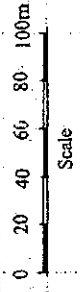
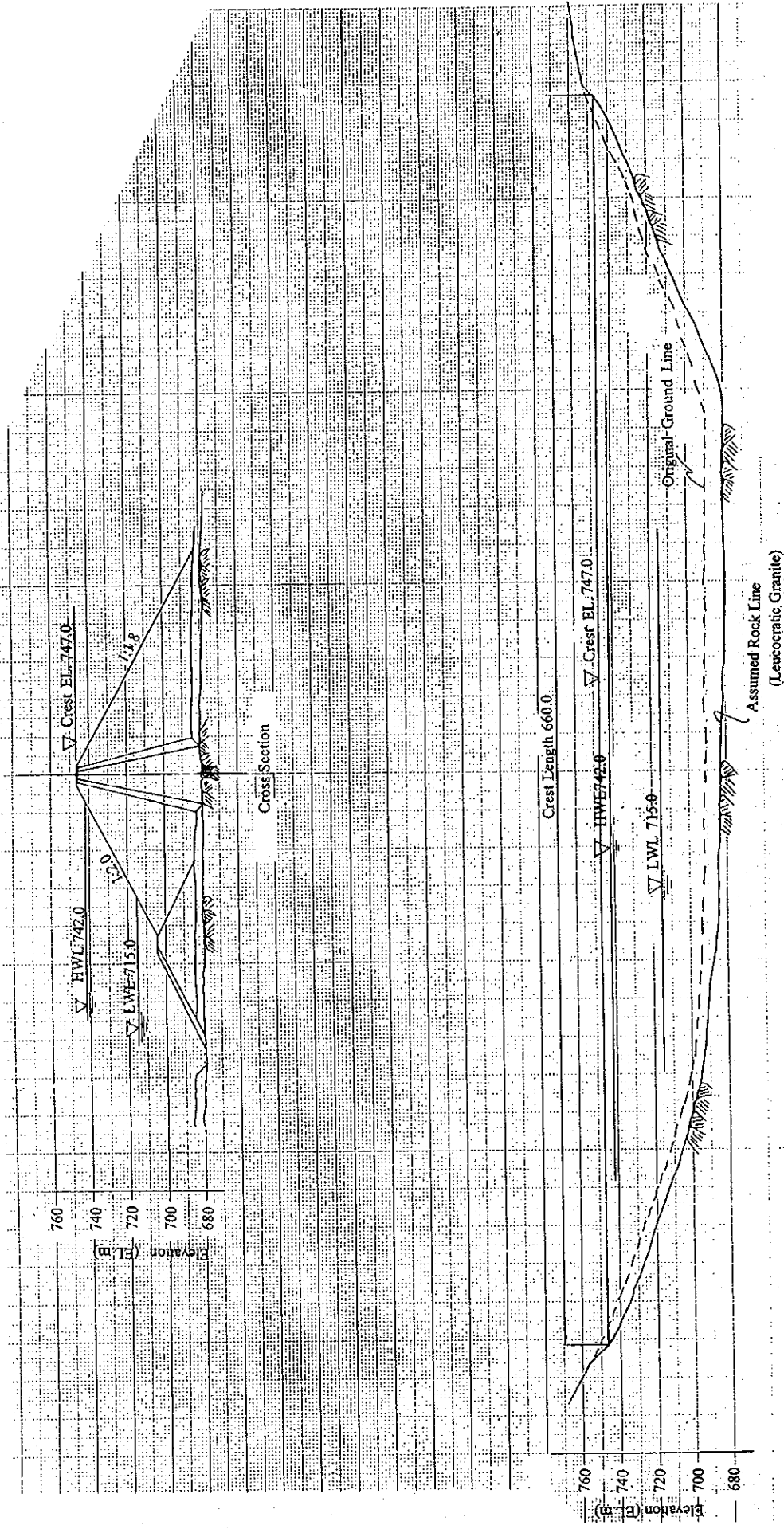


Location Map of Kochishte Dam

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# Kochishte Dam

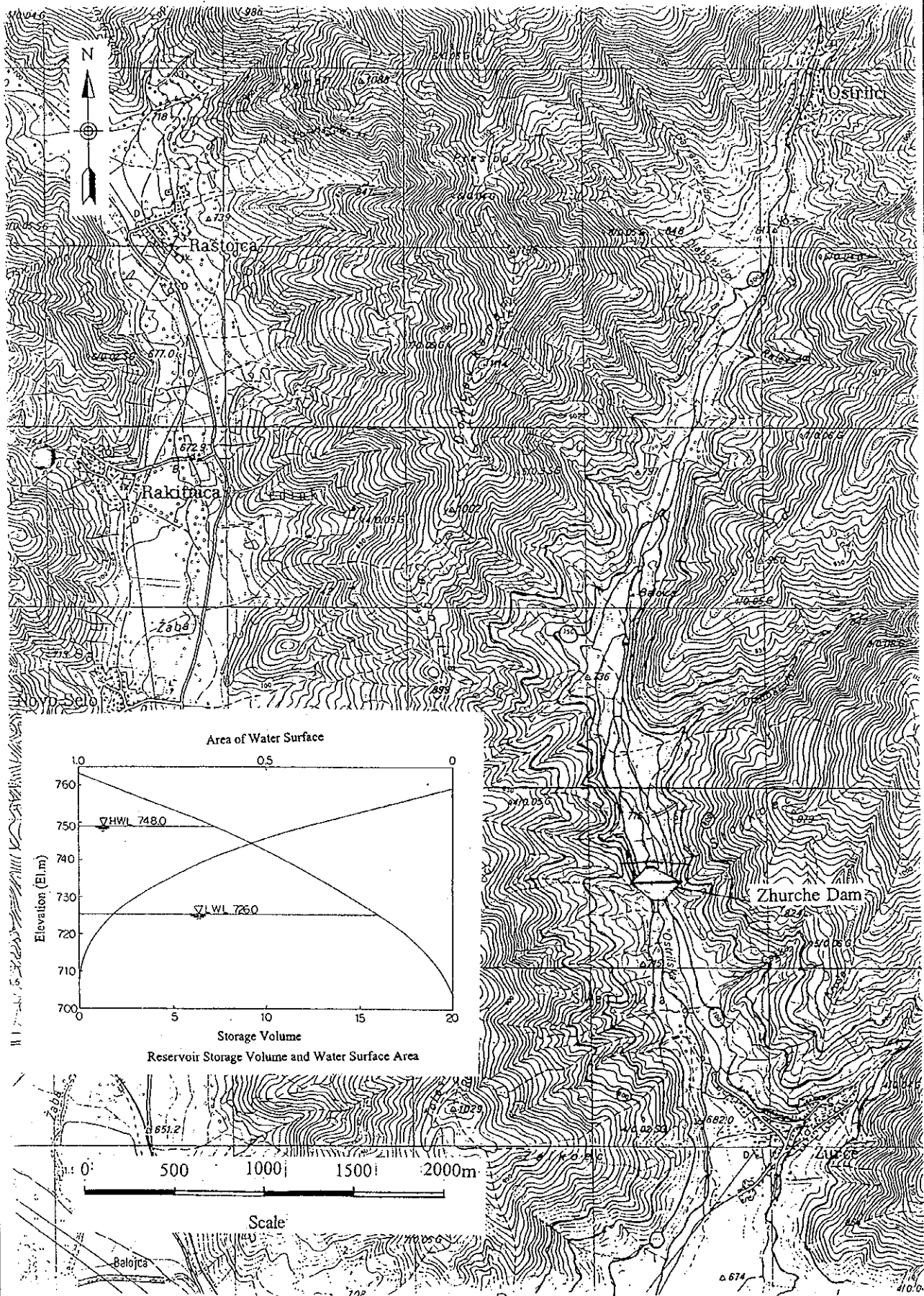
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**PROJECT PROFILE**

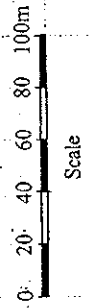
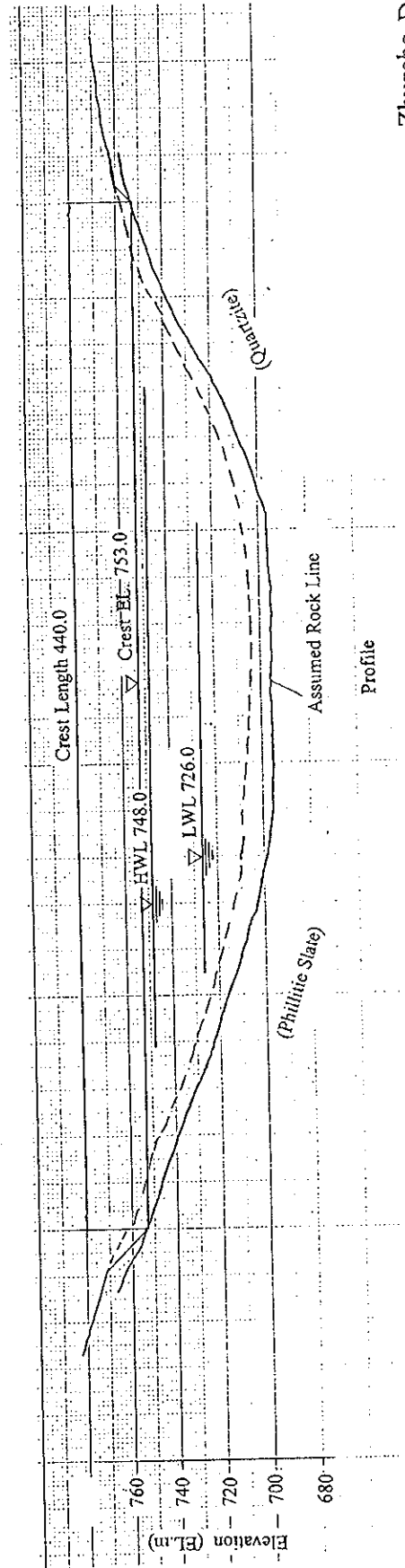
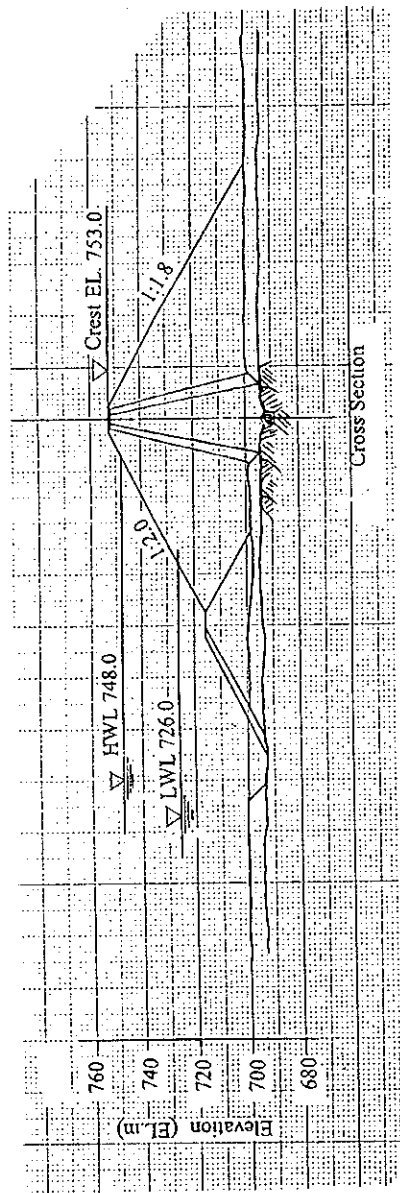
Sheet No. 21

<b>Project Name</b>	Zhurche Dam Project
<b>Sector</b>	Agricultural water
<b>Phase of implementation</b>	
<b>Target area</b>	Demir Hisar
<b>Beneficiaries</b>	Farmers, AK (to be estimated)
<b>Brief description of the project</b>	The Zhurche dam is located in the Ostrilska River originating near Krushevo and joining the Crna River at north of Demir Hisar. This dam was proposed in Hydrosystem "PELA" – Pelagonija as alternative dam project instead of Buchin dam. The purpose of the dam is solely for irrigation water supply to the central part of Pelagonija Field, where has huge potential of agricultural development with 36,000 ha for irrigation.
<b>Project components</b>	<ol style="list-style-type: none"> <li>1. Construction of Zhurche dam</li> <li>2. Construction of irrigation canal and related facilities <ul style="list-style-type: none"> <li>- Catchment area: 26.6 km<sup>2</sup></li> <li>- Dam type: Rockfill dam</li> <li>- Height: 58 m</li> <li>- Embankment volume: 1,200,000 m<sup>3</sup></li> <li>- Gross storage capacity: 11.7 m<sup>3</sup></li> <li>- Effective storage capacity: 9.7 m<sup>3</sup></li> </ul> </li> </ol>
<b>Total construction cost (US\$)</b>	(21,542,000)
<b>Benefits</b>	
<b>Related studies completed</b>	
- Title of study	Hydrosystem "PELA" - Pelagonija
- Year/Month	1997
- Author/Agency	Sterna – prilep and Strezevo - Bitola
<b>Responsible ministry</b>	MAFWE
<b>Operational organisation</b>	PWME Prilep
<b>Financial plan of operation</b>	



Location Map of Zhurche Dam

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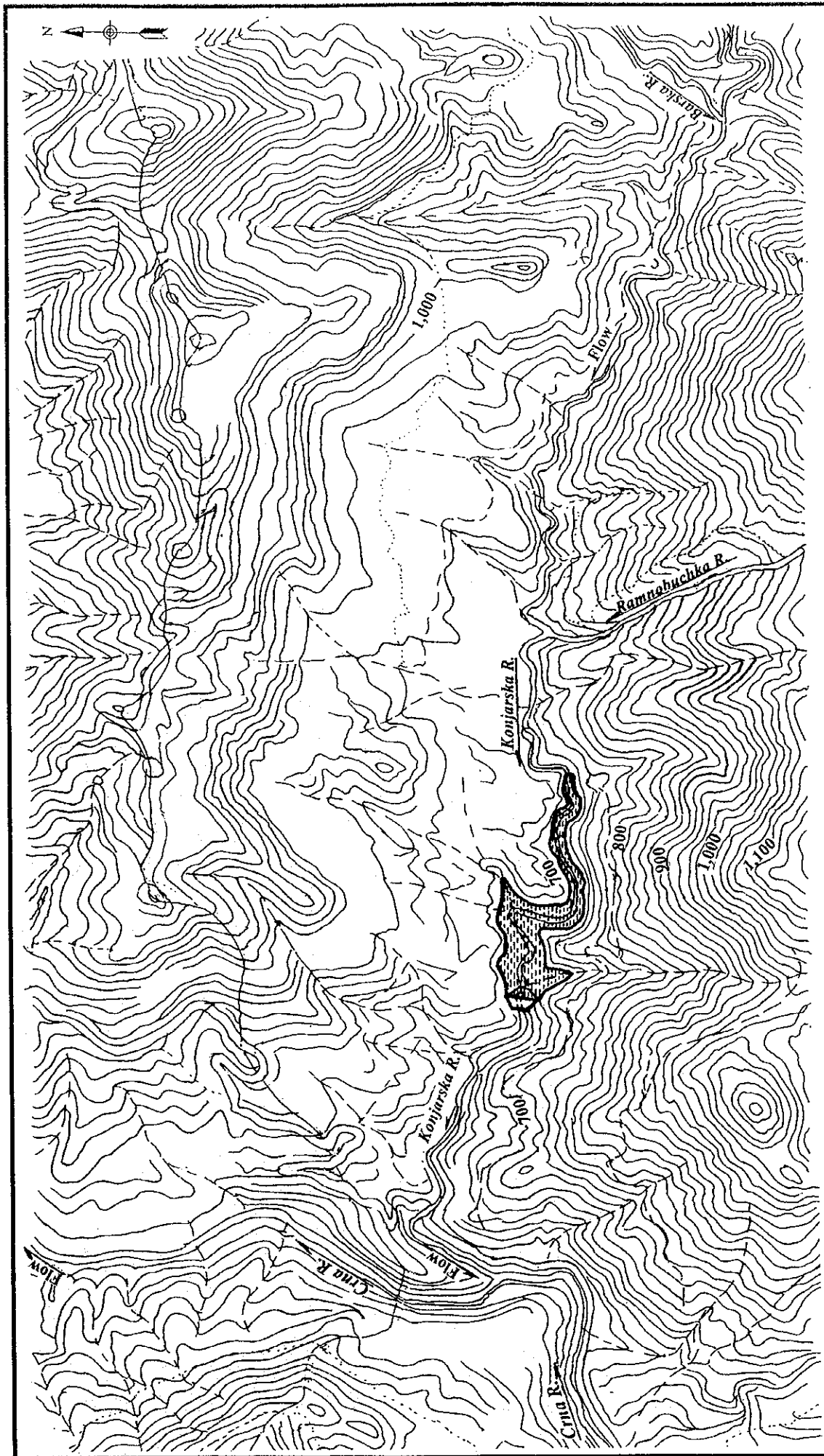
Zhurche Dam

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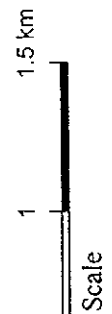
PROJECT PROFILE

Sheet No. 22

<b>Project Name</b>	Konjarka Dam Project
<b>Sector</b>	Agricultural water
<b>Phase of implementation</b>	
<b>Target area</b>	Bitola
<b>Beneficiaries</b>	Farmers (to be estimated) and AK (to be confirmed)
<b>Brief description of the project</b>	The Konjarka dam is sited at the Konjarka River, which joins the Crna River from the right side at 2 km downstream of Skochivir (HMI's major hydrological station is operated). The Konjarka River originates in Mt. Nidze (El. 2,361 m) along the southernmost national border with Greece. The water will serve new irrigation area of about 3,000 ha, which is lying at right side of the Crna river and the Mariovo area.
<b>Project components</b>	<ol style="list-style-type: none"> <li>1. Construction of Konjarka dam</li> <li>2. Construction of irrigation canal and related facilities <ul style="list-style-type: none"> <li>- Catchment area: 59.4 km<sup>2</sup></li> <li>- Dam type: Rockfill dam</li> <li>- Height: 60 m</li> <li>- Embankment volume: 356,000 m<sup>3</sup></li> <li>- Gross storage capacity: 3,200,000 m<sup>3</sup></li> <li>- Effective storage capacity: 2,400,000 m<sup>3</sup></li> </ul> </li> </ol>
<b>Total construction cost (US\$)</b>	(24,472,000)
<b>Benefits</b>	Irrigation water supply
<b>Related studies completed</b>	
- Title of study	
- Year/Month	
- Author/Agency	
<b>Responsible ministry</b>	MAFWE
<b>Operational organisation</b>	PWME Bitola
<b>Financial plan of operation</b>	



