1. Basic information

1.1 Désirée number: HU01.07.02
1.2 Title: Flood Control Development of the Körös Valley
1.3 Sector: Environmental protection
1.4 Location: Hungarian-Romanian common concern1 river sections in Békés and Hajdú-Bihar counties of Hungary, as well as in Arad and Bihar counties of Romania

2. Objectives

2.1 Wider objectives: Developing economical and safe flood control systems on the drainage area divided by the Hungarian-Romanian national border. Decreasing the endangerment of the national assets in the protected area. Promoting economic growth in the frontier regions.

2.2 Immediate objectives: Safely discharging the floods in the areas of the Körös Region Water Authority (hereinafter: KÖVIZIG) and the Trans-Tisza Region Water Authority (hereinafter: TIVIZIG).

2.3 Connections to the strategic objectives specified by the Accession Partnership: One of the intermediate range objectives of the environmental chapter of “Accession Partnership 1999. Hungary” is the “integration of the principles of sustainable development,” to which this project is also connected. In addition to the approximation of the laws and institutional development, the National Program for the Adoption of the Acquis Communautaire of the European Union (NPAA) also provides for economic development and investments in the sectors concerned. Securing the safety of the investments and the economic development are of primary importance. By reducing the risk of floods, the project serves this objective.

2.4 Contribution to the National Development Plan: The Preliminary National Development Plan (PNDP) designated the North-Plains and the South-Plains regions as priority areas for development both in terms of the economy (industry, agriculture, tourism, labour market) and the infrastructure. This project involves both of these regions by contributing to the reduction of risks for floods in the development target areas. Flood control and safety are essential for the achievement of the objectives set in the PNDP.

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1 Common concern river sections are defined as those sections forming or crossing the national borders of Hungary and Romania and subject to the convention regulating water management issues (Convention on Border Waters) signed by the respective Governments of the Hungarian People’s Republic and the Romanian Socialist Republic on 25 July 1986.
The Development Concept the Hungarian-Romanian Frontier Region (Chapter 4.4) lists environmental, conservation and water management co-operations as a development priority.

2.5 Cross border impact: The impact of the proposed measures in Romanian territory is the following:

a./ Installation of flow measuring equipment in the frontier sections of the river:
On the basis of the automatically registered data, the Romanian experts will be able to make more accurate forecasts of the travel times and rates of discharge phase of flood waves. In possession of these more reliable predictions, the resources available for protection may be used in a more optimal, efficient and economic manner. The installation of the discharge measuring equipment will increase the efficiency of flood control.

b./ Updating of communication and data transmission equipment:
The implementation of this development will increase the possibility of communication, processing and evaluation the registered hydrological and hydrometrical data much faster. Quick, in-time access to these data is a fundamental interest of both parties for the success of flood control.

c./ Improvement of the flood control embankments:
As a result of the measures proposed by the project, floods originating in Romanian territory will be discharged more safely than before. The risk of flooding in the neighbouring frontier regions of both countries will be greatly reduced on the Hungarian-Romanian common concern river sections. The effects of dyking and river regulation planned on Romanian territory will be balanced by the embankment improvements proposed by this project.

d./ Environmental impact
The Joint programming Document specifies the Environmental Protection and the Water resource management as one of its main priorities (See Priority 5). The Joint actions against the damages caused by rivers (flood prevention) are clearly identified as a common strategy between Hungary and Romania. An environmental investment is realised on the lower section of the Maros River in Romania, which is part of the joint development strategy.

3. Description

3.1 Background and explanation
The area of operation of KÖVIZIG and TIVIZIG include the flood areas of the Fehér-Kőrös, Fekete-Kőrös, Sebes-Kőrös, Kettos-Kőrös, Hármas-Kőrös and the Berettyó Rivers.
The Berettyó and Körös Rivers region is one of the most susceptible areas of Hungary as far as flooding damage is concerned. The value of national assets in this area amounts to approximately 400 MEUR.

a./ Characteristics

The flooding load on the Hungarian parts of the Berettyó and the Körös Rivers largely depends on the hydrological events of the upper drainage area. Another characteristic feature is extremity. The difference between the highest and the lowest water levels recorded in the frontier sections of the rivers exceeds 10.0 m. The intensity of the flooding of the rivers is in excess of 20-25 cm per hour. As a result of the above, preparation time is only 24-30 hours ahead of the flooding. Reliable forecasting, therefore, is extremely important for the management and organization of flood protecting.

b./ Problems (inadequacies):

On more than 64% of the embankment the cross-sectional dimension is less than the minimal dimension assigned to the standard 1% flood level. During the discharging of a flood wave the water level may wash over the crest, or may cause a crevasse (bursting of the embankment) because of the inadequate cross-sectional dimensions.

