

## 資 料

資料 1. Terms of Reference

資料 2. Scope of Work

資料 3. Minutes of Meeting

資料 4. 主要面談者リスト

資料 5. 質問票及びその回答

資料 6. 収集資料リスト



資料 1. Terms of Reference

MINISTRY OF FOREIGN AFFAIRS OF ROMANIA

ASIA AND THE FAR EAST DIVISION

Nr. G(02)/3064

The Ministry of Foreign Affairs of Romania presents its compliments to the Embassy of Japan in Bucharest and has the honour to forward, herewith enclosed, the request of the Romanian Ministry of Public Works concerning the "Feasibility Study on the Wastewater Treatment in Seven Cities along the Danube River Downstream Reach", agreed upon between the above mentioned ministry and JICA in november 1995 and march 1996.

The Ministry of Foreign Affairs of Romania avails itself of this opportunity to renew to the Embassy of Japan in Bucharest the assurances of its highest consideration.

Bucharest, June 18, 1996




EMBASSY OF JAPAN

- IN TOWN -



MINISTRY OF PUBLIC WORKS AND TERRITORIAL PLANNING  
General Department for Public Works  
Municipal Services Department

De acord  
Secretar de Stat  
Teodor Gavrilă  


**Application for the Technical Cooperation (Development Study)  
by the Government of Japan**

**1. Study Digest**

**(1) Study Title**

Feasibility Study on the Wastewater Treatment in Seven Cities along the Danube River Downstream Reach.

**(2) Location**

Cities of Tulcea, Galati, Braila, Calarasi, Giurgiu, Turnu Magurele and Turnu Severin

**(3) Implementation Agency**

- Name of the Agency : Ministry of Public Works
- Number of the Staff of the Agency :
- Budget allocated to the Agency :
- Organisation Chart

**(4) Justification of the study**

**i) Present conditions of the sector**

Presently, 586 cities have a sewage collection system (sewer network) in Romania. 50% of population receive sewage collection services by sewer networks in Romania. A sewerage system in most cities, however, is not equipped with a wastewater treatment plant (WWTP) or has a WWTP with not enough capacity to treat sewage collected by their sewer networks.

Accordingly, most sewage collected are discharged to rivers without any or proper treatment. Amount of untreated sewage being discharged to rivers is estimated at 50% of the collected sewage and are considered to be a major pollution source of river water quality.

Seven industrial cities in the project area are located along the downstream reach of the Danube river and are directly discharging their

wastewater to the Danube river. Although sewer networks in those cities have been developed at a higher level, some cities have only a primary treatment by a simple sedimentation and the other cities do not have any treatment at all.

#### ii) Sectorial development policy of the national/local government

The Ministry of Public Works has set up a target ultimately to facilitate a wastewater treatment plant with a biological treatment process in every city where a public water supply system is provided. The Ministry intends to combine development of sewerage system with development of new water supply system, as well as up-grading of existing wastewater treatment plants.

The Ministry of Public Works plans to construct 43 wastewater treatment plant by 2010. Construction of 16 among 43 wastewater treatment plants are to be realized utilizing loans EBRD, World Bank and other finance sources. They are expecting to continue development of wastewater treatment plants in remaining cities by utilizing further foreign loans.

However, local governments, which are responsible for preparation of a feasibility study on the construction of a wastewater treatment plant, have not enough capacity to conduct a feasibility study in terms of their finance and technology.

#### iii) Present sewerage development conditions of the proposed cities

All the proposed seven cities have sewer networks to provide sewer collection services. Sewer collection services in each city cover 60 to 90% of the population. Residents of all apartment houses and some portions of individual houses discharge their wastewater to the sewer networks. Remaining residents discharge wastewater into the ground through septic tanks. Sludge from the septic tanks are collected by vehicles and are disposed to sewer networks or treatment plants. This means that most of the pollution loads generated in these cities reach to the Danube river with passing sewerage system.

Only three cities, namely Calarasi, Giurgiu and Turnu Magurele, among seven cities have a wastewater treatment plant in their sewerage system. In these cities, wastewater is discharged to the Danube river after treatment by sedimentation and chlorination and, in other four cities, wastewater is discharged without any treatment. Sewer networks in those cities comprise several trunk mains that have an individual outlet to the river. (There is an interceptor system in Tulcea to transmit wastewater downstream of the city area, but it does not work well due to shortage of its capacity).

Sewerage development conditions each city are summarized in Annex 1.

#### iv) Outline of the study

The main purpose of the study is to undertake feasibility studies on the construction of wastewater treatment plants in the seven cities to stop discharging untreated or poorly treated wastewater to the Danube river.

