

**A METROPOLITAN CASE STUDY
SUBSCRIBER AND TRAFFIC FORECASTING**

Appendix 2

Physical Development Plan for the
Commune of RIJEKA



**UNION INTERNATIONALE DES TELECOMMUNICATIONS
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Introduction

The preparatory stages of the Physical Development Plan for the communes of Opatija, Rijeka, Crikvenica and Krk started in 1978 under the title of "Preconception of the Plan" and in December 1981 the second stage called "Conception of the Plan" was completed. This plan elaborated the development goals for the 4 communes and later the plan was divided into 3 separate plans for the communes of Rijeka, Opatija and Crikvenica. At the same time, the commune of Krk approved its own separate Physical Development Plan.

In December 1985, the Physical Development Plan for the commune of Rijeka was approved and it continues to the present to form a legal basis for development and utilization of space.

This summary sets out the essential features of the Physical Development Plan for the commune of Rijeka.

Problems of Development

To the present, six major problems have emerged in the utilization of space which the plan intends to solve:

- A tremendous disproportion exists between density of population in the town of Rijeka and existing settlements. In the town of Rijeka alone, 66% of the total population of the 3 communes is concentrated and 136 settlements have an average population of 170 inhabitants.
- A greater disproportion exists in the dispersion of jobs in certain areas. In the commune of Rijeka (especially in the centre of the town), 86% of all jobs in the 3 communes are concentrated so that in the commune of Rijeka (1978), for every 100 inhabitants, an average of 46 jobs existed; in the commune of Opatija, only 29 and in the commune of Crikvenica 28 jobs.
- The existing economic structure (the main economic activities of transport and industry represent 60% of production) is totally unsuited for further economic and social development and for maintaining a minimum level of decent living. Employment is still heavily dependent on the migration of population so that the housing crisis has never abated. Due to a false concept of development along the coastline, we have lost the best area for national and human development of towns and settlements, development of tourism, even including the development of ports and transport terminals.
- Poor transport connections with the world and the region, particularly rail and road, together with bottlenecks on the hinterland towns and settlements in this region: these are old and familiar problems to us all. The area itself is badly connected.
- The remaining infrastructure does not conform to present-day requirements.
- The problems of air, soil and sea pollution, excessive noise, the protection of living and working places and human and natural environment are especially difficult and gave more cause for concern. The air in Bakar and its surrounding area is polluted with phenyl and exceeds all legal norms. The maximum permissible level of sulfur dioxide in the air in the centre of Rijeka has already been exceeded. The petrochemical plant on Krk will further aggravate the situation and increase the concentration. Some sources of drinking water, particularly the coastline around Bakar Bay are in potential danger from pollution.

Goals of Development

The imperative need to solve the above problems requires a complete RE-ARRANGEMENT of our concept and approach to UTILIZATION AND ORGANIZATION OF SPACE. Analyses, estimates and results of special studies carried out within the framework of this plan point to the need for changes in the setting up of goals and tasks in the overall social economic planning of development of this area. In conformity with this, in the first phase of the elaboration of a Physical Development Plan for the 4 communes, GOALS OF DEVELOPMENT have been set out and accepted by agreement with the communes of Crikvenica, Opatija and Rijeka. In this Plan, the basic goals of development are:

1. Develop this area as a regional polycentred town or rather as a unique urban system composed of greater and smaller existing and new settlements, keeping and developing their own identity and thus preventing the creation of an enormous periphery of Rijeka.

2. Develop and accelerate the process of tertiarization and quaternization which means develop service and social facilities and thus effect physical planning decentralization of services and other jobs.
3. Coordinate development of this urban system with potential development of the whole region and allow decentralization of housing and jobs to extend beyond the boundaries of the 4 communes of Rijeka's urban system.
4. Existing and future development must be subordinate to decent living standards.
5. Basic conflicting lines of development will have to be minimized to the benefit of more important lines of development.
6. The most important lines of development of this area are:
 - development of the port and transport facilities;
 - development of services facilities, particularly catering and tourism;
 - development and transformation of the structure of industrial production to conform to the goals mentioned above.

Forecast of Development

The assembly of the three communes opted for that variant which permitted retarded growth and gradual change in the economic structure. In the year 2005, over the entire area of the 4 communes, 132,000 would be employed in the economic sector and total employment would reach 180,000 or 64% more than in 1981, and the average growth rate of employment only 1.86% yearly.

Based on the same variant, in the year 1990, in the area of the 4 communes, 129,000 would be employed or 17.7% more than in 1981.

As to the structure of employment, greater changes are foreseen and the tertiary and quaternary sectors should absorb a greater share of the employment figures, ie, service and social facilities.

Until the present, the forecasted number of inhabitants had to be corrected to a much lower figure so that the new forecast was dependent on growth of numbers employed in the lowest variant. Since the present figure of 43.6 per hundred employment rate will increase to 45 per hundred by the year 2005, it seems reasonable to say that the total number of inhabitants in the 4 communes will be 400,000 at the end of that year or 59.1% more than in 1981. At the end of 1990, inhabitants will number 294,000 which is an increase of 16.9% in 10 years.

Concept of the Plan

Inherent in the concept of the plan for the communes of Crikvenica, Opatija and Rijeka is a unique organization of space for the three communes. Rijeka's position as the main centre of development for the region extends to cover the whole urban system. The entire spatial system is structured into 9 gravitational areas. They are: Opatija, Kastav-Matulji, Rijeka, Kostrena, Cavle, Kraljevica, Crikvenica, Malinska and Krk.

