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Transport and Energy infrastructure in South East Europe

(Albania, Bosnia-Herzegovina, Croatia, Federal Republic of Yugoslavia, Former Yugoslav Republic of Macedonia)

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1. INTRODUCTION

1.1. THE REGIONAL DIMENSION

The development of transport and energy networks in the South East Europe region, connected and compatible with the corresponding European internal networks and those of the neighbouring candidate countries, is an important means of improving links within the region and integrating the countries of the area into the political and economic mainstream of Europe.

This paper focuses on the countries included in the Stabilisation and Association Process, comprising Albania, Bosnia and Herzegovina, Croatia, the Former Yugoslav Republic of Macedonia and the Federal Republic of Yugoslavia¹. It takes account of the wish of these countries to participate in the process of European integration, as well as the need for them to engage in political and economic reform and regional co-operation.

At the European Councils in Lisbon and Feira in the first half of 2000, it was confirmed that the Stabilisation and Association Process is the centrepiece of the Union's policy towards the region and that the countries concerned are potential candidates for membership in the European Union.

The regional dimension of a future Community strategy and assistance will be given special attention, with the view to stepping up regional co-operation between all countries in South Eastern Europe in the context of the Stability Pact.

It should be remembered that the EU has gone through extensive planning exercises resulting in transeuropean networks for the European Union and the accession countries. The result of these exercises is shown in MAP 1. It comes out of these exercises that there is a need for further planning in the region of the five countries which are examined in the present paper. It is evident that any development of a regional nature has to take full account of links with neighbouring countries, both EU Member States and candidate countries. In particular for the transport sector, the results of the work undertaken in the framework of the Transport Infrastructure Needs Assessment (TINA) process will be considered as a given for the development of infrastructure in these candidate countries of the region.

1.2. A STRATEGIC APPROACH TO INFRASTRUCTURE DEVELOPMENT

The Commission services describe here their view on the basic development of infrastructure in the transport and energy sectors of this region. The paper was presented to the members of the Stability Pact, during the conference in Tirana in May 2001, to the beneficiary and surrounding countries, to the International Financial Institutions, and to other donors, with the intention of establishing a reference and to give guidance for future planning exercises and for the identification of priority investment actions in the energy and transport sectors in the countries of the region.

¹ These strategies cover the countries which participate in the EU's Stabilisation and Association process. They are not designed to cover other members of the Stability Pact, such as Romania, Bulgaria or Moldova, with which the EU has close relations. Relations with these countries are governed by the accession process and the Europe Agreements and the Partnership and Co-operation Agreement respectively.

In building this strategy, the report “The road to stability and prosperity to South Eastern Europe”, prepared by the World Bank, and a second report, prepared by the EIB “Basic Infrastructure Investments in South-Eastern Europe – Regional Project Review” have been used as references. Both reports were presented to the Regional Funding Conference held in Brussels 29-30 March 2000².

These strategies are intended to give guidance, from a regional perspective, to future investment decisions. They are intended as a basis for future Commission decisions on the use of EU funds in the region. The criteria for the selection of projects, also included in this paper, should provide a common ground for the identification of priority projects. They should guide the activities of the donor community, including assistance programmes from the European Union and the International Financial Institutions, as well as the vetting of regional projects by the infrastructure group³. This group had its first meeting in Brussels on 21 September 2001 in view of the presentation of regional projects at the next regional conference to be held in Bucarest in October 2001.

These strategies will also set the context for more detailed studies for the development of the transport and energy sectors underway or due to start during 2001. These studies include the Transport Infrastructure Regional Study (TIRS),- with a first phase, financed by France, aiming at the selection of medium-term investment proposals, and a second phase, to be financed by the EU, for the definition of a longer term (2015) transport infrastructure plan - and three studies financed by the EU in the context of the CARDS program in the energy sector (electricity, oil and gas), which are due to start soon.

It is evident that the development and implementation of a strategy is an ongoing process. Therefore developments (e.g. changes in economic activity or in demand patterns) have to be carefully monitored and results of ongoing studies have to be examined. The Commission services will take into consideration these developments and adapt the present strategy guidelines accordingly – if need be.

1.3. THE REFORM PROCESS

In 1998, the five countries of this region had a population of about 25 million people i.e. 6,6 % of the population on the European Union. They had an average Gross Domestic Product per capita of about € 2.050, only about 11 % of the EU figure. This shows the long way that these countries have to go in order to reach an economic level, comparable to EU standards. An additional problem is the great differences in the level of development between the countries of the region. Per capita GDP is ranging from € 890 in Albania to € 5000 in Croatia.

² The reports are available for consultation on the internet:

<http://www.seecon.org/RegionalInitiatives/WBRegionalStrategy/contents.htm> and
<http://www.seecon.org/Calendar/2000/Events/RC/WT2/Infrastructure/EIB-InfrastructureReport.pdf>

³ The infrastructure group consist of the European Commission, the World Bank, the European Investment Bank, the Development Band of the Council of Europe, the European Bank of Reconstruction and Development, the Office of the Special Coordinator of the Stability Pact and the High Level Steering Group for South East Europe.

During the last ten years, reforms oriented towards the establishment of a market economy and the strengthening of institutions have been introduced in all countries of the region. While the starting points and present situation differs considerably from country to country, it is obvious that major gains would be achieved through increased regional co-operation.

Improving transport and energy infrastructure in the region and integrating the countries of South Eastern Europe to the rest of Europe is important in order to support better quality of life through economic growth, regional integration, social cohesion and adequate environmental conditions. In this context, conditions for improvement of the situation would include:

- Rapid progress in the reform process at the national level, notably through the introduction of market mechanisms, modern operating practices and sound infrastructure financing and management ; strengthening of institutions through improved legislative and regulatory frameworks; restructuring of the sectors, including the eventual privatisation of some assets; and introduction of new technologies. The Stabilisation and Association process should provide the necessary guidance for the reform process and the progressive adoption of EU standards and policies for infrastructure development, including environmental, social and safety policies.
- Development, within a regional framework, of a sound investment programme based on the co-operation among the countries of the region and with the Member States and Candidate Countries of the European Union.

2. TRANSPORT INFRASTRUCTURE

2.1. PREAMBLE

The transport strategy for South East Europe, developed in this paper, is intended to provide a common ground for the development of a multimodal transport infrastructure network adjusted to the expected requirements of passenger and goods transport in the area.

The network covers the main road and rail routes, inland waterways and river ports, seaports, airports and terminals. It should be built on the principles and overall objectives of the European Parliament and Council decision N° 1692/96/EC of the 23rd July 1996, on Community guidelines for the development of the trans-European transport network.