A crevasse in 1980 at Hosszúfok at the 16+100 tkm section of the Kettos-Körös River resulted in the flooding of 10,000 hectares of land causing 6.54 MEUR damage calculated at the prices of that time.

The gauge height (water level) and discharge measuring, information and communications equipment necessary for efficient flooding protection are partly missing.

The floods in the Körös Valley in 1999-2000 caused significant natural disasters, especially on the Romanian side of the drainage area. The governments of both countries have made serious efforts in order to avoid and protect against such disasters.

c./ Strategy

- The reinforcement of the existing flood control embankments must be continued on inadequate sections.
- The existing flooding and hydro-meteorological network must be updated and improved.
- The communication and data transmission network used for the distribution of information for participants of the flood control efforts must be developed.
- The scope of data involved in the mutual information exchange between the Hungarian and the Romanian parties must be extended.
3.2. Linked activities

In the Körös Valley, PHARE aid was already provided for the following developments:

a./ “The Development of the Water Management of the Fekete- and Sebes-Körös Rivers” project (ZZ 9622.03.02):

b./ “Mutual Evaluation of the Flood Control Situation of the Fehér-Körös River” (ZZ 9622-03-03)

c./ “The Development of the monitoring system of the Berettyó River” project (ZZ 9622-03-04)

d./ “The Prevention of Floods on the Drainage Area of the Berettyó and the Körös Rivers” (ZZ 9624-03-02)

A more detailed list of projects in the Körös Valley implemented with national and Phare financing is enclosed in Appendix 8.

3.3 Results:

- With the realisation of the program aiming at the development of flood control in the Körös Valley, the flooding phenomena emerging in Romanian territory will be better known.
- The understanding of the hydrological factors causing these phenomena will be improved. The objective of flood control will become safely attainable with embankments of appropriate cross-sectional dimensions, which serves the purpose of protecting national assets in the value of approximately 400 MEUR.
- The modern, economically reasonable, and mechanised maintenance of the embankments will also become possible.
- The data transmission and communication equipment will make the timely monitoring of all events on the flood control embankments much faster. The program providing flood control development in the Körös Valley will ultimately also promote the sustainable economic growth of the Berettyó and Körös Rivers region.

3.4 Activities

The following activities are proposed in the framework of this project:

1. Construction

   a./ The reinforcement of the flood protection embankments on a length of 11.1 km of the Hungarian-Romanian common concern section of the
Berettyó River, extension of the same to the standard dimensions requiring 160,000 m$^3$ of earthwork. This activity requires 0.788 MEUR, 25% of which (0.097 MEUR) would be from own resources. (TIVIZIG)

b./ Stabilizing the crest of the embankment on a length of 2849 meters of the Hungarian-Romanian common concern section of the Sebes-Körös River. This activity requires 0.12 MEUR, 25% of which (0.03 MEUR) would be from own resources. (TIVIZIG)

c./ Construction of cable connection between Komádi and Szeghalom flood control centres in the length of 45 km. This activity requires 0.23 MEUR, 26% of which (0.06 MEUR) would be from own resources. (TIVIZIG)

d./ Reconstruction of the Komádi and Pocsaj flood control centres in 400 m$^2$ buildings, requiring 0.04 MEUR, 25% of which (0.01 MEUR) would be from own resources. (TIVIZIG)

e./ The reinforcement of the flood protection embankments on a length of 4880 m of the Hungarian-Romanian common concern section of the Kettős-Körös River, extension of the same to the standard dimensions requiring 75,000 m$^3$ of earthwork. This activity requires 1.02 MEUR, 25% of which (0.255 MEUR) would be from own resources. (KÖVIZIG)

f./ Construction of ultrasonic flow-measuring stations in the Hungarian-Romanian section of the Fekete-Körös and the Fehér-Körös Rivers. This activity requires 0.15 MEUR, 27% of which (0.04 MEUR) would be from own resources. (KÖVIZIG)

2. Procurement

a./ Purchasing of GPS-based geodesic equipment with accessories, requiring 0.04 MEUR, 25% of which (0.01 MEUR) would be from own resources. (TIVIZIG)

b./ Purchasing of communications and information technology equipment for the support of flood control activities:
   - PASSPORT information technology interface units 3 pcs.
   - Enlargement of existing ST telephone exchange 1 pc.
   - OPTION telephone sub-exchange 4 pcs.
   - Upgrading of analogue lines to digital (ISDN) lines 8 pcs.
   - Connecting protection centres to the information system 3 pcs.
   - Setting up structured IT network (LAN) 2 pcs.
   - FTP Hungarian-Romanian information server 1 pc.
   - SQL Server licence 20 pcs.
   - Upgrading to Novell 4.1 1 pc.
   - SQL Server 7.0 2 pcs.
   - LN licence (for workstations) 30 pcs.
   - Win NT licence (for workstations) 20 pcs.
- Setting up national VPN (Virtual Private Network) 2 pcs.
- Communication and data transmission equipment 12 pcs.

