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DANUBE RIVER GRAIN AND FEED TRADE INFRASTRUCTURE AND EQUIPMENT in ROMANIA, BULGARIA and HUNGARY

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This report is based on the findings of a mission consisting of Michel Louis Debatisse (task manager, EMTAG); Lynn Engstrand (EMTAG); and Richard Henry (CAGDR), that visited Romania (April 25-29, 1994), Bulgaria (May 2-5, 1994), and Hungary (May 8-12, 1994). A review meeting was held on September 7, 1994. Peer reviewers are Hans Peters and Marc Juhel (TWUTD).
The Danube Waterways Link the North and Black Seas. The Danube river is now linked for navigation through the Main and the Rhine rivers to the North Sea. Between Austria and the Black Sea, the river crosses or flows alongside the Slovak Republic, Hungary, the Federation Republic of Yugoslavia, Romania, Bulgaria, and Ukraine; the river is also situated a few kilometers south of Moldova for which it constitutes a possible link to/from overseas markets. Between Austria and Constantza, the largest port on the Black Sea, five locks must be traversed. These locks are able to accommodate six barges. Between Austria and the Rhine delta, a total of sixty-seven locks must be traversed and these locks can only be navigated by two barges simultaneously. Navigability of the Danube river is usually good. However, over the past few years, droughts have significantly affected the traffic, and, for a time, resulted in up to a fifty percent reduction of the tonnage to be transported in a barge.

The Fertile Danube Plains Are Among the Main Grain Production Regions in Europe and Transportation Has Started to Shift From Train to River/Sea. The Danube waterways cross one of the main grain producing regions in Europe. Transportation on the Danube waterways suffers from significant political unrest on several sections, embargoes, and severe economic crises resulting from the on-going transition from a centrally-planned to a market-oriented economy. Trade flows in the former COMECON countries have favored train and, to a lesser extent trucks, with direct shipments by rail to the former Soviet Union from the three countries visited by the mission. Such trade flows, since 1989, have been decreasing and direct shipments through waterways (from Danube, through the Black Sea and to Don/Volga river locations) directly supplying inland locations in Russia, have slowly started and are claimed to have good potential. The Danube river is, however, still underutilized for the transportation of bulk commodities and other goods; but, in the long-run, it is critical to the competitiveness of the agricultural sector in the region, that it becomes a major route for the transportation of grain and feed products (for local trade as well as for imports and exports to/from the region). It is anticipated that over the medium term, the grain production and export marketing system of the region will be revitalized, modernized and privatized so that this region will regain its position as a major player in the international grain trade. In the same time, the largest share of the imports of feed products are likely to be shipped from Hamburg and Rotterdam and from the Black Sea through the Danube river. In any event, in this context, terminal facilities situated alongside the Danube and the Black Sea are expected to become key connecting points between international and domestic markets, and this will require cost-effective, modern and flexible shipping facilities and equipment.

A Need to Concentrate Reference Marketing Points On a Few Locations Alongside
the Danube and the Black Sea. It is recognized that large grain trading countries maintain one or several major reference delivery points. With some exceptions, these points, used as reference in the trade, are located at the mouth of major waterways (e.g., New Orleans, Montreal, Rotterdam, Rouen/Le Havre, etc.) and are equipped with efficient handling and storage facilities. In a similar way, several reference trading points for grain and feed in Hungary, Bulgaria and Romania, would likely to be developed by trading companies and brokerage firms alongside the Danube river. The linkage between international markets and regional markets will play an important role in improving local awareness of marketing techniques that are used in international trade and that could be adapted to domestic commerce. It is likely that, when properly equipped, Constanza in Romania, Burgas and Varna in Bulgaria -three ports situated on the Black Sea-- will become dominant reference points for east-central Europe. However, numerous constraints for such developments will slow down this process. They include trade barriers (e.g., export restrictions, including between countries in the region), preference for domestic port facilities to save foreign exchange in handling operations to/from ship, quality and availability of storage, handling equipment, port infrastructure, connections with railroad, remaining monopolies, contract intermediation and contract enforcement, market surveillance by governmental agencies or parastatals; inspection services; custom procedures; ability to trade in foreign exchange denomination; etc.

(iv) Grain Terminals Alongside the Danube Are Mostly Missing or Outdated, Poorly Equipped and Poorly Interconnected With Train/Road. The major observation of the mission is that grain handling and storage equipment on the Danube river, on the Danube/Black Sea canal and on the Black Sea ports are mostly missing. The few existing facilities are either outdated, poorly located or insufficiently equipped, in terms of connection to/from and loading/unloading between rail, road and river. The poor performance of the existing loading/unloading equipment already results in long and costly waiting periods for railroad cars, barges and sea vessels. In the three countries, during the on-going transition period, with the adjustments of transportation prices, international shipments will, in part, move from train to river/sea. Similarly to what is observed in the other major grain producing regions in the world, the comparative advantage of river/sea transportation over train/trucks in terms of cost for bulk products such as grain and feed will be recognized. Transhipment from trucks or train to river barges and to sea vessels will become a key element to improve over the next few years. In this context, the poor infrastructure in river and sea grain terminals will be a major constraint to fully benefit from the advantage of river transportation.

(v) Current Transportation Conditions Will Have A Negative Impact on On-Going Effort to Improve Production and Domestic Marketing and on Farmers’ Incomes. While the plains surrounding the Danube river have a high potential for producing grain surplusses, on-going and future efforts to improve efficiency in crop production and in domestic marketing will be negatively affected by the poor performance of linkages between domestic and foreign markets. Although logistics can adapt to less than optimal infrastructure and equipment, under the current poor river and seaside handling conditions, the impact on farmers’ incomes will be negative for both grain and animal producers.

(vi) Regional Collaboration --Currently Non-existent-- Would Facilitate Shipping and
Trading Conditions on the Danube and Through the Black Sea Ports. With respect to the potential of improving grain trade in the region, it is surprising that both Romania and Bulgaria have not articulated a regional approach to the development of this potential. Instead, each views its own economy in isolation. A reference point for grains shipped from the region could be developed in common on both sides of the Danube for Bulgarian and Romanian cereals, in Rousse (Bulgaria) and Giurgiu (Romania) where the hinterland and a well-developed train and road network already exist. Similarly, no standardized Danube grain contracts, valid for the entire region, are being considered for shipments to/from the river. Both countries have emerging commodity exchanges, but both are small and only play a role in the domestic transfer of products. As a result, there would be two scenarios for these exchanges: either one emerges as the stronger exchange and becomes the main reference for the region, or electronic connections between all these exchanges are established on the basis of a standard contract, internationally recognized and valid for the entire region. Commodity exchanges are important for external trade, but international and neighboring traders would not use, nor pay much attention to, small exchanges. These small exchanges are still only a national concern – not a regional concern.

(vii) Recommendations: A Regional Investment Program To Improve Logistics For Grain and Feed Trade Should Be Promoted. A comprehensive regional approach for the development of grain trade on the Danube should be promoted to improve 1) infrastructure; 2) handling, transportation and storage equipment; and 3) enabling environment including legal framework (national and international). Investment in a selected country without the proper actions in its neighboring countries to fix their own weakest links in the grain trade chain, would have a negative impact on the overall economic and financial return of the project. Although difficult to achieve, in some cases, a comprehensive regional approach rather than country-based projects should be encouraged to avoid duplication of efforts and waste of resources. For the above reasons, grain- and feed-related market development and infrastructure projects should be carefully coordinated to include the necessary components complementing, as much as possible, each other. With a total investment program of about US$600 million (roughly Hungary US$100 million; Romania and Bulgaria US$250 million each), professionals in the trade would envisage a reduction in the cost of handling and transportation of products that could reach an excess of US$100 million per year: a rough order of magnitude at this stage of the analysis (see, section II para. 17). In addition, the suggested investment (public and private) would result in a better ability to react rapidly to market changes and to adjust products accordingly by mixing them at the river or sea terminal before loading. Finally, an investment program related to river/sea grain and feed trade would support the success of the on-going and future reforms (clearly a condition to any investment project in this field) toward liberalization and privatization of agriculture and agro-industry, as well as the adjustments made in the transportation sector.

(viii) Tentative Components of an Investment Project. There is clearly a need to study and prepare feasibility assessments for a regional investment program (see table 1, page 7) that would include the following elements:

1) rehabilitation and maintenance investments on selected riverside infrastructure and equipment (full access to the road and rail from riverside locations; in and out
handling to/from river/train/road; storage; laboratory for analyses);

2) construction by private enterprises of riverside grain elevators and their equipment (in and out) including at the following sites: Rousse (Bulgaria); Galatzi (Romania); Budapest region and Gonyu (Hungary). This would include the necessary adjustment of public infrastructure at these locations;

3) a program of construction of grain terminals in Constantza, Varna and Burgas (at locations where Panamax vessels can be directly loaded or unloaded; such terminals should be preferably installed in free-trade zones to facilitate buffer storage before transhipments to/from other countries). It would be acceptable to have such investment made by state agencies (e.g., the local port authority), but under the condition that they would be immediately leased or, alternatively, managed, under concession arrangements, by the private sector. This program should include, where needed, the cleaning of the site and its immediate neighborhood;

4) an investment program, by private sector, in specialized grain hoppercars for rail shipments to/from ports (Hungary, Bulgaria and Romania), and specialized trucks (semi-trailer) for shorter distances; and

5) the electronic linkage, in real time, through modern telecommunication systems, of the main river terminal to/from the main regional commodity exchanges and to/from the main world reference places for grain and feed products (United States, Canada, Argentina/Uruguay, Brazil, Australia, France, the Netherlands, Germany, the United Kingdom, Thailand, etc.).

(ix) A Comprehensive Regional Approach by Multi- and Bilateral Donors to the Development Of Grain Trade On The Danube Should Be Considered. For the above reasons it would be better to have one comprehensive regional project, but also considering the country-based lending methods of most agencies and Bank, it would be advisable to develop simultaneously three projects (one for each country). Adjustments and investments would then complement each other and main externalities at the country level would be taken care of. A coordinated financing of the three projects, by the World Bank, by multi- or bilateral donors, and, for selected investment projects, by the private sector and by international financial institutions, could be sought. Foreign investment could also be facilitated through a guarantee scheme to be explored after a more advanced assessment of such demand by private investors (domestic and foreign). Technical assistance to trade associations, commodity exchanges, rationalization / privatization of state agencies in the sector would complement this action program and could be financed international financial institutions or by foreign donors (EU, US, Canada, Japan, etc.).

