

<i>PART 4</i>	<i>RECOMMENDATION</i>
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PART 4 RECOMMENDATION

<Promotion of Agriculture and Protection of Natural Environment through Guidelines>

The Guidelines provide technical measures and their implementation for the promotion of regional agriculture, which is stagnant at the moment. The promotion will be realized by two approaches: one is the conversion of the present agricultural system to a more efficient one by rational land use, considering land conditions and using regional resources in agriculture effectively: the other is the promotion of intensive farming with proper irrigation and fertilization of appropriate land by maintaining and improving existing facilities. The stagnation/devastation of regional agriculture causes abandonment or devastation of farmland. Furthermore, inadequate application of industrial fertilizer and agricultural chemicals in the field increases environmental impact. It is expected that relevant personnel and organizations will take into account the Guidelines, and cooperate to promote agriculture and protect the natural environment in the region by improving the regional agriculture quantitatively and qualitatively.

Further works for completing and maintaining the Guidelines

The Guidelines shown in this report provide the contents and directions of necessary technical measures for promoting regional agriculture. In order to improve accuracy and adoptability of the Guidelines, SWME-ID, which is the responsible organization operating and maintaining the Guidelines, is expected to continue the effort to complete the Guidelines by establishing real indexes/standards of technical measures and new technologies specific to the Zahorska Lowland.

Expansion of case study

During the Study, the case study, focusing on around 3,000 ha in Male Levare, Velke Levare and Gajary villages was carried out. Technical measures in the Guidelines were examined in more detail, using the concrete example of improving agriculture in the case study site. With the expansion of intensive irrigated agriculture and rational land use, along with enlargement of the detailed study area, the content of the Guidelines

should be more substantial and some parts of the Guidelines should be adaptable to wider areas.

Operation and maintenance of Guidelines

The Guidelines need to be maintained, updating the information so as to maintain their applicability and increase accuracy. As mentioned in the Operation and Maintenance of Guidelines in Part 2, continuous efforts of many related personnel and organizations such as farmers, farming companies, SWME-ID, regional office of MoA, etc., are necessary to maintain and update the Guidelines. It is proposed to establish an organization for the operation and maintenance of the Guidelines, which coordinates the activities of concerned organizations and operates the Guidelines efficiently. Immediate establishment of such an organization through the cooperation of existing organizations is expected.

Land use conversion of unsuitable land for crop cultivation

Introduction of adequate and proper use of farmland based on the land resources evaluation is considered to be the first step to realize rational land use, which is indispensable for improving the efficiency of regional agriculture. The land use conversion of farmland, which is unsuitable for crop cultivation, to grassland, will not always bring additional profit to land users, on the contrary it will cause a decrease in profit for some time. However, it has an important role in improving efficiency of farmland use in the region and conserving farmland. It is necessary to have some advantage to land users by the appropriate operation of the current subsidy for grassland promotion for environmental protection, so that land users would include it in their farming plan voluntarily.

Positive development of irrigation farming

Zahorska Lowland is dominated by widespread low fertility sandy soils, which is a natural disadvantage for agriculture.. To promote successful agriculture in such a disadvantaged area, it is necessary to use the resources to maximum potential, including the existing irrigation facilities developed by great effort and investment in the past.

Because of embedded property, the recovery of those existing irrigation facilities, even though some of them are superannuated and malfunctioned, has a large cost effect. Positive development of irrigation farming is considered a key factor in the promotion of agriculture in the disadvantaged area. It is first necessary to recover the irrigation facilities so as to realize stable water supply to users and coping with their demand.

In the current system of water charges, the water price does not reflect the decrease of water cost accompanying the increase in the amount of water used. It is necessary to review the system for the time when irrigation farming is widely developed and the amount of water used would be markedly increased. Furthermore, it is necessary to secure the budget for irrigation subsidy, which increases accompanying the increase of water use. Adequate subsidy is indispensable to promoting irrigation farming due to its higher farming cost.

Enhancement of agricultural credit

In the development of irrigation farming, the farming cost increases markedly due to increases in water charge and investment for equipment. Even though the expected profit from introducing irrigation farming is sufficiently large, farmers/farming companies meet the difficulty of financing. The importance of contract farming, which has the advantage to farmers/farming companies of support for equipment and funds, increases with irrigation farming. Furthermore, it is necessary to introduce state measures to enhance agricultural credit in the future.

Future changes to institutions and circumstances surrounding farm management from the viewpoint of joining the EU

The institutions and circumstances surrounding farm management is expected to change significantly during the preparation to join EU, and there is a lot of uncertainty at the moment. Even with these changes, the technical measures proposed in the Guidelines will remain necessary and the adaptability of the Guidelines will not be weakened. When the state institution is changed, it is necessary to review the operation and maintenance plan of the Guidelines to cope with the changes of role and responsibility of each organization.

The system of agricultural subsidy, on which the regional agriculture relies heavily, is expected to undergo the biggest changes in agricultural support in future. It will directly influence farm management in the Zahorska Lowland, which is a disadvantaged area for agriculture with a subsidy support that is indispensable to maintain its agriculture. Promotion of agriculture is a priority from the viewpoints of the national land conservation and the protection of the natural environment, and higher priority will be given during the process of joining the EU. Subsidy for agriculture is expected to be maintained at the proper level and operated appropriately in order to promote regional agriculture.

Future Development of Technology, Extension and Technology Transfer

Under the condition that agricultural production is surplus in Slovakia, a new method of agriculture, which will be sustainable, harmonized with natural environment and market-oriented, needs to be established. The Guidelines aims to carry out agriculture development with stability and sustainability of farm management and to realize sustainable development of natural environment and society by introducing rational land use in the Zahorska Lowland. To achieve the goal, the following topics are pointed out as future development of technology, extension and transfer.

<Development of Technique of Economical Grassland Management>

In promotion of converting land use of unsuitable land for cropping, it is important that farming entities continue to use land as grassland so as to avoid abandoning farmlands. For this purpose, the following techniques of economical grassland management should be established and their extension/transfer to farming entities is necessary.

- Establishing low cost and labor-saving grassland management techniques,
- Re-establishing and transferring of practice of grazing farming to the farming entities, which had been disappeared during process of socialistic agriculture,
- Development of low cost grazing fence that makes it easier to develop grazing farming, etc.

<Promotion of Crop Rotation for Soil Fertility Management>

Introducing legumes into crop rotation is one of the most realistic measures to improve fertility of sandy soil, which spreads widely in the Zahorska Lowland. The Guidelines proposes alfalfa as a soil resting crop to be introduced in the area. Future development of techniques for extension as shown below is necessary.

- Diversification of legumes variety especially in annual cultivation, which makes it easier to introduce to crop rotation,
- Improvement of drying technique of forage and development of marketing channel.

<Development of Preventive Maintenance Technique of Irrigation Facilities>

Maintenance work is usually carried out as a corrective maintenance, which is conducted after the degradation or failures. Preventive maintenance techniques should be developed while formulating maintenance plan of irrigation facilities, which will reduce damage or influence to other facilities/equipment and will reduce the total amount of maintenance cost.