The Community guidelines constitute a declaration of intent by the European Community for establishing and developing a multimodal transport network. This network should meet the transport needs of the Community derived from the single market and the objectives of economic and social cohesion and sustainable mobility. These guidelines, while developed for the European Union, may serve as a model for other European regions. The concept of a Pan-European Transport network partnership was already approved in Helsinki in 1997. The strategy developed here for South Eastern Europe abides to the principles of this partnership so, in the long run, the whole of Europe will be served by an integrated multimodal network.

Three recent planning exercises involving countries outside the EU and the region in focus are specifically relevant and have been taken into account:

- The decisions of the Pan-European Transport Conferences, in particular those held in Crete and Helsinki, concerning the concept of Pan-European transport corridors and areas. A number of these Corridors and Areas (PETrAs) cross or concern the Balkan region: Corridors IV, V, VII, VIII, X and the Adriatic-Ionian PETrA.
- The activities carried out by the United Nations Economic Committee for Europe (UNECE) in the mid 90's concerning European Agreements on main international traffic arteries (AGR: International E-road network), on main international Railway lines (AGC) and on important international combined transport lines and related installations (AGTC)
- The Transport Infrastructure Needs Assessment (TINA) in Central and East Europe concerning accession countries, some of them neighbouring the five countries examined in this paper. This exercise is also useful as a methodology for identifying priority investments within transport networks.

In addition, the “Western Balkan Transport Infrastructure Inventory”, financed by the EIB, presented in July 2000, provides a systematic inventory of the basic transport network elements in the region. This inventory will be used as a database for the development of the transport network planning process.

The strategy presented here focuses on infrastructure, but it has to be stressed that while adequate infrastructure development is a necessary condition for the achievement of efficient transport systems in the Balkan region, sustainable mobility will not be attained in the absence of a better organisational context requiring a new regulatory and institutional framework.

2.2 PRESENT SITUATION

Transport infrastructure in South East Europe is generally below European standards and has been severely affected by:

- Direct war damage, which destroyed or rendered unusable important components of the infrastructure in the Federal Republic of Yugoslavia and in Bosnia-Herzegovina, including roads, railway lines and airports. The destruction of bridges across the Danube and Sava rivers is still severely impeding road and rail traffic flow and inland navigation.
- Indirect damage from the conflicts as well as neglect and under-investment, which led to severely curtailing periodic and current maintenance and renewal activities.

Disruption on the main corridors has led to diversion of traffic towards other, less adapted routes. Priorities have also changed for political reasons; in Croatia, for instance, priority is given to corridor V (north-east/south-west) instead of corridor X (former “trans-Yugoslav” north-west/south-east).

Overall, however, the capacity of existing infrastructure – under normal operating conditions - is well adapted to the present traffic and its foreseeable medium-term development, except for some links in the neighbourhood of the large cities of the region. Given the outstanding needs, investments to increase capacity should be considered, in general, of low priority with regards to reconstruction and renewal works of the existing infrastructure, needed to provide the required quality of service in terms of speed and or bringing it back to design quality.

More particularly in the various modes of transport the situation is as follows:

- Roads

Road endowment in the region is significant, although not reaching the typical levels of the European Union. In all five countries, road networks are relatively extensive, albeit density and quality are quite different. Primary and secondary roads amount to some 57000 km. There are 1008 km of motorways (two-by-two lane divided highways) concentrated in Croatia, the Federal Republic of Yugoslavia and the Former Yugoslav Republic of Macedonia.

The state of the network is very uneven, although in general it shows a serious lack of periodic and current maintenance. The maintenance problem is becoming particularly acute in certain cases. In the Federal Republic of Yugoslavia it is estimated that only 30% of the roads are in a satisfactory condition. Furthermore, many roads do not comply with the requirements of European trucks, which are allowed axle loads up to 11.5 tons. This needs special attention.

- Railways

The railway network of the region consists of some 9 000 km of lines, of which only 612 km have double track and 3 333 km (37%) are electrified. Network densities are low for Albania, Bosnia-Herzegovina and the Former Yugoslav Republic of Macedonia.

The division of the former Yugoslavia has induced the creation of separate rail companies, which are generally owned and controlled by the state, and introduced severe difficulties into the operation of international services. Reform along the lines of EU Directive 91/440 on the separation of infrastructure and operations has been only partially implemented. In Croatia, restructuring has gained some momentum under the impulse of the International Financial Institutions.

Investment and maintenance have been heavily neglected, leading to a deteriorating infrastructure, obsolete rolling stock and lack of technical innovation in signalling and telecommunication technologies. The main route of the region, the Trans-Yugoslav Railway (Corridor X) is, at present, interrupted for long-distance traffic.

- Seaports and waterways

The countries of South East Europe have outlets to the Adriatic Sea via major ports in Rijeka, Split, Ploce and Dubrovnik in Croatia, Bar in the Federal Republic of Yugoslavia and Durres in Albania. These ports are generally significant for hydrocarbons and other bulk commodities, although container traffic is gradually being developed. Outside the region, Thessaloniki, in Greece, is an important sea outlet for the land-locked Former Yugoslav Republic of Macedonia. Croatia has the biggest commercial maritime traffic (40 million tons) in the region.

The region's inland navigation is dominated by the Danube, which was a key shipping artery (Corridor VII) prior to its interruption. Although traffic on the Danube has fallen sharply over the past decade, the river remains an essential transport link for Europe after the construction of its link with the Rhine-Main.

A key element severely affecting the navigation on the Danube is the destruction in April 1999 of major bridges in Novi Sad and Panchevo. Clearance work is underway with a view to opening a navigable channel during 2002.

- Airports

There is an extensive air route network in the region, including international airports in each country. Due mostly to the conflicts, air traffic has been heavily reduced in the mid-nineties and, although is increasing, it still remains low compared with traffic in the rest of Europe.

Air traffic control systems are neither sufficient nor adequate to meet increasing traffic. Other safety-related infrastructure in the airports also needs to be modernised. The "Air Traffic Infrastructure Regional Study"(March 2001), prepared by the EIB, contains a good description of the problems of air traffic control and safety and gives a series of recommendations, which are now being discussed with the countries of the region.

2.3 STRATEGY

The strategy described here should be seen as a framework for planning and investment decision-making. It sets the priorities for developing a transport network in South Eastern Europe based primarily on political, geographical, demographic and regional (i.e. socio-economic) considerations. Its primary aim is to provide guidance for the realisation of national transport plans and for feasibility studies for the specific projects selected in the subsequent investment programme. In particular, it should provide a framework for selecting the links and nodes that would define the strategic multimodal transport network of the region. The priority investment projects for interurban transport that will be identified in the next few years will be mostly located on this network.