The above procurements require 0.27 MEUR, 26% of which (0.07 MEUR) would be from own resources. (TIVIZIG-KÖVIZIG)

c./ Installation of ultrasonic flow-measuring and sensing equipment in the Hungarian-Romanian section of the Fekete-Körös and the Fehér-Körös Rivers. This activity requires 0.142 MEUR, 28% of which (0.04 MEUR) would be from own resources. (KÖVIZIG)

Construction type activities of the project as proposed to be implemented in the framework of a local contract. Procurements detailed in sub-sections 2.a/ - 2.c/ are to be divided into 3 “lots” during the implementation phase, because of the specificity of the equipment and instruments to be installed.

4. **Institutional framework**

The beneficiaries of the project – KÖVIZIG and TIVIZIG – are regional institutions under the supervision of the Ministry of Transport and Water Management with financing by the state budget. Their operation is directly controlled by the National Water Authority.

The functions of the “Engineer” will be filled by an independent, contracting engineer to be selected from applicants for the position.

In accordance with the agreement between KÖVIZIG and TIVIZIG, the function of the “Employer” will be filled by KÖVIZIG.

The owner of the completed investment will be the State of Hungary.

The trustees/managers of the investments will be the relevant water authorities on whose territory the investments are made.
5. Detailed budget

<table>
<thead>
<tr>
<th>Phare support</th>
<th>Investment Support (I)</th>
<th>Institution Building (ID)</th>
<th>Total Phare (I+ID)</th>
<th>National co-financing*</th>
<th>International financial institutions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Construction contract according to items 1.a-1.f of chapter 3.4</td>
<td>1.768 MEUR</td>
<td>-</td>
<td>1.768 MEUR</td>
<td>0.58 MEUR</td>
<td>-</td>
<td>2.348 MEUR</td>
</tr>
<tr>
<td>2. Supply</td>
<td>0.332 MEUR</td>
<td>-</td>
<td>0.332 MEUR</td>
<td>0.12 EUR</td>
<td>-</td>
<td>0.452 EUR</td>
</tr>
<tr>
<td>Total</td>
<td>2.1 MEUR</td>
<td>-</td>
<td>2.1 MEUR</td>
<td>0.7 MEUR</td>
<td>-</td>
<td>2.8 MEUR</td>
</tr>
</tbody>
</table>

The Phare amount is binding as a maximum amount available for the project. The ratio between the Phare and national amount is also binding and has to be applied to the final contract price. The national co-financing commitment indicated in the budget is a tax excluded net amount.

6. Implementation arrangements

6.1 Implementing agency:

The project will be implemented under the overall co-ordination and supervision of the Ministry of Agriculture and Regional Development, whose representative, Dr. Péter Szaló, Deputy Secretary of State, will be designated as PAO.

The Ministry for Agriculture and Regional Development, through its Phare Regional Development Implementing Agency (H- 1016 Budapest, Gellérthegy u. 30-32), will be responsible for all aspects of tendering and contracting as well as administrative and financial matters of the implementation.

Ministry of Agriculture and Regional Development
Phare Regional Development IA
Address: H- 1016 Budapest, Gellérthegy u. 30-32.
Phone: +36/1-488-7171
Fax.: +36/1-488-7188

6.2 Twinning: not applicable

6.3 Special procedures: not applicable

6.4 Contracts
Two contracts will be necessary for the implementation of the project: one work contract and one supply contract. The construction work part of the project is intended to be regulated in 1 local works contract. The procurement is divided into 3 “lots” because of the specificity of the equipment. The type of equipment to be procured also defines the circle of potential applicants. By dividing the procurements into lots, a more economic result is expected.

7. Implementation schedule

7.1 Announcement of invitation for tender/application:
The tender dossier will be ready by 1 January 2002.

7.2 Commencement of the project activities:
Expected date of signing the first contract for work: 1 September 2002.

7.3 Completion of the project:
The expected date of payment for last realised activity: 30 September, 2003.

8. Equal opportunity
No discrimination on the basis of gender shall be made during the preparation and implementation of the project and the selection of the beneficiaries.