Basically, facilities to be studied will be limited in the wastewater treatment plant, however, interceptors and pumping stations will be included in the study to bring sewage to the plant from the existing sewage to the plant from the existing sewer networks, if necessary.

Proposed facilities to be studied in each city are summarized as below :

Name of City	Facilities to be studied
Tulcea	New Treatment plant Up-grading of existing interceptors and Pumping Station
Galati	New Treatment Plant New Interceptor
Braila	New Treatment Plant New Interceptor
Calarasi	Biological process*
Giurgiu	Biological process*
Turnu Magurele	Biological process*
Turnu Severin	New Treatment Plant New Interceptor

\*: Rehabilitation of the existing facilities will be included if necessary to ensure normal performance of a biological treatment process to be added.

The feasibility studies cover not only facilities designing but also institutional aspects of construction and operations of sewerage system and economic/financial analysis of the construction projects. As a result, the feasibility study will present enough information for a loan appraisal by foreign financing agencies.

(5) Desirable schedule of the study

One year from early 1997.

(6) Expected funding source and/or assistance (including external origin)

Technical Cooperation by the Government of Japan (Grant)

(7) Other relevant projects, if any

## **Municipality Utilities Development Plan (MUDP) in cooperation with EBRD:**

The plan intends to develop water supply system and sewerage system in selected cities. The plan is divided into two phases. The Phase I covers development of a sewerage system in four cities and some of project components are in the tendering stage. The Phase II will cover development of sewerage system in eight cities and their feasibility studies are going to be started. These cities have been selected mainly based on its necessity of water supply development and the seven cities for the proposed study are not included. Names of the cities for each phase are as follows :

Phase I : Brasov, Iasi, Targu Mures\*, Craiova and Timisoara

Phase II : Oradea, Focsani, Braila\*, Constanta, Targoviste,  
Cluj Napoca and Bistrita

\*: The development of sewerage system in these cities are not included in the scope of the MUDP.

## **2. Terms of Reference of the proposed Study**

### **(1) Necessity/Justification of the study**

The countries of the Danube River basin and interested international institutions met in Sofia in September 1991 to draw up an initiative to support and reinforce national actions for the restoration and protection of the Danube River - the Environmental Programme for the Danube River Basin - known as the Danube Environmental Programme. The countries set up a task force and a programme coordination unit to coordinate and support implementation of the Programme. In 1994, the task force drafted the Strategic Action Plans for the Danube River Basin as an essential early step towards addressing the Danube Basin's environmental problems in a comprehensive way.

The Strategic Plan identified a development of wastewater treatment as one of priority actions to be taken to achieve the target. The Plan also listed discharging wastewater to the Danube River in cities along its downstream reach as one of hot spots.

Therefore, the sewerage development in cities along the Danube river should have a higher priority in the nationwide sewerage development plan. The proposed seven cities have been selected from cities along the Danube river based on its population. (refer to population in major cities shown in Annex 1). Other cities along the Danube have much smaller population than those of the selected and do not have sewer collection services. While it would be necessary to develop sewerage system even in these small towns, its priority should be lowered as long as the present pollution loads to the Danube concerned.

In the proposed cities, coverage of wastewater collection services is 60 to 90% of its population and only three among seven cities have a wastewater treatment plant with a sedimentation process.

In Romania, coverage of wastewater collection services is 50% of its total population and a half of the collected wastewater is treated before being discharged to rivers. Therefore, while both expansion of the sewage collection services and up-grading of existing sewerage system are urgent issues to be addressed, in particular in cities along the Danube River, up-grading of the existing system has a higher priority from a view point of reducing pollutants loads to the Danube River.

There are several plans to construct a new wastewater treatment plant or to improve an existing wastewater treatment plant in such cities, but any of the plans have not realized due to a lack of financial sources. Realization of such plans will be possible only by utilizing loans from foreign financing agencies, judging from current budget constraints in the central and local governments. However, local governments, which are responsible for preparation of a feasibility study on the construction of a wastewater treatment plant, have not enough capacity to conduct a feasibility study in terms of their financial and technical resources. Consequently, they do not have appropriate data/information to apply foreign loans for the realization of their plan.

The proposed study will help the realization of the implementation of construction or improvement projects for wastewater treatment in those cities by providing a preliminary design of wastewater treatment facilities and other necessary information for loan appraisals by foreign financing agencies for those cities.

## (2) Study's purpose

- To achieve feasibility studies for the construction of new treatment plants in the cities which have sewerage collection system and modernization and up-grading of existing treatment plant.