However, this process of streamlining the investment will not solve alone the transport problems of the region. An absolutely necessary prerequisite for the success of the strategy is the creation of a new, adequate and more efficient regulatory, organisational and institutional framework. Therefore, the introduction and the progressive implementation of reforms towards market mechanisms and the development of modern practices in the transport sector will be a necessary condition for the financing of infrastructure projects. This is required to ensure the efficient implementation, management and maintenance of transport infrastructure financed from public grants.

Emphasis should be given to the solution of border crossings. This is particularly necessary for the region, since many new borders have been created after the division of the former Yugoslavia. It is obvious that the facilitation of trade and traffic flows brought about by infrastructure improvements will be useless if border crossings continue to act as bottlenecks. All efforts have to be made to reduce waiting time in the borders, by institutional changes and the use of best practices and modern technology.

Environmental concerns should also be taken into account so as to avoid environmental degradation. In that respect, projects selected for finance should, when appropriate and possible, be subject to an Environmental Impact Assessment in line with EIA directive 85/337/EC as amended by 97/11/EC.

The time horizon for the implementation or the commencement of the majority of the selected projects to fulfill this strategy, is the year 2010.

2.4. PRINCIPLES

The definition of the strategic infrastructure network is based on the following principles:

- 1) A strategic network for the transport of passengers and goods consists of multimodal links and their nodes, at which efficient interchange of goods and passengers between transport modes can be accomplished. Connections with the network within the region and with the Pan-European transport corridors outside South East Europe or to the TEN-T and TINA networks are considered as part of the network.
- 2) Priority is given to the use of existing infrastructure, by repairing and rehabilitating it. Upgrading or new infrastructure components should be kept to a minimum.
- 3) The network design uses the principles of the EU transport policy in aspects such as the development of competition and co-operation between transport modes and privileging those modes of transport which pollute less over those which pollute more.
- 4) An investment programme for the execution of the transport infrastructure plan must be based on the economic viability of projects. The density of the network must reflect the financial strength and capacity for implementing large projects in the countries concerned. Experience in other regions shows, that this capacity is reached at an investment level of 1-2 % of the expected GDP of each country.

2.5 CRITERIA

The selection of the priority networks and priority projects can be based on the following criteria:

Criteria for the selection of network sections

- 1) The network definition will take account of the infrastructure planning of the UN-ECE European agreements, the E-routes for the land transport to which South East Europe countries agreed to.
- 2) The network definition will take account of the declarations of the Pan-European transport conference of Helsinki in 1997. The relevant sections of corridors IV, V, VII, VIII and X will be included in the backbone network.
- 3) The network should interconnect all capitals inside the region as well as ensuring their connection to the capitals of the neighbouring countries.
- 4) The network should concentrate accessibility to only a few Adriatic ports, with the aim to support short sea shipping, which requires the convergence of substantial traffic flows. These ports should be adequately linked to the land transport network and equipped for combined transport.

- 5) The network should concentrate air transport development in a few international airports in the region able to guarantee sufficient services. Adequate land accesses should be provided to ensure sufficient accessibility to air transport services to the whole region.
- 6) The network should include connections to and with cities of major regional importance. The following cities are considered: Banja Luka, Nis, Novi Sad, Podgorica and Pristina.
- 7) The regional air traffic control system should be upgraded, according to the “Air Traffic Infrastructure Regional Study”, to cope with increasing traffic at regional and international levels.

Criteria for selection of projects

- 8) Application of Trans European Motorways (TEM) and Trans European Railways (TER) technical minimum standards and EU “acquis communautaire” for the quality of network components.
- 9) Technical quality of the transport infrastructure asset must correspond to the expected traffic in the next decade. It is essential that before any decision on project selection and financing a specific study for traffic forecasts is established.
- 10) The technical standards and the quality of transport infrastructure assets should correspond to the expected traffic and ensure adequate socio-economic rates of return to prevent a misallocation of scarce economic resources. Feasibility studies must also ensure interoperability conditions in all modes: railways (electrification, signalling, etc.); roads (axle loads, signing); inland waterways (clearance, draught) and aviation (ATC systems).

It has to be noted that the updating of the traffic forecasts for the priority networks must be evaluated by the Stability Pact Quick Start studies on the transport sector in South East Europe due to start during 2001. More particularly the above mentioned TIRS Study will help to define a medium term programming exercise to allow efficient channelling of financial assistance. In any case, projects should always be selected on the basis of their economic viability, following adequate pre-feasibility and feasibility studies.

2.6. PRIORITY NETWORKS-MAPS

The attached maps show how the use of the principles and criteria lead to the selection of the priority infrastructure networks in roads, railways, ports and airports concerned. It also presents the linkages to and the priority networks in the surrounding countries.

The following points should be noticed:

- 1) Map no 2 shows the existing road network for the five countries, including the main road network i.e. Corridors and their branches, UN-ECE roads, links with main ports and airports. Map no 3 shows the proposed strategic road network. It also presents the linkages to and the priority networks in the surrounding countries.
- 2) Maps nos 4 and 5 show similar information for the railway network.

- 3) It has to be noted the priority road network consists of motorways or roads of two lanes. The selection should be based on the traffic forecasts and safety considerations. For the time being traffic is very low, in the order of 2000 PCU/day, except in the areas around Belgrade and Zagreb. It would make sense to complete missing motorway links on the routes where already motorways exist even if the present traffic would not suggest so.
According to the works of UN/ECE W.P. 5, there exists a correlation between the necessary road infrastructure capacity to be offered with transport demand; this correlation demands motorways only for traffic above 20 000 PCU/day.
- 4) Similar considerations apply for the railway network. Traffic is actually very low, in the order of 10-20 trains per day which requires only a minimum capacity on these links. Double track electrified permitting speeds up to 160km/h are only required for high quality services and where more than 100 trains per day are expected.
- 5) The road network in the region is quite well developed and therefore the selection of the strategic parts is not easy. However, the selection principles restrict the network to the links between the capitals of the five countries plus the cities of regional importance (mentioned above) and their airports. Furthermore the ports of Rijeka, Split, Ploce, Dubrovnik, Bar and Durres should be connected to the network. 12 links establish the connection with the neighbouring countries.
- 6) The proposed railway network follows the same patterns. However, the railway links in this region do not form a real network; to a large extent the railway system is a patchwork. One should note, that there is a 40 km missing link on the route from Sarajevo to the link between Belgrade and Podgorica.
- 7) Priority in the ports is considered for the ports of Rijeka, Split, Ploce, Dubrovnik, Bar and Durres.
- 8) Priority in the riverports is considered for the ports of Belgrade and Novi Sad on the Danube. The usage of the river Sava between Zagreb and the Danube, as well as the construction of the Sava-Danube canal, need to be studied further.
- 9) Priority in the airports is considered for the airports of the five capitals (Zagreb, Belgrade, Sarajevo, Tirana and Skopje) plus the airports of Podgorica, Pristina, Split, Dubrovnik and Banja Luka. The air traffic control systems are in a bad condition. The integration of these control systems into EUROCONTROL with the aim to have a harmonised approach for the entire region will be a major policy issue for the next years. The key results of the Air Traffic Regional Infrastructure Study are:
 - the need for increased co-ordination of Upper Air Space
 - the need for an enhanced Regional Communication Network to support effective air traffic management
 - the need for important institutional measures to accompany implementation of investments

The most urgent need for traffic control and air traffic management improvement is for Bosnia-Herzegovina and Albania.