(x) Next Steps. The mission recommends to organize a regional technical conference on grain and feed trade on the Danube river, and coordinated investment. The agenda of the conference would be to solicit the views (perspectives, constraints, opportunities) of the
professionals in the trade (international trading companies; local trading enterprises and marketing cooperatives; shipping companies; forwarders; and government agencies regulating agriculture, transportation and commerce). Representatives of the Slovak Republic, Ukraine and Moldova should also be invited to the regional conference and a brief visit to Reni and Ismael (two river ports in Ukraine), and to the Slovak Republic would complete the overview on the trade in the region. Therefore, the mission recommends a series of action-steps to be carried out in the very near future. As indicated by the following items, a flexible approach has been preferred in which "go" - "no go" decisions at each step (a series of five steps is described in section II, para. 24) should be made. In other words, certain work must be done before additional actions should be undertaken.
I. INTRODUCTION: OBJECTIVES AND METHODOLOGY

1. Based on a short fact-finding mission to Romania, Bulgaria, and Hungary, the purpose of this report is to assess: (i) the state of trade over the Danube river with regard to grain and feed products; and (ii) the constraints and prospects for use of the Danube in shipping such products. This is not a full-fledged sector review in which future flows of products would have had to be estimated, and detailed quantitative estimates of benefits from investments would have had to be made. However, this technical report makes a series of recommendations on i) areas for potential investments and adjustment in the management of the shipping operations, and ii) rough orders of magnitude are provided for investments and benefits to expect from such investments.

2. A fact-finding mission organized by the Agriculture Unit of the Technical Department for the Europe and Central Asia (ECA) regional office, and composed of Michel L. Debatisse (task manager, Technical Department, ECA regional office), Lynn Engstrand (Technical Department, ECA regional office) and Richard Henry (Agribusiness Department, International Finance Corporation) visited Romania (between April 25 and 29, 1994), Bulgaria (between May 2 and 5, 1994), and Hungary (between May 8 and 12, 1994) to assess the state of the trade over the Danube river with regard to grain and feed products, and the constraints and prospects for use of the Danube in shipping such products. In sections one and two, the report summarizes the background, objectives, methodology, main findings and recommendations of the mission. Sections three to five comment on the mission’s observations in each of the three countries.

3. Objectives of the Mission. The objectives of this short mission were:

   a. to assess current transportation modes for grain exports and imports from/to the three selected countries, and their potential development; and the current state of bulk grain handling and storage facilities both along the Danube and on the Black Sea;

   b. to judge potential interest in these three countries in developing grain infrastructures over the Danube river system; and

   c. to recommend potential role, including financing contribution, of the World Bank and other donors, in developing Danube river grain and feed trade.
4. **Methodology.** With the effective assistance of the local World Bank resident mission, in each country, the program of visits and collection of data were organized as follows:

   (i) meetings with the counterparts and data collection were carried out upon arrival and at the end of the field visits, in the capital city;

   (ii) field visits were paid to most (about 90 percent of the permanent and seasonal Danube and Black Sea facilities) of the grain/feed storage and loading facilities where missing data were also collected; and

   (iii) a wrap-up meeting was held at the Ministry of Agriculture, to summarize the findings of the mission.

5. In Each Country, the Mission Was Accompanied by a Team of Experts from Enterprises and from Ministries of Agriculture and Transport. In each country, a team of counterparts including representatives of the Ministry of Agriculture, Ministry of Transport, Ministry of Foreign Trade, grain trading enterprises (state and private), enterprises related to freight forwarding and grain inspection, port authority, and transportation companies provided information and/or accompanied the mission to a total of thirty-two locations on both sides of the river, from the Slovak border to the Moldovian and Ukrainian borders, and to the Black Sea ports. Due to the embargo, no visits were included to river ports in the Federation Republic of Yugoslavia although these ports would have been an integral part of the review of the Danube river shipping system. Questionnaires distributed prior to the mission, were completed by the host ministries of agriculture. Past and future flows of grain and feed products were discussed with the counterparts in the grain trade business. In these discussions, the mission attempted to assess, mostly on a qualitative basis, the future role of the Danube river transportation (in and out, westward and eastward), and determine what the situation would become after the lifting of the current embargoes (between Greece and the Former Yugoslavian Republic of Macedonia; and the Federation Republic of Yugoslavia/UN).

6. During the wrap-up meetings, after a rather detailed presentation of the findings of the mission, the discussions identified the difficult problems faced in the de-monopolization and privatization of the service and processing industry. Strong interest was expressed by the counterparts regarding:

   (i) the inclusion of river transport in their agriculture and trade investment strategy; and

   (ii) the financing that would be available for private investment.
II. MAIN FINDINGS AND RECOMMENDATIONS

7. Inland Navigation Is Now Fully Open Between North Sea and Black Sea Through the Rhine, Main and Danube Rivers. The Danube river is about 2,850 kms long down to the Black Sea, with a basin of more than 800,000 sqkms, and terminated on a large delta. The river is now linked for navigation through the Main and the Rhine rivers to the North Sea. Between Austria and the Black Sea, the river crosses or flows alongside the Slovak Republic, Hungary, the Federation Republic of Yugoslavia, Romania, Bulgaria, and Ukraine. The Danube river is also situated a few kilometers south of Moldova for which it constitutes a link to/from overseas markets. Between Austria and Constantza, the largest port on the Black Sea, five locks must be traversed (two locks only on the canal). These locks are able to simultaneously accommodate six barges. Between Austria and the Rhine delta, a total of sixty-seven locks must be traversed and these locks can only be navigated by two barges simultaneously. Navigability of the Danube river is usually good: in winter, in the last ten years, navigation has never been stopped by icing, and professionals indicate that two to three weeks of non-navigability would constitute a maximum and an exceptional situation (in the north-western part of the river). Over the past few years, droughts have also affected the traffic and, at some point, resulted in up to a fifty percent reduction of the tonnage to be transported in a barge.

8. Environmental Problems Linked to Pollution and Changes in the Hydrological Regime of the Danube. Environmental problems linked to the pollution and changed hydrological regime of the Danube have for a long time been in the international focus. A Convention on "Cooperation for the Protection and Sustainable Use of the River Danube" was signed by the riparian countries in June 1994. In this regard, the World Bank is, at present, involved in three projects (Global Environment Facility, GEF) related to the Danube: "The Environmental Programme for the Danube River Basin"; "The Danube Delta Biodiversity Project"; and "The Black Sea Environmental Programme". The environmental problems linked to river transport has been a major interest and matter of discussion in the international fora as well as in the local environmental communities. Their concerns related in particular to i) hydrological structures needed for navigation; ii) dredging; iii) oil pollution and pollution from ports. Future investments on the Danube now have to address their environmental impact and take into consideration the environmental limitations and requirements.

9. The Danube Waterways Cross One of the Main Grain Producing Regions in Europe. The Danube basin is formed by rich agricultural plains situated in the above-mentioned countries. Transportation on the Danube waterways suffers, on several sections, from significant political unrest, embargoes, and severe economic crises resulting from the on-going transition from a centrally-planned to a market-oriented economy. The Danube river is, therefore, still underutilized for the transportation of bulk commodities and other goods. However, in the long-run, in order to make domestic agricultural production internationally competitive, it is critical to the region that waterways become a major route for the transportation of grain and feed

1/ See map IBRD 26094
products (for local trade as well as for imports and exports to/from the region). For several decades before World War II, the Danube river was the main outlet for a country like Romania. In these countries, grain exchanges were operating on a rather large scale, the main ones were located in the main cities (e.g., Sofia, Budapest, Bucharest), but also in the production regions and in the main ports (e.g., in Romania, Braila, Constantza, Galatzi, Timisoara, Chisinau --now the capital city of Moldova). After World War II, flows of products changed direction. Most of them became either inward oriented, or directed toward the Soviet Union for which train was, by large, the main transportation mode. Since 1989, the adjustments linked to liberalization and market reforms in the region very much affect production and trade in all the countries surveyed by the mission. The current order of magnitude of imports of grain, soybean and soymeal by Romania, Bulgaria, Hungary, the Czeck and Slovak Republics and the Federation Republic of Yugoslavia, was, over the 1988-92 period, between 5 and 7 million tons, while, for the same countries and the same period, exports situated between 3 and 5 million tons. These figures were used on a conservative basis to assess the benefits from the proposed public and private infrastructure development and rehabilitation. At this stage, it is fair to say that changes in grain and feed production and trade are, however, not likely to remain marginal in the three countries visited by the mission.

10. Grain Trade Is Still Too Limited to Observe Significant Switch to Water Transportation. Demand for river/rail or river/road transhipments at river terminals has been, over the last forty years, rather small all across the region. Trade flows in the former COMECON countries have favored train and, to a lesser extent, trucks, with, in the case of grain and feed products, direct shipments by rail to the former Soviet Union from the three countries visited by the mission. Such trade flows, since 1989, have been decreasing and direct shipments through waterways (from Danube, through the Black Sea and to Don/Volga river locations) to directly supply inland locations in Russia, have slowly started and are claimed to have good potentials. Countries on the Danube, including Hungary, Romania, and Bulgaria are old, well established grain and feed production countries. However, such trade remains small since, over the past five years, with the collapse of COMECON markets, and further, due to regional drought and declining economic conditions, grain production and exports have fallen dramatically.

11. A Poor Infrastructural Link Between Domestic and Foreign Grain and Feed Markets Will Affect Market Development. The major overall observation is that grain handling and storage facilities on the Danube river, on the Danube/Black Sea canal and on the Black Sea ports are mostly missing. The few existing facilities are either outdated, poorly located or

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2/ For Romania, Bulgaria and Hungary, these figures are: exports 2 to 4 million tons; imports 3 to 5 million tons.

3/ 41.5% in value of the Romanian cereal production being exported between 1921 and 1925 --this percentage making Romania number one in the world above Argentina. Romania was the largest exporter in the world of barley for several years between 1923 and 1937 with 340,000 tons to 400,000 tons per year; and Romania was the largest exporter in Europe and second largest exporter in the world of maize with an average of 900,000 tons per year. Similar background situation can be found for the other countries in the region: i.e., Hungary, the Federation Republic of Yugoslavia, and Bulgaria. At that time, hundreds of exporting firms were operating alongside the river and on the Black Sea ports (e.g., 250 export firms in Romania in 1937 --several were subsidiaries of large international trading companies).

insufficiently equipped, in particular in terms of connection to/from and loading/unloading between rail, road and river. In the three countries, during the on-going transition period, with the adjustments of transportation prices, international shipments will in part move from train to river/sea. Similarly to what is observed in the other major grain producing regions in the world, the comparative advantage of river/sea transportation over train/trucks in terms of cost for bulk products such as grain and feed will be recognized. Transhipment from trucks or train to river barges and to sea vessels will become a key element to improve over the next few years. While the plains surrounding the Danube river have a high potential for producing grain surplusses, on-going and future efforts to improve efficiency in crop production and in domestic marketing will be affected by the poor performance of the link between domestic and foreign markets. Although logistics can adapt to less than optimal infrastructure and equipment, under current conditions observed at most terminal facilities, the impact on farmers' incomes would be negative for both crop and animal productions.