<Improvement of Field Irrigation Techniques>

Irrigation farming will be developed mainly for the intensive agriculture such as vegetables and fruits, which is expected to generate higher effect. The existing irrigation system is not suitable to such irrigation farming, which requires flexibility in water use and mid-low pressure, since most of the existing systems are composed of large-scale reel hose system. The field level irrigation system should be developed to make it suitable for intensive farming by setting up pressure regulator, farm pond, etc.

<Selection of Appropriate Crops>

In the Zahorska Lowland, crops or varieties tolerant to dry or over wet conditions should be developed. In the future development, it is expected to improve both of productivity and profitability through breeding of appropriate crops, grasping cultivation techniques of crops, and selection of crops suitable to soil

characteristics and other environmental conditions.

<Development of Weeding Technique>

In the Zahorska Lowland, the arable lands which are rich in soil water and fertility suffer from severe weed damage. It increases input of agricultural chemicals which is one of the largest component in production cost, resulting in serious problems for crop protection. The weed damage usually happens in much wider areas than the water logging, but the damaged areas are still limited partly in fields. Therefore, intensive use and higher concentration of herbicides can reduce total amount of input. Suitable weeding techniques should be developed and the technology should be transferred to farmers/farming entities.

<Establishment of Appropriate Level or Limitation of Fertilizer Application>

Leakage of fertilizers occur easily in the sandy soils which are widely spread in the Zahorska Lowland. Therefore, it is necessary to establish cultivation techniques considering nitrate pollution of groundwater or environmental loading of agricultural activities. Fertilizer application should be limited in sandy soils and appropriate fertilizing standard including improvement of fertilizing technique should be developed.

<i>APPENDIX 1</i>	<i>PARTICIPANTS LIST</i>
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APPENDIX 1 PARTICIPANTS LIST

SLOVAK SIDE

Name	Assignment	Organization
Stefan REHAK	Team Reader / Case Study Supervisor	Director, SWME-ID
Andrej SOLTESZ	Hydraulic Engineering Expert	Technical University of Slovakia
Jan ALENA	Drainage System Expert	SWME-ID
Jan HRIBIK	Irrigation System Expert	SWME-ID
Katarina NOVAKOVA	Soil Conservation Expert	SWME-ID
Radovan KAZDA	Soil Conservation Expert	SWME-ID
Michal SANTA	Agronomist	SWME-ID
Jan BIZIK	Agronomist	SWME-ID
Bohdan JURANI	Landuse System expert	University of Comenius
Boris MINARIK	Hydrologist / Water Use Expert	SWME-ID
Igor SOBOCKY	Water Use Expert	SWME-ID
Marian JENCO	GIS Expert	SWME-ID
Ladislav HREHA	Coordinator	SWME-ID
Zuzana KASANICKA	Coordination with MoE	Ministry of Environment


JAPANESE SIDE

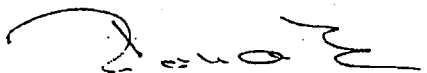
Name	Assignment	
Takashi FUJITA	Team Leader/Case Study	
Sumio SHINDO	Irrigation/Drainage System	
Toyoaki MORISHITA	Soil Conservation	
Hideo WATANABE	Agriculture	
Kazuhiro TSUCHIDA	Hydrology/Water use	
Robert WHITCOMBE	Rural Sociology/Landuse System	
Keizo MARUYAMA	Agricultural Information System/Extension	
Gabor MOLNAR	GIS Expert	
Badri Nath ADHIKARY	Plan Evaluation	
Tadakatsu OKUBO	Livestock	
Hideki HIROSHIGE	Coordinator	
Anna KIMUROVA	Interpreter	

<i>APPENDIX 2</i>	<i>MINUTES OF MEETING</i>
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Scope of Work
for
**The Study for Sustainable Development of Agriculture in Zahorska Lowland
and Protection of Natural Resources
in Slovak Republic**
agreed upon between
Research Institute of Melioration and Landscape Engineering
and
Japan International Cooperation Agency

Bratislava, August 9, 2000

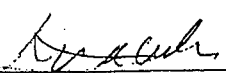

Junji TAKAHASHI
Leader
The Preparatory Study Team
Japan International Cooperation Agency
(JICA)


Stefan REHAK
Director
Research Institute of Melioration and
Landscape Engineering
(RIMLE)

witnessed by


Stefan MORAVEK
Director
Department of International Economic
Cooperation
Ministry of Foreign Affairs

co-signed by


Stefan PALACKA
Director
Plant Production Department
Section of Agriculture and Food Industry
Ministry of Agriculture

I. INTRODUCTION

In response to the request of the Government of The Slovak Republic (hereinafter referred to as "GOS"), the Government of Japan decided to conduct The Study for Sustainable Development of Agriculture in Zahorska Lowland and Protection of Natural Resources (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as JICA), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, will undertake the Study in close cooperation with the authorities concerned of Slovakia.

The present document sets forth the scope of work with regard to the Study.

II. OBJECTIVES OF THE STUDY

The overall goal of the Study is;

to improve crop production of the Zahorska lowland in quantity and quality, taking its environmental aspects into account, for encouraging agriculture in the area.

The objectives of the Study, in order to achieve the above overall goal, are as follows;

- (1) to propose technical guideline(s) for the optimum water management and soil management,
- (2) to conduct the technology transfer to the Slovak counterpart personnel in the course of the study.

III. STUDY AREA

The Study shall cover the Zahorska lowland. The total land area and agricultural land shall be approximately 570 km² and 211 km², respectively (Refer to the location map attached as Annex 1).

IV. SCOPE OF THE STUDY

In order to achieve the objectives above, the Study shall consist of the following items.

[Phase 1]

1. Data collection and analysis

1.1 Collect and review the existing information on the followings:

- (1) Meteorology, hydrology and water quality
- (2) Soil, topography and geology
- (3) Crop production (land use, cropping pattern, productivity, use of fertilizer/pesticides, etc.)
- (4) Irrigation and drainage networks and those technical / operational management system
- (5) Relevant laws, regulations and activities of concerned organizations of the Slovak Government
- (6) Others

1.2 Conduct field surveys to collect supplementary information

1.3 Analyze and evaluate the information, to define prioritized constraints

[Phase 2]

2. Preparation of the technical countermeasures

2.1 Propose the technical and methodological guideline(s), focusing on the followings:

- (1) Water management
 - Optimization of soil water, subsurface and surface water
 - Irrigation and drainage system

- Operation & maintenance and rehabilitation of irrigation and drainage facilities

(2) Soil management

- Wind erosion and water erosion

- Improvement of soil fertility

- Desirable land use / cropping pattern

2.2 Conduct the case study (studies), based on the above guideline(s)

(1) To select the case study site(s)

(2) To draw up the optimum plan(s) in the respects of water management and soil management

(3) To indicate the plan(s) by using GIS

2.3 Prepare Conclusion and Recommendation

V. STUDY SCHEDULE

The Study shall be carried out in accordance with the Tentative Work Schedule attached as Annex 2.