The proposal for airport investments need to be carefully evaluated on a case by case basis.

- 10) The road network also indicates the existing scheduled ferry links in the Adriatic sea. It demonstrates the large potential for short sea shipping. Investments in installations for short sea shipping and its integration in the land transport system should be of high priority.

Map 1: Proposed Trans-European Transport Network for the enlarged union



Map 3

South East Europe: STRATEGIC ROADS



- | | | | | | |
|---|-------------------------------|---|--------------|---|-------------------|
|  | Capitals |  | Airports |  | Adria ferry lines |
|  | Cities with regional function |  | Inland ports |  | strategic roads |
| | |  | Ports |  | TEN or TINA roads |

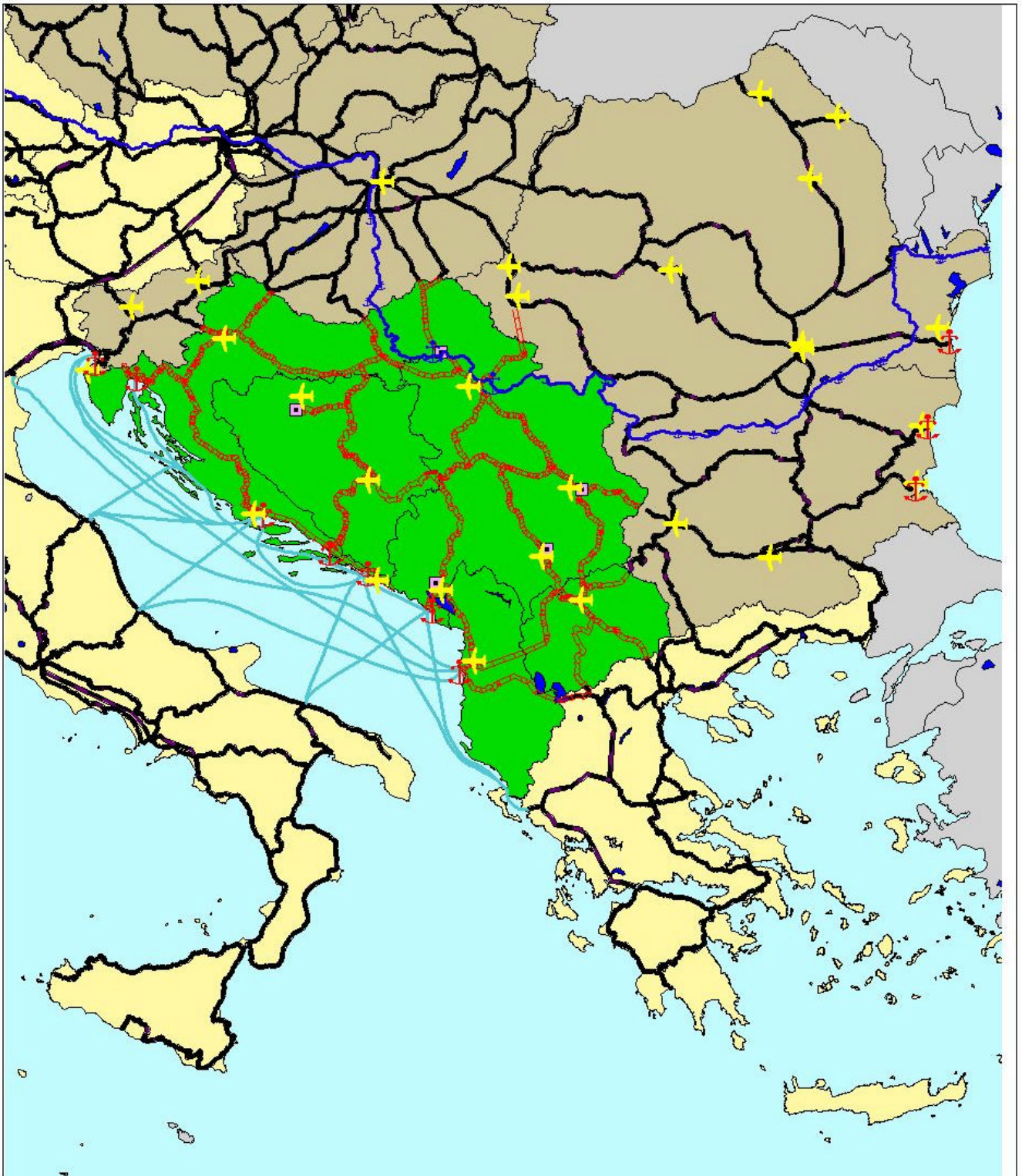
2) The railway network in the region

Map nr 4: All railway links



Map 5

South East Europe: STRATEGIC RAILWAYS



- | | | | |
|-------------------------------|----------------------|------------------------|-------------------|
| Capitals | Danube | strategic Airports | Adria ferry lines |
| Cities with regional function | TEN or TINA railways | Strategic Inland ports | lakes |
| | priority railways | Strategic seaports | |

3. ENERGY INFRASTRUCTURE

3.1. PREAMBLE

A strategy has been developed for South East Europe to create modern and efficient energy infrastructure networks (for electricity, oil and gas) to ensure that the energy system of the region can meet the energy demands of each country. The development of energy infrastructures should therefore ensure an adequate supply of energy, ensure the region's security of supply, and the necessary interconnection between the region and the neighbouring systems (for instance that with the European electrical system UCTE). It should also develop interconnections of regional interest within the South-eastern European region.

The basic principles and overall objectives in the field of electricity and gas networks have been defined by the TEN-Energy guidelines contained in the decision N° 1254/96/CE of the European Parliament and the Council.

In the electricity sector, in addition to the development of the infrastructure networks and their interconnections, a particular effort has to be made from the countries of the region to co-operate for the development of a regional electricity market. The countries of the region have committed themselves formally to establish such a market by the end of 2006. For this purpose a new regional regulatory, administrative and economic framework has to be put into place. The various initiatives in this field should be coordinated.

Reforms in the national and regional level include (inter alia) progressive liberalisation, market opening, unbundling of the electricity utilities developing, tariffication systems which reflect costs, an improved rate of bill collection etc.