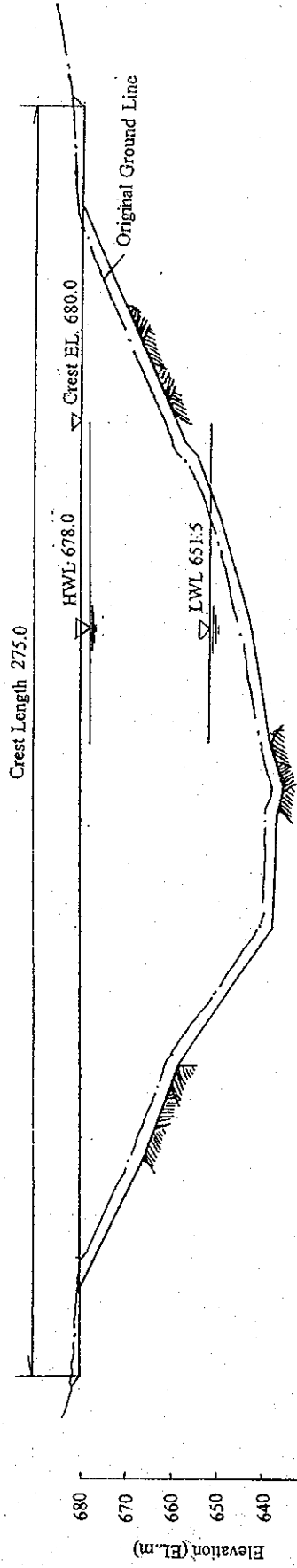
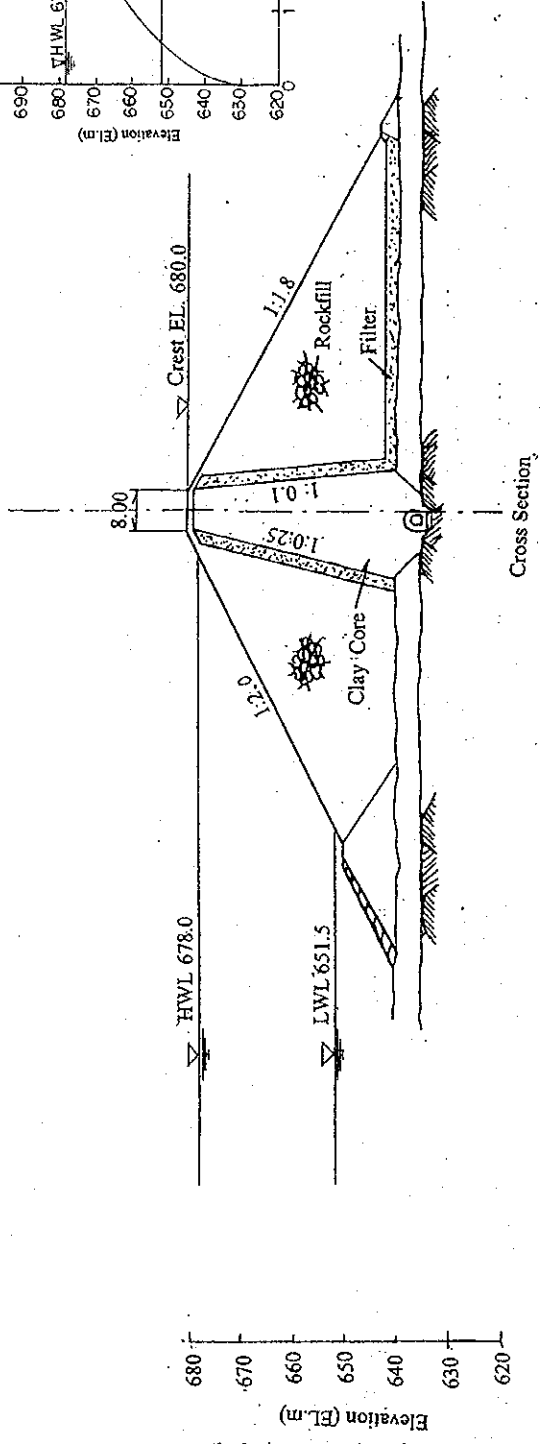
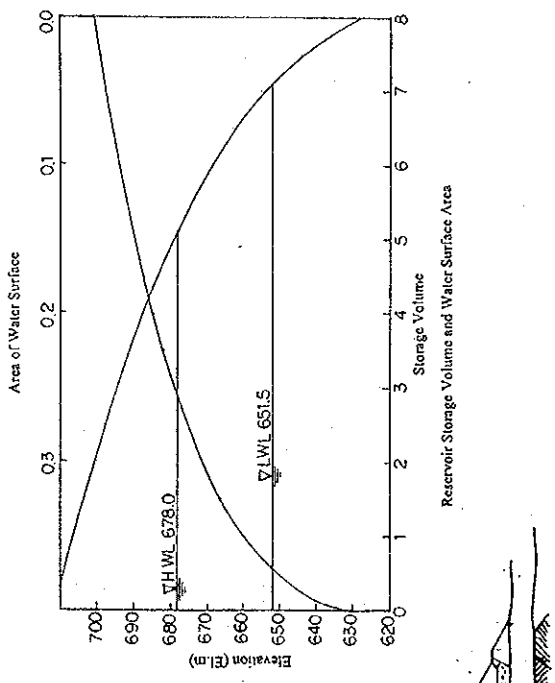
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Location Map of Konjarska Dam

# Konjarka Dam

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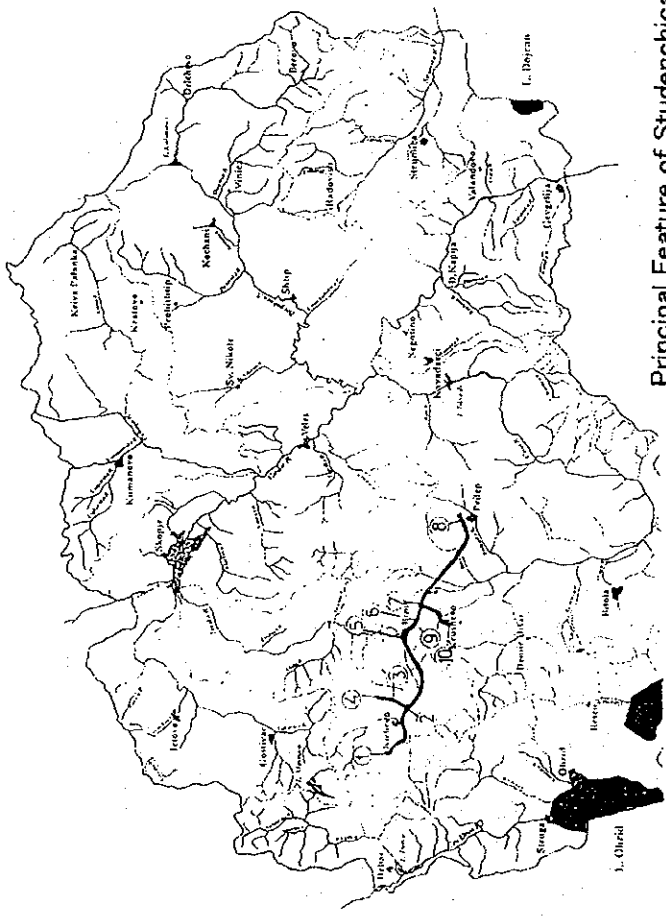
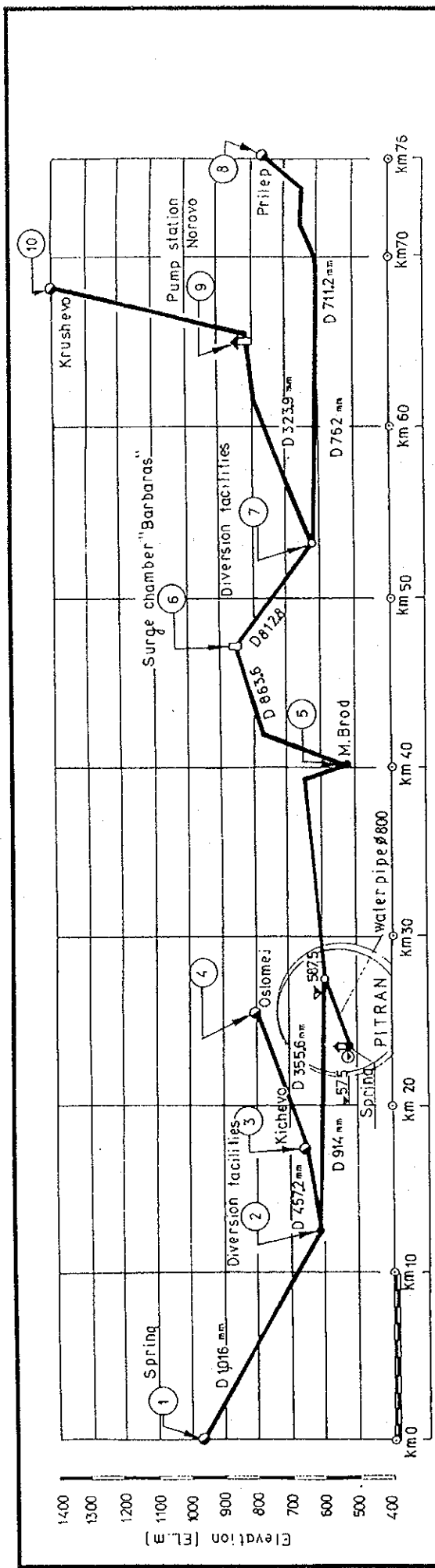




## PROJECT PROFILE

Sheet No. 23

<b>Project Name</b>	Studencica Supplemental Water Supply Project
<b>Sector</b>	Municipal water
<b>Phase of implementation</b>	
<b>Target area</b>	Kichevo, Krushevo, Prilep, Demir Hisar, Bitola
<b>Beneficiaries</b>	20,000 inhabitants
<b>Brief description of the project</b>	The project consists of water captivation from Pitran Spring (250 l/sec) and connection with the regional water supply system "Studenchica". The spring of Studenchica is located at upstreammost of the Treska River, near Javolec village (El. 970 m), which is about 8 km west from Kichevo. It is planned to tap Pitran spring water at El. 575 m and pump up to at El. 587.5 m, to connect it with the existing pipeline.
<b>Project components</b>	<ol style="list-style-type: none"> <li>1. Improvement of Studencica water supply system</li> <li>2. Construction of local water supply system in mountain villages</li> </ol>
<b>Total construction cost (US\$)</b>	2,450,000
<b>Benefits</b>	- Stable supply of safe drinking water
<b>Related studies completed</b>	
- Title of study	Main Project for Additional Water Quantities for the Regional Water Supply "Studenchica"
- Year/Month	1993
- Author/Agency	EMO HEP - Skopje
<b>Responsible ministry</b>	MUPC
<b>Operational organisation</b>	Communal Enterprizes Municipal offices
<b>Financial plan of operation</b>	



LEGEND

- ① Intake - Studenchica
- ② Diversion facilities (v. Druqovo)
- ③ Reservoir - Kichevo
- ④ Reservoir - Oslomej (V=1000 m<sup>3</sup>)
- ⑤ Diversion facilities (for M. Brod)
- ⑥ Surge chamber "Barbaras"
- ⑦ Diversion facilities (for Krushevo)
- ⑧ Reservoir space Prilep 2x4000 + 2x3000 m<sup>3</sup>
- ⑨ Pump station
- ⑩ Reservoir - Krushevo

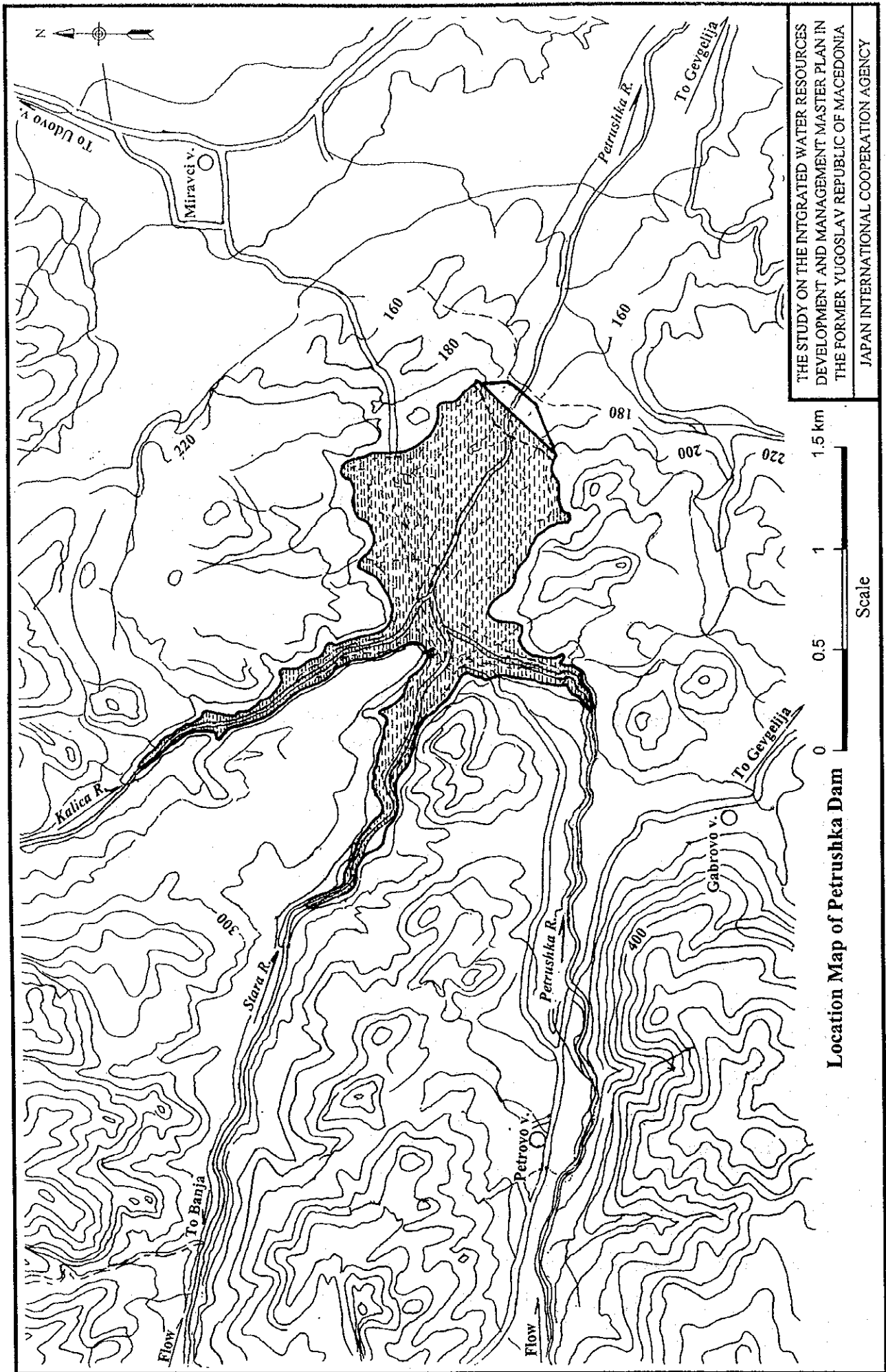
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Principal Feature of Studenchica Water Supply System

**PROJECT PROFILE**

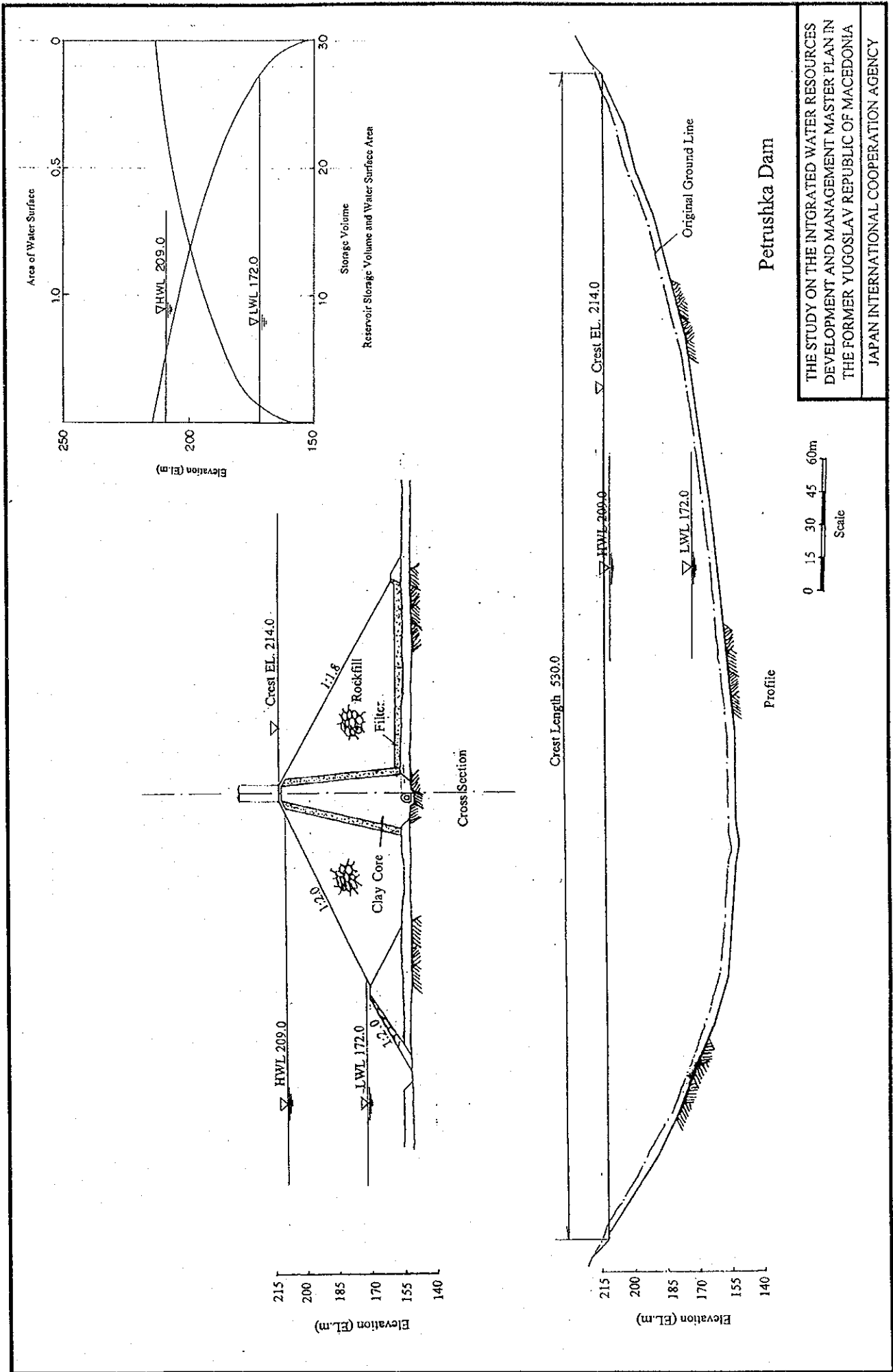
Sheet No. 24

<b>Project Name</b>	Petrushka Dam Project
<b>Sector</b>	Agricultural water
<b>Phase of implementation</b>	
<b>Target area</b>	Valandovo, Gevgelija
<b>Beneficiaries</b>	Farmers and AK (to be estimated)
<b>Brief description of the project</b>	<p>The Petrushka dam is planned in the Stara River to tap water for extension of existing irrigation area in Valandovo system, which covers about 5,000 ha nowly.</p> <p>Since the area extends the right and left side crossing the Vardar mainstream, aqueduct to connect both side will be required.</p> <p>At present, the irrigation system is operated by catching water directly from the Vardar and partially from wells.</p>
<b>Project components</b>	<p>1. Construction of Petrushka dam</p> <p>2. Construction of irrigation canal and related facilities</p> <ul style="list-style-type: none"> <li>- Catchment area: 71.2 km<sup>2</sup></li> <li>- Dam type: Rockfill dam</li> <li>- Height: 70 m</li> <li>- Embankment volume: 2.5 x 10<sup>6</sup> m<sup>3</sup></li> <li>- Gross storage capacity: 20,500,000 m<sup>3</sup></li> <li>- Effective storage capacity: 22,000,000 m<sup>3</sup></li> </ul>
<b>Total construction cost (US\$)</b>	(65,192,000)
<b>Benefits</b>	Irrigation water supply
<b>Related studies completed</b>	
- Title of study	Land Reclamation Plan
- Year/Month	1988
- Author/Agency	National Committee of Irrigation and Drainage in Macedonia
<b>Responsible ministry</b>	MAFWE
<b>Operational organisation</b>	PWME Valandovo
<b>Financial plan of operation</b>	