12. Summary of the Existing River/Sea Port Grain Handling Installations. While grain assembly at local elevators benefit in the three countries from rather extensive investment programs made under the former economic regime, in sharp contrast, these countries have hardly invested in river/sea grain terminals. Infrastructure and equipment alongside the Danube river and the Black Sea are as follows:

a. Along the Danube river:

* in Romania, one grain elevator only has been built after World War II and five small elevators have been built during World War II. Transhipments to/from river are currently very limited and mostly through outdated equipment;

* in Bulgaria, there are no infrastructure specialized in grain handling and storage; and

* in Hungary, several silos are located alongside the river and linked to it: in Budapest, Dunaujvos, Mohacs (the best equipment so far in Hungary), Baja, and Paks. Three of them belong to de-monopolized and privatized enterprises from the former grain monopoly (the Gabona Trust) and are only equipped with loading equipment from silo to barge. The rather old silo in Budapest is not linked to appropriate unloading and loading equipments. Several free-standing loading slides are also operated on a seasonal basis for direct loading of locally harvested grain from truck to barge. Fixed permanent installations are usually not fully equipped to accomodate efficient transloading of grain to/from train or trucks to/from river.

b. Along the Black Sea:

* in Romania, the three silos in Constantza are well equipped and...
maintained, but their poor location in the port does not permit a direct link with large vessels (Panamax type). In addition, their small storage cells are not adapted to the current size of grain shipments. As a result, a large part of the activity (direct transhipments from/to train/sea vessels) is done in another part of the port where no buffer storage exists. In addition, direct shipments through the mouth of the Danube through inland grain river terminals, on smaller vessels (maximum 8,000 tons) can only be made from two antique silos in Braila and Galatzi, where loading/unloading equipment is archaic; and

* in Bulgaria, the two large ports, Varna and Burgas, are not equipped with buffer storage facilities. This results in direct transhipments of grain in a busy port environment between train and sea vessels. A smaller port, Balchik, can accommodate small vessels (8,000 tons maximum). The small port silo in Balchik is not linked with the berths and trucking is the only way to approach the ships.

13. The River Grain Terminal System Should Play a Growing Role in Imports, Exports and Regional Commerce. It is anticipated that over the medium term, the grain production and export marketing system of the region will be revitalized, modernized and privatized so that this region will regain its position as a major player in international grain trade. In addition, it is assumed that these countries will continue to be major grain and livestock production areas. There are currently two inter-linked systems for grain and feed shipments: rail and river transport, both to and from these countries to the Black Sea. In addition, the Danube is also now a major waterway to northern Europe. With significant improvement, the river system of terminals would facilitate general commerce and trade as well as the importation of required protein meals, concentrates, and other bulk commodities. Professionals in the trade believe that, on the short- to medium-term, a majority of shipments will be made through the Danube waterways. Agricultural trade of bulk commodities with western Europe would mainly consist of oilseeds to the Netherlands and Germany, with return shipments of soymeal and other bulk commodities. With regard to eastern destinations, shipments of agricultural products would consist mainly of cereals, with transhipments in the delta region either to overseas destinations, through the Bosphorus Strait, or to the Don/Volga river system; and return shipments of bulk products would be for a large part made of fertilizers. In this context, port facilities alongside the Danube and the Black Sea should again provide interface between international and domestic markets. Privatization and the development of market-driven economies in these countries would require more cost-effective and flexible shipping facilities and equipment. In order to work out such changes, linkage with rail is already largely available, but investments into specialized grain hoppercars would be needed both in Bulgaria and Hungary. Trucking in the three countries is mostly done by small trucks, handling only 15 tons. Investment in semi-trailer trucks (30 tons) would be advisable in order to improve cost-efficiency for short distance and urgent deliveries (e.g., to complete the loading of a barge without waiting for another train).
TABLE 1: RECOMMENDED DIRECTIONS FOR A REGIONAL PROJECT(*)

(*) it would be advisable to have the proposed project also open to accommodate other investments, when appropriate, in the Slovak Republic, the Federation Republic of Yugoslavia and Ukraine.

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<tr>
<td>A. Rehabilitation and maintenance investments i) of selected riverside infrastructures for transhipment of grain to/from river; and ii) of related equipment</td>
<td>Yes</td>
<td>Yes</td>
<td>Feasibility; preparation; appraisal</td>
<td>IBRD (loan); IFC and EBRD for selected private enterprises; multi-bilateral donors</td>
</tr>
<tr>
<td>B. Construction of riverside grain elevators and their handling equipment</td>
<td>No</td>
<td>Yes</td>
<td>Privatization; feasibility; preparation; appraisal; training</td>
<td>IBRD (guarantee only); IFC and EBRD for selected private enterprises; multi-bilateral donors</td>
</tr>
<tr>
<td>C. Construction of grain terminals on the Black Sea</td>
<td>Yes (submitted on condition of lease to private sector)</td>
<td>Yes</td>
<td>Feasibility; preparation; appraisal; concession to private management; training</td>
<td>IBRD (loan and/or guarantee); IFC and EBRD for selected private enterprises; multi-bilateral donors</td>
</tr>
<tr>
<td>D. Investment in specialized grain hoppercars and specialized trucks (semi-trailer) for shorter distances</td>
<td>Yes (submitted on condition of lease to private sector)</td>
<td>Yes</td>
<td>Feasibility; preparation; appraisal; concession to private management; training</td>
<td>IBRD (loan); IFC and EBRD for selected private enterprises; multi-bilateral donors</td>
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<tr>
<td>E. Electronic linkage, in real time, through modern telecommunication systems, of the main river terminal to/from the main regional commodity exchanges and to/from the main world reference places</td>
<td>No</td>
<td>Yes</td>
<td>Standard Danube/Black Sea contracts * Support to professional associations; arbitration instances; Futures exchange development (Budapest; Constantza) and related banking and clearing activities; * Training</td>
<td>IBRD (loan); but mainly grants from multi-bilateral donors</td>
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14. **Potentials for the Development of Several Reference Market Points Alongside the Danube River and Canal.** It is recognized that each major exporting country has one or several major reference trading points: e.g., Vancouver, Port Cartier, and Thunderbay in Canada; several points alongside the Mississippi from St. Louis to New Orleans in the United States; in the west, Portland; and, in the east, Baltimore, etc. Similarly, Rouen and Bordeaux are reference markets for French grains, or Rotterdam, in the Netherlands for both imports and exports. With some exceptions, these reference trading points are located at the mouth of major waterways and are equipped with efficient handling and storage facilities. Similarly, it is likely that some locations on the Danube river would be developed as reference trading points for grain and feed. Reference trading points come as a result of the development of infrastructure and trade. They improve the economic link with international markets. In the specific case of the Danubian region, when developed, they would play an important role in creating awareness about marketing techniques that are used in international trade and that could be adapted to domestic commerce. It is likely that, when properly equipped, Constanza in Romania, Burgas and Varna in Bulgaria --three ports situated on the Black Sea-- will become prevailing reference points for Central Europe. However, numerous constraints for such developments will slow this process. They include trade barriers (e.g., export restrictions, including between countries in the region), preference for domestic port facilities to save foreign exchange in handling operations to/from ship, quality and availability of storage, handling equipment, port infrastructure, connections with railroad, remaining quasi-monopolies, contract intermediation and contract enforcement, market surveillance by governmental agencies or parastatals; inspection services; custom procedures; ability to trade in foreign exchange denomination; etc.

15. **Collaboration in the Region Would Help Develop Commerce of Grain and Feed Products.** With respect to the potential of improving grain trade in the region, it is surprising that both Romania and Bulgaria have not articulated a regional approach to the development of this potential. Instead, each views its own economy in isolation. A reference place for grains shipped from the region could be developed in common on both sides of the Danube for Bulgarian and Romanian cereals, in Rousse (Bulgaria) and Giurgiu (Romania) where the hinterland and a well-developed train and road network already exist. No standardized Danube grain contracts are being considered for shipments to/from the river. Both countries have emerging commodity exchanges but both are small and only play a role in domestic transfer of products. There are two scenarios for exchanges: either one emerges as the strongest exchange, or electronic connections between them could be established on the basis of a standard contract, internationally recognized and valid for the entire region. Commodity exchanges are important for external trade, but international and neighboring traders would not use nor pay much attention to small exchanges. These small exchanges are only a national concern - not a regional concern. As a starting point for further studies one should recommend four basic contracts to be developed in a coordinated manner in the region. They would tentatively be:

a. **Reference # 1: "FOB Budapest"** and its surrounding terminal facilities and

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4. It would be preferable to study and prepare such standard contracts in coordination with foreign institutions: e.g., the *Grain and Feed Trade Association* (London), the *Her Comite Van Graanhandelaren* (Rotterdam); the *Chambre Arbitrale et de Conciliation de Grains et Graines* (Anvers); the *Sraat Institut Für Angewandte Botanik* (Hamburg); or the *Syndicat de Paris du Commerce et des Industries des Grains* (Paris).
standard price differentials would be negotiated by professionals for deliveries (FOB barges) made north (Gonyu/Komaron) or south (Baja/Mohacs) of Budapest;

b. Reference #2: "FOB Black Sea" for shipments made from Constantza, Varna, Burgas (and CIF for shipments made to the same);

c. Reference #3: "Ex-Danube Delta Silos" for shipments made on small sea vessel to/from Galatzi, Braila, Reni, Ismael; and

d. Reference #4: "FOB Romanian/Bulgarian Danube Terminals at Rousse and Giurgiu" and standard price differentials would be negotiated by professionals for deliveries (FOB barges) made north (e.g., Turnu Severin, Turnu Magurele, etc.) or south of these places.

16. Directions For A Regional Investment Program To Improve Logistics For Grain and Feed Trade. Although, at this moment, it is difficult to estimate the future flows of grain and feed products on the Danube and through the Black Sea ports, it is certain that a majority of shipments made in the region to balance surpluses and deficits, will use the Danube waterways. Interest has been expressed in Hungary by potential private investors to develop riverside terminals. Such projects would need to be studied and feasibility assessments would need to be prepared on how to accompany and support such investments with regard to the following issues:

a. rehabilitation and maintenance of selected riverside infrastructure and equipment (in and out handling to/from river/train/road, storage, link with road/rail, laboratory for analyses);

b. construction, by private sector, of riverside grain elevators and their equipment (in and out) at selected locations, including the following ones: Rousse (Bulgaria); Galatzi (Romania); Budapest region and Gonyu (Hungary). This would also imply the necessary adjustment of public infrastructures at these locations;

c. construction of grain terminals in Constantza, Varna and Burgas (at locations where Panamax vessels can be accommodated, and in free-trade zones to facilitate buffer storage before transhipments to/from other countries). It would be acceptable to have such investments be done by the public sector through its local port authority, but on the condition that it would be immediately leased or, alternatively, managed, under concessional arrangements, by the private sector. This program should include, where needed, the cleaning of the site and its immediate neighborhood;

d. investment by private sector in specialized grain hoppercars for rail shipments to/from ports (Hungary, Bulgaria and Romania), and specialized trucks (semi-trailer) for shorter distances; and

e. development of the linkage, in real time, through modern telecommunication
systems, of the main river terminal to/from the main regional commodity exchanges and to/from the main world reference points for grain and feed products (United States, Canada, Argentina/Uruguay, Brazil, Australia, France, the Netherlands, Germany, the United Kingdom, Thailand, etc.).