9. Environment
Minimal environmental effects (dust and noise) are to be effected during the construction works; however, the finished project has no harmful environmental effect at all.
A detailed study of the expected environmental impact of the proposed works is found in Appendix 7.

10. Rates of return
While the developments of the flood control works may be quantified, only a part of the results can be directly evaluated. A significant portion of the results will only appear indirectly, as economic effects in other economic. The impact will reach a wide geographical area.
As regards the study of the investments and developments of the flood protection works, savings of approximately 20-30% may be calculated with in the operation and maintenance of the protective works.
The following actual factors of benefit may be calculated with:
- a significant increase in the level of safety from flood damage in the settlements involved (prevention of flooding damage)
- resources will be freed in the flood protection because of the smaller operative efforts needed
- maintenance will become simpler and more mechanized after the completion of the project

The financial and economic rates of return of the investments under the present project may not be directly determined. The results can be measured by the elimination of flood damage, economic and social development on the protected area, as well as the increase of the personal and material security:

<table>
<thead>
<tr>
<th>Damage</th>
<th>Costs(mil HUF)</th>
<th>Economic benefit (mil HUF)</th>
<th>Investment(mil HUF)</th>
<th>Rate of Return $\varnothing = \frac{E}{I}$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>implementation</td>
<td>implementation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production loss</td>
<td>97,81</td>
<td>1,80</td>
<td>96,01</td>
<td></td>
</tr>
<tr>
<td>Flood protection cost</td>
<td>30,31</td>
<td>5,69</td>
<td>24,62</td>
<td></td>
</tr>
<tr>
<td>Damage of national assets</td>
<td>642,81</td>
<td>0</td>
<td>642,81</td>
<td></td>
</tr>
<tr>
<td>Salvage and evacuation costs</td>
<td>15,35</td>
<td>0</td>
<td>15,35</td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td>786,28</td>
<td>7,49</td>
<td>778,79</td>
<td>1,07</td>
</tr>
<tr>
<td>Before implementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After implementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Result</td>
<td>778,79</td>
<td>728,00</td>
<td></td>
<td>0,93</td>
</tr>
</tbody>
</table>

**11. Investment criteria**

**11.1 Catalytic effect:**
Phare support has a catalytic effect on economic development in the border region, because the project contributes increasing safety in the flood protected area.

**11.2 Co-financing**
The Hungarian State contributes to the project in the amount of 0.7 MEUR of co-financing, that is 25 % of the total project budget.

**11.3 Additionality**
The PHARE support requested for the realisation of the project does not substitute any other financing sources.

**11.4 Project readiness and size**
All preliminary studies necessary for the project are ready (cf. Appendix 4).
The right and left embankment of the Berettyó river and the right embankment of the Kettos-Körös river dispose of valid water authority permission for operation. The right embankment section of the Kettos-Körös river of 4,880 m that will be reinforced in the present project is directly joined to the embankment section of 6,391 m that is of the same type and got the water authority permission in 1998.

Kettos-Körös River, development of right embankment, Phase IV: Preliminary planning work (geodesy, soil mechanics) is ready. The preparation of the authorisation plan documentation is in process. The water authority permission will be obtained by 30 September 2001. (An ultrasonic flow measuring station was built before on the Zala river in 1996 and there were no problems regarding the water authority permission.)

The building of ultrasonic flow measuring stations in the frontier section of the Fehér-Körös and Fekete-Körös Rivers: an implementation plan for the substructure is available.

The total amount of PHARE support for the proposed investment is 2.1 MEUR, which is in compliance with the minimum project size requirements.

11.5 Sustainability
The proposed investments are in line with the EU regulations currently in effect; they comply with regulations on financial support, have no harmful environmental effects, and have a sound financial basis. The future operation and maintenance of the proposed investments will be provided by the Hungarian State.

11.6 Compliance with state aid provisions:
All project proposals are in full compliance with the EU state aid provisions.

12. Conditionality and sequencing:
The relative sequencing of the project activities is free. Conditions of the realisation: Availability of PHARE financial support and obtaining the required licences from the competent authorities (to be done by the beneficiaries, at least 30 days before contracting).

Milestones of the project:
- 30 September 2001: The water authority permission will be obtained
- 1 October 2001: Financing memorandum
- 1 September 2002: Signing the works and supply contracts
- 30 September 2003: Completion
Annexes:

1. Logframe planning matrix
2. Detailed implementation chart
3. Cumulative contracting and disbursement schedule
4. Reference to Feasibility Studies
5. Letter of Commitment regarding own contribution
7. Study of Environmental Impact
8. Projects implemented in the Körös Valley