VI. REPORTS

JICA shall prepare and submit the following reports, written in English, to the GOS;

Inception Report : Twenty (20) copies at the commencement of the Study

Progress (1) Report : Twenty (20) copies at the end of Phase I

Interim Report : Twenty (20) copies at the commencement of Phase II

Progress (2) Report : Twenty (20) copies at the end of Work in Slovakia of Phase II

Draft Final Report : Thirty (30) copies at the end of Phase II

Slovak side shall submit written comments on the Draft Final Report to JICA in one (1) month after the receipt of the report.

Final Report : Thirty (30) copies in two (2) months after the receipt of comments on the Draft Final Report from the Slovak side

VII. UNDERTAKING OF THE GOS

1. To facilitate the smooth conduct of the Study, GOS shall take necessary measures, as listed below:

(1) Secure the safety of the Study Team,

(2) Permit the members of the Study Team to enter, leave and sojourn in Slovakia for the duration of their assignment therein, and exempt them from alien registration requirements and consular fees,

(3) Exempt the members of the Study Team from taxes, duties and other charges on equipment, machinery and other materials to be brought into and out of Slovakia for the conduct of the Study,

(4) Exempt the members of the Study Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Study Team for their services in connection with the implementation of the Study,

(5) Provide necessary facilities to the Study Team for remittance as well as utilization of the funds introduced into Slovakia from Japan in connection with the implementation of the Study,

(6) Secure permission for the Study Team(s) to enter private properties or restricted areas for the conduct of the Study,

(7) Secure permission for the Study Team to take all data and documents, including photographs and maps, relevant to the Study out of Slovakia to Japan, and

(8) Provide medical services as needed. Its expenses will be chargeable to members of the Study Team.

2. GOS shall bear claims, if any arises, against members of the Study Team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Study Team.

3. RIMLE shall act as the counterpart agency to the Study Team and also as the coordinating body in relations with other governmental and non-governmental organizations for the smooth implementation of the Study.

4. RIMLE shall, at its own expense and in cooperation with other organizations concerned, provide the Study Team with the following;

(1) Available data and information related to the Study,

(2) Counterpart personnel,

(3) Suitable office space and necessary equipment in Bratislava,

(4) Credentials or identification cards.

VIII. UNDERTAKING OF JICA

For the implementation of the study, JICA shall take the following measures;

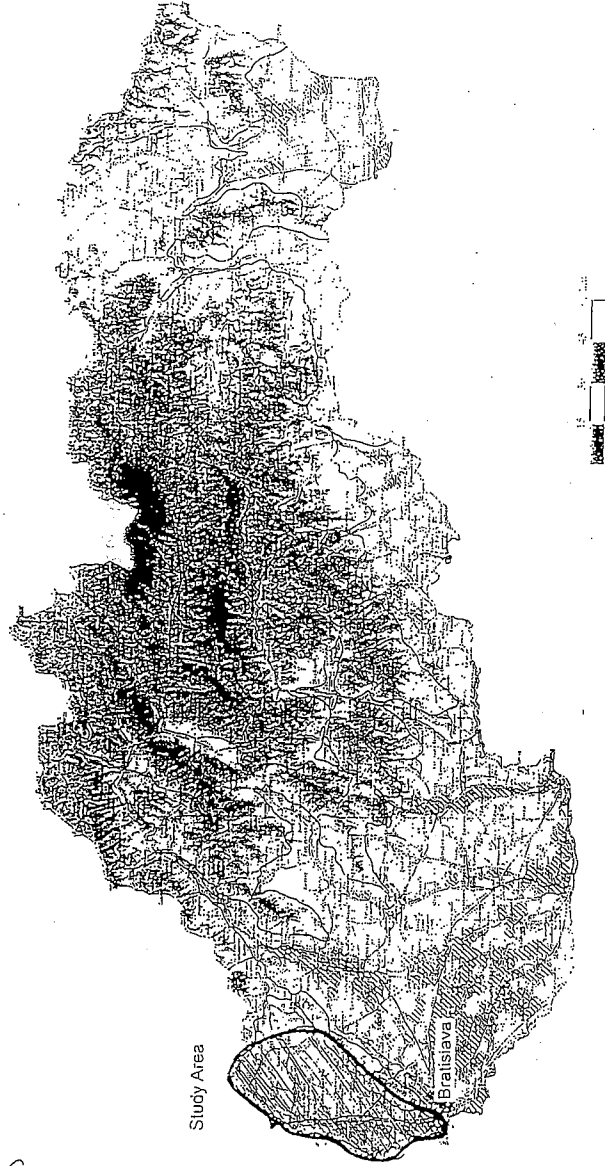
(1) Dispatch, at its own expense, study teams to Slovakia,

(2) Pursue technology transfer to the Slovak counterpart personnel in the course of the study.

IX. CONSULTATION

JICA and RIMLE shall maintain constant communication and consult with each other in respect of any matters that may arise from or in connection with the Study.

Annex 1



LOCATION MAP

TENTATIVE WORK SCHEDULE

MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Work in Slovakia																			
Work in Japan																			
Stages	Phase 1				Phase 2														
Reports	IC/R					P/R(1)		It/R		P/R(2)		DF/R							F/R

(Remarks)

IC/R
P/R(1)
It/R
P/R(2)
Df/R
F/R

: Inception Report
: Progress Report(1)
: Interim Report
: Progress Report(2)
: Draft Final Report
: Final Report
: Comments on Df/R by Slovak side

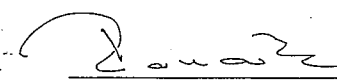


Annex 2

Minutes of Meeting
of
Scope of Work
for
The Study for Sustainable Development of Agriculture in Zahorska Lowland
and Protection of Natural Resources
in Slovak Republic
agreed upon between
Research Institute of Melioration and Landscape Engineering
and
Japan International Cooperation Agency.

Bratislava, August 9, 2000

高橋 順二
Junji TAKAHASHI
Leader
The Preparatory Study Team
Japan International Cooperation Agency
(JICA)


Stefan REHAK
Director
Research Institute of Melioration and
Landscape Engineering
(RIMLE)

The Preparatory Study Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter "JICA") and headed by Dr. J. TAKAHASHI, visited the Slovak Republic from August 1 to 9, 2000. The Team discussed and exchanged views with regard to the Scope of Work for "The Study for Sustainable Development of Agriculture in Zahorska Lowland and Protection of Natural Resources" (hereinafter "the Study") with the officials from Research Institute of Melioration and Landscape Engineering (hereinafter "RIMLE") as well as others concerned.

As a result of the discussions, the Slovak side and the Team mutually agreed on the Scope of Work for the Study. The following are the important issues discussed and agreed.

The list of participants and resource persons in the series of discussions is attached as Annex 2.

1. GIS formulation

With regard to the plan(s) drawn up in the case study (studies), the database shall be built which will store the information collected throughout the Study. It shall also be integrated into GIS, which will be capable to simulate the movement of water and yield.

2. Office space

RIMLE promised to provide to the Japanese study team(s) a suitable office space in Bratislava, equipped with desks, chairs, a facsimile machine, the executive use of telephone line and a photocopier during the Study period.

3. Vehicle

RIMLE expressed the difficulty of providing the Japanese study team(s) with enough number of vehicles during the Study period, due to the budgetary constraints. RIMLE also requested that the Japanese side would prepare the vehicles. The Team promised to convey it to the Government of Japan.