17. **Main Benefits to Be Expected from an Investment Program.** It is well documented that a modern, efficient shipping and transport system is as important to a country as its production capability. With all the technical assistance and other programs currently put in place by international lenders, including EBRD and World Bank, the major benefit from this proposed investment program, is that this region could once again take its place in world trade as a major exporter of grains and cereals. A series of proposed innovative new projects would substantially increase the basic crop output for countries alongside the Danube --countries which would be the direct beneficiaries of the proposed investment program. The proposed investment along the Danube river and the Black Sea ports would drastically improve the logistics for shipment and handling of grain and feed products. **It would reduce handling time and costs and enhance the ability of the concerned countries to be a competitive trading partner with other regions of the world.** A rough estimate of the suggested new public and private investments would reach a total of about US$600 million for the three countries (Hungary: US$100 million; Romania: US$250 million; Bulgaria: US$250 million). Such investments would improve economic integration in the region and with foreign markets. Based on conservative estimates of future flows of products to and from the three countries (to be reached by the end of the 1990s), professionals in the trade would envisage a reduction in the cost of handling and transportation of products that could reach an excess of US$100 million per year: a rough order of magnitude at this stage of the analysis, based i) on a low scenario estimate of 4 million tons moved by the end of the century on the Danube and through Black Sea ports; and ii) about US$ 28-30/ton savings on transportation costs, shorter waiting time for sea vessels and trains, smaller losses during handling, and improved ability to react to market conditions.

18. In addition, an investment program would undoubtedly attract substantial private investment to the region and the project. Regarding the livestock feed industry of the region, the proposed investment program would produce an **upgrading of the livestock industries of the region due to a better and cheaper access to feed and feed grains.** These countries would also have a new window to world trade. In the specific case of Hungary which formerly shipped most of its grains via rail to the former Soviet Union, there is currently a very large trade deficit that could be reduced by giving Hungary access to improved waterways shipments of its surplus grain.

19. The countries alongside the Danube appear especially well suited to grain production. Redevelopment of the Danube as a major inland waterway, and the development of grain terminals on the Black Sea would facilitate establishment of a modern grain and feed products trade in this region through brokerage houses, standardized contracts (mostly forward contracts), and concentration of trade on a small number of reference places. On this basis, **this project would also facilitate the establishment of information systems which could be used by producers, shippers and buyers (domestic and foreign).**

20. **Main Issues to be Addressed With Regard to the Enabling Environment.**
Revitalization of the Danube river / Black Sea shipping system will demand much needed changes in the enabling environments of the countries alongside the Danube. This investment would facilitate such changes in the legal and business environment by quickly moving these countries into a world trade arena. Old laws, rules and outdated regulations would be changed to accommodate and facilitate competition by these countries. Moreover, new laws which enhance trade and commerce would have to be promulgated in the countries and tested in their respective counts so that disputes and other business related problems can be resolved without delay and at minimum cost. The banking environment would also be overhauled and modernized inasmuch as banking is a key element of the international grain and shipping business for both physical and hedging operations. The legal framework would have to be reviewed with special attention paid to contract laws and enforcement mechanisms. Regulations would have to be put into place with regard to the administration of trade with an objective of trade facilitation. Market reforms including demonopolization have already occurred (Hungary) or are occurring (Bulgaria and Romania). However, an efficient, profitable trade and transport of competitive grain producing countries would require a substantive review of the remaining market intervention, including impact of subsidies to agricultural producers, market protection, and subsidies to alternative transportation means.

21. The international legal status of the Danube would also need to be carefully researched. The arrangements covering the Danube basin are contained in the 1948 Belgrade Convention, complemented by the Bratislava Convention as far as freight regulation is concerned. Although, in principle, the Belgrade Convention does not impose any special condition governing access to the transportation market. Transport is in fact limited to the fleet of the country of loading or unloading, unless the State has surrendered this right. In addition, the European Union has taken steps to regulate the use of western Europe inland waterways by East European fleets. This applies to both the Rhine and the Rhine-Main-Danube canal. Finally, the issue of cargo insurance would have to be reviewed in connection with the specific risks related to the use of substandard navigation and handling equipment.

22. A Comprehensive Regional Approach to the Development Of Grain Trade On The Danube Should Be Preferred. A comprehensive regional approach for the development of grain trade on the Danube should be promoted to improve (i) infrastructure; (ii) handling, transportation and storage equipment; and (iii) enabling environment including the legal framework (national and international). Investment in a selected country without the proper actions in its neighboring countries to fix their own weakest links in the chain for grain trade, would have a negative impact on the overall economic and financial return of the project. In addition, although difficult to achieve, in some cases, a comprehensive regional approach rather than country-based projects should be encouraged to avoid duplication of efforts and wastage of resources. For the above reasons, grain- and feed-related agricultural market development projects, and infrastructure projects should be carefully coordinated to include the necessary components complementing, as much as possible, each other. Finally, an investment program related to river/sea grain and feed trade would support the success of the on-going reforms -- clearly a condition to any investment project in this field-- toward liberalization and privatization of agriculture and agro-industry, as well as the adjustments made in the transportation sector.

23. A Collaborative Approach To the Financing of Public/Private Investments. For the
above reasons, but also considering the country-based lending methods of most agencies and Bank, it would be advisable to develop simultaneously three projects (one for each country), but these separate projects would be jointly prepared for financing. Adjustments and investments would also complement each other. A coordinated financing of the three projects, by the World Bank, by multi- or bilateral donors, and, for selected investments by the private sector and by other international financial institutions could be sought. Foreign investment could also be facilitated through a guarantee scheme to be identified after demand by private investors has been assessed. Technical assistance to trade associations, commodity exchanges, rationalization / privatization of state agencies in the sector would complement this action program and could be financed by international financial institutions and by foreign donors (EU, US, Canada, Japan, etc.).

24. **Next Steps.** Discussions with international financial institutions, based on the findings of this report, should be undertaken to explore interest in these institutions to join efforts to help organize a regional technical conference on grain and feed trade on the Danube river, and coordinated investment. The agenda of the conference would be to solicit the views (perspectives, constraints, opportunities) of the professionals in the trade (international trading companies; local trading enterprises and marketing cooperatives; shipping companies; forwarders; and government agencies regulating agriculture, transportation and commerce). Representatives of the Slovak Republic, Ukraine and Moldova should also be invited to the regional conference and a brief visit to Reni and Ismael (two river ports in Ukraine), and to the Slovak Republic would complete the overview on the trade in the region. Therefore, the mission recommends a series of action- steps to be carried out in the very near future. As indicated by the following items, a flexible approach has been preferred in which "go or no go" decisions at each step should be made. In other words, certain work must be done before additional actions (steps 1 to 5) should be undertaken.

**Step 1.** Preliminary agreement among the countries alongside the Danube should be obtained for carrying out any additional work and study. A regional technical conference would facilitate such agreement. Ukraine, Moldova and the Slovak Republic should also be included as an interested country. When appropriate, guidance should be sought regarding the Federation Republic of Yugoslavia with regards to its input;

**Step 2.** Once preliminary agreement is obtained from the above countries, **substantial funds should be identified for carrying out studies and technical assessments.** The multilateral donors may be approached even during the agreement seeking exercise described in step 1 above;

**Step 3.** At this stage, a decision should be made to do **research and analyses** which would provide information and a foundation for additional steps. Such analyses should include: i) a medium- to long-term projection of grain and feed production and trade; ii) an assessment of the traders, shippers, buyers, markets, and other critical elements of a functioning river transport system for grain --in other words, the **structure of the grain shipping industry in the next five to ten years**; and iii) a study on the technical aspects and constraints of the river's
navigation. Again, on the basis of these findings, if there is agreement by the countries and the Bank to go forward, preparatory work should proceed.

Step 4. More elaborated estimates should be made of the private and public investments required to rehabilitate the Danube river/Black Sea grain shipping capability so that this water transport system includes a modern, efficient river/sea terminal shipping system. Actual interest in future investment should be identified: private sector (domestic and foreign), investment banks, development banks, and, for public infrastructure, budget resources from the respective governments;

Step 5. On the basis of all the above initial preparatory work, a "Coordinated Danube River/Black Sea Grain Terminal Development and Rehabilitation plan" should be assembled, prepared and appraised on a country by country basis.

III. ROMANIA: RIVER AND SEA GRAIN TRADE AND TERMINALS

25. The Centrallized State-Owned Marketing Organization for Cereals. The state-owned enterprise, Romcereal, was formerly the only market outlet for Romanian farmers. It had been created, before World War II, as an autonomously-managed concession. It, then, became a grain monopoly, in charge of collecting and marketing the majority of cereals, as the policy implementing body of the Government of Romania. Romcereal still buys some portion of the cereals marketed by the producers, and sells them to the processing enterprises (flour mills and feed mills). Currently, there are rather strong indications of the intention of the Government to reform Romcereal. Romcereal still runs 676 local agencies, in 41 districts to collect, store and distribute grain and agricultural inputs. Total storage capacity is 15.5 million tons of which 5 million are in non-ventilated facilities for short term storage.

26. Agricultural Price and Trade Policy: Main Elements Interfering With Grain Trade. The main programs for agriculture that have affected exports and imports of grain, in 1993, were:

(i) State ownership of the distribution and marketing system was still largely intact and operated as a monopoly under central direction mainly through Romcereal (in 1993, about 50 percent of the distribution of domestic wheat and imports);


6/ A so-called Régie autonome

in 1993 a special state budget fund for agriculture was established to support all
categories of agricultural producers (equiv. to US$218 million);

for "basic" agro-food products such as maize and wheat, contracts and purchase
prices were guaranteed by the State. seventeen products and services were freed
from price controls by special order of the Ministry of Agriculture, but this did
not include wheat and maize which were kept in the previous system; the State
Agricultural Fund (i.e., the previous procurement system) is used to attract
produce for human consumption (wheat, maize), fodder and processing (barley,
maize, sunflower, soybean) through various incentives; and

trade was liberalized in theory in 1990 by a law which removed the state
monopoly on foreign trade. There are no import quotas and no license
requirements for both imports and exports, except when part of an inter-
government agreement or clearing arrangements. However, in 1993, agricultural
trade policies were largely determined by the levels of supply on the domestic
market: e.g., the export ban for cereals for human consumption; similarly the 25
percent tariff on wheat imports was abolished for the first 1.6 million tons
imported in 1993.