These reforms will lead to an improved efficiency of the system, a better use of the existing infrastructure, therefore ensuring a long-term viability of the system and a better integration of energy systems and practices with those of the Community.

It should be envisaged that progress in promoting reforms becomes a condition for allocation of funds for investments in the energy sector of each beneficiary country.

For the electricity sector, it is the premise of this strategy that the installed power production capacity in the countries of the region is sufficient to meet the region's demand. However, the effective production capacity is well below the installed one, due to a number of physical, technical, administrative and political problems, and, in certain cases, as a consequence of war damages.

It is considered that, if appropriate measures are taken, no new power production capacity will be required in the short and medium term. Specific actions to rehabilitate or to improve the efficiency of the existing production capacity, as well as those which improve the environmental impact of this capacity should be envisaged. Actions to improve the electricity transmission systems should also be considered. This is particularly the case if such actions are envisaged on a regional basis, i.e. taking account of the complementary of the supply and demand in various countries.

The rehabilitation and development of the energy sector must take into account environmental concerns so as to avoid environmental degradation. In that respect, projects selected for finance should, when appropriate and possible, be subject to an Environmental Impact Assessment in line with the relevant EC directives.

In the oil and gas sectors the most immediate task is to try to improve security and diversity in the supply of oil and gas to the existing markets as well as to secure the transit to neighbouring markets. Concerning future large scale projects (notably those that develop new transportation routes), the advantages, problems, obstacles, costs and benefits of the various options have to be analysed before definitive investment decisions are taken. In any case, decisions regarding new oil and gas transportation routes should be taken according to the following principles:

- Decision regarding the development of particular routes should be taken according to purely commercial criteria by the commercial operators.
- In the medium to long-term, a policy of multiple routes should be promoted.
- This entails that, in the medium to long-term, competition between the route options should be encouraged.

Financing of investment in the energy sector and particularly for the oil and gas sectors is principally undertaken by the private funds. Loans from the IFI's can be used to finance such a projects but, in principle, no grants of the international community should be used for projects that are otherwise viable and profitable. Nevertheless some specific actions may require co-financing through grants, for example preparatory actions for the transmission of electricity or necessary priority actions which, for various reasons cannot attract private investment. This is the case, for instance, with cross-border power transmission projects, for which the principle beneficiaries are often not those of the country in which the projects are situated.

3.2. PRESENT SITUATION

The energy sectors of the countries of this region share a number of important physical and institutional characteristics.

Primary sources of energy are limited: many countries produce low-quality lignite (particularly in Bulgaria, the Federal Republic of Yugoslavia, the Former Yugoslav Republic of Macedonia and Romania) and there is hydroelectrical production in Albania, Bosnia-Herzegovina, Bulgaria and Croatia. Only Croatia and Romania have some limited production of oil and gas but insufficient to meet the country's demand. Romania and Bulgaria also have nuclear power stations on their territory.

As a result, the countries of the region are heavily dependent upon the import of primary energy, particular of oil and gas. Bulgaria, the Federal Republic of Yugoslavia and the Former Republic of Macedonia use gas for power production. Only limited amounts of gas are used in Bosnia-Herzegovina. Gas is not available in Albania.

Local energy resources have their own limitations: the high cost and environmental constraints of lignite and coal-fired power plants (limitations regarding SO₂, NO_x, particulates and CO₂ emissions), or the dependence of hydroelectrical production on levels of rainfall.

Energy infrastructures were the subject of significant damages during the conflicts. In addition, they suffer from a number of inefficiencies at all levels of the chain: extraction (of lignite), generation, transmission, distribution. This has been brought about by a lack of investment, maintenance and (in some cases) repair.

To this has to be added the low-level of energy efficiency of the countries' economies, estimated at between 2 and 4 times less efficient per unit of GDP produced. This situation is both cause and effect of the lack of reforms of the energy sector: efficient management, opening up the sector to private operators, restructuring of vertically-integrated state-monopolies, new price and tariffication policies, independent regulatory structures, improvement of the level of bill collections etc. All countries are interested in privatisation of parts of the system.

This general picture, hides a number of differences between the situations in the different countries. The cause of the severe supply deficits suffered in the Federal Republic of Yugoslavia (in Serbia and Kosovo) is not a lack of reform; the main problem in Albania is implementing a policy that will reduce an over-inflated demand. Bosnia and Herzegovina suffers from the division of a former unified network into three sub-networks on the lines of the division of the country. In the Former Yugoslav Republic of Macedonia limited reforms have begun to take effect, whereas in Croatia, Bulgaria and Romania reforms on the line of the EU Directives are underway.

3.3. STRATEGY

The strategy objectives are differentiated for the power, oil and gas networks, to take account of the differences in each sector.

The time horizon for the implementation or the commencement of the majority of the selected projects to fulfill this strategy is the year 2010.

The strategy objectives are the following:

3.3.1. Electricity networks

(including cogeneration and heat transmission systems)

a) The interconnection (and synchronisation) of networks of the regions with the European electrical interconnected network UCTE, as well as amongst themselves according to UCTE criteria. This entails strengthening and developing the necessary internal and cross-border connections, which need to be established for the connection with the UCTE network.

b) The reinforcement, rehabilitation or development of interconnections between electricity transmission networks of the region permitting or facilitating exchanges of electricity and promoting the development of a regional electricity market. Missing or insufficient interconnections necessary for the exchange of electricity and the promotion of internal market have to be identified.

- c) Rehabilitate or upgrade the control and dispatching centres, as well as the transmission networks, in order to improve the efficiency of the existing production capacity. Telecommunication systems are also required to improve operation, control and dispatch facilities.
 - d) The rehabilitation of existing lignite mines and electricity production and transmission infrastructures, to improve the efficiency and to reduce the environmental impacts of power productions in order to help the region to meet the power demand without installing new production capacities in the short and medium term. Rehabilitation projects should meet agreed environmental and safety conditions and objectives.
 - e) Continue and deepen the process of regional co-operation leading to the establishment of a regional electricity market.
- A number of projects in the framework of the Stability Pact, will carry out many of practical tasks to establish a regional electricity market. These will be financed by the EC but also by France; other, complementary projects will be financed by the USA and Canada.
- f) Develop the regional electricity market, both from the point of view of the physical interconnection of infrastructures and regional market structures, as well as the restructuring of national industries and markets, to allow the existing production capacity to meet demand.
 - g) Promote measures for energy efficiency and savings in electricity generation and networks, as well as in the cogeneration of heat and power (CHP plants) and in heat transmission systems)

3.3.2. Gas networks

- a) The creation of adequate and environmentally-sound gas transport networks to ensure the supply of the region (particularly to existing markets) and the transit to neighbouring regions.
- This can be achieved through the reinforcement and completion of existing gas networks to transport natural gas volumes that have already been contracted. Such reinforcement concerns not only the transport or transit pipelines but also accompanying installations, such as pumping stations or storage facilities. Indeed, the latter should be envisaged in a regional context.
- b) Contribute to the security and diversification of gas supply to existing markets in the region, by considering the advantages, obstacles, costs, and benefits of new projects envisaged, in particular projects for bringing gas from the Caspian Sea countries, understanding that the final decision as regards any new infrastructure has to be taken by the commercial operators.
 - c) Consider the possibilities of bringing natural gas to new zones or markets in the region, when the use of natural gas could be envisaged from a cost or environmental point of view.