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Location Map of Petrushka Dam



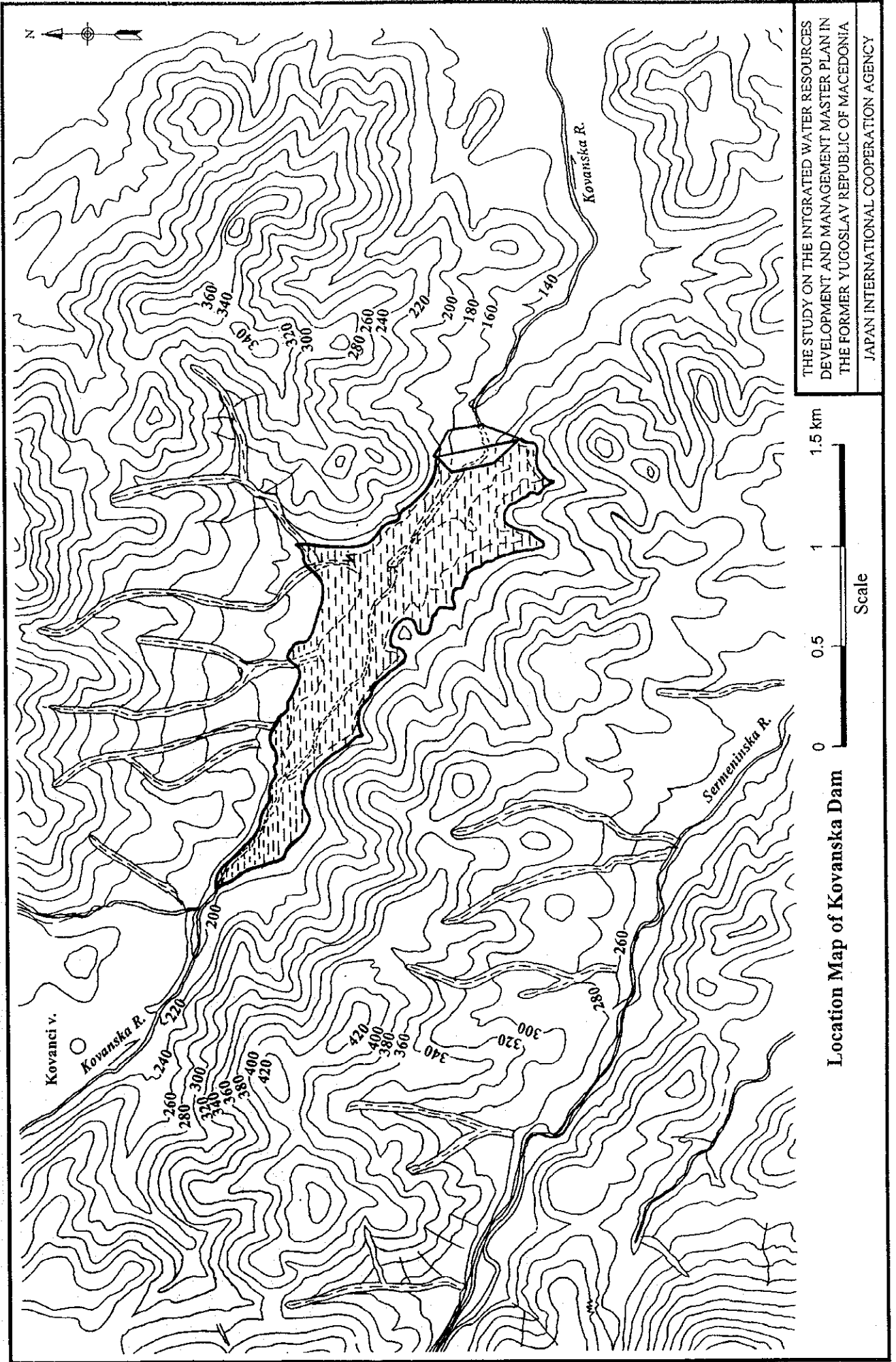
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**PROJECT PROFILE**

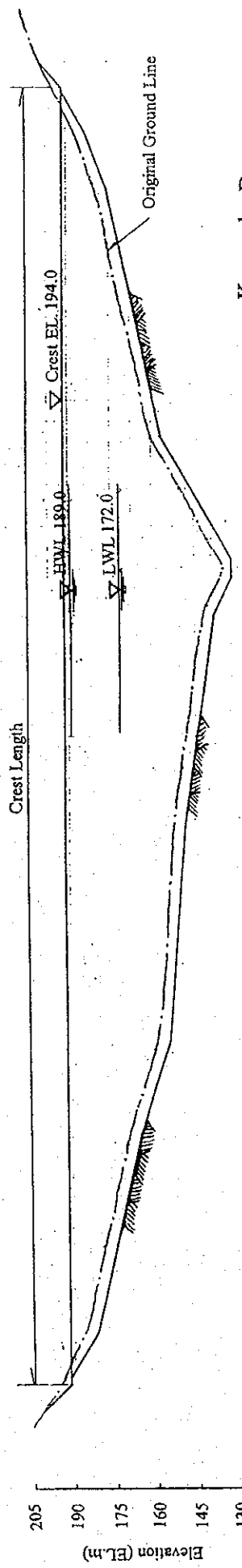
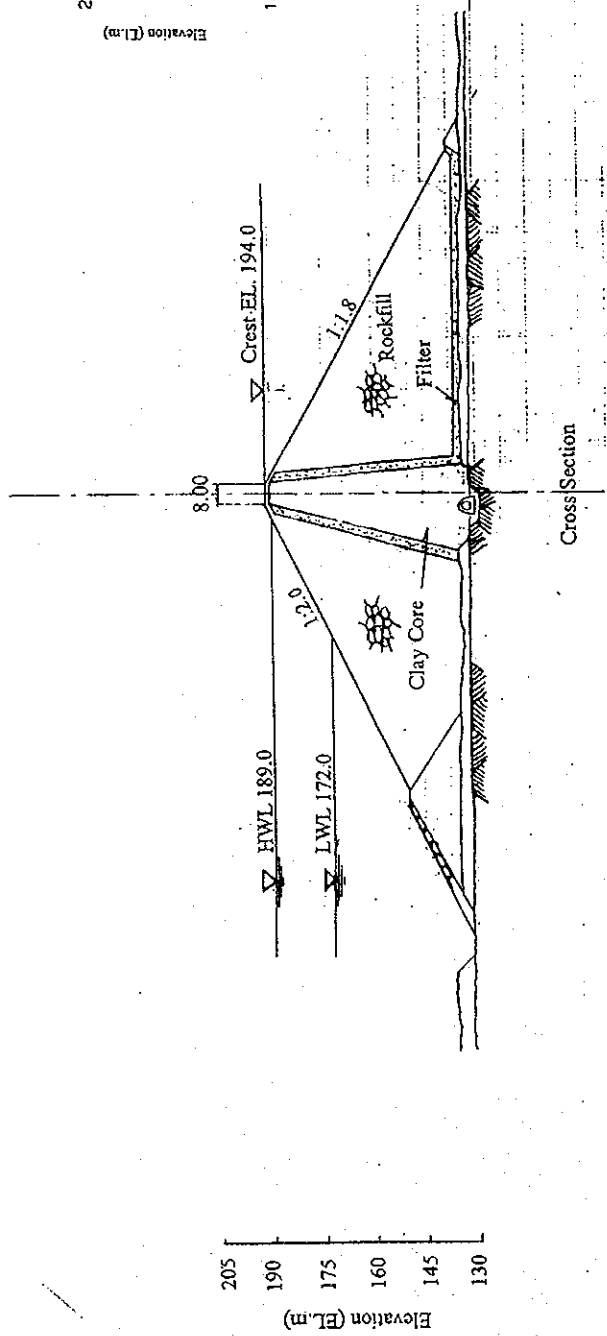
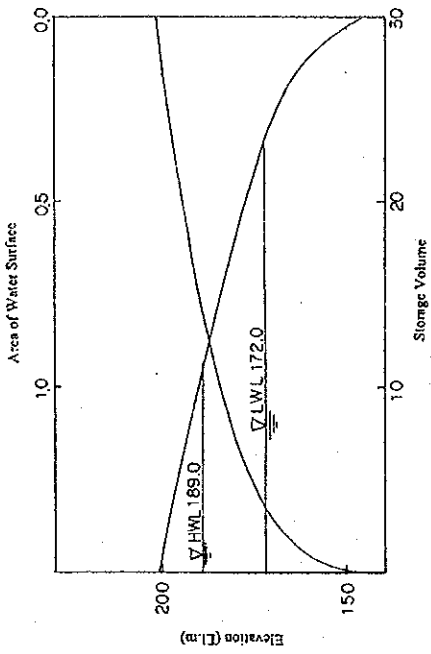
Sheet No. 25

<b>Project Name</b>	Kovanska Dam Project
<b>Sector</b>	Agricultural water
<b>Phase of implementation</b>	
<b>Target area</b>	Gevgelija
<b>Beneficiaries</b>	Farmers and AK (to be estimated)
<b>Brief description of the project</b>	<p>The Kovanska dam project aims to activate agricultural development in the Gevgelija Filed, lying at country's southernmost area, along the Vardar River. The objective of the project is solely to supply irrigation water in the area around 2,000 ha.</p> <p>Since Konsko dam project is planned to be implemented beforehand the Kovanska dam project, is recognized to supplement the irrigation water to enhance agricultural production in the area.</p>
<b>Project components</b>	<p>1. Construction of Kovanska dam</p> <ul style="list-style-type: none"> <li>- Catchment area: 2 km<sup>2</sup></li> <li>- Dam type: Rockfill dam</li> <li>- Height: 55 m</li> <li>- Embankment volume: 903,000 m<sup>3</sup></li> <li>- Gross storage capacity: 14,400,000 m<sup>3</sup></li> <li>- Effective storage capacity: 11.0 m<sup>3</sup></li> </ul> <p>2. Construction of irrigation canal and related facilities</p>
<b>Total construction cost (US\$)</b>	(31,941,000)
<b>Benefits</b>	Irrigation water supply
<b>Related studies completed</b>	
- Title of study	Land Reclamation Plan
- Year/Month	
- Author/Agency	National Committee of Irrigation and Drainage in Macedonia
<b>Responsible ministry</b>	MAFWE
<b>Operational organisation</b>	PWEE Gevgelija
<b>Financial plan of operation</b>	

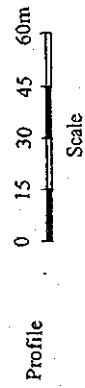


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Location Map of Kovanska Dam



### Kovanska Dam



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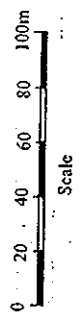
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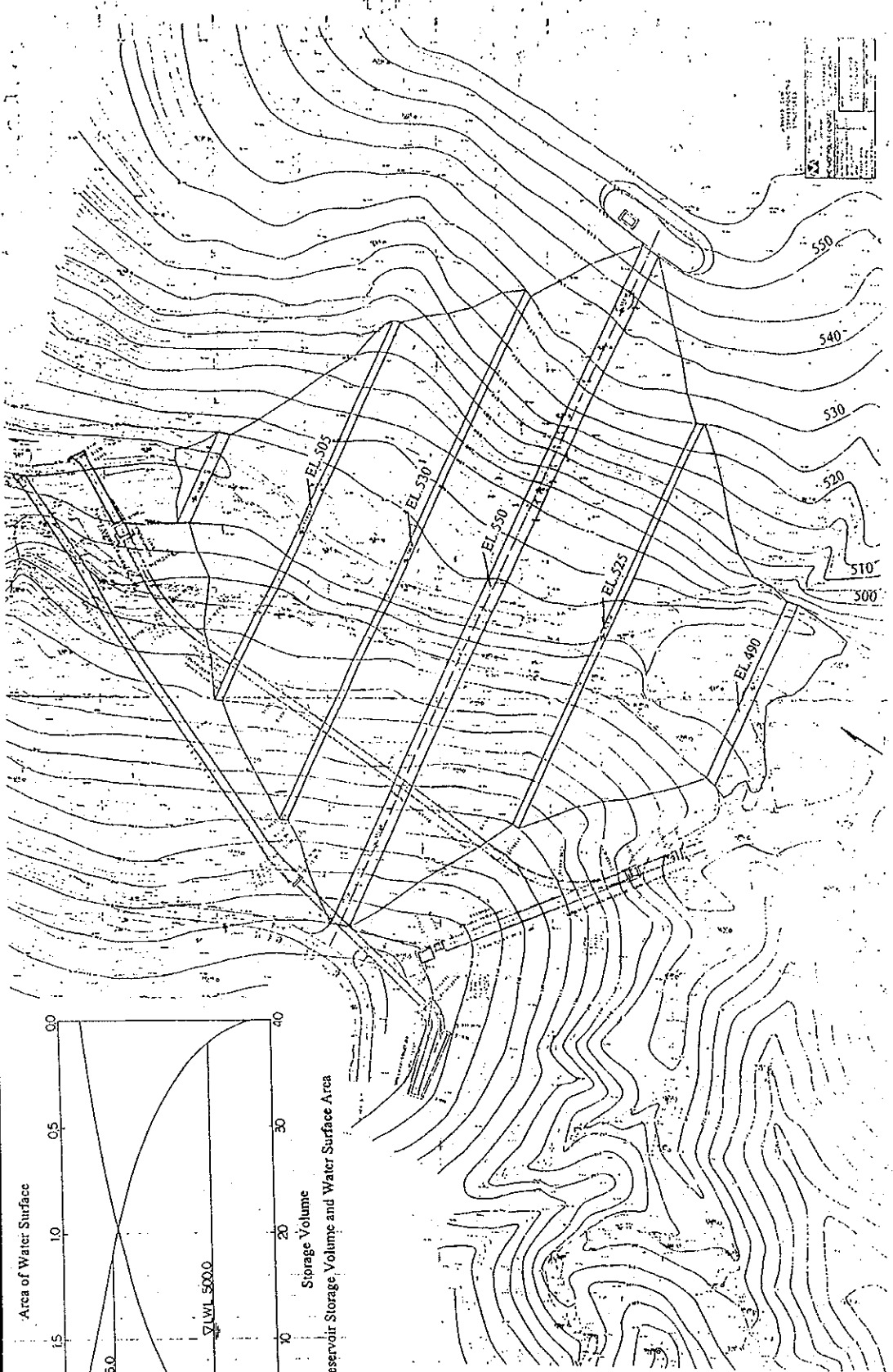
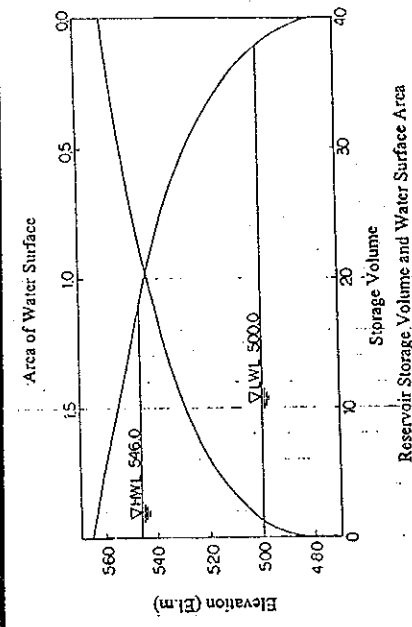
**PROJECT PROFILE**