27. A Pervasive Centrally-Administered Pricing System and the Slow Emergence of
Private Trade. The two-tier pricing system, as summarized above, is still in place for wheat:
i) an administrative pricing system in which Romcereal buys from farmers at 130,000 lei per ton
(at the time of the mission: about US$79 per ton), but is then subsidized to re-sell to millers at
90,000 lei per ton (about US$54.5 per ton); and ii) a free market pricing system which really
started to operate in 1993/94 for a substantial part of the commercialized wheat production.
This last development on the free-market side resulted from more attractive prices (i.e., 200,000
lei per ton: US$121 per ton), after the severe drought experienced in the region in 1993. This
resulted in an increase in quantities delivered on the "free" market, but Romcereal still collects
about 80 to 85 percent of the wheat commercialized by Romanian farmers. For barley, maize,
sunflower and soya, prices have been fully liberalized. Price differentials according to a list of
quality criteria are applied. Small private trading has started to return and mostly lease storage
space from Romcereal or from former state and cooperative farms (the latter being now
redesigned into associations of private farmers). Farmers can also rent storage from Romcereal
for their own grain and, if they decide to sell on the free market they pay three percent of the

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8/ For wheat, standard specific weight is 75, foreign matters are 3%, and humidity is 15%. Differences between the product and the
standard are added and price is changed accordingly. For instance:

<table>
<thead>
<tr>
<th></th>
<th>standard</th>
<th>actual delivery</th>
</tr>
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<tbody>
<tr>
<td>Test weight</td>
<td>75</td>
<td>80</td>
</tr>
<tr>
<td>Foreign matters</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Humidity</td>
<td>15%</td>
<td>13%</td>
</tr>
</tbody>
</table>

TOTAL +8

The price that is actually paid for this delivery of wheat will be increased by 8 percent.
value of the grain per month (e.g., 270 lei per ton of wheat each month), otherwise, if they sell to *Romcereal*, such storage is free of charge. Transport of grain from farm to the local elevator is either made directly by *Romcereal* or reimbursed to farmers. To restrict exports in years of low production, strict quantitative restrictions have been introduced and are still enforced. Import duties are 25 percent *ad valorem*. Over the last five years, almost no investment has been made in Romania in grain handling, storage and transportation. In addition to *Romcereal*, the former grain trade monopoly, *Agroexport*, has now developed subsidiaries in ten districts, to trade cereals and oilseeds on the domestic markets. Currently, this last company also diversifies its activities into wheat milling and bakeries.

28. **Domestic Flows of Grain and Feed Products Have Reversed from the Pre-war Directions.** In sharp contrast to the pre-war period, when Romania was one of the major exporters of cereals and even with the near past before 1989, Romanian cereal markets have fallen on hard times due to the transition to market economy, drought, lack of agricultural chemicals, the war and blockade of the Danube in Yugoslavia. Over the past three years, average yields for wheat were between 2.1 and 2.3 tons per hectare (about one third of western Europe). Yields for maize are, according to the same source, about 2.6 tons/hectare but have been even more affected by the last year's drought and then plunged to a low 1.4 ton/hectare. This situation has made the country a large net importer of cereals during the last three crop years. With the objective of adding value to grain in the production of meat, high priority was given to livestock and meat exports over the export of grains and feed. Therefore, as opposed to before the war where grain and feed products were shipped down the river to the Black Sea, the development of large agro-kombinats and agro-industrial enterprises in the interior regions has mostly reversed the flow of products which now goes from the Danubian region and other surplus areas (mostly situated in the peripheral of the country: west, south and east) to northern, central deficit areas.

29. **Grain and Feed Trade Through the Black Sea.** The recent large net deficit in grains experienced by Romania has reversed the role played by the sea port of Constanza which is the main access gate for imported grains. In Constantza, imported grain is transferred from large vessels (up to 100,000 tons) to train and barges for shipment to the deficit regions in the interior of the country. The grain terminal in the harbour of Constanza, over the last four years, has received for export only an average of 26,000 tons of grain per year from domestic production, but shipped an average of 1.4 million tons of imports to the interior of the country. Constanza and the two main river elevators of the Danube delta, at Galatzi and Braila, have started to play a new role with the neighboring regions of the former Soviet Union. For Moldova, rail is also the main means of transportation. Grain goes through Galatzi where transhipment can be done at the local antique terminal elevator. Turnover in the terminal elevator of Braila is about 125,000 tons (five times the capacity of the elevator). It is also noteworthy that Galatzi is linked with the former Soviet Union's rail system with wide gauge rail system. Representatives of the trade also indicated that the absence of sea port facilities in Serbia and Serbian reported reluctance to use the Croatian ports, may, in the future, attract some more shipments from this potentially large producing region, down the Danube. Small sea/river vessels (maximum of 7

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2/ See map IBRD 26095.
to 8,000 tons of grain) also import grain directly to inland locations such as Braila, Cernavoda or Giurgiu.

30. In the Last Thirty Years Preference Was Given to Rail for Grain Shipments. Most of the Romanian grain elevators alongside the Danube have distributed only products from their own district to their hinterland in Romania. They have basically played no role in shipping by river or reception from the river of products from other domestic or foreign regions. These shipments are made by train with specialized railroad cars. Under the previous centrally-planned economy, railways were given priority both in use and in investment for bulk agricultural product shipment. From the collection of grain to its domestic destination, railway transportation is and will remain the major transportation mode in Romania. Large investment in silos and storage facilities by Romcereal has been placed all over the country alongside railway lines. In sharp contrast, the existing grain elevators alongside the Danube river\textsuperscript{10} were built at the end of last century or in the early 1940s with the exception of one facility which was built in 1984 in Turnu Severin. Even this last investment is still used to ship only local production by rail to the interior of the country.

31. The Emergence of the Private Sector in the Trade of Grain and Feed Products. As of this date, the grain handling/storage industry is mainly operated by Romcereal and Agroexport (the former foreign trade agency for grain). However, large feed mills and agro-kombinats have also their own silos. Private farmer associations and the remaining state farms continue to operate silos and flat stores of the previous era. Small private farmers have a choice between delivering to Romcereal at state prices in the case of wheat, and selling directly to local processors or to the emerging small and medium size private grain traders. With the sharp reduction in deliveries to Romcereal, this enterprise has begun to rent out its storage cells to these emerging private traders and farmers associations. Even the former import/export company, Agroexport which is now privatized, is extensively leasing Romcereal’s facilities to diversify into domestic grain trade. The privatization of the storage facilities operated by Romcereal is currently under discussion and should result in significant changes in the allocation of products in the grain sector over time, space and form. No major legal constraints to the emergence of private trading companies in Romania have been identified.

32. Mostly Antique Storage, Handling Equipment and Infrastructures at the River- and Seaside. In general, grain elevators along the Danube are relatively well-kept, particularly when considering their chronological age. In fact, two of them, in Braila and Galatzi, are even considered as national treasuries\textsuperscript{11} which are to be preserved under the UNESCO program. The only set of silos alongside the Black Sea is composed of three elevators of 30,000 tons each, which are more than sixty years old. They are in good working condition. These large silos were built at the time when Romania was one of the world’s largest exporters. They consist of 250 to 300 cells of about 100 tons each, as opposed to the more recent silos, mostly located

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\textsuperscript{10}/ See map IBRD 26095.

\textsuperscript{11}/ These two terminal elevators have been designed by Anghel Saligny, a Romanian architect and a student of Eiffel. Saligny also designed and built, in 1895, a long bridge across the Danube which, until recently, was the only bridge built in the southern part of Romania. In the 30’s he finally built three grain elevators in the port of Constanta.
alongside the railway system, made of large unit cells of about 5,000 tons each. This large number of individual cells not only gives more flexibility in handling and combining a large number of different types of grains, received in small quantities, but also creates an obligation for more complex and time consuming operations to load or unload large quantities of grain. Elsewhere, the handling facilities (loading and unloading, to and from the river) are, in most locations, antiquated or out-of-order. In addition, the processing systems of weight/measure, drying and cleaning and laboratories must, in most places, be replaced. Although no information was obtained on the matter, it is clear that there must be significant post-harvest losses during the transport, handling and storage of grain products.

33. Large Individual Shipments To and From the Danube Region Do Not Take Advantage of Low Cost of River/Canal Transportation. Transport through the Danube canal (i.e., between Constantza and Cernavoda, the river port at the connection of the Danube and the canal) is, in principle, limited to i) 6 barge-convoys for a total of 12,000 tons each, which is the equivalent to a full train of 40 cars of 50 tons each; or ii) sea vessels of about 3,000 tons each (no transhipment is then needed between the exporting foreign country, and in-land destinations on the Danube). River transportation between the port of Sulina (where the Danube reaches the Black Sea), Galatz and Braila is possible with sea vessels with a capacity of 7,500 to 8,000 tons each. Then river transportation up to Turnu Severin is usually possible with barges of 1,500 to 1,700 tons each. Several barges can be towed or tugged together, up or down the river, but, in most places, they would have to wait to be loaded/unloaded due to the capacity of the existing handling equipment and the limitation in the number of operating berths. Today, in western economies, the cost of river transport of grain is reportedly about half of the cost of rail transport and one-third the cost of transport via truck. It will take time for the existing Romanian enterprises to be able to take advantage of the comparative advantage of riverside locations, since most processing industries have been developed over the years in regions other than alongside the Danube. Therefore, transhipments (river to train or truck in Giurgiu, Galatz or Turnu Severin) has become mandatory and adds substantially to the costs in time and money. Also, the existing loading and unloading facilities are antiquated and out-of-order. This includes machinery and silos which are not adapted to this function. The only two currently active transhipping places are: i) the river-train connection to the eastern and north-eastern region of Romania and to Moldova via Galatz, or Braila, or Reni, and ii) the river/train connection in Turnu Severin to supply the extreme western part of the country - both of which are the longest

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12/ Managers of individual elevators only recognize the existence of losses of 0.7 percent in volume. However, this figure is not an actual percentage but, instead, a standard cost that was accepted under the previous system and therefore can be added to the marketing costs by Romcereal.

13/ See annexes 1 to 4

14/ In 1993/94, the severe drought experienced along the Danube river created a new situation in which water level was so low that small shipments only (about 700 tons per barge) were possible. This resulted in higher costs per ton transported, and shipments on the river were reduced.

15/ These figures depend on i) the type of barge/vessel, and ii) the specific weight of grains to be transported.

16/ Transhipments to Moldova of 70,000 tons of US grains have been reported to the mission. Grain was loaded on barges, transported on the canal to Galatz and Reni and loaded on railroads cars. Since 1989, only one shipment delivered 100,000 tons at once (again it was aid to the Republic of Moldova)
distances on the Danube from Constantza. As seen above, some sea/river shipments are also reported to Giurgiu, about 200 kms from Constantza, via the Danube-Black Sea canal.\textsuperscript{17} This results in having about 80 percent of the shipments from Constantza and its surrounding region (for local production) made by train and 20 percent only by canal/river.