3.3.3. Oil networks

- a) Strengthen or complete the region's oil networks to ensure that supply to the region (particularly to existing markets) and the transit to neighbouring regions meets demand, including the demand of the region's refineries.

This can be achieved through the reinforcement and completion of existing oil networks. Such reinforcement concerns not only the transport or transit pipelines but also accompanying installations such as pumping stations, storage facilities, loading and unloading at ports.

- b) Contribute to the strengthening and diversifying the region's security of oil supply by considering the advantages, obstacles, costs, and benefits of new projects envisaged, in particular projects for bringing oil from the Caspian Sea countries, understanding that the final decision as regards any new infrastructures has to be taken by the commercial operators.

3.4. CRITERIA

The basic criteria for the identification and selection of projects in the fields of gas and oil networks are the following:

3.4.1. Electricity networks

(including cogeneration and heat transmission systems)

Possible investment:

Projects could be in the following sub-sectors of the power system: very high tension lines, sub-stations for connection and transformation, regulation devices, power plants (and where appropriate the associated lignite mines), large scale combined Heat and Power (CHP) plants including the heat transmission systems, telecontrol systems including dispatching centres, distribution networks.

System interconnection

With a view to system interconnection, priority will be given to the completion of the necessary missing links for the interconnection of the electricity networks of the region with the UCTE network.

In the west of the region, missing links on two axes from north-west to the south-east have to be re-filled (needing repair or reconstruction work). One is along the Adriatic coast, reaching Greece through Bosnia-Herzegovina, the Federal Republic of Yugoslavia and Albania, and a second one passing through Croatia, dividing in two branches (the first through Bosnia-Herzegovina and the second through the Federal Republic of Yugoslavia), reaching Greece through the Former Yugoslav Republic of Macedonia.

To the east of the region, the interconnection of Romania and Bulgaria to the UCTE via Hungary also has to be considered a priority.

In addition, regulating devices in the power stations and the electric networks have to conform with UCTE standards and UCTE pre-requisites defined in the "Measures Catalogues" for reconnecting the region.

The interconnection of Turkey to the “extended” UCTE – System should be further studied.

N.B.: The rehabilitation and reconnection of 750 KV lines to the Russian and Ukrainian electricity system is not considered as a possible option for the time horizon under consideration in this strategy paper.

Regional interconnection

With a view to regional interconnection, priority will be given to develop interconnections that fill in missing links in the high tension transmission networks between national grids. These interconnection will strengthen electricity exchanges between the countries of the region.

N.B.: Imports of electricity from neighbouring countries and production of electricity in nuclear plants will fully take account of the commitments undertaken by these countries regarding the closure of certain nuclear power units or plants.

Renovation of electricity production and transmission

With a view to renovation of electricity production and transmission, priority will be given to the rehabilitation, reinforcement and upgrade of existing lignite mines and power production and transmission capacities. These investments should be envisaged if they contribute either to improving the region’s environmental situation or to the increase of electricity production and exchanges and will in that way help the region to cover the electricity demand through the best use of existing power production capacities. Preference should be given to the rehabilitation of hydro power plants and to measures improving energy efficiency and reducing energy losses in existing power plants and transmission networks, with the view to meet environmental concerns.

Renovation of electricity distribution and of CHP and heat transmission and distribution

With a view to renovation of electricity distribution and of CHP and heat transmission and distribution, priority will be given to the rehabilitation, reinforcement and upgrade of existing electricity distribution networks and of CHP and heat transmission and distribution networks.

Preference should be given to measures improving energy efficiency and reducing energy losses in such networks, and improving the quality of the service to the customer.

Capacity needs in CHP plants should be estimated on the basis of an energy efficient operation of the heat transmission and distribution networks.

3.4.2. Development of a regional electricity market (REM)

Putting in place the regional market

With a view to putting in place the regional market, priority will be given to the creation of a regulatory, administrative and economic framework so that the regional electricity market can function properly by the planned date of end 2006.

In particular, to organise the study, definition, acceptance, transposition and application of the necessary legal, regulatory, organisation and technical elements necessary for the putting into place implementation of the regional electricity market.

Reforming the electricity sector

If the regional electricity market aims to promote regional level reforms, others reforms and restructuring should be envisaged on a national level to complete and to support the implementation of the regional market. These reforms (including, inter alia, progressive liberalisation, market opening, unbundling, proper tarification and price policies that reflect costs, improvement of bill collection rates) aim to improve the existing system, the best use of existing infrastructure and to ensure the sector's long-term viability. They will also ensure a rapprochement with EU rules.

It is therefore important to make the link between the capacity of a country to attract infrastructure investments with its capacity to promote reform, on both a national and regional level.

Studies in the framework of the Stability Pact

It should be pointed out that much of the study and preparatory work on these questions will be performed in the framework of the Stability Pact Project entitled "Electricity Co-operation Study" which will be financed by the EC.

3.4.3. Gas Networks

Possible investment:

Projects could be in gas pipelines, storage capacities, pumping and connection substations, installations for receiving and storage of liquefied gas (LNG), dispatching and control mechanisms, distribution networks.

Supplying existing markets

With a view to supplying existing markets, priority will be to reinforce existing capacities in gas transmission and distribution networks, or develop the necessary new capacities to cover the demand in the existing markets and gas demand for transit to the neighbouring regions.

New markets and future supply

With a view to new markets and future supply, priority will be given to the limited extension of natural gas networks to new markets/zones within the region and the preparation of future large gas transit projects, in particular projects for bringing gas from the Caspian Sea countries.

Reforming the gas sector

If these project aim to promote regional co-operation, for them to succeed reforms and restructuring should also be envisaged on a national level. These reforms (which include progressive liberalisation , market opening, unbundling of state-owned companies, development of transparent tariffication and pricing policies, improvement of bill collection rate) will improve the efficiency of the existing system as well as a better use of infrastructure, and will ensure the sector's longer term viability, as well as rapprochement with E.U. rules.

Studies in the framework of the Stability Pact

It should be pointed out that much of the study work on these questions – the definition of new routes, identification of possible investments, accompanying reforms - will be performed in a project in the framework of the Stability Pact Project entitled “Natural Gas Network Study”, which would be financed by the EC.