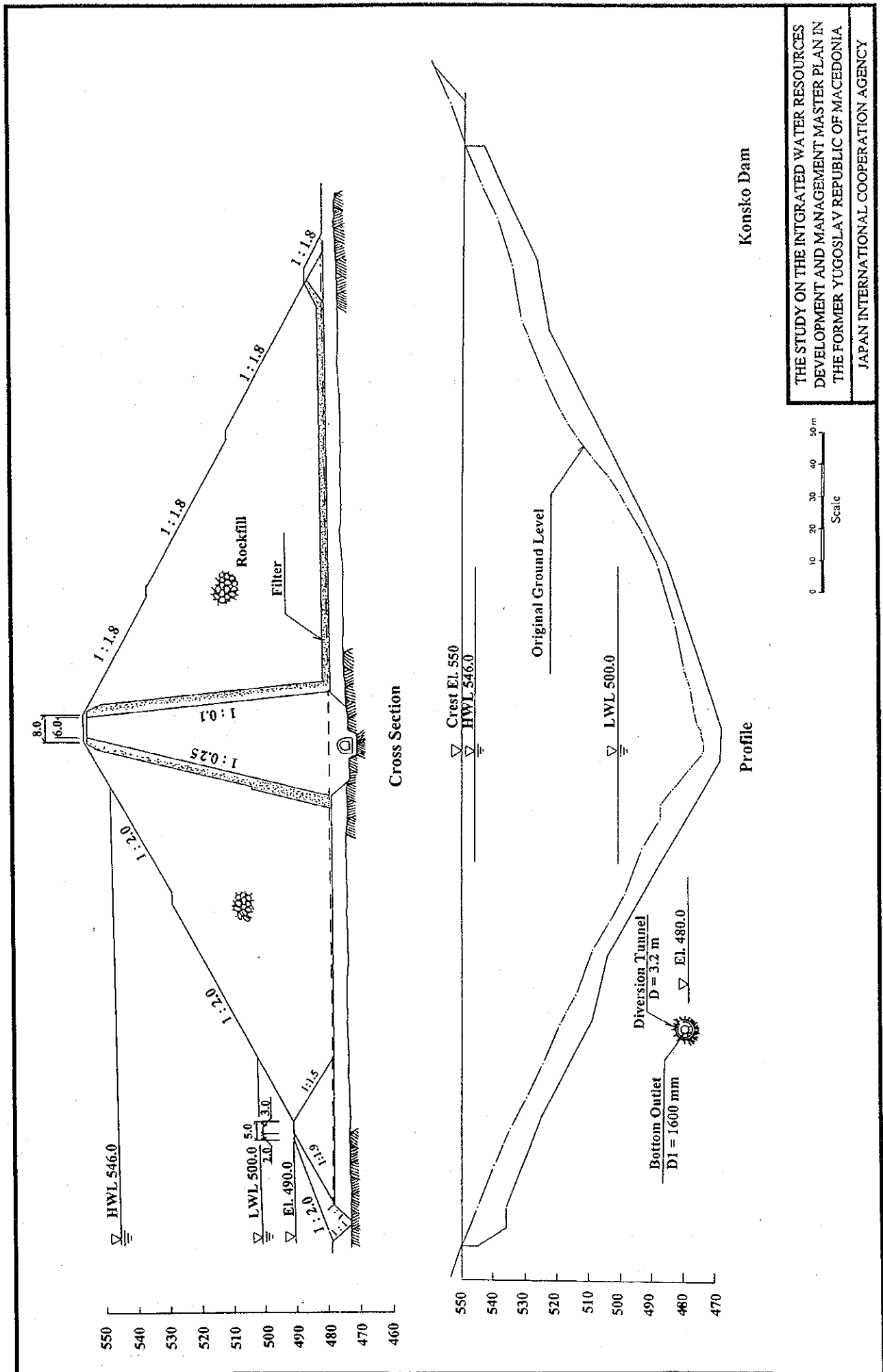
Sheet No. 26

<b>Project Name</b>	Konsko Dam Project
<b>Sector</b>	Municipal, Agricultural, Industrial water
<b>Phase of implementation</b>	
<b>Target area</b>	Gevgelija, Bogdanci, Dojran, Valandovo
<b>Beneficiaries</b>	47,000 inhabitants
<b>Brief description of the project</b>	The Konsko dam is a key element to develop Gevgelija area by means of stable water supply for drinking, industry and irrigation. The damsite is located in the upstream reach of the Konska river. A new intake weir is required to construct to tap water at its downstream. The total irrigation area is about 6,690 ha including new development in Nov Dojran area, which is located northwestern part of Lake Dojran. Construction of aqueduct to cross the Vardar River is also needed.
<b>Project components</b>	<ol style="list-style-type: none"> <li>1. Construction of Konsko dam <ul style="list-style-type: none"> <li>- Catchment area: 57.1 km<sup>2</sup></li> <li>- Dam type: Rockfill dam</li> <li>- Height: 77 m</li> <li>- Embankment volume: 1,500,000 m<sup>3</sup></li> <li>- Gross storage capacity: 20,000,000 m<sup>3</sup></li> <li>- Effective storage capacity: 19,200,000 m<sup>3</sup></li> <li>- Water supply capacity: 100 l/sec (for drinking water)</li> </ul> </li> <li>2. Construction of canal and related facilities</li> <li>3. Construction of filter station</li> </ol>
<b>Total construction cost (US\$)</b>	66,116,000
<b>Benefits</b>	<ul style="list-style-type: none"> <li>- Stable supply of drinking water</li> <li>- Sufficient supply of irrigation water</li> <li>- Increase of agriculture production (fruit, vegetables)</li> </ul>
<b>Related studies completed</b>	
- Title of study	Main Project of Hydrosystem "Konsko"
- Year/Month	1978
- Author/Agency	
<b>Responsible ministry</b>	MAFWE
<b>Operational organisation</b>	PWME Gevgelija Communal Enterprize - Gevgelija
<b>Financial plan of operation</b>	



Location Map of Konsko Dam





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PROJECT PROFILE

Sheet No. 27

<b>Project Name</b>	Valandovo Area Irrigation Rehabilitation Project
<b>Sector</b>	Agricultural water
<b>Phase of implementation</b>	
<b>Target area</b>	Valandovo, Gevgelija
<b>Beneficiaries</b>	Farmers (to be investigated)
<b>Brief description of the project</b>	Valandovo irrigation system has the total area of 3,624 ha that is located near the regional center of Valandovo. Main product in this area is fruits, vegetable, wine etc. Since the national border with Greece is close, economic activities for trading agricultural products are activating.
<b>Project components</b>	1. Rehabilitation of intake, main canal, secondary and tertiary canals
<b>Total construction cost (US\$ mil.)</b>	7,254,000
<b>Benefits</b>	- Stable and safe supply of drinking water
<b>Related studies completed</b> - Title of study  - Year/Month - Author/Agency	None
<b>Implementing agency</b>	PWME Valandovo
<b>Operational organisation</b>	PWME Valandovo
<b>Financial plan of operation</b>	

**PROJECT PROFILE**

Sheet No. 28

<b>Project Name</b>	Irrigation System Betterment Project in Resen
<b>Sector</b>	Agricultural water
<b>Phase of implementation</b>	
<b>Target area</b>	Resen
<b>Beneficiaries</b>	Farmers (to be investigated)
<b>Brief description of the project</b>	The Resen irrigation system is one of the oldest systems which is established about 40 years ago. Due to the aged and deteriorated irrigation facilities, such as pumps, pipes, canals and diversion devices, this area has difficulty to increase its production quantitatively and qualitatively. The target is not only rehabilitation of the existing irrigation facilities, but also institutional strengthening of LWMO (PWME at present), support for establishment of water user's association and strengthening post harvest/marketing system.
<b>Project components</b>	<ol style="list-style-type: none"> <li>1. Betterment of existing irrigation system <ul style="list-style-type: none"> <li>- Renewal of pumps (intake and main pumps)</li> <li>- Betterment of main canal</li> <li>- Construction of post-harvesting facilities</li> </ul> </li> </ol>
<b>Total construction cost (US\$ mil.)</b>	22,572,000
<b>Benefits</b>	<ul style="list-style-type: none"> <li>- Stable and safe supply of drinking water</li> <li>- Improvement of fruit production</li> </ul>
<b>Related studies completed</b>	Feasibility Study of Reconstruction and Rehabilitation of Irrigation System "Prespansko Pole"
- Title of study	
- Year/Month	May 1998
- Author/Agency	Water Development Insititute
<b>Implementing agency</b>	PWME Resen
<b>Operational organisation</b>	PWME Resen
<b>Financial plan of operation</b>	

**PROJECT PROFILE**

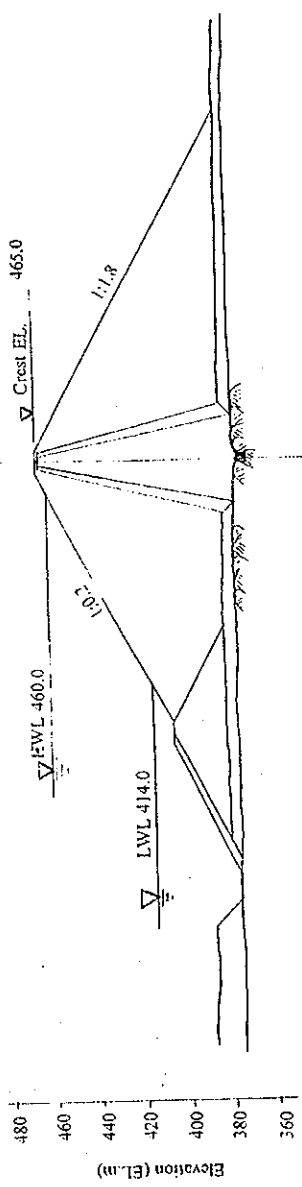
Sheet No. 29

<b>Project Name</b>	Ohrid Area Irrigation Rehabilitation Project
<b>Sector</b>	Agricultural water
<b>Phase of implementation</b>	
<b>Target area</b>	Ohrid
<b>Beneficiaries</b>	Farmers (to be investigated)
<b>Brief description of the project</b>	Irrigation area in Ohrid municipality is lying along the Sateska River originating Ilinska Mountain range. The total area for irrigation is 4,100 ha.
<b>Project components</b>	1. Rehabilitation of intake, main canal, secondary and tertiary canals
<b>Total construction cost (US\$ mil.)</b>	8,200,000
<b>Benefits</b>	- Stable and safe supply of drinking water
<b>Related studies completed</b> - Title of study  - Year/Month - Author/Agency	None
<b>Implementing agency</b>	PWME Ohrid
<b>Operational organisation</b>	PWME Ohrid
<b>Financial plan of operation</b>	

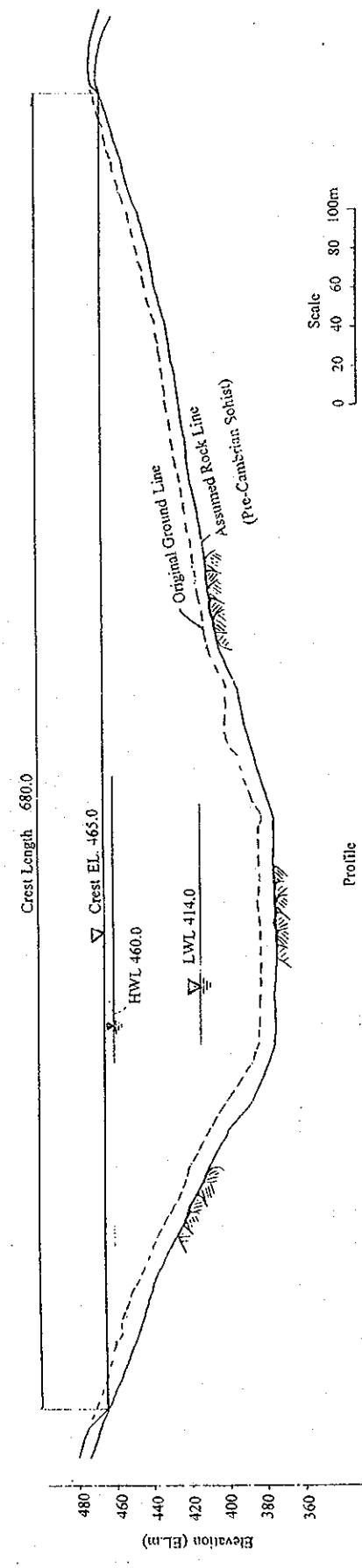
**PROJECT PROFILE**

Sheet No. 30

<b>Project Name</b>	Podares Multipurpose Dam Project
<b>Sector</b>	Municipal, Agricultural water
<b>Phase of implementation</b>	
<b>Target area</b>	Strumica
<b>Beneficiaries</b>	93,000 inhabitants
<b>Brief description of the project</b>	There are two (2) dams exploited in the Strumica river basin, namely, Turija and Vodoca. These two dams are located rather in lower reaches of the basin, so the water of the reservoirs are used mainly for irrigation in the lower reaches. Water demand in the upper reaches of the Strumica basin is now supplied from the Mantovo dam and reservoir located in the Bregalnica basin, however, the upper reaches suffer from the water shortage. So, the <b>Podares</b> dam scheme has been formulated.
<b>Project components</b>	<p>1. Construction of <b>Podares</b> dam</p> <ul style="list-style-type: none"> <li>- Catchment area 119 km<sup>2</sup></li> <li>- Dam type Rockfill</li> <li>- Height 88 m</li> <li>- Embankment volume m<sup>3</sup></li> <li>- Gross storage capacity 48,000,000 m<sup>3</sup></li> <li>- Active storage capacity 43,000,000 m<sup>3</sup></li> </ul>
<b>Total construction cost (US \$)</b>	66,342,000
<b>Benefits</b>	<ul style="list-style-type: none"> <li>- Stable supply of drinking water</li> <li>- Sufficient supply of irrigation water</li> </ul>
<b>Related studies completed</b>	
- Title of study	
- Year/Month	
- Author/Agency	
<b>Responsible ministry</b>	
<b>Operational organisation</b>	PWME Strumica Communal Enterprize - Strumica
<b>Financial plan of operation</b>	



Cross Section

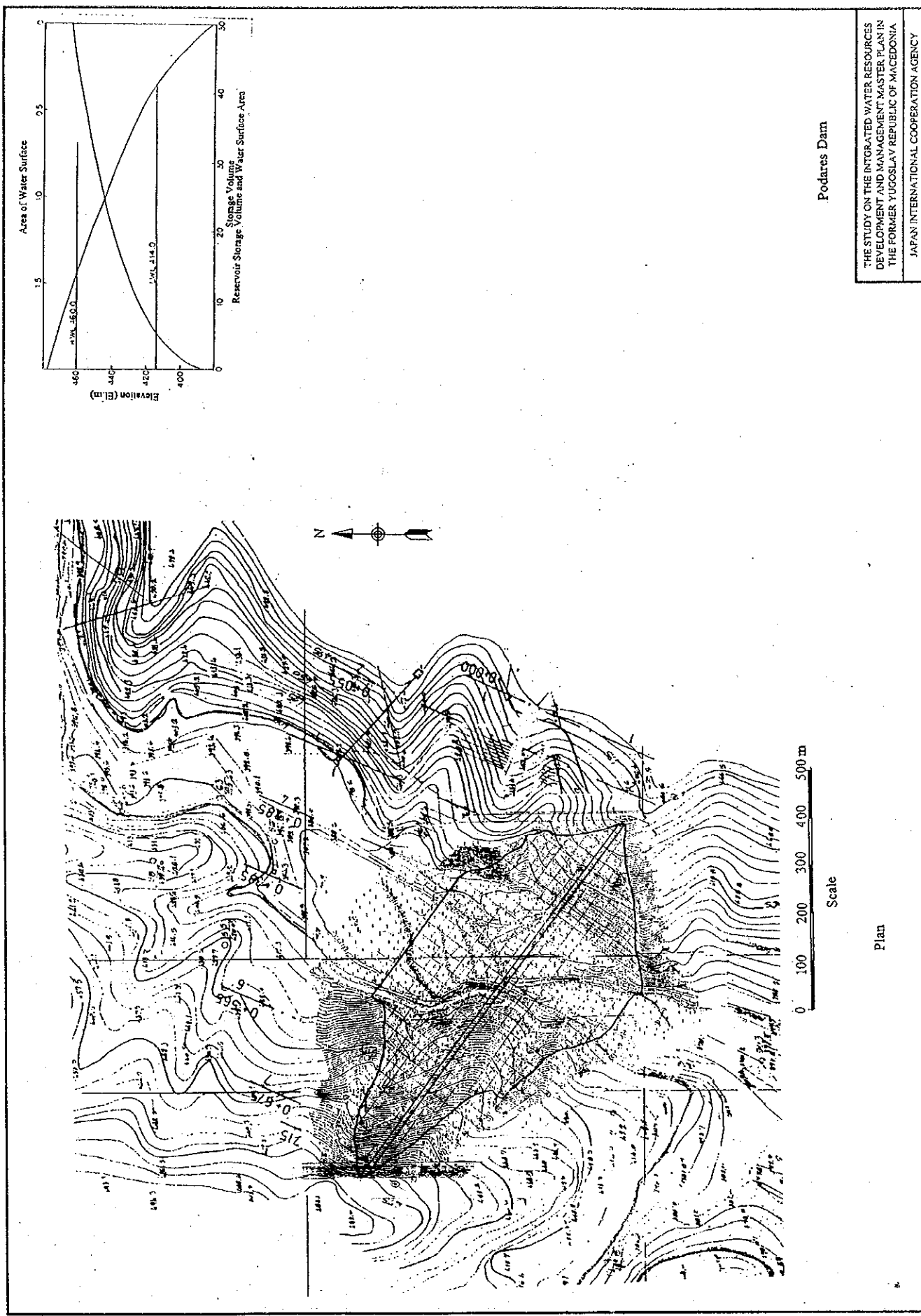


Profile

### Podares Dam

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Podares Dam

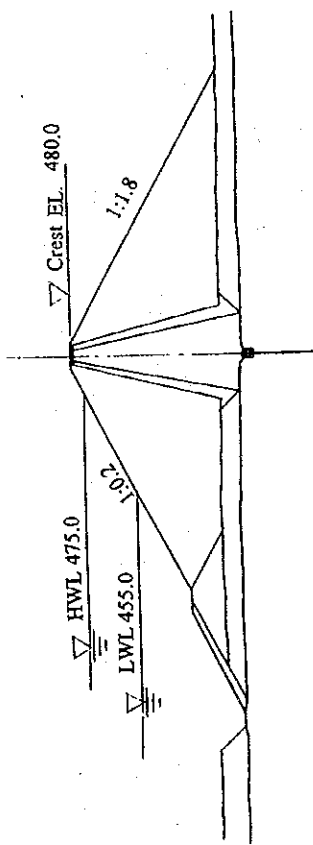
THE STUDY ON THE INTEGRATED WATER RESOURCES DEVELOPMENT AND MANAGEMENT MASTER PLAN IN THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA  
 JAPAN INTERNATIONAL COOPERATION AGENCY