4. Counterpart training in Japan

RIMLE requested the training of counterpart personnel in Japan. The Japanese side promised to convey it to the Government of Japan.

5. Reports

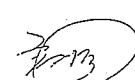
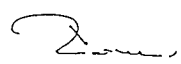
The Final report would be accessible to whoever interested.

6. Implementation of the Study

RIMLE and the Team agreed the concept of the Study, as mentioned in "IV. SCOPE OF THE STUDY" of "Scope of Work" (S/W). However, the Slovak side explained that it was difficult to sign on S/W, under the situation mentioned in the attached document, Annex 1.

The both confirmed that S/W shall become into effect and the Study shall be implemented when the Japanese side receives S/W, signed by the representatives of the Slovak side, through the diplomatic channel.

The Japanese side strongly requested that S/W should be authorized and submitted to the Japanese side by the end of September 2000. The Slovak side promised to convey it to the Government of Slovakia and to make the best effort on this matter.



MINISTRY OF FOREIGN AFFAIRS
OF THE SLOVAK REPUBLIC
Department of International Economic Co-operation

Bratislava August 8, 2000
No.: ad 133.915/2000-OMES

Výskumný ústav meliorácií a
krajinného inžinierstva/
Research Institute of Meliorations
and Land Engineering (RIMLE)
Mr. Štefan Reháč, Director
Vrakunská 29
Bratislava

Re: Development study SAPN - information on an approval procedure

Dear Mr. Director,


regarding the preparation of negotiation talks with a Japanese Preparatory Study Team for the Study on conditions of the Development Study „Sustainable Development of Agriculture In ZAHORSKA LOWLAND and Protection of Natural Resources (SAPN)“ implementation, let me inform you herewith on necessary approval procedure.

Based on the proposal and delivered verbal note of the Japanese side SM No. 22 / 2000, we have requested, subsequently, for a statement the Ministry of Finance of the SR and 'Legislative' and 'International Treaties' departments (LEGO, MEPO) of our Ministry. With regard to the comments of the MF SR to the wording of the Chapter VII. Undertaking of the Government of the SR (draft S/W), as well as to the recommendations of LEGO and MEPO, we find it necessary, prior to submission of our reply to the Japanese side in a form of the verbale note, that the statement on approval for the development study implementation, and namely with stipulations and commitments of the draft S/W, is adopted by the Government of the SR.

Due to the time and procedural aspects of such submission for approval, we do not expect to have it approved before the departure of the Preparatory Study Team from the Slovak Republic.

Once such approval is issued, about which we do not doubt, and which, in addition, can further assist in avoiding of possible misunderstandings in the course of the development study implementation, we will inform the Japanese side via diplomatic channels, and the document S/W can thereafter be legally signed by all parties concerned.

Sincerely yours,


Štefan Morávek
Director



Annex 2

THE LIST OF PARTICIPANTS

SLOVAK SIDE:

1. Ministry of Foreign Affairs

Stefan MORAVEK Director, Department of International Economic Cooperation
Vladimir BUJALKO Department of International Economic Cooperation

2. Ministry of Agriculture

Stefan PALACKA Director, Plant Production Department,
Section of Agriculture and Food Industry

3. Research Institute of Melioration and Landscape Engineering (RIMLE)

Stefan REHAK Director
Jan HRIBIK Deputy Director
Michal SANTA Director Advisor
Jan ALENA Department of Irrigation and Drainage Systems
Vladimir ZAPOTOCNY Department of Sustainable Management on Irrigated and Drained Soils
Jan BIZIK Department of Sustainable Management on Irrigated and Drained Soils
Boris CAMEL Department of Water regime of Soils

4. Faculty of Natural Sciences, Comenius University

Miroslav KROMKA Director, Department of Soil science

5. Slovak Technical University, Bratislava

Andrej SOLTIESZ Hydrotechnical Department, Faculty of Civil Engineering,

JAPANESE SIDE:

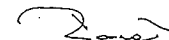
1. Embassy of Japan at Czech Republic

Akira SUZUKI First secretary

2. The Preparatory Study Team

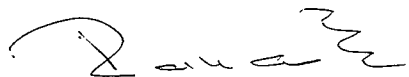
Junji TAKAHASHI Leader
Yoshio OGAWA Soil conservation
Eisaku SHIRATANI Irrigation/Land use
Makoto ASAI Coordinator
Kumiko IKAWA Interpreter



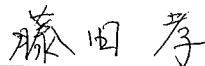


MINUTES OF MEETING
ON
INCEPTION REPORT
FOR
THE STUDY FOR SUSTAINABLE DEVELOPMENT OF AGRICULTURE
IN ZAHORSKA LOWLAND AND PROTECTION OF NATURAL RESOURCES
IN SLOVAK REPUBLIC
AGREED UPON BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
AND
SLOVAK WATER MANAGEMENT AUTHORITY
BRANCH OFFICE IRRIGATION AND DRAINAGE (SVP-OZ-HM)

Bratislava,
June 28, 2001



Štefan REHÁK
Director
Slovak Water Management Authority
Branch Office Irrigation and Drainage
(SVP-OZ-HM)



Takashi FUJITA
Leader
Study Team
Japan International Cooperation
Agency (JICA)

Witnessed by



Mitsuo NAKAMURA
Director
Agricultural Development
Study Division
Japan International Cooperation
Agency (JICA)

In accordance with the Scope of Work for the Study For Sustainable Development of Agriculture in Zahorska Lowland and Protection of Natural Resources in Slovak Republic (hereinafter referred to as "the Study"), the Government of Japan, through Japan International Cooperation Agency (JICA), dispatched to the Slovak Republic the Study Team, headed by Mr. Takashi FUJITA and Mr. Mitsuo NAKAMURA, for the implementation of the Study. At the commencement of the Study, the Study Team submitted officially twenty (20) copies of the Inception Report and explained the basic concepts, methodology and schedule of the Study in the presence of Slovak organizations represented by the Slovak Water Management Authority, Branch Office Irrigation and Drainage, (SVP-OZ-HM) on June 22 and 27, 2001 at the office of SVP-OZ-HM.

Prior to the discussion on the Inception Report, the following issue was confirmed regarding the re-organization of the Ministry of Agriculture on the Slovak side:

1. The Research Institute of Melioration and Landscape Engineering (RIMLE) has been re-named as the Branch Office Irrigation and Drainage and placed under the Slovak Water Management Authority on June 2001. It was confirmed that the role and status of the Branch Office has not been changed from that of the former RIMLE and the re-organization does not have any influence on the implementation of the Study.

As a result of explanation and exchange of opinions on the Inception Report, the Slovak side and Japanese side agreed upon the following points:

1. The Slovak side accepted that the contents of the Inception Report were prepared in due compliance with the conditions set forth in the Scope of Work for the Study and agreed that the Study Team would proceed to the next stage of the Study in accordance with the methodology and schedule mentioned in the Inception Report.
2. The Slovak side confirmed that suitable office space, with necessary equipment and furniture in the office of SVP-OZ-HM, would be provided by the Slovak side as mentioned in the Scope of Work.