34. **Other Constraints to the Use of Inland Waterways.** National and regional restrictions in trade (physical and legal) have created noneconomical product flows. That is, if the Danube were used as the major regional inland waterway as in other countries, it is conceivable that Romanian products would be shipped south to export markets while deficit areas of Romania in the northwest would be supplied by neighboring countries such as Hungary and Serbia. Increased regional trade with neighboring countries should create demand for grain handling/storage facilities and transport from the port of Constanza. However, a clear reluctance to tranship products through Romania has been perceived in several surrounding countries and this would, to some extent, benefit ports in Ukraine (Ismael and Reni, on the Danube) and Varna, one of the three Bulgarian Black sea ports with a transhipment by train from/to Rousse on the Danube. The creation of a free port at Constanza could help develop the grain trade as international traders can off-load grain in-bond without prepayment of Romanian duties and taxes. In any event, current flows of products are on the import side and mostly arrive by sea. USDA estimates that, while following the drought, Romanian exports are banned, during the marketing year 1993/94, Romania will still import about 950,000 tons of barley and maize, and 200,000 tons of wheat.

35. **The Role of the Port of Constantza on the Black Sea and the Danube-Black Sea Canal.** The port of Constantza is the main eastern terminus of the Rhine-Main-Danube waterways although the Danube is also navigable to Siluna through Braila and Galatzí. Constantza is one of the largest industrial ports on the Black Sea which reached its commercial peak in the late 1980’s with more than 62 million tons (58% liquid bulk; 28% dry bulk; and 14% other goods), ranking it no. 5 in all Europe, but plummeting to 27.2 million tons in 1992 (of which 43% liquid bulk; 36% dry bulk; and 21% other goods), with a pause expected around this level. The total throughput capacity of the port is around 80 million tons. One of the relative advantages of the port of Constantza is the possibility to handle large vessels sailing the Bosphorus Strait (200,000 DWT)\textsuperscript{18}. The three parallel grain terminals were located, at the time of their construction, in a place such that the largest vessel at that time (15,000 to 18,000 tons) were able to land in front of them (maximum draft in front of the silos is 25 feet). Some safety issues have been observed during the visit of the facilities in relation with the diesel engine locomotives that enter under the silos on a daily basis. Since then, larger vessels arrive in Constantza and must be transhipped directly to railroad cars (rarely full trains are kept together until final destination) or to smaller sea/river vessels, on another location in the port (with a maximum draft of 35 feet), using five cranes with grabers, two pneumatic installations (250 tons/hour each), and two floating pumps (300 tons/hour each). The relatively slow unloading process results in high waiting costs (demurrage) for the large Panamax vessels. Custom procedures are not fully in line with the development of Constantza as a transit place for large shipments to other countries: for instance custom duties have to be paid and later, after re-export, reimbursed. Finally, it was reported that, with the lack of competition, tug-boats owned by state-owned companies, do not

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\textsuperscript{17} See map IBRD 26095 and annex 4.

\textsuperscript{18} It is, however, reported that ship sizes might be scaled down after the renegotiation of the Montreux Convention, later this year.
deliver a good service in the canal and the Danube river.

36. The Emergence of a Grain and River/Sea Freight Exchange in Constantza. Since December 1993, the Maritime and Commodity Exchange of Constantza (Bursa Maritima si de Marfuri Constanta - BMMC) has been established and plans to specialize on three specific markets: maritime freight; agricultural products; and non-agricultural commodities. Until now it has operated for about seven months only on a spot basis, but the Exchange is also planning to operate on futures. BMMC has already installed the usual specialized committees: e.g., arbitration committee, ethic and discipline, auditing, market surveillance, administration, etc. Various fees are collected on the operations made on the market and from the membership. A network of personal computers has been installed and is used to i) help traders prepare their transactions; ii) record them; and iii) display, in real time, information about prices and volume. Technical cooperation with other exchanges and training is considered by the management of the exchange has a priority for its development. A second series of actions are investment related, mostly dealing with warehouse through a subsidiary company of the Exchange: the "Est Invest Securities Corporation".

19/ In 1894 there was a "brokers'office" which became, in 1900, the "Trade Exchange". A full-fledged exchange operated until 1941. The so-called Trade Stock Exchange of Constantza ceased its activities until December 1993, when it re-emerged under its new name, "the Maritime and Commodity Exchange", which has been constituted as an association of enterprises with both private and state capital. It now has 141 shareholders and a capital of more than 1 billion lei.
<table>
<thead>
<tr>
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<tbody>
<tr>
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</tr>
<tr>
<td>Romania</td>
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</tr>
</tbody>
</table>

**Table 2:** Romania - Danube and Black Sea Grain Terminals: Existing Infrastructure
IV. BULGARIA: RIVER AND SEA GRAIN TRADE AND TERMINALS

37. Agricultural Price and Trade Policy: Main Elements Interfering With Grain Trade. The main programs for agriculture\(^{20}\) that have affected exports and imports of grain, in 1993, were:

(i) support to the state grain agencies to pay higher than the fixed floor price for the purchase of breadmaking wheat (equiv. US$4.6 million);

(ii) credit subsidies schemes (equiv. US$36 million);

(iii) profit margins were fixed at 12 percent of the cost (10 percent for traders); so-called ceiling prices were calculated on a "cost plus the margin" basis, and were controlled by the National Price Commission, regional governors, mayors and other local authorities. Incentives were provided to civil servants to keep control on margins and to fine defaulters;

(iv) a ban on the export of grain until the end of September 1993; export taxes (replacing for a number of products export quotas) these taxes were raised on wheat, maize and wheat flour, and, in April 1993, were changed from *ad valorem* to absolute taxes quoted in US dollars per ton; import taxes; an extension of the ban for breadmaking wheat until the end of September 1994; and

(v) a special duty-free quota for the import of 300,000 tons of breadmaking wheat; 100,000 tons of feed barley; 900,000 tons of maize and 50,000 tons of sunflower cake.

38. Good Potentials for Grain Production, but Strong Regulatory Constraints to Foreign Trade. One of the most disruptive government interventions in 1993 was in the grain market. A number of price support measures and trade measures were introduced to hold the price of bread at a politically "acceptable" level. In July 1993, the government introduced a floor price (1,900 leva/ton --about US$70-- of breadmaking wheat) offered to producers by the state purchasing agencies and the state-owned mills. To facilitate the operation, a 127 million leva (US$4.6 million) subsidy was paid to these enterprises. This subsidy was to be repaid to the State budget by May 1994. Substantial problems arose in grain marketing after the harvest. Transactions on commodity exchanges showed prices between 2,500 and 2,600 leva per ton (about US$95) of wheat. Thus, many producers did not want to sell grain to state agencies at the offered floor price. Smaller than expected deliveries to state grain agencies and mills were at the origin of the ban to export until September 1994 and of the special duty-free quota for the import of grain, to run until the end of June 1994. OECD reports that pressures to increase border protection and to introduce impediments to export, especially for grain, have largely originated from the Ministry of Agriculture. Bulgaria has a high potential for grain production and export. However, unclear and unpredictable agricultural and trade policies are significant constraints to such

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development. Restrictions on exports (e.g., the current grain export prohibition) and export taxes\textsuperscript{21} discriminate against farmers and preclude increased levels of production. This policy is detrimental to the development of trade and related support services, and, therefore, to private investment and infrastructure development. If these policy constraints are alleviated, the logistics and the infrastructure required for trade will become critical. So far, private trading remains small and obviously optimizing the allocation of products over space would imply free trade and stronger competition. The existence of the grain monopoly, Zarno, is still a significant deterrent to development of private trade. When the total off-farm grain storage capacity is estimated to total 5 million tons, Zarno controls almost 50 percent of this capacity. Privatization of the flour milling industry and storage has started and has already had a significant impact on price competition: in 1993, it has been reported that grain prices have been competitively determined reflecting a rather efficient market. The role and business practices of Zarno, including cross subsidization of operating facilities, privileged access to state-controlled stocks might however result again in a quasi-monopoly power. Between 1989 and 1991, Bulgarian cereal production (mainly wheat, barley and maize) remained between 8 and 9.3 million tons, but then decreased drastically to less than 5 million tons in 1993. Sunflower exports reached record highs in 1992 and 1993 of 92,000 tons and 138,000 tons respectively. Imports of grains have fluctuated since the late 1980s between 1.2 and 1.7 million tons.

39. Poor Handling Equipment To and From Danube and Black Sea. In Romania, the flows of products are from the Danube to the interior of the country. In the case of Bulgaria, the flow of cereals are to the eastern coast and to Sofia.\textsuperscript{22} The absence of specialized facilities and infrastructure along the Danube and the Black Sea coast is striking.\textsuperscript{23} This means that, in the absence of significant investments in infrastructure and logistics, Bulgaria will not be i) efficiently linked with the international markets nor, therefore, ii) able to maximize its potential as a grain producer and exporter, or as a regional trade center for products in transit. This situation reflects, in part, the past era when exports were mainly to the former Soviet Union. It appears that, after the transition period, the country has a high potential of being a net exporter of grains. For this reason, it is important that linkages between Bulgaria and foreign markets be identified and modernized. Although Bulgaria formerly belonged to the eastern block of countries, there has been no past collaboration with these countries in terms of handling/shipping of grains and cereals. In the previous system, there was no emphasis on the Danube river, so specific investments have been insignificant alongside this river. As a result, Bulgaria has basically discontinued use of the Danube for trade in feed and grain products. In the case of Black Sea ports, only minor investments have been realized, but they are of a rather primitive state and design. Therefore, the efforts of Bulgarian farmers to achieve higher yields will be negatively impacted by the poor state of logistics linking Bulgaria to its foreign customers. In times of net imports, an indirect protection of the domestic market thanks to poor handling equipment, would become, in times of net exports, a adverse effect on farmers' incomes.

40. Poor Handling Equipments on the Danube and Black Sea Reflect Past Preference by Central Planners for Rail Transportation. Domestic logistics for grain appear to be better organized around the railway system. A total of 1,200 specialized railroad cars are being used (about 1,000 from the Bulgarian railway company; and 200 leased from Yugoslavia). There has been significant investment in cost effective storage with metal and large concrete silos. Disincentives to invest alongside the Danube are also connected

\textsuperscript{21} Professionals in the port of Varna indicate that a government decree instituted exports taxes for grains and their derivatives as follows: $25 per ton for cereals; $30 per ton for wheat flour and $80 per ton of sunflowerseeds.

\textsuperscript{22} See map IBRD 26096.

\textsuperscript{23} See table 3.
with the fact that water transportation was, and still is, more expensive than railway transportation. In the rest of the world, the opposite is true. As a result, in Bulgaria, cost-conscious managers in the grain trade, use rail transportation instead of the river. A clear example of this problem is the case of the port of Rousse, on the Danube, where transportation to the Black Sea is about $10 per ton on the river, but would only be (although this is not an official figure that was obtained from trade sources during the mission) $3 per ton by train. Under such conditions, transshipments (at a cost of $2 per ton) from river to train would make sense for products in transit on the Danube from northwestern regions. A feasibility study has been commissioned under the EU-Phare program, for a river grain terminal that would include a grain silo in the port of Rousse.