Plan

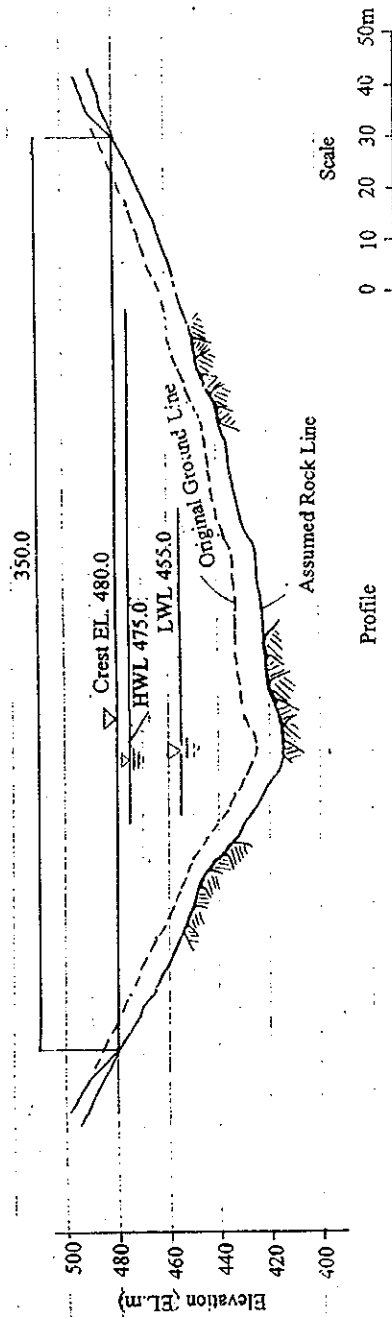
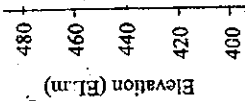
**PROJECT PROFILE**

Sheet No. 31

<b>Project Name</b>	Oraovica Dam Project
<b>Sector</b>	Municipal water, Ecological need
<b>Phase of implementation</b>	
<b>Target area</b>	Radovish and Strumica
<b>Beneficiaries</b>	93,000 inhabitants
<b>Brief description of the project</b>	The Oraovica dam is located in the Oraoviska River, which is one of tributaries of the Strumica River, at around 2 km east from Radovish. This project is envisaged to cope with shortage of drinking water and deterioration of river water quality, since intensive water uses and untreated wastewater from domestic, irrigation and industry sectors are threatening sound river environment in the Strumica River basin. It is expected that stable water supply of surface water from dam would attenuate further contamination of river water.
<b>Project components</b>	<ol style="list-style-type: none"> <li>1. Construction of water supply facilities</li> <li>2. Construction of Oraovica dam <ul style="list-style-type: none"> <li>- Catchment area: 38 km<sup>2</sup></li> <li>- Dam type: Rockfill dam</li> <li>- Height: 57 m</li> <li>- Embankment volume: 2,737,000 m<sup>3</sup></li> <li>- Gross storage capacity: 5,000,000 m<sup>3</sup></li> <li>- Effective storage capacity: 3,000,000 m<sup>3</sup></li> </ul> </li> </ol>
<b>Total construction cost (US\$)</b>	21,674,000
<b>Benefits</b>	<ul style="list-style-type: none"> <li>- Stable supply of drinking water</li> <li>- Supplemental discharge for biological minimum</li> </ul>
<b>Related studies completed</b>	
- Title of study	
- Year/Month	
- Author/Agency	
<b>Responsible ministry</b>	MUPC
<b>Operational organisation</b>	Communal Enterprize - Strumica
<b>Financial plan of operation</b>	

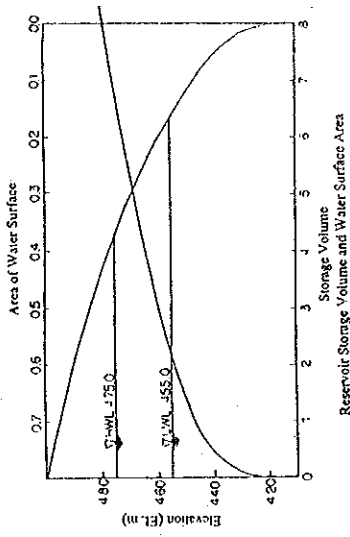
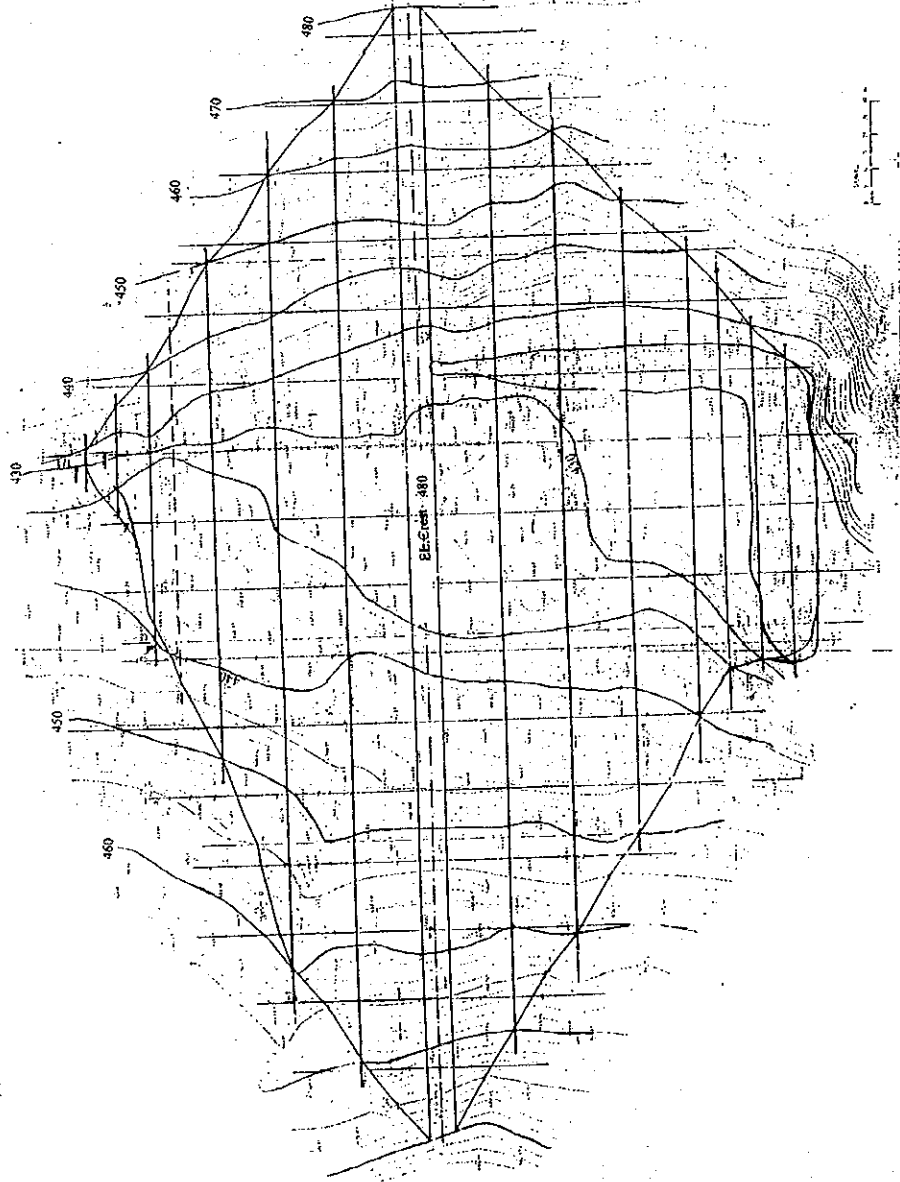


Cross Section



Oraovica Dam

THE STUDY ON THE INTEGRATED WATER RESOURCES  
 DEVELOPMENT AND MANAGEMENT MASTER PLAN IN  
 THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA  
 JAPAN INTERNATIONAL COOPERATION AGENCY



Oraovica Dam.

THE STUDY ON THE INTEGRATED WATER RESOURCES DEVELOPMENT AND MANAGEMENT MASTER PLAN IN THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA  
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**PROJECT PROFILE**

Sheet No. 32

<b>Project Name</b>	Mantovo Area Irrigation Rehabilitation Project
<b>Sector</b>	Agricultural water
<b>Phase of implementation</b>	
<b>Target area</b>	Radovich
<b>Beneficiaries</b>	Farmers (to be investigated)
<b>Brief description of the project</b>	This irrigation area is lying on the plain in the upstream of the Strumica River basin, of which irrigation area is 5,581 ha. Main products in the this area are wheat, maize and vegetables. The water source for irrigatin is the reservoir Mantovo in the Kriva Lakavica River.
<b>Project components</b>	1. Rehabilitation of intake, main canal, secondary and tertiary canals
<b>Total construction cost (US\$ mil.)</b>	11,162,000.
<b>Benefits</b>	- Stable and safe supply of drinking water
<b>Related studies completed</b> - Title of study  - Year/Month - Author/Agency	None
<b>Implementing agency</b>	PWME Radovich
<b>Operational organisation</b>	PWME Radovich
<b>Financial plan of operation</b>	

**PROJECT PROFILE**

Sheet No. 33

<b>Project Name</b>	Strumica Area Irrigation Rehabilitation Project
<b>Sector</b>	Agricultural water
<b>Phase of implementation</b>	
<b>Target area</b>	Strumica
<b>Beneficiaries</b>	Farmers (to be investigated)
<b>Brief description of the project</b>	This irrigation system is located at the downstream part of the Strumica River. This irrigation system is heavily deteriorated and causes a large efficiency loss of water utilization. The total area is 12,200 ha.
<b>Project components</b>	1. Rehabilitation of intake, main canal, secondary and tertiary canals
<b>Total construction cost (US\$ mil.)</b>	24,400,000
<b>Benefits</b>	- Stable and safe supply of drinking water
<b>Related studies completed</b> - Title of study  - Year/Month - Author/Agency	None
<b>Implementing agency</b>	PWME Strumica
<b>Operational organisation</b>	PWME Strumica
<b>Financial plan of operation</b>	

**PROJECT PROFILE**

Sheet No. 34

Project Name	Vardar River Upper Reach Rural Water Supply Project
Sector	Domestic water
Phase of implementation	
Target area	Gostivar and Tetovo Former Municipalities
Beneficiaries	36,131 inhabitants in 48 villages
Brief description of the project	This project is contemplated to supply water to village inhabitants, who are neither supplied nor covered by network service, in Gostivar and Tetovo former municipalities.
Project components	The following facilities are included, 1. Spring intake : 47 2. Well and pump station : 9 3. Tyrolean intake : 0 4. Main pipeline (225 or 125 mm) : 235 km 5. Secondary pipeline (75 mm) : 101 km 6. Reservoir : 28 7. Filter station : 9
Total construction cost (US\$)	15,552,000
Benefits	Safe drinking water supply
Related studies completed - Title of study - Year/Month - Auther/Agency	There are some preliminary studies for some villages according to MUPC.
Responsible ministry	MUPC , MOD
Operational organization	Village water supply unit
Financial plan of operation	Village water supply unit

## PROJECT PROFILE

Sheet No. 35

Project Name	Treska River Upper Reach Rural Water Supply Project
Sector	Domestic water
Phase of implementation	
Target area	Kichevo and Makedonski Brod Former Municipalities
Beneficiaries	15,288 inhabitants in 72 villages
Brief description of the project	This project is contemplated to supply water to village inhabitants, who are neither supplied nor covered by network service, in Kichevo and Makedonski Brod former municipalities.
Project components	The following facilities are included, 1. Spring intake : 70 2. Well and pump station : 8 3. Tyrolean intake : 2 4. Main pipeline (225 or 125 mm) : 360 km 5. Secondary pipeline (75 mm) : 81 km 6. Reservoir : 27 7. Filter station : 10
Total construction cost (US\$)	19,329,000
Benefits	Safe drinking water supply
Related studies completed - Title of study - Year/Month - Auther/Agency	There are some preliminary studies for some villages according to MUPC.
Responsible ministry	MUPC MOD
Operational organization	Village water supply unit
Financial plan of operation	Village water supply unit



## PROJECT PROFILE

Sheet No. 36

Project Name	Regional Water Supply Project "Petrovec"
Sector	Domestic water
Phase of implementation	
Target area	Petrovec municipality, Skopje former municipality
Beneficiaries	6,227 inhabitants in 4 villages (30,000 people in 10 villages and the international airport)
Brief description of the project	This project is contemplated to supply water to village inhabitants, who are neither supplied nor covered by network service, in Petrovec municipality of Skopje former municipality, and the international airport.
Project components	The following facilities are included, 1. Spring intake : 0 2. Well and pump station : 3 3. Tyrolean intake : 0 4. Main pipeline (225 or 125 mm) : 6 km 5. Secondary pipeline (75 mm) : 26 km 6. Reservoir : 3 7. Filter station : 1
Total construction cost (US\$)	2,848,000
Benefits	Safe drinking water supply
Related studies completed - Title of study - Year/Month - Auther/Agency	There is a preliminary study for regional water supply network "Petrovec" accoring to MUPC.
Responsible ministry	MUPC , MOD
Operational organization	
Financial plan of operation	

**PROJECT PROFILE**

Sheet No. 37

Project Name	Skopje Circle Rural Water Supply Project
Sector	Domestic water
Phase of implementation	
Target area	Skopje Former Municipalities
Beneficiaries	31,068 inhabitants in 58 villages
Brief description of the project	This project is contemplated to supply water to village inhabitants, who are neither supplied nor covered by network service, in Skopje former municipality.
Project components	The following facilities are included, 1. Spring intake : 49 2. Well and pump station : 19 3. Tyrolean intake : 0 4. Main pipeline (225 or 125 mm) : 290 km 5. Secondary pipeline (75 mm) : 143 km 6. Reservoir : 43 7. Filter station : 19
Total construction cost (US\$)	18,416,000
Benefits	Safe drinking water supply
Related studies completed - Title of study - Year/Month - Auther/Agency	There are some preliminary studies for some villages according to MUPC.
Responsible ministry	MUPC , MOD
Operational organization	Village water supply unit
Financial plan of operation	Village water supply unit

**PROJECT PROFILE**

Sheet No. 38

Project Name	Kriva Palanka/Kumanovo Circle Rural Water Supply Project
Sector	Domestic water
Phase of implementation	
Target area	Kriva Palanka and Kumanovo Former Municipalities
Beneficiaries	34,771 inhabitants in 97 villages
Brief description of the project	This project is contemplated to supply water to village inhabitants, who are neither supplied nor covered by network service, in Kriva Palanka and Kumanovo former municipalities.
Project components	The following facilities are included, 1. Spring intake : 96 2. Well and pump station : 20 3. Tyrolean intake : 0 4. Main pipeline (225 or 125 mm) : 495 km 5. Secondary pipeline (75 mm) : 174 km 6. Reservoir : 52 7. Filter station : 20
Total construction cost (US\$)	29,273,000
Benefits	Safe drinking water supply
Related studies completed - Title of study - Year/Month - Auther/Agency	There are some preliminary studies for some villages according to MUPC.
Responsible ministry	MUPC , MOD
Operational organization	Village water supply unit
Financial plan of operation	Village water supply unit

**PROJECT PROFILE**

Sheet No. 39

Project Name	Bregalnica River Basin Rural Water Supply Project
Sector	Domestic water
Phase of implementation	
Target area	Veles, Sveti Nikole, Shtip, Kratovo, Probishtip, Kochani, Delchevo Former Municipalities
Beneficiaries	12258 inhabitants in 144 villages
Brief description of the project	This project is contemplated to supply water to village inhabitants, who are neither supplied nor covered by network service, in Veles, Sveti Nikole, Shtip, Kratovo, Probishtip, Kochani, Delchevo former municipalities.
Project components	The following facilities are included, 1. Spring intake : 139 2. Well and pump station : 7 3. Tyrolean intake : 0 4. Main pipeline (225 or 125 mm) : 700 km 5. Secondary pipeline (75 mm) : 102 km 6. Reservoir : 32 7. Filter station : 7
Total construction cost (US\$)	29,840,000
Benefits	Safe drinking water supply
Related studies completed - Title of study - Year/Month - Auther/Agency	There are some preliminary studies for some villages according to MUPC.
Responsible ministry	MUPC , MOD
Operational organization	Village water supply association
Financial plan of operation	Village water supply association

**PROJECT PROFILE**

Sheet No. 40

Project Name	Pelagonia Circle Rural Water Supply Project
Sector	Domestic water
Phase of implementation	
Target area	Bitola, Prilep, Krushevo and Demir Hisar Former Municipalities
Beneficiaries	21,211 inhabitants in 137 villages
Brief description of the project	This project is contemplated to supply water to village inhabitants, who are neither supplied nor covered by network service, in Bitola, Prilep, Krushevo and Demir Hisar former municipalities.
Project components	The following facilities are included, 1. Spring intake : 105 2. Well and pump station : 50 3. Tyrolean intake : 1 4. Main pipeline (225 or 125 mm) : 525 km 5. Secondary pipeline (75 mm) : 168 km 6. Reservoir : 55 7. Filter station : 51
Total construction cost (US\$)	32,444,000
Benefits	Safe drinking water supply
Related studies completed - Title of study - Year/Month - Auther/Agency	There are some preliminary studies for some villages according to MUPC:
Responsible ministry	MUPC , MOD
Operational organization	Village water supply unit
Financial plan of operation	Village water supply unit

**PROJECT PROFILE**

Sheet No. 41

Project Name	Regional Water Supply Project "Medzitlija"
Sector	Domestic water
Phase of implementation	
Target area	5 villages near the international border of Greece in Bitola Former Municipality
Beneficiaries	2352 inhabitants in 5 villages
Brief description of the project	This project is contemplated to supply water to village inhabitants, who are neither supplied nor covered by network service, in 5 villages near the international border of Greece in Bitola Former Municipality.
Project components	The following facilities are included, 1. Spring intake : 0 2. Well and pump station : 0 3. Tyrolean intake : 0 4. Main pipeline (200 mm) : 15.1 km 5. Secondary pipeline (150 mm) : 1.1 km 6. Reservoir : 0 7. Filter station : 0
Total construction cost (US\$)	3,000,000
Benefits	Safe drinking water supply
Related studies completed - Title of study - Year/Month - Auther/Agency	There is a preliminary study for the extension of Bitola urban water supply network according to MUPC.
Responsible ministry	MUPC , MOD
Operational organization	Bitola communal enterprise
Financial plan of operation	Bitola communal enterprise