3. Both sides agreed to collaborate with each other for the efficient implementation of the Study so that the objectives of the Study be attained as described in the Scope of Work for the Study.
4. Upon the request of the Study Team, the Slovak side agreed to nominate necessary counterparts for each member of the Study Team.
5. Upon the request of the Study Team, the Slovak side agreed to take responsibility for obtaining the reports, data and other information required for the Study.
6. The Slovak side requested to conduct a counterpart training in Japan during the Study period, and the Study Team promised to convey that request to the JICA headquarter.

THE STUDY FOR SUSTAINABLE DEVELOPMENT OF AGRICULTURE IN
ZAHORSKA LOWLAND AND PROTECTION OF NATURAL RESOURCES

List of participants
Discussion of The Minutes of Meeting
27. 6. 2001

JAPANESE SIDE

Nakamura Mitsuo	Director JICA	中村 光夫
Takashi Fujita	Team Leader/Case Study Supervisor	藤田 孝
Hideo Watanabe	Agronomist	和田 秀雄
Kazuhiro Tsuchida	Hydrologist/Water Use Expert	津田 和弘
Robert Whitcombe	Rural Sociologist/Land Use System Expert	R. P. Whitcombe
Gábor Molnár	GIS Expert	莫納爾 加博爾
Anna Kimura	Interpreter	木村 安娜
Hideki Hiroshige	Coordinator	廣重 英樹

SLOVAK SIDE

Research Institute of Irrigation

Stefan Rehák	Team Leader	Rehák
Ján Hrbík	Irrigation System Expert	Hrbík
Michal Santa	Agronomist	Santa
Ján Alena	Drainage System Expert	Alena
Vladimír Zápotočný	Agronomist	Zápotočný
Ján Bízík	Agronomist	Bízík
Katarína Nováková	Soil Conservation Expert	Nováková
Radovan Kazda	Soil Conservation Expert	Kazda
Marián Jenčo	GIS Expert	Jenčo
Ladislav Hreha	Coordinator	Hreha
Boris Minárik	Hydrologist/Water Use Expert	Minárik
Igor Sobocký	Hydrologist/Water Use Expert	Sobocký

Faculty of Natural Sciences, Comenius University

Bohdan Juráni	Rural Sociologist/Land Use Expert	
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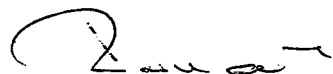
Slovak Technical University Bratislava

Andrej Šoltész	Hydraulic Engineering Expert	
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MINUTES OF MEETING
ON
THE BOUNDARY OF THE STUDY AREA
FOR
THE STUDY FOR SUSTAINABLE DEVELOPMENT OF AGRICULTURE
IN ZAHORSKA LOWLAND AND PROTECTION OF NATURAL RESOURCES
IN SLOVAK REPUBLIC
AGREED UPON BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
AND
SLOVAK WATER MANAGEMENT AUTHORITY
BRANCH OFFICE IRRIGATION AND DRAINAGE (SVP-OZ-HM)

At the beginning of the Phase-I Study in Slovakia, both side made effort to confirm and clarify the boundary of the Study Area. As a result of discussion, the Study Area was set as the lowland area along the Morava River between the northward of the Bratislava urban area and the left bank of the Myjava River, as shown in the figure attached. The Area is composed of the Malacky District excluding the military zone and seven villages from Bratislava IV and Senica District. The Area is recognized as representing the agriculture of the Zahorska Lowland from the character both of its present conditions, potentials and constraints.

Bratislava,
July 27, 2001

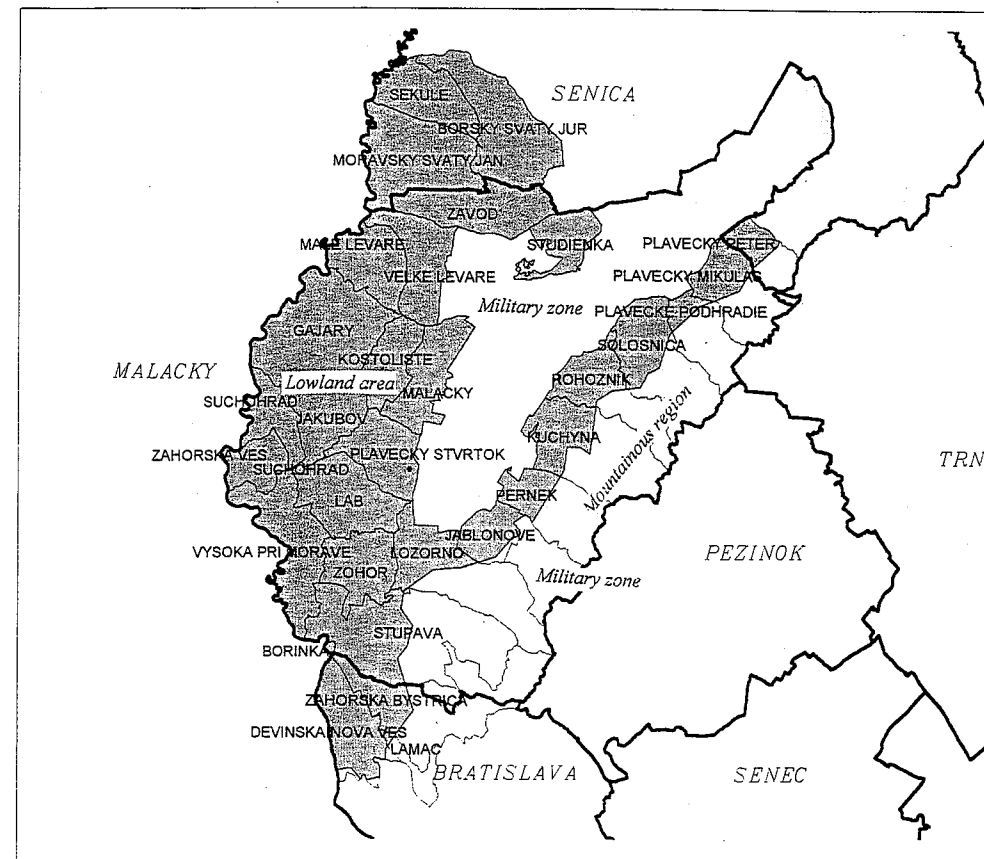





Štefan REHÁK
Director
Slovak Water Management Authority
Branch Office Irrigation and Drainage
(SVP-OZ-HM)



Takashi FUJITA
Leader
Study Team
Japan International Cooperation
Agency (JICA)

Attachment - 1



 Studyarea
 Militally area
 Mountenouce

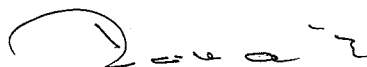


Study Area

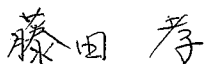


MINUTES OF MEETING
ON
PROGRESS REPORT (1)
FOR
THE STUDY FOR SUSTAINABLE DEVELOPMENT OF AGRICULTURE
IN ZAHORSKA LOWLAND AND PROTECTION OF NATURAL RESOURCES
IN SLOVAK REPUBLIC
AGREED UPON BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
AND
SLOVAK WATER MANAGEMENT ENTERPRISE
BRANCH OFFICE IRRIGATION AND DRAINAGE (SVP-OZ-HM)

Bratislava,
December 4, 2001



Štefan REHAK
Director
Slovak Water Management Enterprise
Branch Office Irrigation and Drainage
(SVP-OZ-HM)



Takashi FUJITA
Leader
Study Team
Japan International Cooperation
Agency (JICA)

In accordance with the Scope of Work for the Study for Sustainable Development of Agriculture in Zahorska Lowland and Protection of Natural Resources in Slovak Republic (hereinafter referred to as "the Study"), the Government of Japan, through Japan International Cooperation Agency (JICA), dispatched to the Slovak Republic the Study Team, headed by Mr. Takashi FUJITA, for the implementation of the Study.