3.4.4. Oil networks

Possible investment:

Projects could be in port or storage facilities, pipelines, pumping and connection sub-stations, and dispatching and control mechanisms.

Supplying existing markets

With a view to supplying existing market, priority will be given to strengthen the existing capacities or to develop new capacities to ensure demand - including the demand of the region's refineries - as well as transit.

Future Supply

In view of future supply, priority will be given to the preparation of future large oil transit projects, in particular projects bringing oil from the Caspian Sea countries.

Reforming the oil sector

Accompanying reforms and restructuring (market opening and liberalisation, transparent and competitive pricing policy, level of taxation, etc...) will be need to improve the efficiency of the existing system as well as a better use of infrastructure and to ensure the sector's longer term viability, as well as rapprochement with E.U. rules.

Studies in the framework of the Stability Pact

It should be pointed out that much of the study work on these questions – the definition of new routes, identification of possible investments, accompanying reforms – will be performed in a project in the framework of the Stability Pact Project entitled “Oil Pipeline Networks Study”, which will be financed by the EC.

3.5. PRIORITY NETWORKS – MAPS

The attached map no 6 shows how the use of the principles and criteria leads to the selection of the priority infrastructure networks for electricity (at 400 Kilo Volts).

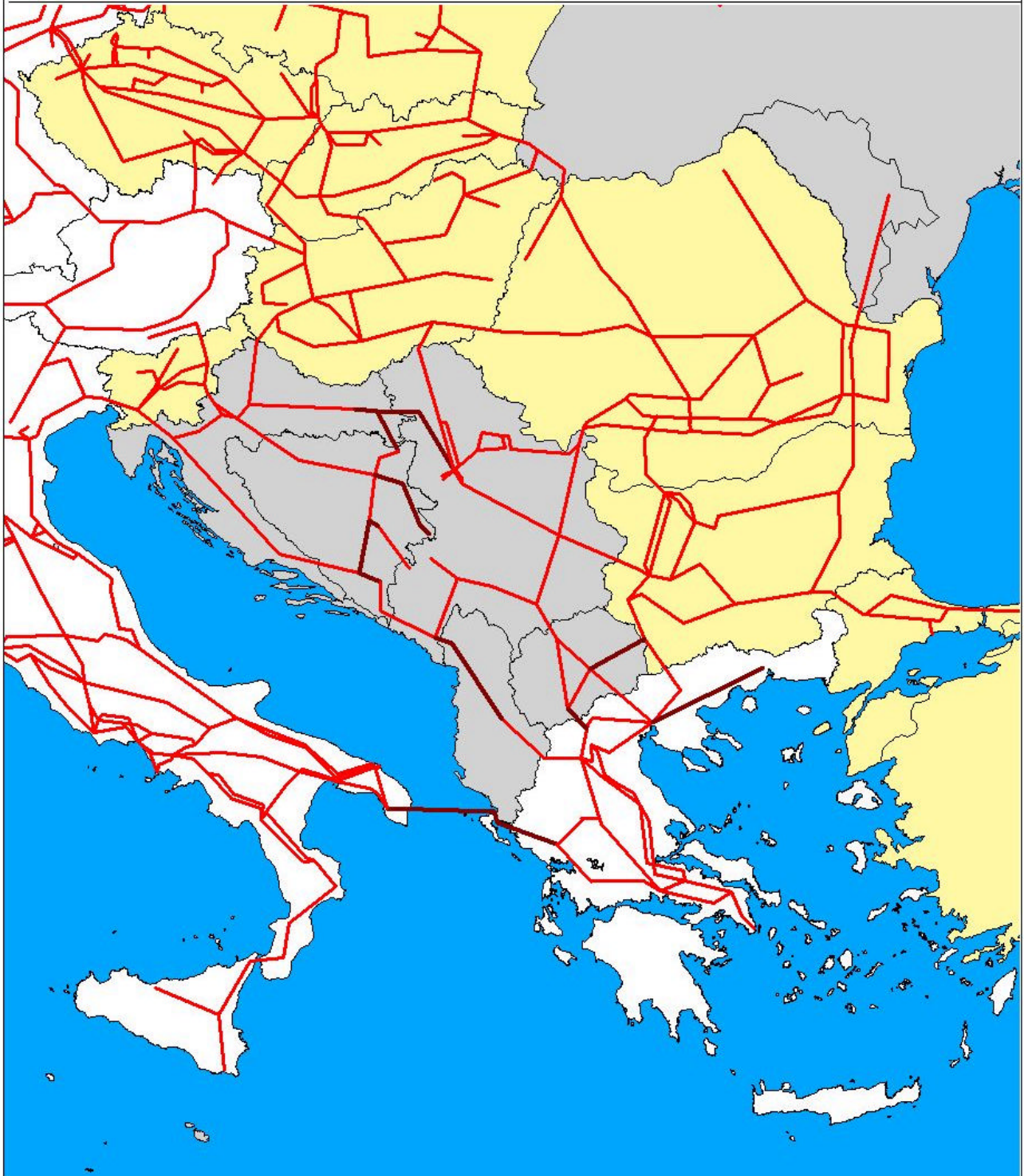
Map no 7 and no 8 present the existing networks for gas and oil.
These maps present as well the linkages and the priority networks of surrounding countries.





10.2001

Map 6: South East Europe: Energy - Electricity lines (400 kV)