**PROJECT PROFILE**

Sheet No. 42

Project Name	Vardar River Lower Reach/Strumica River Basin Rural Water Supply Project
Sector	Domestic water
Phase of implementation	
Target area	Kavadarci, Negotino, Valandovo, Gevgetlija, Radovish and Strumica Former Municipalities
Beneficiaries	29,371 inhabitants in 92 villages
Brief description of the project	This project is contemplated to supply water to village inhabitants, who are not supplied by network service, in Kavadarci, Negotino, Valandovo, Gevgetlija, Radovish and Strumica former municipalities.
Project components	The following facilities are included, 1. Spring intake : 68 2. Well and pump station : 26 3. Tyrolean intake : 0 4. Main pipeline (225 or 125 mm) : 340 km 5. Secondary pipeline (75 mm) : 114 km 6. Reservoir : 38 7. Filter station : 26
Total construction cost (US\$)	21,361,000
Benefits	Safe drinking water supply
Related studies completed - Title of study - Year/Month - Auther/Agency	There are some preliminary studies for some villages according to MUPC.
Responsible ministry	MUPC , MOD
Operational organization	Village water supply uinit
Financial plan of operation	Village water supply unit

## PROJECT PROFILE

Sheet No. 43

Project Name	Southwest Mountainous Area Rural Water Supply Project
Sector	Domestic water
Phase of implementation	
Target area	Ohrid, Struga, Debar and Resen Former Municipalities
Beneficiaries	2,853 inhabitants in 30 villages
Brief description of the project	This project is contemplated to supply water to village inhabitants, who are not supplied by network service, in Ohrid, Struga, Debar and Resen former municipalities.
Project components	The following facilities are included, 1. Spring intake : 29 2. Well and pump station : 3 3. Lake intake : 1 4. Main pipeline (225 or 125 mm) : 145 km 5. Secondary pipeline (75 mm) : 39 km 6. Reservoir : 13 7. Filter station : 4
Total construction cost (US\$)	7,547,000
Benefits	Safe drinking water supply
Related studies completed - Title of study - Year/Month - Auther/Agency	There are some preliminary studies for some villages according to MUPC.
Responsible ministry	MUPC , MOD
Operational organization	Village water supply unit
Financial plan of operation	Village water supply unit



**PROJECT PROFILE**

Sheet No. 44

Project Name	Nationwide Rural Water Supply Extension/Improvement Project
Sector	Domestic water
Phase of implementation	
Target area	Nationwide
Beneficiaries	93,936 inhabitants in 212 villages
Brief description of the project	This project is contemplated to extend and rehabilitate the existing village water supply network systems, which are supplying un-safe drinking water.
Project components	Extension and rehabilitation of existing 212 village water supply network systems out of total 882 systems, which are supplying un-safe drinking water.
Total construction cost (US\$)	53,866,000
Benefits	Safe drinking water supply
Related studies completed - Title of study - Year/Month - Auther/Agency	There are some preliminary studies for some villages according to MUPC.
Responsible ministry	MUPC , MOD
Operational organization	Village water supply unit
Financial plan of operation	Village water supply unit

## Principal Features of Potential Dams

Dam	River System	River	CA (km <sup>2</sup> )	Mean Annual Inflow (10 <sup>6</sup> m <sup>3</sup> )	Q/ 100 km <sup>2</sup> (m <sup>3</sup> /s)	Foundation Geology	Dam		Reservoir							Spillway			M&I Water			Data Source	Remarks						
							Type	Crest El (m)	Bed El (m)	Height (m)	Crest L (m)	V (10 <sup>3</sup> m <sup>3</sup> )	FWL (m)	H/LWL (m)	Gross (10 <sup>6</sup> m <sup>3</sup> )	Active (10 <sup>6</sup> m <sup>3</sup> )	Dead (10 <sup>6</sup> m <sup>3</sup> )	Area (km <sup>2</sup> )	Type	Capa (m <sup>3</sup> /s)	Purpose			Irrigation ha	Supply m <sup>3</sup> /s	Power MW/GWh			
Lukovo Pole	Radika	Radika	53.8			Metasand/Phyllite	R	1,591	1,520	84.9	321	1,589	1,587	1,540	39	38	1	16.7	MG		P				+115	(1)	CA:Dam only, to be diverted to Vardar through Mavrovo		
Boskov Most	"	Mala	75.6			Dolomite Limestone	R	993	960	46.1	130	992.3	990	984	2.30	0.858	1.442	MG	300	P				45/155	(1)	CA:Dam only			
Kunovo	Vardar	Upper Vardar	152	90.4	1.89	Meta Diabase/Green Schist	R	636	588	53	310	634.2	632.7	596.4	16.2	15.6	0.6	0.82	Side Ch'l		I,M&I					(2)			
Tetovo	"	Pena	85.3+24.1			Schist/Phyllite			1,007	(103)		(1,100)		(19.6)							P,M&I					(2)	Figures in parentheses are tentative		
Lower Tetovo	"	"	148			Schist	G		795	(15)		(800)																	
Greshnica	Treska	Bachiska	64.3	32.8	1.62	Phyllite	R	755	716	44	284	753.5	751	724	32	31	1	2.53	Lateral Chan		I,M&I	5,740				(2)			
Kojica	"	Treska	73.6			Phyllitoids			695	(65)		(750)		(31.3)												(2)	Figures in parentheses are tentative		
Kozjak II	"	"	1,171			Dolomite			468	(72)		(530)		(179)												(2)			
Matka II	"	"	1,875	832	1.41	Mica Shist/Marble	R	365	316	59	208	363	358	355	7.0	1.0	6.0	1.56	MG	1,500	P,M&I,Rec				33.2/53	(1)			
Brazda	Lepence		98.6	16.6	0.53	Onyx Marble	R	408	375	38	181	406.5	405.5	389	12.9	10.7	2.2	0.80	Side Ch'l		I	1,900				(2)			
Paligrad	Kadina		74.0	29.6	1.27	Pre-Cambrian Mica Schist	R	909	820	91	218	1,677		905	852	24.2	22.6	1.6	0.8	MG	380	M&I,I,sP	1,800	1.2	1.8	8.66/58	(4)	to be diverted to Skopje	
Slupchanka	Pchinja	Slupchanka	32.3	8.38	0.82	Gabbro/Diabase/Granodiorite	R	490	446	50	157.5	270	488.5	487	472	2.50	1.85	0.65	0.18	Side Chan	77	M&I				0.26	(5)		
Marashka Maala	"	Kriva	39.2			Gneiss/Schist																				(5)			
Kiselichka	"	"	81.8	20.6	0.80	Mica shist	R	849	782	77	280	955		845	808	20	16	4	0.9	Side Chan		M&I,I,sP					(2)		
Dlabocica	"	"	412	116	0.89	Schist	R	560	515	50	470	558.3	556.5	538	28.2	20.2	8.0	2.2	Side Chan	900	I	2,986				(2)			
Vakuf	"	"	734	180	0.78	Andesite	R	450	385	75	332	1,560	448	445.3	420	146	114	32	6.3	MG	934	I,sP	25,000			9.4/14.3	(2)	to be diverted to Sveti Nikole	
Pelince	"	Pcinja	565	140	0.79	Mica shist	R	480	387	104	640	5,200		475	435	96	74	22	2.85							(2)			
Pchinja	"	"	2,576			Paleozoic Marble	G		276	(45)		(310)		(226)		(454)		(21.8)								(2)	Figures in parentheses are tentative		
Lower Pchinja	"	"	2,755			Conglomerate	G		235	(55)		(280)		(454)		(21.8)										(2)			
Veles	Vardar	Main	8,800	2,722	0.98	Schist	G	222	161	69	242	219.25	219	211	191	64	127	8.85	OF w/Gate	3,000	P				93/300	(1)			
Babuna	Babuna	Babuna	550	143.5	0.83	Marble	R	236	170	(66)	215	234	231	211	114	80	34		MG	681	M&I,Rec					(2)			
Veneč	"	Izvorica	58.0	17.7	0.97	Gneiss/Grano Diolite	R	390	353	42	170	388	386.5	361	17.2	16.6	0.6	1.26	Side Chan		I	1,790				(2)			
Berovo	Bregalnica	Bregalnica	67.7			Schist			916	(74)		(980)		(12.6)				(0.56)									(2)	Figures in parentheses are tentative	
Ciflic	"	Negreska	20.0	6.0	0.95	Clay/Loam/Sand	E	952	924	33	196				1.5	1.5	0	0.02			I	500				(2)			
Razlovci	"	Bregalnica	4.6	109	0.76	Grano Diorite/Amphibolite	R	767.5	702	67.5	299	940	765.2	763	728	48.5	45.5	3.0	3.1	Side Chan	1,107	I,P,M&I	3,977			3.7/11	(2)		
Knezevo	Bregalnica	Zletovska	52.0+6.9	28.9	1.56	Pre-Cambrian Schist/Gneiss	R	1,065.5	990.5	84.7	300	1,615	1,063.5	1,061.5	1,009	23.5	22.5	1.0	0.74	MG	2.5	I,M&I,sP	3,100	3.6	1.30	14.9/56.4	(7)	CA:Dam+Kuceska	
Rechani	"	Orizarska	92.9+51.8	49.6	1.09	Mica Schist	R	650	573	81	216	928		646	610	23.0	20.0	3.0	3.00	MG	194	I,M&I,sP				0.877	/19.7	(7)	
Bištec	"	Osojnicna	82.8	34.2	1.31	Orthogneiss	R	685	590	100	350	3,000		680	630	23.0	20.0	3.0	0.68			I					(2)		
Bargala	"	Konjachska				Granite			(50.5)						4.4	3.5											(2)		
Jagmular	"	Bregalnica	3,480	460.4	0.42	Gabbro	R	264.2	222	56.8	165	400	262.8	259	242.5	190	145	45	12.6	Side Chan	2,166	M&I,TPC,I,sP	900			14.2/26	(2)		
S. Nikole I	"	Kara Tash	63.4			Flysch																				(2)			
S. Nikole II	"	Perish	62.5			Flysch																				(2)			
Lower Jagmular	"	Bregalnica	4,232			Conglomerate	R		170	(60)		(220)		(239)			(14.0)									(2)	Figures in parentheses are tentative		
Kochishte	Crna	Zhaba	62.7	22.4	1.13	Leucoeratic granite	R	747	688	67	660	2,500		742	715	32.5	27.3	5.2	1.55	Side Chan		I					(2)		
Dolenci	"	Crna	192						676	(85)		(750)		(120)				(3.29)								(2)			
Zhan	"	Crna	298	106	1.13	Diabase/Phyllitic slate	R	713	665	50	670	1,400		708	687	108	83	25	5.5			I					(2)	Alternative for Zhuvan; figures in parentheses are tentative	
Obednica	"	Obednichica	27	9.5	1.13	Granite/Meta sandstone	R	805	752	58.0	500	1,400		800	775	13.0	10.4	2.6	0.63			I					(2)		
Zurche	"	Zureshnica	26.6	9.5	1.13	Phyllitic slate/Quartzite	R	753	702	58	440	1,200		748	726	11.7	9.7	2.0	0.68	Side Chan		I					(2)		
Buchin	"	Crna	642	219	1.08	Grano Diorite	R	640.5	604	35.5	835	1,790	639.1	637.5	617.5	250	215	35	19.7	Chute	352	I,FC,Rec	46,886				(2)		
Konjarka	Crna	Konjarska	59.4	18.8	1.00	Mica Gneiss	CFRD	683	626	61	300	550		678	651.5	3.1	2.5	0.6	0.15			I					(1)	Pumped storage	
Chebren	"	Crna	4,536	873	0.61	Pre-Cambrian Granite/Gneiss	Arch	567.5	398	192.5	500	1,214	565	565	550	915	210	705				P				420/673	(1)	Lower pond for Chebren	
Orlov Kamen	"	"				Gneiss	Arch		55	260		56	406	400	393	41.4	14.9								420/269	(1)	Pumped storage; Lower pond be existing Tikvesh, Operation mode of Tikvesh be altered		
Galishite	"	"	5,030	969	0.61	Gneiss	R	397	262	141.5	495	7,380	396	392	372	344	144	200	8.3	MG	1,645	P					(1)		
Gradec	Vardar	Main	21,148	3,808	0.57	Diabase	G+R	101	76	42	550		98	98	94	108	43	65	7.4	OF w/Gate	4,300	P				54/203	(2)		
Petrushka	Vardar	Stara	71.2	21.7	0.97	Spillite	R	214	150	70	530	2,500	213.5	209	172	22	20.5	1.5	1.28	Side Chan	150	I	825				(2)		
Kovanshka	"	Kovanshka	51.2				R	194	145	55.0	470	903		189	172	14.4	11.0	3.4	9.90							(2)			
Konsko	"	Konjsko	57.1	24.9	1.38	Gabbro	R	550	477	77	338	1,500	547.7	546	500	20	19.2	0.8	0.94	Side Chan	61	I,sP	6,503			13.6/29	(2)		
Oraovica	Strumica	Oraoviska	35.4	10	0.85	Pre-Cambrian Schist	R	480	426	65	350	890		475	455	7.0	3.0	4.0	0.37	Side Chan		I,M&I					(7)		
Podares(Plavija)	"	Plavaja	119	32	0.85	Pre-Cambrian Schist	R	465	382	90	680	4,160		460	414	44	39	5	1.43	Side Chan		I,M&I,sP					(7)	based on detailed topo surveyed map	

Notes 1) Dam height : from the base, ( ) : from the present river bed

2) Dam type: R=Rockfill, E=Earthfill, G=Gravity, CFRD=Concrete Faced Rockfill Dam

3) Spillway type : MG=Morning Glory

4) Purpose: P=Power generation, sP=Small hydro Power, I=Irrigation, FC=Flood Control, M&I=Municipal and Industrial water supply, Rec=Recreation, TPC=Cooling of Thermal Power

Sources (1) ECM Leaflet and/or Design Drawings

(2) Integrated Development of The Vardar/Axios River Basin, TAMS/MIT, 1978

(3) Feasibility Report on Zletovica, EMO/INSTITUT ZA ENERGETIKA/HYDROELECTROPROJEKT, May 1996

(4) Hydrosystem "Kadina Reka" and design drawings

(5) Design Report w/Drawings

(6) Technical Documentation for "ORIZARSKA REKA"

(7) Design Drawings

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### Principal Features of Existing and Under Construction Dams

Dam	River System	River	CA (km <sup>2</sup> )	Mean Annual Q/100 km <sup>2</sup>		Dam										Reservoir					Spillway		Power MW/GWh	Irrigation		Operated from		
				Inflow (10 <sup>6</sup> m <sup>3</sup> )	Q/100 km <sup>2</sup> (m <sup>3</sup> /s)	Foundation Geology	Type	Surfase slope for filldam		Crest EL (El m)	Bed EL (El m)	Height (m)	Crest L (m)	V (10 <sup>3</sup> m <sup>3</sup> )	FWL (Wl m)	HWL (Wl m)	LWL (Wl m)	Gross (10 <sup>6</sup> m <sup>3</sup> )	Active (10 <sup>6</sup> m <sup>3</sup> )	Dead (10 <sup>6</sup> m <sup>3</sup> )	Area (km <sup>2</sup> )	Type		Capa (m <sup>3</sup> /s)	Purpose		ha	m <sup>3</sup> /s
Globochica	Cm Drim	Cm Drim	3,118	1,076	1.09	Platy Limestone	R	1:1.6 w/berm	1:1.6 w/berm	692	610	90	200	998	691	687.5	682	58	13.2	44.8	2.7	MG	1,100	P	42/230	-	-	1965
Shpilje	"	"	4,198	1,852	1.40	Platy Limestone	R	1:2.0	1:2.0	587	482	112	330	2,700	520	70	450	13.2				MG	2,200	P,I	70/353	1,980	-	1970
Mavrovo	Radika	Mavrovska	322	275	2.71	Metamorphic Diabase/Phyllite	R	1:2.5-1:2.96	1:1.83-1:2.5	1,236	1,180	62	210	705	1,233		1,207	357	274	83	13.7	none	-	P,I	182/521	28,000	-	1957/73
Matka	Treska	Treska	1,875	760	1.29	Mica Schist/Marble	Arch	-	-			29.5	64	3.0	318.4	314.5		3.55	2.60	0.95	0.25	Overflow		sP	4.4/11.8	-	-	1938
Kozjak	"	"	1,815	716	1.25	Marble	R	1:2.2	1:2.0	471.1	356.9	126.1	305	3,440	469.6	459	432	550	260	190	13.5	MG	1,500	P,FC,M&I	80/156	-	-	under const
Glaznja	Pchinja	Lipkovska	101	35.7	1.12	Diabase/Rhyolite	Arch	-	-	590	518	90	344	168	590	588	542	26.0	24.1	1.9	0.96	Overflow	175	I,sP,M&I	2.1/8.3	10,825	-	1971
Lipkovo	"	"	112	39.3	1.11	Diabase	Arch	-	-	484	452	37	203	13	484	481	466	2.25	1.75	0.5	0.4	Overflow	152	I,sP,M&I	/5.9	2,570	4.0	1958
Mladost	Vardar	Otavica	97	13.1	0.43	Crystal Limestone	Arch	-	-	248	220	35	60	2.6	248	247	223	8.0	3.8	4.2	0.84	Overflow	76	I	-	1,350	0.45	1962
Lisiche	"	Topolka	93.4+32.9	57.4	1.44	Gneiss/Sandstone	E	1:2.36 (rock)	1:2.88 (earth)	426	360	73	612	3,300	422.5	422	381	23.0	21.5	1.5	7	Weir/Chute	256	I,M&I	-	2,072	-	under const
Ratevska	Bregalnica	Ratevska	54.3	20.4	1.19	Gneiss	Arch	-	-	986	937	53	194	21.7	985.75	984	955.5	10.5	9.0	1.5	0.57	Overflow	70	I,M&I	-	3,000	1.5	1974
Kalimanci	"	Bregalnica	1,100	349	1.01	Mica Schist	R	1:1.7 w/berm	1:1.7 w/berm	519.5	435	92	240	1,390	517	515	476	127	120	7	4.23	Side Chan	720	I,sP	12.8/54	28,111	20	1970
Gradche	"	Kochanska	88.1	30.9	1.11	Schist	Arch	-	-	467	438	43	150	12	467	465		2.4	2.0	0.4	0.19	Side Chan	120	I,M&I	-	576	1.3	1960
Mavrovica	"	Mavrovica	43.5			Flysch	E	1:3.0	1:2.5	378	353	29			376	362.5	3.25	2.97	0.28	0.39	Side Chan		I,M&I	-			1984	
Strezevo	Crna	Shemnica	158	144	2.89	Metasandstone	R			741	665	86	632	4,300	739	737.5	697	120	110	10	4.5	MG	170	I,M&I,sP	2.5/5.5	20,455	12.3	1983/84
Prilep	"	Stara	49.4	7.1	0.46	Granodiorite/Sand	Mul-A			746.5	711.5	36	404	25.5	745.5	744.5	727.5	6.0	5.1	0.9	0.54	Overflow	150	I,M&I	-	6,200	1.2	1967
Tikvesh	"	Crna	5,361	1,188	0.70	Schist/Marble	R	1:1.7	1:1.7	269	164.5	113.5	338	2,722	268.5	265	233	475	360	115	14.0	MG	2,050	I,P	92/180	18,300	12.1	1968/81
Paljurci	Vardar	Luda Mara	64	4.9	0.24	Granite	E			126.5	104.5	27	182	180		124.2	111	3.1	2.8	0.3			I	-			1979	
Vodoca	Strumica	Vodoca	75.9	21.4	0.89	Schist	R	1:1.74 w/berm	1:1.74 w/berm	405	356	48.8	185	317	403.2	402		26.7	25.1	1.6	1.94	Side Ch'l	140	I,M&I	-	4,200	2.2	1966
Turija	"	Turija	210	54.0	0.82	Pre-Cambrian Mica Schist	R	1:1.65	1:1.7	392	300	93	417	1,978			48	45	3	0.16		Side Ch'l		I,M&I,sP	2.0/5.2	10,050	6.0	1970
Ilovica	"	Ilovica					R			356.5		27.4		131		353.8		500					M&I,I		90		under const	
Mantovo	Bregalnica	Kriva Lakavica	180	39.0	0.69	Andesite	R			404	369	49	138			400						MG	I	-	6,881		1975	