41. No Specialized Grain Terminals on the Black Sea. Generally speaking, grain harvested in the northeastern part of Bulgaria would be more likely to be exported through the two ports of Balchik (for small shipments only: i.e., less than 8,000 tons) and Varna. In addition, transshipments from/to the Danube would alternatively be done in Rousse for transfer rail to/from Varna. Cereals harvested in the southeastern plains are more likely to remain in the domestic market or to be shipped, in the short term, to the Former Yugoslavian Republic of Macedonia. There is no specialized infrastructure for river- and seaside grain storage nor transhipment in Bulgaria. There are no grain terminal elevators in the two main ports of the country, Varna and Burgas. This absence of buffer equipment results in rather expensive waiting periods for ships delayed while waiting for railroad cars; and in rather slow unloading and loading for railroad cars waiting for ships to be loaded or unloaded. Over the last five years, Varna has handled about three quarters (on average about 950,000 tons) of the total imports of grain, and Burgas about one quarter (on average about 270,000 tons). The Port Authority of Burgas indicates it can accommodate sea vessels carrying up to 50,000 tons (maximum draft: 36 feet; max length: 240 meters). In Balchik, the small silo next to the port, is not equipped to mechanically transfer grain to/from sea vessels. Vessels are supplied by trucks from an inland grain elevator situated approximately 6 kilometers from the port. At the end of the report, the map for Bulgaria shows the main, but non-specialized, locations of the riverside transhipping places (directly to/from train

\[\text{FIGURE 1: COMPETING ROUTES TO THE BLACK SEA FROM ROUSSE}\]

\(\text{\$10/ton}^{(*)}\)

Small sea vessels or barges

\(\text{\$3/ton}\)

\(\text{Rousse/Sulina (i.e. Black Sea) - 408 kms}^{25}\)

\(\text{Rousse/Varna - 242 kms}^{25}\)

\(\text{(*) based on recent tenders}\)

24/ See figure 1.

25/ See, in annex 5 the proposed site for the new grain terminal

26/ Burgas is the closest port in Bulgaria for grain shipments to the Yugoslavian Republic of Macedonia (this however remains small: in 1992, shipments of grains reportedly totalled approximately 50,000 tons)

27/ See table 3 and map IBRD 26096.
or trucks by cranes). Each Bulgarian seaport has development plans that include infrastructure and equipments specialized in the handling of grain. Two sites (Topolite and Varna West) are considered for future development by the Port Authority of Varna\textsuperscript{28}, while a significant program of construction of new berths and docks is under preparation in Burgas\textsuperscript{29} (new draft limit would then be 42 feet and vessels up to 100,000 tons could then be accepted). Balchik will be more difficult to develop because it is surrounded by high hills and is located in the middle of a touristic area.

42. Difficulties in Assessing Future Flows and Transportation Modes. There is a consensus in the country that the Danube river has high potential in this region and surplus grain will be produced in the region at some point in the future. Similarly, it is clear that transport on this water system, as everywhere in the world, will play an important role. The performance of the logistics system (transport/storage and handling) is critical to agricultural development in Bulgaria. If the system is improved, there will be a positive effect on farmers' business/incomes. Under new economic incentives, even if transport cost structure changes, technical constraints will still prevent use of water transport system. Today is, therefore, the appropriate time to research the situation and to make strategic plans for improvements in Bulgarian transport as well as in the regional transport system. However, the economic transition period compounds the difficulty of analysis and strategic planning. There are difficulties of assessing the future flows of products as new countries of the region such as Moldova, Ukraine, the Federation Republic of Yugoslavia, the Former Yugoslavian Republic of Macedonia, and even Albania, play new roles. In addition, the current embargoes (the Federation Republic of Yugoslavia by United Nations, the Former Yugoslavian Republic of Macedonia by Greece) are a major constraint to regional trade. The flows of products are difficult to assess, but it is already clear that products will flow through Bulgaria and/or Romania. All these uncertainties mean it is important that i) fundamentals, i.e., the basic trade economics be considered in any strategic decisions for the region; and ii) flexibility in the choice of transportation modes be preferred. Clearly, under the current practices, there is an excessive number of transshipments and an absence of buffer stocks. These result in significant losses and high costs.

V. HUNGARY: RIVER GRAIN TRADE AND TERMINALS

43. Agricultural Price and Trade Policy: Main Elements Interfering With Grain Trade. The main programs for agriculture\textsuperscript{30} that have affected exports and imports of grain, were included in the Agricultural Market Regulation Act which came into force in March 1993. It is broadly patterned on the Common Agricultural Policy of the European Union (e.g., target prices, threshold prices and variable levies on imports and exports; ad valorem export subsidies; quantitative regulations, intervention purchases and storage). It, also, has several mechanisms

\textsuperscript{28} See annexes 6 and 7. Representatives of the Port Authority in Varna indicated that a study is under preparation in connection with EBRD

\textsuperscript{29} See annex 8

of the previous Hungarian policy (e.g., export and import licensing). As the market regime for wheat was not in place in 1993, policy measures were mainly emergency market-balancing measures. They included:

(i) a guaranteed price of 7,000 forints per ton (about US$72) for breadmaking wheat since July 1, 1993, for the 1993 crop, with a first payment of 4,000 forints and the remaining 3,000 forints only paid if producers do not take back their products at the end of three months (a three-month interest free loan). Almost 100 percent of the participants at the initial tender for 625,000 tons of top grade wheat, repurchased the wheat and sold it on the open market. Otherwise the Agricultural Market Regime Office (AMRO) would have sold any retained wheat on the commodity exchange;
<table>
<thead>
<tr>
<th>Number (see map 26069)</th>
<th>Location</th>
<th>Date of construction</th>
<th>Total capacity (m tons)</th>
<th>Capacity of loading and unloading equipment (tons/hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Varna</td>
<td>1941</td>
<td>24,000</td>
<td>Train 25, Road 25, River/Sea 25, 50 &amp; 65 for transloading from barges to barges/sea vessels</td>
</tr>
<tr>
<td>2</td>
<td>Ruse</td>
<td>1948</td>
<td>12,000</td>
<td>Train 25, Road 25, River/Sea 25</td>
</tr>
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<td>3</td>
<td>Novi Razgrad</td>
<td>1972</td>
<td>5,000</td>
<td>Train, River/Sea 350(**), 350, 350-400</td>
</tr>
<tr>
<td>4</td>
<td>Ruse</td>
<td>1972</td>
<td>5,000</td>
<td>Train, River/Sea 350(**), 350, 350-400</td>
</tr>
<tr>
<td>5</td>
<td>Ruse (*)</td>
<td>1982</td>
<td>6,000</td>
<td>Train, River/Sea 350(**), 350, 350-400</td>
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<tr>
<td>6</td>
<td>Varna</td>
<td>1972</td>
<td>6,000</td>
<td>Train, River/Sea 350(**), 350, 350-400</td>
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<tr>
<td>7</td>
<td>Varna</td>
<td>1972</td>
<td>6,000</td>
<td>Train, River/Sea 350(**), 350, 350-400</td>
</tr>
<tr>
<td>8</td>
<td>Burgas</td>
<td>1972</td>
<td>6,000</td>
<td>Train, River/Sea 350(**), 350, 350-400</td>
</tr>
</tbody>
</table>

(1) Another location for shipments of grain was visited in Tomsk, but it is not included in the table. 

(2) Varna is considered a "normal" port, but it is claimed that the four cranes in the port could load/unload up to 830 t/h.

Source: mission findings 1994
in 1994, a guaranteed price for breadmaking wheat of 8,200 forints per ton (US$84) and a target price of about 9,000 forints per ton will apply from July 1, 1994. The guaranteed price will be increased in October 1994 to 8,410 forints, in November to 8,480 forints and in December to 8,550 forints, but will not apply after December 1994. The guaranteed price is set at the farm gate for a quota of 2.4 tons per hectare. Any additional wheat has to be sold on the open market. As the guaranteed price is set at a level well below the expected export price available on world markets, the guarantee is only aimed at providing some security for producers. In case of large intervention purchases, storage will be mostly done in private stores. The market regime for maize is under preparation; and

(iii) to help maintain the new market arrangements for wheat, the principle of export subsidies has been re-introduced for wheat but has not been applied yet. At the same time, a policy of export licensing is retained.

44. **A Major Exporting Country Already Oriented Towards River Transportation.** The Danube river stretch in Hungary is approximately 420 km long. A detailed report\(^{31}\) on the technical constraints of river transportation in Hungary has been issued by consultants for the Ministry of Transport, Communication and Water Management in August 1993. It reports several issues regarding maintenance and dredging on several portions of the river. It also estimates there is a potential for new traffics of cereals. Hungary, the last of the three countries visited, is the most consistent exporter of grain and seed products. Hungary is a big producer of cereals, pulses and sunflower seeds. The average production of cereals (mainly corn and wheat) between 1986 and 1990 totalled about 14.3 million tons, then 15.8 million tons in 1991, and then decreased to less than 10 million tons in 1992 and 1993. Total production of oilseeds --mainly sunflowerseeds-- is between 860,000 tons and 1 million tons. Hungary, like the other countries visited during the mission, has had a long term policy of giving preference to rail and road as opposed to river transport. However, new economic conditions have begun to push products back to river transportation. Already river transport is more active in Hungary even with the Yugoslavian embargo. As a result of the above, significant investments are being considered by both public and private investors (including joint ventures with foreign partners). Grain trade is, however, still suffering from the strong shocks from the transition to a market-oriented economy and from the 1993 drought.

45. **Flows of Grains and Related Equipment and Infrastructure.** Main flows of cereals\(^{32}\) are the following: (i) from the eastern region (east of the Danube) to Russia through Ukraine by train; and (ii) from the main production regions in the central Danubian region via river and train to the north mainly for sunflowerseed, and to the south for cereals. As a result, domestic flows of products are heading in increasing quantities to the Danubian ports\(^{33}\). The main exit ports to sea are: 1) Koper in Slovenia; 2) Rijeka in Croatia; 3) Reni and Ismael in Ukraine; and 4) Rotterdam in the


\(^{32/}\) See map IBRD 26097 and figure 2.

\(^{33/}\) See table 4 and map IBRD 26097.
Netherlands and Hamburg in Germany. According to Hungarian traders, Hungary is not well equipped with hoppercars for grain shipment. Although it has not been possible to clarify the exact number of such cars, this number would be about 350 cars in working order (50 to 60 tons each depending on the type of grain and on the type of destination: CIS hoppercars, with changeable axes can handle 60 tons) in working order. Transportation via river is made with individual barges or barge trains made up of a maximum three to four barges to the north and six to eight barges to the south. This gives more flexibility to grain traders to accommodate multi-product shipments in the same barge train, eg. cement, fertilizers, grains. Each barge handles between 1,500-1,800 tons of products depending on the river depth constraints. The availability of Hungarian barges is reportedly good in Hungary, with significant additional supply from Ukraine, Czech and Slovak Republics.