1:200000



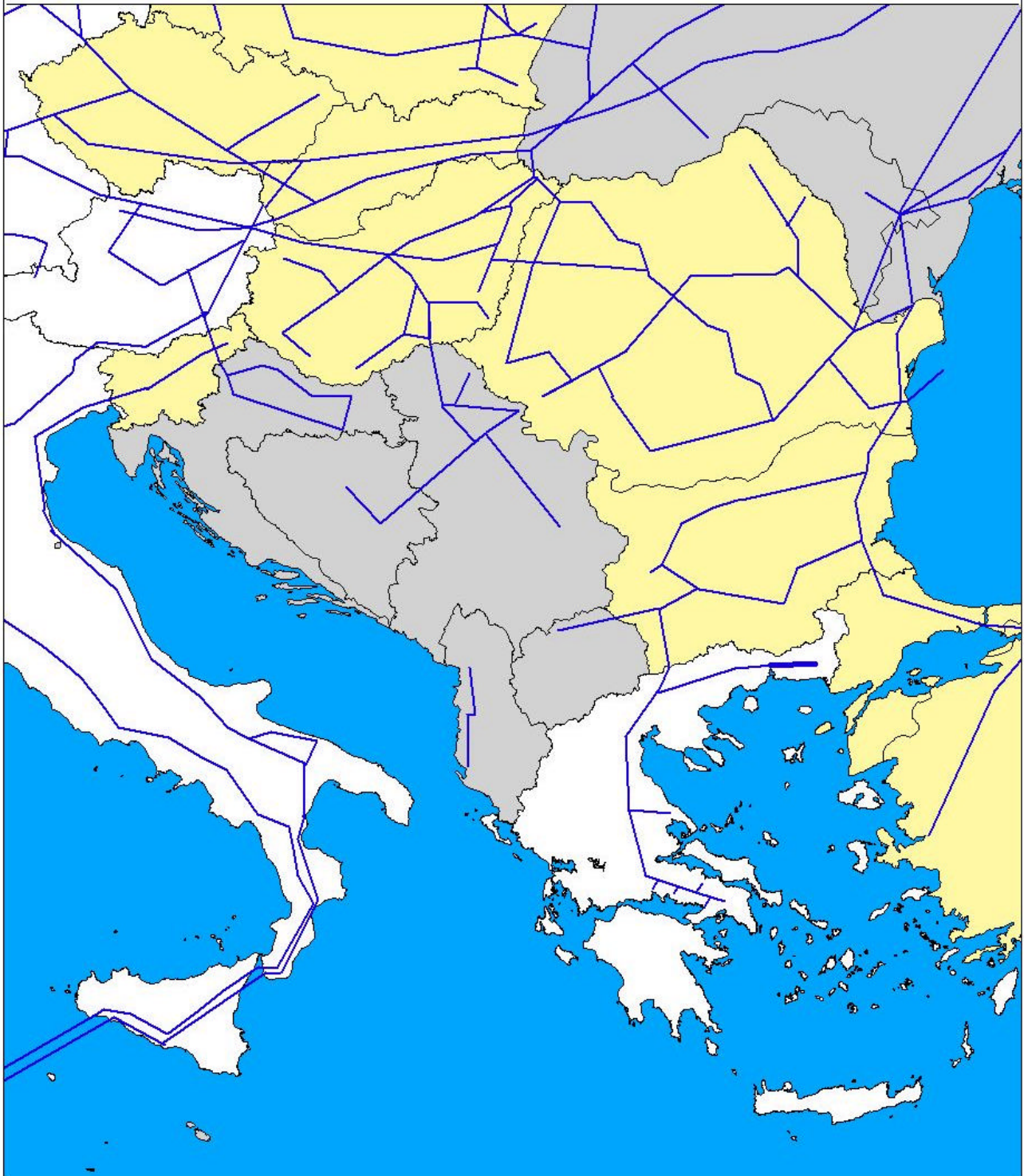
-  In operation
-  Planned/under construction



10.2001

Map 7: South East Europe: Energy - Gas transmission pipelines

1:200000



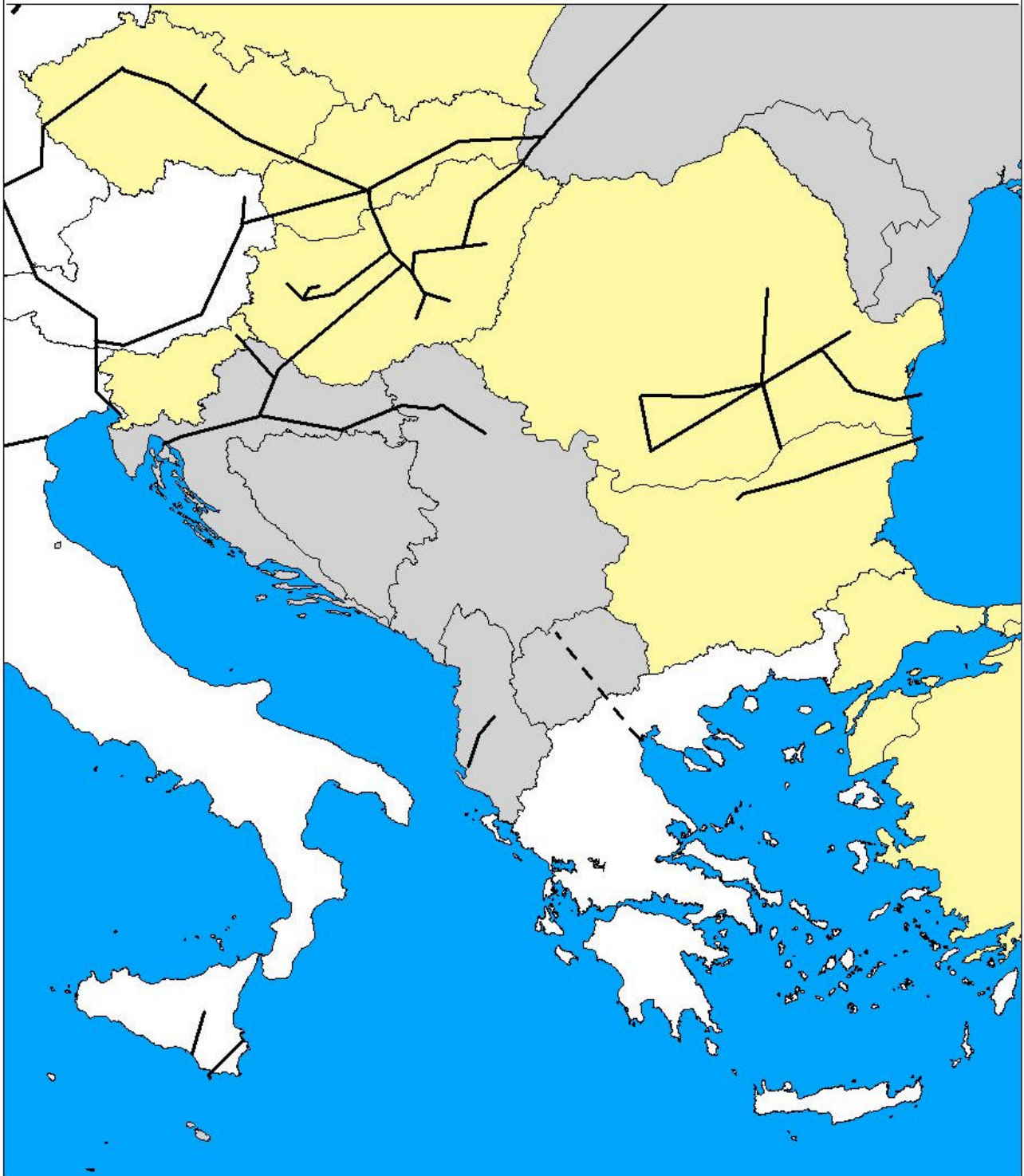
- Existing
- Under construction



Map 8: South East Europe: Energy - Crude oil transmission pipelines

10.2001

1:190000



- Existing
- - - Under construction