At the end of the field survey of the Phase I of the Study, the Study Team submitted officially twenty (20) copies of the Progress Report (1) and explained its contents with an emphasis laid on the results of data collection and their review, the expected regional agriculture in future, the approach and basic concept of the guidelines, the necessity of participation of related organizations to manage the guidelines effectively, the selection of the case study site, etc. in the presence of Slovak organizations represented by the Slovak Water Management Enterprise, Branch Office Irrigation and Drainage, (SVP-OZ-HM) on November 27 and 30, 2001 at the office of SVP-OZ-HM.

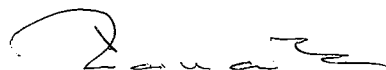
As a result of explanation and exchange of opinions on the Progress Report (1), the Slovak side and Japanese side agreed upon the following points:

1. The Slovak side accepted that the contents of the Progress Report (1) were prepared in due compliance with the conditions set forth in the Inception Report for the Study.
2. The Slovak side introduced that the Water Protection and Water Use Act to cope with the EU Water Directive is under preparation, and mentioned that the water management policy of Slovakia would be changed under the Law. The Slovak side requested to the Study Team to consider this new framework in the Study, even the detail had not yet decided. The Study Team requested detail information on that and replied to be taking consideration as much as possible.
3. The both side agreed upon the basic idea of selection of the case study site and the sites will be finally decided at the beginning of the Phase II Study.
4. The Slovak side agreed upon that the Study Team will proceed to the next stage of the Study in accordance with the methodology and tentative schedule mentioned in the Progress Report (1).

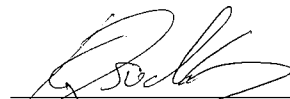


MINUTES OF MEETING
ON
PROGRESS REPORT (2)
FOR
THE STUDY FOR SUSTAINABLE DEVELOPMENT OF AGRICULTURE
IN ZAHORSKA LOWLAND AND PROTECTION OF NATURAL RESOURCES
IN SLOVAK REPUBLIC
AGREED UPON BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
AND
SLOVAK WATER MANAGEMENT ENTERPRISE
BRANCH OFFICE IRRIGATION AND DRAINAGE (SVP-OZ-HM)

Bratislava,
April 29, 2002



Štefan REHÁK
Director
Slovak Water Management Enterprise
Branch Office Irrigation and Drainage
(SVP-OZ-HM)



Kazuhiro TSUCHIDA
Study Team
Japan International Cooperation
Agency (JICA)

In accordance with the Scope of Work for the Study for Sustainable Development of Agriculture in Zahorska Lowland and Protection of Natural Resources in Slovak Republic (hereinafter referred to as "the Study"), the Government of Japan, through Japan International Cooperation Agency (JICA), dispatched to the Slovak Republic the Study Team, headed by Mr. Takashi FUJITA, for the implementation of the Study.

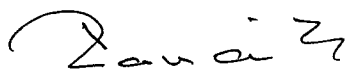
At the end of the field survey of the Work in Slovakia (2), the Study Team submitted officially twenty (20) copies of the Progress Report (2) and explained its contents with an emphasis laid on the results of the field observation and data collection targeting to grasp the natural and cultivating conditions in the spring season, in the presence of Slovak organizations represented by the Slovak Water Management Enterprise, Branch Office Irrigation and Drainage, (SVP-OZ-HM) on April 29, 2002 at the office of SVP-OZ-HM.

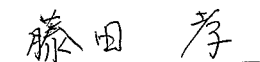
As a result of explanation and exchange of opinions on the Progress Report (2), the Slovak side and Japanese side agreed upon the following points:

1. The Slovak side accepted that the contents of the Progress Report (2) were prepared in due compliance with the conditions set forth in the Inception Report for the Study.
2. The both side agreed upon the modification of the proposed case study site and the sites will be finally decided at the beginning of the Phase II Study on June 2002.
3. The Slovak side agreed upon that the Study Team would proceed to the next stage of the Study in accordance with the methodology and tentative schedule mentioned in the Progress Report (2).
4. The Slovak side mentioned the industrial park project in the Plavecký Štvrtok and the necessity of considering the influence of that to the agriculture sector especially in the water management in the succeeding study. The Study Team requested detail information on that and replied to be taking consideration as much as possible.

MINUTES OF MEETING
ON
INTERIM REPORT
FOR
THE STUDY FOR SUSTAINABLE DEVELOPMENT OF AGRICULTURE
IN ZAHORSKA LOWLAND AND PROTECTION OF NATURAL RESOURCES
IN SLOVAK REPUBLIC
AGREED UPON BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
AND
SLOVAK WATER MANAGEMENT ENTERPRISE
BRANCH OFFICE IRRIGATION AND DRAINAGE (SVP-OZ-HM)

Bratislava,
July 01, 2002


Stefan REHAK
Director
Slovak Water Management Enterprise
Branch Office Irrigation and Drainage
(SVP-OZ-HM)


Takashi FUJITA
Team Leader
Study Team
Japan International Cooperation
Agency (JICA)

Witnessed by


Masatada TAKEMOTO

Agricultural Development
Study Division
Japan International Cooperation
Agency (JICA)

In accordance with the Scope of Work for the Study for Sustainable Development of Agriculture in Zahorska Lowland and Protection of Natural Resources in Slovak Republic (hereinafter referred to as "the Study"), the Government of Japan, through Japan International Cooperation Agency (JICA), dispatched to the Slovak Republic the Study Team, headed by Mr. Takashi FUJITA, for the implementation of the Study.

At the beginning of the field survey of the Work in Slovakia (3), the Study Team submitted officially twenty (20) copies of the Interim Report and explained its contents with an emphasis laid on the contents of the draft technical guidelines and the approach of the case study, in the presence of Slovak organizations represented by the Slovak Water Management Enterprise, Branch Office Irrigation and Drainage (SVP-OZ-HM), on June 26, 2002 at the office of SVP-OZ-HM.