46. Other Non-Market Constraints to River Transportation. The mission did not discuss in detail regulatory constraints which arise from several international agreements such as the Bratislava Convention which is between eastern countries and Germany in relation to the construction of the link between the Danube and the Rhine/Main rivers. It is clear to the mission that the new economic conditions have led the Hungarian business community to move faster on the way to more cost-effective systems for transporting products in/out of the country. In addition, collaboration with foreign ports such as Rotterdam and with foreign partners is well advanced. Just as in Bulgaria, no collaboration has so far really been considered with Romania. As a result these countries tend to focus on shipping to southwest Ukraine and Russia directly and without transhipment via Constanza.

47. Transportation Costs. Costs on the main routes are tentatively given in figure 2. These costs are tentative due to the lowered demand for transport (drought and the embargo with the Federation Republic of Yugoslavia). Cost of transportation by train is still only between 20 and 30 percent higher than river transportation. Figure 2 also shows the potential advantage to utilize the waterways to reach large sea vessels: transportation by train to the Adriatic Sea (a rather short distance from Budapest) costs about 2.6 times more than transportation down the Danube. Soymeal imported from the United States is mainly transported to the southern part of Hungary by train (90 percent) from Koper and the remaining 10 percent by barges from Germany or the Netherlands. Costs for transhipments between barges and train are about US$3 per ton. Generally grain contracts are specified to be delivered to Budapest and a standard adjustment (i.e., accepted unchanged by professionals until further notice) is made depending on the actual delivery point on the river, with a maximum range for the discount/premium of about plus or minus $1.25 per ton. Supply to the river is made by trucks for distances up to 150 kms.

48. Three Reference Points for Transhipments of Grain Should Emerge and Be Internationally Quoted As One Hungarian Standard Contract. Provided the proper investments are made, it is clear that three main points for Hungary should emerge. They are: a) Budapest/Adony; b) Mohacs/Baja; and c) Komaron/Gonyu. In all these points substantial investment would be needed for port infrastructure (Adony; Gonyu, Komaron), adjustment of road/train connection with the river, and to terminal handling and storage equipment. These locations should

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34/ Based on three interviews only with professionals in the trade

35/ In Gonyu, near the border with Austria and the Slovak Republic, a new port is under construction in which an investment in a 10,000 tons grain elevator is being considered.
be linked together into one internationally recognized standard contract for shipments of grain and feed products to/from Hungary: published standard price differentials would then be applied depending on the actual delivery/shipment location on the Danube (south or north of Budapest/Adorny).

49. The Budapest Commodity Exchange The Budapest Commodity Exchange (BCE) has been analyzed in detail by numerous consultants and Bank missions. BCE is, until now, the only functioning futures market in eastern Europe. It began trading in November 1989. The original founders -banks and large trading companies- stepped in as sponsors to provide opportunities for risk management and free-market based price setting though organized futures trading.\textsuperscript{36} Capitalization

\textsuperscript{36} This decision and the on-going experience recognize the need for alternative market-based instruments to manage risk and discover price in times of liberalization. Such need is reported in M. L. Debatisse, I. Tsakok & al., Risk Management in Liberalizing Economies: Issues of Access to Food and Agricultural Futures and Options Markets, World Bank Report No: 12220 ECA, 30 November 1993, 52 p. Currently, reports of move towards the development of agricultural commodity exchanges have been made for (continued...)
of the Commodity Exchange Co. Ltd. which runs BCE, is HUF 125 million (about US$ 1.1 million) and total assets exceed HUF 200 million (about US$2 million). Basic types of trades are spot and futures transactions, in an open outcry form. The number of seats is limited. Registration and settlement of each transaction is done by the Clearing House (KELER, created by the Budapest Stock Exchange and the National Bank of Hungary). Futures trading currently exists in three domains: grains, livestock and currencies (50 members operate in each agricultural market; 20 in the currency section). Since its creation, BCE has achieved a remarkable continuous growth (its turnover for 1993 was HUF 10.75 billion (about US$100 million). In the grain sector, the volume traded on BCE was, in 1993, equivalent to 15 percent of the total grain harvested in Hungary. BCE is considering the creation of new contracts on oil and oil derivatives. Currently, grain can be delivered only at Budapest grain silos. A national conference was held at the time of the mission, to discuss the development of warehouse receipts for grain by licensed storage enterprises (e.g., Concordia Co. Ltd.) that could serve to extend the underlying cash market for the futures exchange.

36/ (...continued)
numerous countries including Turkey, Morocco, Romania, China, India and most Latin-American countries. Since the above report, statistics on BCE have been actualized on the basis of discussions at BCE during the mission and on the BCE report: S. Keresztesi, Budapest Commodity Exchange since 1989, 1993, 20 p.

37/ The Commodity Exchange Co. Ltd. has 83 owners, 63 of which are legal entities (including several banks, large commercial houses, brokerage firms, domestic grain traders, meat processors and a few smaller trading companies) and 20 are private individuals

38/ Last sale of a seat exceeded HUF 3.1 million (about US$ 30,000)

39/ 90 percent futures and 10 percent spot transactions
<table>
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<th>Location</th>
<th>Total capacity</th>
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<th>Total capacity of endurance and unloading equipment (tonnes)</th>
<th>Unloading load bearing</th>
<th>Unloading load bearing (tonnes)</th>
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<td>1928</td>
<td>1000 (2.020 m)^2 + 11000 (one 2.400 m)</td>
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<td>2940</td>
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<td>2</td>
<td>400</td>
<td>1984</td>
<td>2000 (one 2.000 m) + 7000 (two 2.400 m) + 10000 (four 2.400 m)</td>
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<td>1000</td>
<td>2000</td>
<td>2000 (two 2.000 m) + 7000 (two 2.400 m) + 10000 (four 2.400 m)</td>
<td>14</td>
<td>2940</td>
</tr>
<tr>
<td>4</td>
<td>2000</td>
<td>2000</td>
<td>2000 (two 2.000 m) + 7000 (two 2.400 m) + 10000 (four 2.400 m)</td>
<td>14</td>
<td>2940</td>
</tr>
<tr>
<td>5</td>
<td>350</td>
<td>1979</td>
<td>1000 (1.000 m) + 11000 (2.000 m) + 10000 (3.000 m)</td>
<td>14</td>
<td>2940</td>
</tr>
<tr>
<td>6</td>
<td>320</td>
<td>1985</td>
<td>1000 (1.000 m) + 11000 (2.000 m) + 10000 (3.000 m)</td>
<td>14</td>
<td>2940</td>
</tr>
<tr>
<td>7</td>
<td>1600</td>
<td>1979</td>
<td>1000 (1.000 m) + 11000 (2.000 m) + 10000 (3.000 m)</td>
<td>14</td>
<td>2940</td>
</tr>
<tr>
<td>8</td>
<td>320</td>
<td>1985</td>
<td>1000 (1.000 m) + 11000 (2.000 m) + 10000 (3.000 m)</td>
<td>14</td>
<td>2940</td>
</tr>
<tr>
<td>9</td>
<td>400</td>
<td>2000</td>
<td>2000 (two 2.000 m) + 7000 (two 2.400 m) + 10000 (four 2.400 m)</td>
<td>14</td>
<td>2940</td>
</tr>
</tbody>
</table>

**TABLE 4: HUNGARY - DANUBE GRAIN TERMINAL FACILITIES EXISTING INFRASTRUCTURE**
Annex 1: ROMANIA - UKRAINE:

POSITION OF THE PORTS OF ISMAEL, SULINA AND CONSTANZA

Source: Port Authority of Constanza Documentation
Annex 2: ROMANIA: PORT OF CONSTANZA

A: Three Grain Elevators
B: Grain Handling for Large Vessels

Source: Port Authority of Constanza Documentation
The boundaries, colors, denominations, and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

Annex 3: Danube River
Distance and Time to the Suez Canal

Source: Port Authority of Constanta Documentation

JULY 1994
THE DANUBE-BLACK SEA CANAL

REACH km 24-64

REACH km 0-24

LEGEND

----- hydrographic basin

port platform

industrial platform

locks

GENERAL TECHNICAL CHARACTERISTICS

Length: 54.4 km
Breadth of the waterway: 100 m
Canal water depth: 7.0 m
Draught: 5.5 m
Bridge clearance: 17.0 m
Curves minimum radius: 3000 m

LOCKS ON THE CANAL

<table>
<thead>
<tr>
<th>Location</th>
<th>Reach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cernavoda</td>
<td>km 60-100</td>
</tr>
<tr>
<td>Agigea</td>
<td>km 1-50</td>
</tr>
</tbody>
</table>

PORTS ON THE CANAL

<table>
<thead>
<tr>
<th>Location</th>
<th>Reach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cernavoda</td>
<td>km 64 left bank</td>
</tr>
<tr>
<td>Medgidia</td>
<td>km 37-500 right bank</td>
</tr>
<tr>
<td>Basarabi</td>
<td>km 24 right bank</td>
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</tbody>
</table>

CHARACTERISTICS OF THE SHIPS ALLOWED ON THE CANAL

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>PUSHED CONVOY</th>
<th>SELF-PROPELLED VESSEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>capacity</td>
<td>6,3000 t</td>
<td>3000 t</td>
</tr>
<tr>
<td>length</td>
<td>296 m</td>
<td>138.3 m</td>
</tr>
<tr>
<td>breadth</td>
<td>22.8 m</td>
<td>16.8 m</td>
</tr>
<tr>
<td>draught</td>
<td>3.5 m</td>
<td>3.5 m</td>
</tr>
<tr>
<td>navigation speed</td>
<td>10-12 km/h</td>
<td></td>
</tr>
</tbody>
</table>

Annex 4: ROMANIA: THE DANUBE BLACK SEA CANAL

Source: Port Authority of Constanza Documentation
Annex 5: BULGARIA - PORT OF ROUSSE
Proposed Site for a New Grain Terminal Elevator
Annex 6: BULGARIA - PORT OF VARNA (East and West)

Legend:
1. Current grain terminal
2 & 3. Proposed site for grain elevators
Annex 7: BULGARIA - PORT OF VARNA West: Proposed Grain Elevator (80,000 t)
Annex 8: BULGARIA - PORT OF BURGAS and Proposed Extension
HUNGARY
GRAINS AND FEED PRODUCTS
CURRENT FLOWS AND HANDLING FACILITIES

CURRENT FLOWS OF GRAINS & FEED PRODUCTS:
- RAILROADS
- RIVERS / SEA
- DANUBE RIVER & BLACK SEA GRAIN HANDLING & PORT FACILITIES

GRAIN HANDLING & PORT FACILITIES (see also table A)

GRAIN SURPLUS REGIONS (TENTATIVE)

*Adony still seasonal; other seasonal loading locations not shown.

NATIONAL CAPITAL
- COUNTIES (MEGYE) CAPITALS
- OTHER MAJOR CITIES
- COUNTY (MEGYE) BOUNDARIES
- INTERNATIONAL BOUNDARIES

*Budapest is a municipality that has County (Mgye) status. It is also the capital of Pest County.

0 10 20 30 40 50 60 70 80 KILOMETERS
0 10 20 30 40 50 60 70 80 MILES
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