The following elements are essential in the concept of the plan: development of the port's regional system and modernization of Rijeka's railway terminal. The port system would be composed of:

- port for "dry-dust" cargo in Bakar bay;
- oil terminal in Omisalj Bay;
- the complete transformation of the structure of the old port in the centre of Rijeka.

The future rail terminal will be linked with the port system and the main railway network will be connected to Karlovac and Zagreb from the one side and from the other side, it will be linked with the Istrian railway lines and the island of Krk (new railway bridge).

In order to protect nature and the ecological equilibrium, development is concentrated on the smaller area in the commune of Opatija, Rijeka and Crikvenica, of which the greater part will be protected as national landscape and new buildings will not be permitted unless they are recreational facilities. Present and future planning will be concentrated on the remaining 350 square kilometres of land called "urban landscape".

The functional organization of space is based on the relative dispersion of jobs and housing, on strengthening a greater number of existing settlements, particularly those that will be the centre of the zone and gravitational area. This applies to all but Rijeka, Opatija and Lovran which plan slower population growth. Two further exceptions will be two new towns which are planned: Kostrena with a population of 30,000 inhabitants and Jadranovo with a population of 6,000.

It is intended that neighbouring settlements be merged into a single settlement. The most important in this group would be the towns of Kastav-Matulji, Crikvenica composed of settlements on a line Kacjak- Selce, Bribir, Jusici-Jurdani, Cavle and Kukuljanovo-Skrljevo.

Growth of population with all its accompanying infrastructure including a greater variety of jobs is primarily directed towards 7 centres of the gravitational areas, 23 zone centres and 30 other settlements with a population of 500-600 inhabitants. 65-70% of total numbers employed in all three communes would be found in separate working zones such as the Port and traffic terminals, industrial, service and other working zones, tourist complexes, etc. The major working zone is planned along the lines Jusici-Jurdani-Permani-Rupa-Sapjane, Skrljevo-Kukuljanovo- Mavrinci-Cernik-Kostrena pensinsula and Bakar Bay. The minor working zone would be found in Matulji, near Kastav, Viskovo, Skurinska Draga, Grobnicko Polje near Kraljevica, Vinodol and elsewhere.

For recreational and tourists purposes, the coastline of the communes of Opatija and Crikvenica is protected together with many forest and hilly/mountainous areas of those communes and the commune of Rijeka.

Forecast of Population and Employment

The Physical Development Plan of Rijeka Commune forecasts (294,000 population) a total population for the year 2005 less than the Master Plan of Rijeka (425,000) foresaw in 1974. The town of Rijeka (with- out Kostrena) in the year 2005 foresees an increase in population to 197,000 total inhabitants of the town. The plan's aim was to distribute the number of inhabitants in a poly-central system which means strengthening existing centres in the small towns and unifying small settlements around their own centre.

Year	Total Population	Total Number of Employee	Employees Density/100 inhab.
1971	160,044	70,912	46.2
1978		83,590	
1981	193,044	91,321	45.3
1986	205,060	96,073	
2005	294,000	133,230	

Gravitation Area	Existing Stage		Forecast for year 2005		
	Emp.1978	Pop.1981	Pop	Emp.Tot.	Emp./100inhab.
Kastav -Matulji	1,650	14,644	32,000	8,110	25.3
Rijeka	77,900	162,046	211,000	93,300	44.2
Kostrena	2,580	3,130	30,000	10,040	33.5
Grobinstina	500	12,033	19,000	16,990	89.4
Kraljevica	2,410	10,860	25,000	13,390	53.6
TOTAL	85,040	202,713	317,000	141,530	

The territory of Rijeka Commune is divided into four gravitational areas: Rijeka, Kostrena, Grobinstina, Kraljevica, plus part of the gravitational area Kastav-Matulji.

TRAFFIC

With respect to the importance of traffic in this area, a special **TRAFFIC STUDY OF RIJEKA** (and its urban system) was carried out in cooperation with **PHYS. DEVELOPMENT PLAN** and the main features of this study are set out with the physical plan. On the basis of this study and spatial distribution of housing and work, a system of an integrated system of the main traffic network with the local system including all other systems of traffic: rail, ship, road, air and pedestrian!

The construction of the highway for Rijeka's transportation system is one of the crucial tasks as is the construction of a new (valley) railway line and Rijeka's railway terminal and a new port and traffic terminal. High priority should be given to the construction of the Rijeka bypass from Matulji to Krizisce, and later the Lovran bypass Opatija, Crikvenica and Novi Vinodolski as well as the truck terminal at Cernik and Permani.

INFRASTRUCTURE

Water supply is of the utmost importance in the infrastructure system of this region. In the first phase, the construction of the water supply system Zoretici is planned which would ensure 5,083 litres of water per second, and this should satisfy demand until the year 2005. Further stages of this system would be available for Istra and also to replace any existing sources of water that might become polluted.

Of particular interest in this plan is the suggestion to extract gas from the lower regions of the Adriatic Sea. Naturally, the plan calls for a network covering other infrastructure such as electricity, post, telegram and telegraph and canalization.

SYNTHESIS OF THE PLAN FOR THE YEAR 2005

The main purpose of the plan is a poly-centred development of the three communes with the specified goals to improve the living and working conditions of the population.