As a result of explanation and exchange of opinions on the Interim Report, the Slovak side and Japanese side agreed upon the following points:


1. The Slovak side accepted that the contents of the Interim Report were prepared in due compliance with the conditions set forth in the Inception Report for the Study.
2. Both sides agreed upon the proposed case study sites and the approach to the Case Study.
3. The Study Team explained the necessity of preparing the Guidelines in Slovak language to facilitate understanding and discussion on their contents by the stakeholders including farmers/enterprises. The Study Team requested SVP-OZ-HM to translate the Guidelines into the Slovak language and SVP-OZ-HM accepted the request.
4. The Study Team explained the schedule of workshops in this stage, that comprise the 1st workshop to be held in July and the 2nd workshop to be held in September. SVP-OZ-HM mentioned the importance of inviting concerned personnel from the Ministry of Agriculture to both workshops and the new regional administration (VUC) to the 2nd workshop. The Study Team agreed but mentioned that all participants will be requested to study the report carefully before the workshop.
5. The Slovak side agreed that the Study Team would proceed to this stage of the Study in accordance with the methodology and tentative schedule mentioned in the Interim Report.
6. JICA expressed the acceptance of one trainee for a counterpart training in Japan in the field of the soil management. The Slovak side answered they had selected the candidate for the training and the necessary application form had submitted though the Embassy of Japan.



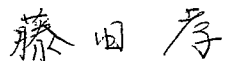


MINUTES OF MEETING
ON
PROGRESS REPORT (3)
FOR
THE STUDY FOR SUSTAINABLE DEVELOPMENT OF AGRICULTURE
IN ZAHORSKA LOWLAND AND PROTECTION OF NATURAL RESOURCES
IN SLOVAK REPUBLIC
AGREED UPON BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
AND
SLOVAK WATER MANAGEMENT ENTERPRISE
BRANCH OFFICE IRRIGATION AND DRAINAGE (SVP-OZ-HM)

Bratislava,
September 19, 2002



Stefan REHAK
Director
Slovak Water Management Enterprise
Branch Office Irrigation and Drainage
(SVP-OZ-HM)



Takashi FUJITA
Team Leader
Study Team
Japan International Cooperation
Agency (JICA)

In accordance with the Scope of Work for the Study for Sustainable Development of Agriculture in Zahorska Lowland and Protection of Natural Resources in Slovak Republic (hereinafter referred to as "the Study"), the Government of Japan, through Japan International Cooperation Agency (JICA), dispatched to the Slovak Republic the Study Team, headed by Mr. Takashi FUJITA, for the implementation of the Study.

At the end of the field survey of the Work in Slovakia (3), the Study Team submitted officially twenty (20) copies of the Progress Report (3) and explained its contents with an emphasis laid on the results of the case study including the farmland management plan, irrigation and drainage recovery plan and cultivation plan, in the presence of Slovak organizations represented by the Slovak Water Management Enterprise, Branch Office Irrigation and Drainage, (SVP-OZ-HM) on September 18, 2002 at the office of SVP-OZ-HM.


As a result of explanation and exchange of opinions on the Progress Report (3), the Slovak side and Japanese side agreed upon the following points:

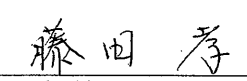
1. The Slovak side accepted that the contents of the Progress Report (3) were prepared in due compliance with the conditions set forth in the Inception Report for the Study.
2. The Slovak side agreed upon that the Study Team would proceed to the next stage of the Study in accordance with the methodology and tentative schedule mentioned in the Progress Report (3).
3. Both side agreed upon that the seminars on the Guidelines are to be held in January 2003 and the date was tentatively set on January 13 and 14. It was agreed that both side have responsibilities to prepare those seminars in Slovakia.
4. The Slovak side agreed upon that they would modify and complete the translation of the Guidelines to Slovak according to the review and modification of the original by the Study Team.



MINUTES OF MEETING
ON
DRAFT FINAL REPORT
FOR
THE STUDY FOR SUSTAINABLE DEVELOPMENT OF AGRICULTURE
IN ZAHORSKA LOWLAND AND PROTECTION OF NATURAL RESOURCES
IN SLOVAK REPUBLIC
AGREED UPON BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
AND
SLOVAK WATER MANAGEMENT ENTERPRISE
BRANCH OFFICE IRRIGATION AND DRAINAGE (SVP-OZ-HM)

Bratislava,
January 15, 2003


Stefan REHAK
Director
Slovak Water Management Enterprise
Branch Office Irrigation and Drainage
(SVP-OZ-HM)


Takashi FUJITA
Team Leader
Study Team
Japan International Cooperation
Agency (JICA)

Witnessed by


Masatada TAKEMOTO

Agricultural Development
Study Division
Japan International Cooperation
Agency (JICA)

In accordance with the Scope of Work for the Study for Sustainable Development of Agriculture in Zahorska Lowland and Protection of Natural Resources in Slovak Republic (hereinafter referred to as "the Study"), the Government of Japan, through Japan International Cooperation Agency (JICA), dispatched to the Slovak Republic the Study Team, headed by Mr. Takashi FUJITA, for the implementation of the Study.

At the final stage of the Study, the Study Team submitted officially thirty (30) copies of the Draft Final Report and explained its contents with an emphasis laid on the contents of the guidelines and the operation and maintenance of the guidelines, in the presence of Slovak organizations represented by the Slovak Water Management Enterprise, Branch Office Irrigation and Drainage (SVP-OZ-HM), on January 8, 2003 at the office of SVP-OZ-HM.

Seminars on the guidelines were held at Kostoliste on January 13, 2003 and on Bratislava on January 14, 2003 inviting local farmers/farming companies and related agencies.

As a result of explanation and exchange of opinions on the Draft Final Report, the Slovak side and Japanese side agreed upon the following points:

1. The Slovak side accepted that the contents of the Draft Final Report were prepared in due compliance with the conditions set forth in the Inception Report for the Study.
2. The Study Team requested to the Slovak side and was accepted that the additional comments, if any, be informed to the Study Team within one month, for the preparation of the Final Report.
3. The Study Team requested to make clear the future responsible organization for the Guidelines and the Slovak side stated that the SVP-OZ-HM will take responsibility for maintaining the Guidelines and promoting their use by the concerned parties.
4. Close communication between the two parties will be maintained regarding the preparation of the Final Report.

2



<i>APPENDIX 3</i>	<i>LIST OF GIS MAP</i>
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APPENDIX 3 LIST OF GIS MAP

1. BASE MAPS

Group	Map	Operation Manual	Main Report	Annex
Topography	Topographic Map 1:10 000	C.1.1		
	Elevation Contours	C.1.2		
	Digital Model of Relief (Mosaic – Slope, Aspect, Curvatures)	C.1.3		
	SPOT Satellite Image – Panchromatic	C.1.4		
Climate, Meteorology	Map of Climate Conditions (Precipitation, Temperatures and Humidity)	C.2.1		B.7.2
	Map of Climate Conditions (Evaporation and Winds)	C.2.2		B.7.3
Soils	Soil (Type) Map	C.3.1		B.10.1
	Soil Texture Map	C.3.2	Figure 1.1	B.10.2
	Soil Productivity Map	C.3.3		B.10.3
Waters	Observation network of Surface Water of the Morava River Basin	C.4.1		B.8.1
	River System and Microbasins	C.4.2		B.8.3
	Groundwater Balance Units and Groundwater Observation Network of the Morava River Basin	C.4.3		B.8.2
Land Cover	Land Cover Map of the Study Area (1970)	C.5.1		B.6.2
	Land Cover Map of the Study Area (1990)	C.5.2		B.6.3
Agriculture	Map of Agricultural Land Unit Price	C.6		
Forests	Forest Regions and forest management units	C.7.1		
	Forest Management Map	C.7.2		
Infrastructure	Road and Railway Network Map	C.8.1		B.5.1
Administrative boundaries	Administrative Boundaries in the Morava River Basin	C.9.1		B.1.1
	Location Map of Extension Offices	C.9.2		B.13.3
	Nature Conservation Areas	C.9.3		B.14.1
Socio-Economy	Map of Population Distribution (1999)	C.10.1		B.2.1
	Map of Age Index Distribution (1999)	C.10.2		B.2.4
	Map of Net Migration Distribution (sum of '96 to '99)	C.10.3		B.2.2