- Notes 1) Catchment area of the Mavrovo dam itself is 92 km<sup>2</sup> and remaining area is consisted of diverting from mountain streams  
 2) Dam type: R=Rockfill, E=Earthfill, Mul-A= Multiple Buttressed Arch  
 3) Spillway type : MG=Morning Glory  
 4) Purpose: P=Power generation, sP=Small hydro Power, I=Irrigation, FC=Flood Control, M&I=Municipal and Industrial water supply  
 5) Storage capacity of 100x10<sup>6</sup> m<sup>3</sup> of Kozjak is for flood control  
 6) Stored water in the Mavrovo reservoir on the Radika river is diverted to the Vardar basin through two power stations  
 7) Stored water in the Mantovo reservoir on the Bregalnica river is diverted to the Strumnica river basin  
 8) Rockfill dams on this table contain the center or slightly inclined core zone

- Sources: 1) Dams of Macedonia, 1970  
 2) Integrated Development of The Vardar/Axios River Basin, TAMS/MIT, 1978  
 3) The Hydrosystem "LISICHE" and Design Drawings  
 4) HEC "Kozjak", ECM, 1996  
 5) Design Drawings of Mavrovica Dam

List of Individual Projects in/around Upper Reach of Vardar River Vasin in Master Plan (1/2)

Region	No.	Project Title	Target Area		Purpose of Water Use	Major Activities	Key Figures of Project Output			Roughly Estimated Construction Cost (US\$)	Problems to Be Coped with	Beneficiaries
			Former Municipality	Current Municipality/Villages			Water Supply Increased	Irrigation Area Developed by the Project	Hydropower Generation			
I. Upper Reaches of the Vardar River	1	Water Supply Pipeline for Tetovo - River Pena Intake	Tetovo	Tetovo	Municipal water	1. Construction of intake, filter station, and pipeline 2. Construction of a laboratory	400 lit/s	Not applicable	Not applicable	3,200,000	- Seasonal water shortage (2-3 months a year)	70,000 inhabitants
	2	Studena Voda Groundwater Development Project	Tetovo	Tetovo	Municipal water (supplemental)	1. Exploitation of 4 wells, pumping station, and pipe	200 lit/s	Not applicable	Not applicable	1,000,000	- Seasonal water shortage (2-3 months a year)	70,000 inhabitants
	3	Kichevsko Pole Area Irrigation Rehabilitation Project	Kichevo	Kichevo	Agricultural Water	1. Rehabilitation of existing structures	None	Not applicable	Not applicable	2,900,000	- Deteriorated irrigation efficiency	farmers (to be estimated)
	4	Construction of By-pass Channel Raven-Rechica	Tetovo, Gostivar	Tetovo, Gostivar	Agricultural water	1. Construction of intake and channel (46km)	Not applicable	8,000 ha	Not applicable	44,000,000	- Insufficient irrigation water	farmers (to be estimated) AK (to be surveyed)
	5	Patishka Reka Water Supply Project	Skopje	13 villages in Sopishte	Municipal water	1. Construction of an intake in Patishka Reka 2. Construction of filter station and water supply pipeline	90 lit/sec	Not applicable	Not applicable	3,200,000	- Limited access to water supply	11,000 inhabitants
	6a	Paligrad Multipurpose Dam Project - Phase I	Skopje	Grand Skopje	Municipal water Industrial water	1. Construction of Placard dam 2. Construction of filter station and water supply pipeline	800 lit/sec (for M) 1,000 lit/s (for I)	Not applicable	Not applicable	70,000,000 (total)	- Seasonal water shortage	500,000 inhabitants
	6b	Paligrad Multipurpose Dam Project - Phase II	Skopje	Grand Skopje	Agricultural water	1. Construction of irrigation system	Not applicable	1,800 ha	Not applicable		- Seasonal water shortage	500,000 inhabitants
	6c	Paligrad Multipurpose Dam Project - Phase III	Skopje	Grand Skopje	Hydropower	1. Construction of hydroelectric power facilities	Not applicable	Not applicable	58 x 10 <sup>6</sup> KWh		- Consumption fossil fuel and air pollution from thermal power plant	500,000 inhabitants
	7	Slupchanka Dam Project	Kumanovo	Kumanovo	Municipal water	1. Construction of Slupchanska dam 2. Construction of water supply pipeline	260 lit/s (total 400 lit/s)	Not applicable	Not applicable	7,300,000	- Seasonal water shortage - Restriction of water supply	100,000 inhabitants farmers (to be estimated)
	8	Lipkovo-Glaznja Area Irrigation Rehabilitation Project	Kumanovo	Kumanovo	Agricultural Water	1. Rehabilitation of existing Structures	None	Not applicable	Not applicable	21,600,000	- Deteriorated irrigation efficiency	farmers (to be estimated)
	9	Kiselichka Dam Project	Kriva Palanka	Kriva Palanka	Municipal water Agricultural water Industrial water	1. Construction of Kiselichka dam 2. Construction of water supply pipeline	50 liter/sec (M) 20 liter/sec (I)	4,500 ha	Not applicable	25,000,000	- Seasonal water shortage - Restriction of water supply - Potential of vegetable production	25,000 inhabitants
10	Vakuf Multipurpose Dam Project	Kumanovo	Kumanovo, Kratovo and Sveti Nikole	Municipal water Agricultural water Industrial water	1. Construction of Vakuf dam 2. Construction of filter station and water supply system 3. Construction of irrigation pipeline	50 liter/sec	24,000 ha (Not yet assured)	9.4 MW (2units)	164,300,000	- Seasonal water shortage - Restriction of water supply - Mainly industrial crop production	inhabitants (to be estimate farmers (to be estimated)	
11	Pelince Dam Project	Kumanovo	Kumanovo	Agricultural water	1. Construction of Pelince dam 2. Construction of water supply pipeline	Not applicable	5,000 ha (tentative)	Not applicable	52,700,000		inhabitants (to be estimate farmers (to be estimated)	

List of Individual Projects in/around Upper Reach of Vardar River Vasin in Master Plan (2/2)

Region	No.	Project Title	Target Area		Responsible Ministries	Project Operation			Benefits	Source	Finished Study	Other Donors	Request Status	Data Source (Reports)/Remarks
			Former Municipality	Current Municipality/Villages		Operation Body	Operational Expenses	Expected Income						
1. Upper Reaches of the Vardar River	1	Water Supply Pipeline for Tetovo - River Pena Intake	Tetovo	Tetovo	MUPCE	"Tetovo"	- Personnel for filter station control and facility maintenance - Experts, clerical staff, and technicians of the laboratory - Cost for facility operation	Drinking water charge	- Stable and safe supply of drinking water	MUPCE	None	None	B/D to GOJ	Further study is required
	2	Studena Voda Groundwater Development Project	Tetovo	Tetovo	MUPCE	"Tetovo"	- Personnel for pumping station control and facility	Drinking water charge	- Stable and safe supply of drinking water	MUPCE	None	None		Further study is required
	3	Kichevsko Pole Area Irrigation Rehabilitation Project	Kichevo	Kichevo	MAFWE	PWME Kichevo	- Cost for facility operation and maintenance	Irrigation water charge	- Sufficient irrigation water supply - Increase of agricultural production	MAFWE	None	None		
	4	Construction of By-pass Channel Raven-Rechica	Tetovo, Gostivar	Tetovo, Gostivar	MAFWE	PWME Gostivar	- Personnel for irrigation system management and facility maintenance - Cost for facility operation and maintenance	Irrigation water charge	- Sufficient irrigation water supply - Increase of agricultural production	PIP				By-Pass Channel Idea Project, Raven-Rechica, 1991
	5	Patishka Reka Water Supply Project	Skopje	13 villages in Sopishte	MUPCE	C.E. Skopje	- Personnel for filter station control and facility maintenance - Cost for facility operation and maintenance	Drinking water charge	- Stable and safe supply of drinking water	Macedonia	F/S	None	B/D to GO	The Water Supply System "Patishka Reka", Volume I General Issues
	6a	Paligrad Multipurpose Dam Project - Phase I	Skopje	Grand Skopje	MAFWE MUPCE	PWME Skopje C.E. Skopje	- Personnel for dam and filter station control and facility maintenance - Cost for facility operation and maintenance	Drinking water charge Industrial water charge	- Stable and safe supply of drinking water - Tourism attraction - Increased industrial production	Macedonia		None		Irrigation System Skopsko Pole Book I General Report
	6b	Paligrad Multipurpose Dam Project - Phase II	Skopje	Grand Skopje	MAFWE	PWME Skopje	- Personnel for irrigation system management and facility maintenance - Cost for facility operation and maintenance	Irrigation water charge	- Stable and safe supply of drinking water - Increased irrigation water	Macedonia		None		
	6c	Paligrad Multipurpose Dam Project - Phase III	Skopje	Grand Skopje	MOE	ECM	- Personnel for hydroelectric power system management and facility maintenance - Cost for facility operation and maintenance	Electric power charge	- Stable and safe supply of drinking water	Macedonia				
	7	Slupchanka Dam Project	Kumanovo	Kumanovo	MAFWE MUPCE	PWME Kumanovo CE Kumanovo	- Personnel for dam control and facility maintenance - Cost for facility operation and maintenance	Drinking water charge Irrigation water charge	- Stable supply of drinking water - Increased agricultural production	Macedonia	F/S	New pipeline financed by Phare, wastewater treatment by	F/S to GOJ	Water Supply of Kumanovo, Provision of New Water Quantities, Statements of the Technical Documentation, 1997
	8	Lipkovo-Glaznja Area Irrigation Rehabilitation Project	Kumanovo	Kumanovo	MAFWE	PWME Kumanovo	- Cost for facility operation and maintenance	Irrigation Water charge	- Sufficient irrigation water supply - Increase of agricultural production	MAFWE	None	None		
	9	Kiselichka Dam Project	Kriva Palanka	Kriva Palanka	MAFWE MUPCE	PWME Kumanovo C.E. Kriva Palanka	- Personnel for dam control and facility maintenance - Cost for facility operation and maintenance	Drinking water charge Irrigation water charge	- Stable supply of drinking water - Increased agricultural production	Macedonia	(to be surveyed)	None		
10	Vakuf Multipurpose Dam Project	Kumanovo	Kumanovo, Kratovo and Sveti Nikole	MAFWE MUPCE MOE	PWME Kumanovo C.E. Kumanovo ECM	- Personnel for dam control and facility maintenance - Cost for facility operation and maintenance	Drinking water charge Irrigation water charge Industrial water	- Stable supply of drinking water - Increased agricultural production	Macedonia	Vardar River Integrated M/P	None	F/S to GOJ	Engineering Study for the Damsite "Vakuf" Final Report	
11	Pelince Dam Project	Kumanovo	Kumanovo	MAFWE	PWME Kumanovo	- Personnel for dam control and facility maintenance - Cost for facility operation and maintenance	Irrigation water charge	Increased agricultural production	Macedonia	Vardar River Integrated M/P	None		An agreement on water use will be required with Yugoslavia	

List of Individual Projects in/around Middle Reach of Vardar River Basin in Master Plan (1/2)

Region	No.	Project Title	Target Area		Purpose of Water Use	Major Activities	Key Figures of Project Output			Roughly Estimated Construction Cost(US\$)	Problems to Be Coped with	Beneficiaries
			Former Municipality	Current Municipality/Villages			Water Supply Increased	Irrigation Area Developed by the Project	Hydropower Generation			
2. Middle reaches of the Vardar River	12	Razlovci Dam Project	Delchevo	Delchevo	Municipal water Agricultural water	1. Construction of Razlovici dam and filter station 2. Improvement of water supply system	100liter/sec	4,000 ha 3,500 ha ( left bank side) 500 ha (right bank side in the future phase)	Not applicable	42,300,000	- Seasonal water shortage	46,000 inhabitants
	13	Blatec Dam Project	Kochani, Vinica	Kochani, Vinica	Municipal water Agricultural water	1. Construction of Blatec dam	Not applicable	1,000 ha + additional (Bregalnica)	Not applicable	37,900,000	Insufficient irrigation water	inhabitants (to be surveyed)
	14a	Rechani Multipurpose Dam Project - Phase I	Kochani, Vinica	Kochani, Vinica	Municipal water	1. Construction of intake and pipeline 2. Construction of facilities for transferring water from Golema Reka	870 liter/sec	Not applicable	Not applicable	11,300,000	- Seasonal water shortage	45,000 inhabitants
	14b	Rechani Multipurpose Dam Project - Phase II	Kochani, Vinica	Kochani, Vinica	Municipal water	1. Construction of Rechani reservoir 2. Extension of water supply system	200 liter/sec	Not applicable	Not applicable	23,000,000	- Seasonal water shortage	45,000 inhabitants
	14c	Rechani Multipurpose Dam - Phase III	Kochani, Vinica	Kochani, Vinica	Hydropower	1. Construction of hydroelectric power facilities (3 power plants)	Not applicable	Not applicable	19.7 x 10 <sup>6</sup> KWh	16,000,000	- More beneficial water use - Consumption of fossil fuel and air pollution from thermal power plant	45,000 inhabitants
	15a	Zletovica Multipurpose Dam Project - Phase I-A	Probishtip, Sveti Nikole, Shtip, Kratovo	Probishtip, Zletovo, Lezovo, Sveti Nikole, Karbinci, Shtip, Kratovo	(Municipal water) (Industrial water)	1. Construction of Knezevo Jam 2. Access road (L=19 km)	(1,294 lit/sec (for M)) (180 lit/sec (for I))	Not applicable	Not applicable	32,250,000	- Water shortage throughout the year	inhabitants (to be surveyed)
	15b	Zletovica Multipurpose Dam Project - Phase I-B	Probishtip, Sveti Nikole, Shtip, Kratovo	Probishtip, Zletovo, Lezovo, Sveti Nikole, Karbinci, Shtip, Kratovo	Municipal water Industrial water	1. Construction of water supply system	1,294 lit/sec (for M) 180 lit/sec (for I)	Not applicable	Not applicable	21,250,000	- Water shortage throughout the year	inhabitants (to be surveyed)
	15c	Zletovica Multipurpose Dam Project - Phase II	Probishtip, Sveti Nikole, Shtip, Kratovo	Probishtip, Zletovo, Lezovo, Sveti Nikole, Karbinci, Shtip, Kratovo	Agricultural water	1. Construction of irrigation system	Not applicable	2,000 ha (lower zone) 1,100 ha (upper zone)	Not applicable	18,300,000	- Limited agricultural production	farmers (to be estimated) AK (to be confirmed)
	15d	Zletovica Multipurpose Dam Project - Phase III	Probishtip, Sveti Nikole, Shtip, Kratovo	Probishtip, Zletovo, Lezovo, Sveti Nikole, Karbinci, Shtip, Kratovo	Hydropower	1. Construction of hydroelectric power facilities (3 power plants)	Not applicable	Not applicable	6.2 MW (Zletovo I) 4.9 MW (Zletovo II) 3.8 MW (Zletovo III)	29,500,000	- More beneficial water use - Consumption of fossil fuel and air pollution from thermal power plant	inhabitants (to be surveyed)
	16	Construction of Irrigation of Sub-system "Shtipsko Pole"	Shtip	Shtip	Agricultural water	1. Construction of left side of hydro-meliorating system "Bregalnica"	Not applicable	2,773 ha	Not applicable	13,900,000	Insufficient irrigation water	farmers (to be estimated) AK (to be confirmed)

List of Individual Projects in/around Middle Reach of Vardar River Basin in Master Plan (2/2)