2. THEMATIC MAPS

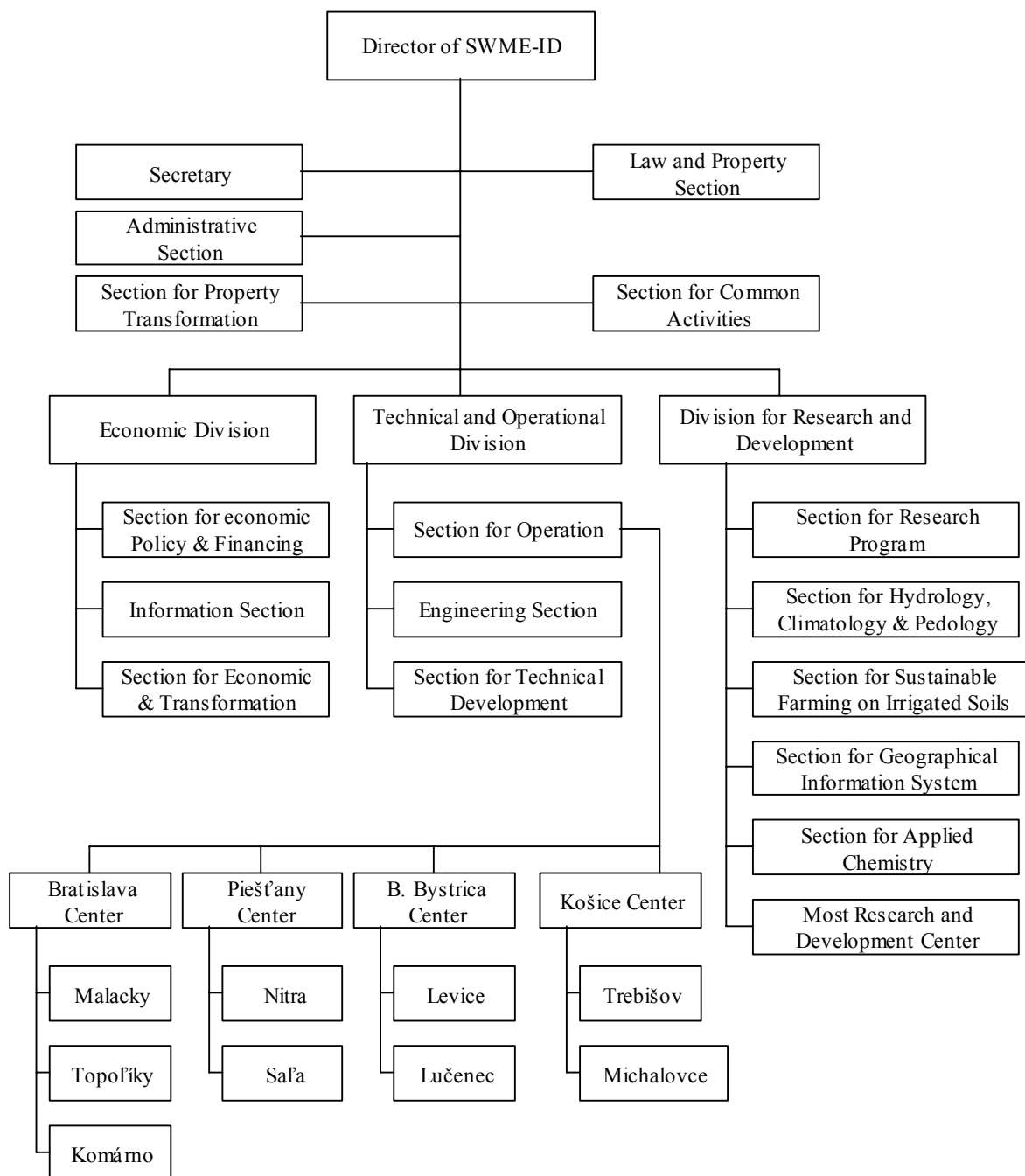
Group	Map	Operation Manual	Main Report	Annex
Digital Model of Relief and Soil Erosion Assessment	Topographic Map	3.1.2		B.3.1
	Raster Model of Relief (elevation)			
	Water Erosion Potential Map	3.1.3		B.10.5
	Wind Erosion Potential	3.1.4		B.10.4
Land Use and Land Cover Classification	SPOT Satellite image	3.2.2		
	Land cover map of the Study Area (year 2000)	3.2.3		B.6.4
	Land Use Structure of the Study Area	3.2.4		
Agricultural Land Use Survey and Farm Management	Land Use Registration Map	3.3.2	Figure 1.2	B.6.1
	Farming Types and Farm Management	3.3.3	Figure 1.3	B.11.5
Integration of Cadaster Maps and Land Registry	Examples of Integrated Cadaster map	3.4.2		
Preparation of Digital Irrigation and Drainage System Maps	Location and State of the irrigation System	3.5.2	Figure 1.4	B.9.3
	Drainage areas	3.5.3		
Draft Land Evaluation of the Study Area	Zonation of the Study Area	3.6.2	Figure 2.3	
	Land Resources Evaluation (Draft)	3.6.3	Figure 2.4	

3. EVALUATION MAPS

Group	Map	Operation Manual	Main Report	Annex
Land Resources Evaluation Map and Soil Unit Map	Result of Grouping into Soil Unit	4.1.1.	Figure 3.3	
	Soil Unit by Farming Plot	4.1.2	Figure 3.9	
	Land Use Plan of Case Study Area	4.1.3	Figure 3.10	
Irrigation and Drainage Evaluation Maps	Irrigation Condition in Case Study Area	4.2.1	Figure 3.4	G.2.2.1.3
	Drainage Condition in Case Study Area	4.2.2	Figure 3.5	
Farming and Cropping Maps	Cultivated Crops in Case Study Site	4.3.1	Figure 3.2	
	Possible Crop Rotation	4.3.2	Figure 3.11	D.4.2-D.4.4
	Sample of Cropping	4.3.3	Figure 3.14	D.4.5-D.4.7

<i>APPENDIX 4</i>	<i>ORGANIZATION CHART</i>
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APPENDIX 4 ORGANIZATION CHART OF MINISTRY OF AGRICULTURE



(April 2003)

Organization Chart of Slovak Water Management Enterprise
Branch Office Irrigation and Drainage

MINISTRY OF AGRICULTURE OF SLOVAK REPUBLIC