Region	No.	Project Title	Target Area		Responsible Ministries	Project Operation			Benefits	Source	Finished Study	Other Donors	Request Status	Data Source (Reports)/Remarks
			Former Municipality	Current Municipality/Villages		Operation Body	Operational Expenses	Expected Income						
2. Middle reaches of the Vardar River	12	Razovci Dam Project	Delchevo	Delchevo	MAFWE MUPCE	PWME Kochani C.E. Berovo	- Personnel for dam control, filter station, irrigation system management, and facility maintenance - Cost for facility operation and maintenance	Drinking water charge Irrigation water charge	- Stable supply of drinking water - Increased agricultural production	Macedonia				
	13	Blatec Dam Project	Kochani, Vinica	Kochani, Vinica	MAFWE	PWME Kochani and Vinica C.E. Kochani and "Solidarnost"				Macedonia	No study yet			
	14a	Rechani Multipurpose Dam Project - Phase I	Kochani, Vinica	Kochani, Vinica	MUPCE	C.E. Kochani and "Solidarnost"	- Personnel for plant management and facility maintenance - Cost for facility operation and maintenance	Drinking water charge	- Stable supply of drinking water till 2025	Macedonia	F/S	Belguin project?	B/D to GOJ	Regional Water Supply System for Kochani and Vinica from the Hydrosystem "Orizarska Reka", 1997
	14b	Rechani Multipurpose Dam Project - Phase II	Kochani, Vinica	Kochani, Vinica	MAFWE MUPCE	PWME Kochani and Vinica C.E. Kochani and "Solidarnost"	- Personnel for reservoir control and facility maintenance - Cost for facility operation and maintenance	Drinking water charge Irrigation water charge Increase of agriculture production	- Stable supply of drinking water till 2050	Macedonia	F/S		B/D to GOJ	Regional Water Supply System for Kochani and Vinica from the Hydrosystem "Orizarska Reka", 1997
	14c	Rechani Multipurpose Dam - Phase III	Kochani, Vinica	Kochani, Vinica	MOE	ECM	- Personnel for controlling hydro electric power system and facility maintenance - Cost for facility operation and maintenance	Electric power charge	- Supplement of power energy	Macedonia	F/S		B/D to GOJ	Regional Water Supply System for Kochani and Vinica from the Hydrosystem "Orizarska Reka", 1997
	15a	Zletovica Multipurpose Dam Project - Phase I-A	Probishtip, Sveti Nikole, Shtip, Kratovo	Probishtip, Zletovo, Lezovo, Sveti Nikole, Karbinci, Shtip, Kratovo	MAFWE MUPCE	PWMEs C.E. and Komunalects	- Personnel for dam control and facility maintenance - Cost for facility operation and maintenance	Drinking water charge	- Stable and safe supply of drinking water	Macedonia	F/S	None	Loan to GOJ	Hydrosystem Zletovica Feasibility Study
	15b	Zletovica Multipurpose Dam Project - Phase I-B	Probishtip, Sveti Nikole, Shtip, Kratovo	Probishtip, Zletovo, Lezovo, Sveti Nikole, Karbinci, Shtip, Kratovo	MAFWE MUPCE	PWMEs C.E. and Komunalects	- Personnel for dam control and facility maintenance - Cost for facility operation and maintenance	Drinking water charge	- Stable and safe supply of drinking water	Macedonia	F/S	None	Loan to GOJ	Hydrosystem Zletovica Feasibility Study
	15c	Zletovica Multipurpose Dam Project - Phase II	Probishtip, Sveti Nikole, Shtip, Kratovo	Probishtip, Zletovo, Lezovo, Sveti Nikole, Karbinci, Shtip, Kratovo	MAFWE	PWEEs	- Personnel for irrigation system management and facility maintenance - Cost for facility operation and maintenance	Irrigation water charge	- Stable supply of irrigation water - Increased and diversified agricultural production - Tourism attraction	Macedonia	F/S	None	Loan to GOJ	Hydrosystem Zletovica Feasibility Study
	15d	Zletovica Multipurpose Dam Project - Phase III	Probishtip, Sveti Nikole, Shtip, Kratovo	Probishtip, Zletovo, Lezovo, Sveti Nikole, Karbinci, Shtip, Kratovo	MOE	ECM	- Personnel for hydropower system management and facility maintenance - Cost for facility operation and maintenance	Electric power charge	- Supplement of power energy	Macedonia	F/S	None	Loan to GOJ	Hydrosystem Zletovica Feasibility Study
	16	Construction of Irrigation of Sub-system "Shtipsko Pole"	Shtip	Shtip	MAFWE	PWME Shtip	- Personnel for system management and facility maintenance - Cost for facility operation and maintenance	Irrigation water charge	- Sufficient supply of irrigation water - Increased agriculture production	PIP				Main Project, 1974; Completion of incomplete main canal

List of Individual Projects in/around Lower Reach of Vardar River Basin in Master Plan (1/2)

Region	No.	Project Title	Target Area		Purpose of Water Use	Major Activities	Key Figures of Project Output			Roughly Estimated Construction Cost (US\$)	Problems to Be Coped with	Beneficiaries
			Former Municipality	Current Municipality/Villages			Water Supply Increased	Irrigation Area Developed by the Project	Hydropower Generation			
3. Lower Reaches of the Vardar River	17	Krapa Dam Project	Makedonski Brod, Prilep	Prilep, Debreshte, Desovo, Dolneni, Slivje, Crnilishte	Municipal water Agricultural water	1. Construction of intake and connection tunnel 2. Construction of tributary intakes	100 liter/sec	8,000 ha	Not applicable	(54,200,000)	- seasonal water shortage - new supply of agricultural water	inhabitants (to be surveyed)
	18	Zhvan Dam Project	Demir Hisar	Demir Hisar	Agricultural water	1. Construction of Zhvan dam and canal	Not applicable	19,000 ha	Not applicable	(127,100,000)	- new supply of agricultural water	farmers (to be estimated) AK (to be confirmed)
	19	Obednik Dam Project	Demir Hisar	Demir Hisar	Agricultural water	1. Construction of Zhvan dam and canal	Not applicable	2,000 ha	Not applicable	(44,600,000)	- new supply of agricultural water	farmers (to be estimated) AK (to be confirmed)
	20	Kochishte Dam Project	Krushevo	Krushevo	Agricultural water	1. Construction of Kochishte dam and canal	Not applicable	4,500 ha	Not applicable	(66,400,000)	- new supply of agricultural water	farmers (to be estimated) AK (to be confirmed)
	21	Zhurche Dam Project	Demir Hisar	Demir Hisar	Agricultural water	1. Construction of Zhurche dam and canal	Not applicable	1,500 ha	Not applicable	(21,500,000)	- new supply of Agricultural water	farmers (to be estimated) AK (to be confirmed)
	22	Konjarka Dam Project	Bitola	Bitola	Agricultural water	1. Construction of Konjarska dam and canal	Not applicable	3,000 ha	Not applicable	(24,500,000)	- new supply of agricultural water	farmers (to be estimated) AK (to be confirmed)
	23	Studencica Supplemental Water Supply Project	Kichevo, Krushevo, Prilep	Kichevo, Krushevo, Prilep, Demir Hisar, Bitola	Municipal water	1. Improvement of Studencica water supply system 2. Construction of local water supply system in mountain villages 3. Others	250 liter/sec	Not applicable	Not applicable	2,450,000	- Limited access to water supply in the mountain villages	inhabitants (to be surveyed)
	24	Petrushka Dam Project	Valandovo, Gevgelija	Valandovo, Gevgelija	Agricultural water	1. Construction of Petrushka dam	Not applicable	5,000 ha	Not applicable	(65,200,000)	- Insufficient irrigation water	farmers (to be estimated) AK (to be confirmed)
	25	Kovanska Dam Project	Gevgelija	Gevgelija	Agricultural water	1. Construction of Kovanska dam	Not applicable	2,000 ha	Not applicable	(31,900,000)	- Insufficient irrigation water	farmers (to be estimated) AK (to be confirmed)
	26	Konsko Multipurpose Dam Project	Gevgelija, Dojran, Valandovo	Gevgelija, Bogdanci, Dojran, Valandovo	Municipal water Agricultural water Industrial water	1. Construction of Konsko dam 2. Construction of intake and water supply facilities	100 liter/sec	6,690 ha	Not applicable	66,700,000	- Insufficient irrigation water - Seasonal water shortage	47,000 inhabitants farmers (to be surveyed) AK (to be confirmed)
27	Valandovo Area Irrigation Rehabilitation Project	Valandovo, Gevgelija	Valandovo, Gevgelija	Agricultural water	1. Rehabilitation of existing structures	None	Not applicable	Not applicable	7,300,000	- Deteriorated irrigation efficiency	farmers (to be estimated)	



List of Individual Projects in/around Lower Reach of Vardar River Basin in Master Plan (2/2)

Region	No.	Project Title	Target Area		Responsible Ministries	Project Operation			Benefits	Source	Finished Study	Other Donors	Request Status	Data Source (Reports)/Remarks
			Former Municipality	Current Municipality/Villages		Operation Body	Operational Expenses	Expected Income						
3. Lower Reaches of the Vardar River	17	Krapa Dam Project	Makedonski Brod, Prilep	Prilep, Debreshte, Desovo, Dolneni, Slivje, Crnilishte	MAFWE	PWME Prilep	- Personnel for system management and facility maintenance - Cost for facility operation and maintenance	Drinking water charge Irrigation water charge	- Stable and safe supply of drinking water - Sufficient irrigation water supply	Macedonia	To be surveyed	None		
	18	Zhvan Dam Project	Demir Hisar	Demir Hisar	MAFWE	PWME Prilep	- Personnel for system management and facility maintenance - Cost for facility operation and maintenance	Irrigation water charge	- Stable and safe supply of drinking water - Sufficient irrigation water supply	Macedonia	To be surveyed	None		Hydrosystem "PELA" - Pelagonija, by Sterna Prilep and Strezevo - Bitola ; Further geotechnical investigation and study are required including cost estimate
	19	Obednik Dam Project	Demir Hisar	Demir Hisar	MAFWE	PWME Prilep	- Personnel for system management and facility maintenance - Cost for facility operation and maintenance	Irrigation water charge	- Stable and safe supply of drinking water - Sufficient irrigation water supply	Macedonia	To be surveyed	None		Hydrosystem "PELA" - Pelagonija, by Sterna Prilep and Strezevo - Bitola ; Further geotechnical investigation and study are required including cost estimate
	20	Kochishte Dam Project	Krushevo	Krushevo	MAFWE	PWME Prilep	- Personnel for system management and facility maintenance - Cost for facility operation and maintenance	Irrigation water charge	- Stable and safe supply of drinking water - Sufficient irrigation water supply	Macedonia	To be surveyed	None		Hydrosystem "PELA" - Pelagonija, by Sterna Prilep and Strezevo - Bitola ; Further geotechnical investigation and study are required including cost estimate
	21	Zhurche Dam Project	Demir Hisar	Demir Hisar	MAFWE	PWME Prilep	- Personnel for system management and facility maintenance - Cost for facility operation and maintenance	Irrigation water charge	- Stable and safe supply of drinking water - Sufficient irrigation water supply	Macedonia	To be surveyed	None		Hydrosystem "PELA" - Pelagonija, by Sterna Prilep and Strezevo - Bitola ; Further geotechnical investigation and study are required including cost estimate
	22	Konjarka Dam Project	Bitola	Bitola	MAFWE	PWME Bitola	- Personnel for system management and facility maintenance - Cost for facility operation and maintenance	Irrigation water charge	- Stable and safe supply of drinking water - Sufficient irrigation water supply	Macedonia	To be surveyed	None		
	23	Studencica Supplemental Water Supply Project	Kichevo, Krushevo, Prilep	Kichevo, Krushevo, Prilep, Demir Hisar, Bitola	MAFWE MUPCE	"Studencica" Community Water Supply Body	- Personnel for system management and facility maintenance - Cost for facility operation and maintenance	Drinking water charge Irrigation water charge	- Stable supply of drinking water - Increased agriculture production (fruit, vegetables)	Agency	F/S			
	24	Petrushka Dam Project	Valandovo, Gevgelija	Valandovo, Gevgelija	MAFWE	PWME Valandovo	- Personnel for system management and facility maintenance - Cost for facility operation and maintenance	Irrigation water charge	- Sufficient supply of irrigation water - Increase of agriculture production (fruit, vegetables)					Land Reclamation Plan
	25	Kovanska Dam Project	Gevgelija	Gevgelija	MAFWE	PWME Gevgelija	- Personnel for system management and facility maintenance - Cost for facility operation and maintenance	Irrigation water charge	- Sufficient supply of irrigation water - Increase of agriculture production (fruit, vegetables)					Land Reclamation Plan
	26	Konsko Multipurpose Dam Project	Gevgelija, Dojran, Valandovo	Gevgelija, Bogdanci, Dojran, Valandovo	MAFWE MUPCE	PWME Gevgelija C.E. Gevgelija	- Personnel for dam control, filter station, irrigation system management, and facility maintenance - Cost for facility operation and maintenance	Drinking water charge Irrigation water charge Industrial water charge	- Stable supply of drinking water - Increased agriculture production (fruit, vegetables) - Increased industrial production	Macedonia				Main Project of Hydrosystem "Konsko", 1978; Of the Project, water supply project to the southeastern regions like Gevgelija, Bogdanci, Dojran and Valandovo has been B/B to GOJ
27	Valandovo Area Irrigation Rehabilitation Project	Valandovo, Gevgelija	Valandovo, Gevgelija	MAFWE	PWME Valandovo	- Cost for facility operation and maintenance	Irrigation Water charge	- Sufficient irrigation water supply - Increase of agricultural production	MAFWE	None	None			

List of Individual Project in/around Crn Drim River Basin in the Master Plan (1/2)

Region	No.	Project Title	Target Area		Purpose of Water Use	Major Activities	Key Figures of Project Output			Roughly Estimated Construction Cost (US\$)	Problems to Be Coped with
			Former Municipality	Current Municipality/Villages			Water Supply Increased	Irrigation Area Developed by the Project	Hydropower Generation		
4. The Crn Drim River Basin	28	Irrigation System Betterment Project in Resen	Resen	Resen	Agricultural water	1. Betterment of the existing irrigation system	Not applicable	5,200 ha	Not applicable	22,600,000	- Low efficiency rate of irrigation system - Insufficient irrigation water supply
	29	Ohrid Area Irrigation Rehabilitation Project	Ohrid	Ohrid	Agricultural water	1. Rehabilitation of existing structures	None	Not applicable	Not applicable	8,200,000	- Deteriorated irrigation efficiency

Table 1.4 List of Individual Projects in/around Crn Drim River Basin in the Master Plan (2/2)

Region	No.	Project Title	Target Area		Beneficiaries	Responsible Ministries	Project Operation			Benefits	Source	Finished Study	Other Donors	Request Status	Data Source (Reports)/Remarks
			Former Municipality	Current Municipality/Villages			Operation Body	Operational Expenses	Expected Income						
4. The Crn Drim River Basin	28	Irrigation System Betterment Project in Resen	Resen	Resen	4,000 of farmers	MAFWE	PWME Resen	- Personnel for irrigation system management and facility maintenance - Cost for facility operation and maintenance	Drinking water charge Irrigation water charge	- Increased agricultural production - Quality improvement of fruit production	JICA M/P	F/S	none	B/D to GOJ	Feasibility Study of Reconstruction and Rehabilitation of Irrigation System "Prespansko Pole"
	29	Ohrid Area Irrigation Rehabilitation Project	Ohrid	Ohrid	famers (to be estimated)	MAFWE	PWME Kichevo	- Cost for facility operation and maintenance	Irrigation water charge	- Sufficient irrigation water supply - Increase of agricultural production	MAFWE	None	None		

List of Individual Projects in/around Strumica River Basin in Master Plan (1/2)

Region	No.	Project Title	Target Area		Purpose of Water Use	Major Activities	Key Figures of Project Output			Roughly Estimated Construction Cost (US\$)	Problems to Be Coped with
			Former Municipality	Current Municipality/Villages			Water Supply Increased	Irrigation Area Developed by the Project	Hydropower Generation		
5. The Strumica River Reaches	30	Podares Multipurpose Dam Project	Radovish and Strumica	Radovish and Strumica	Municipal water Agricultural water Industrial water	1. Construction of Podares dam 2. Construction of water supply system	200 liter/sec	4,000 ha	Not applicable	50,000,000	- Insufficient of drinking water - Low efficiency rate of irrigation system - Insufficient irrigation water
	31	Oraovica Dam Project	Radovish and Strumica	Radovish and Strumica	Municipal water Ecological need	1. Construction of Oraovica dam 2. Construction of water supply system	200 liter/sec	Not applicable	Not applicable	10,000,000	- Water shortage all through the year - Water contamination in he Strumica river
	32	Mantovo Area Irrigation Rehabilitation Project	Radovish and Strumica	Radovish and Strumica	Agricultural water	1. Rehabilitation of existing structures	None	Not applicable	Not applicable	11,200,000	- Deteriorated irrigation efficiency
	33	Strumica Area Irrigation Rehabilitation Project	Strumica	Strumica	Agricultural water	1. Rehabilitation of existing structures	None	Not applicable	Not applicable	24,400,000	- Deteriorated irrigation efficiency

Table 1.5 List of Individual Projects in/around Strumica River Basin in Master Plan 2/2)

Region	No.	Project Title	Target Area		Beneficiaries	Responsible Ministries	Project Operation			Benefits	Source	Finished Study	Other Donors	Request Status	Data Source (Reports)/Remarks
			Former Municipality	Current Municipality/Villages			Operation Body	Operational Expenses	Expected Income						
5. The Strumica River Reaches	30	Podares Multipurpose Dam Project	Radovish and Strumica	Radovish and Strumica	93,000 inhabitants farmers (to be estimated) AK (to be confirmed)	MAFWE MUPCE	PWEE Strumica Komunalec Strumica	- Personnel for dam control, filter station, irrigation system management, and facility maintenance - Cost for facility operation and	Drinking water charge Irrigation water charge	- Stable supply of drinking water - Sufficient supply of irrigation water - Increased agriculture production	Macedonia				
	31	Oraovica Dam Project	Radovish and Strumica	Radovish and Strumica	93,000 inhabitants	MAFWE MUPCE	PWME Strumica	- Personnel for dam control, filter station, irrigation system management, and facility maintenance - Cost for facility operation and	Drinking water charge	- Stable supply of drinking water - Sufficient supply of clean water to the Strumica river	Macedonia				Further and urgent investigation and study are required.
	32	Mantovo Area Irrigation Rehabilitation Project	Radovish and Strumica	Radovish and Strumica	famers (to be estimated)	MAFWE	PWME Radovish	- Cost for facility operation and maintenance	Irrigation Water charge	- Sufficient irrigation water supply - Increase of agricultural production	MAFWE	None	None		
	33	Strumica Area Irrigation Rehabilitation Project	Strumica	Strumica	famers (to be estimated)	MAFWE	PWME Strumica	- Cost for facility operation and maintenance	Irrigation Water charge	- Sufficient irrigation water supply - Increase of agricultural production	MAFWE	None	None		