- To transfer technology and know-how for the rehabilitation and up-grading sewerage collection system. Monitoring sewerage collection system.

## (3) the study Area

Seven cities located along the downstream reach of the Danube River, namely, Tulcea, Galati, Braila, Calarasi, Giurgiu, Turnu Magurele and Turnu Severin.

## (4) Scope of the study

In order to achieve the objectives mentioned above, the study will cover the followings :

- 1) Collection and analysis of relevant data/information, review of previous studies and reconnaissance



### General

- (a) Data on natural conditions such as climate, topography, geology, etc.
- (b) Hydrological and hydraulic conditions in each city
- (c) Social and economic conditions and statistics
- (d) Population, population density and land use
- (e) Industrial activities
- (f) Surface and ground water uses
- (g) Existing and future water supply system
- (h) Development plans, such as urban planning, related to the study
- (i) Financial conditions

### Sewerage

- (a) Legislation and institutional aspects
- (b) Existing and future sewerage system
- (c) Existing sewerage facilities
- (d) Actual operations and maintenance of existing sewerage facilities
- (e) Laws, standards, guidelines and criteria related to construction and operations of sewerage facilities
- (f) Proposed site for wastewater treatment facilities

## 2) Field Surveys

- (a) Topographic surveys for interceptor routes and treatment sites
- (b) Soil surveys for facilities construction sites
- (c) Water quality surveys for existing sewage treatment plant and wastewater being discharged to rivers
- (d) Questionnaire surveys on residents concerns about sewerage

## 3) Reviews on existing sewerage plan and facilities plan

- (a) Areas and populations to be covered by sewer collection networks
- (b) Sewage amount and quality
- (c) Types, sizes and locations of sewage facilities

## 4) Determination of planning framework

- (a) Target year
- (b) Design sewage flow

(c) Required system components

**Note :**

Basically the study aims to cover the construction of a new sewage treatment plant in the cities where no plant exists presently and the construction of an additional biological treatment process in the existing primary sewage treatment plants in order to treat the sewage currently discharged to the Danube river without any or with improper treatment. However, the study would cover the construction plan of interceptors for the cities where sewage is discharged to the river at several points to transmit the whole sewage to the treatment plant. Also the study could cover the rehabilitation plan of the existing treatment facilities, such as grid chambers, sewage lift pumps, distribution tanks, etc., necessary to ensure proper performance of the additional biological process.

(d) Sites for facilities construction

5) Facility planning

- (a) Establishing standard design methods
- (b) Preliminary design of facilities

6) Operations and maintenance plan

- (a) Schedule of operations and maintenance works
- (b) Required resources

7) Management plan

- (a) Preparation of plans for managing sewerage facilities construction and operations/maintenance
- (b) Recommendation on required organization for sewerage management

8) Cost estimates

- (a) Investigation of necessary equipment and construction methods
- (b) Construction schedule
- (c) Estimates of construction costs
- (d) Estimates of operations/maintenance costs
- (e) Estimation of project costs

9) Financial Plan

- (a) Setting up several cases of financial sources (combination of self financing, subsidy by the central government, foreign loans)
- (b) Preparation of cash flows for each case
- (c) Required sewage charge system for each case
- (d) Recommendation on the most practical financial sources and sewage charge system

10) Project evaluation

- (a) Financial analysis
- (b) Social and economic analysis
- (c) Institutional analysis
- (d) Environmental analysis

11) Project implementation plan (Prioritization of seven cities)

(5) Study Schedule

Tentative study schedule is proposed as follows :

Month	1	2	3	4	5	6	7	8	9	10	11	12	13
-------	---	---	---	---	---	---	---	---	---	----	----	----	----

Data collection and analysis in Romania													
Report Preparation in Japan													
Report													

Details of the work schedule for "Data collection and analysis in Romania" and "Report preparation in Japan" is shown in Annex 3.

(6) Expected Major Outputs of the study

Major outputs of the study are expected as follows :

- \* Preliminary designing of sewerage facilities
- \* Recommendation on institutional aspects necessary for sound sewerage system management
- \* Capacity building of staff of counterpart organizations

- (7) Request of the study to other donor agencies, if any

None.

- (8) Other relevant information, if any

MUDP; as mentioned in (7) of.1.

**3. Facilities and information for the Study Team, etc.**

- (1) Assignment of counterpart personnel of the implementing agency for the study (number, academic background, etc.)

Name	Organization
	Ministry of Public Works
	Other organizations concerned: D.A.P.L., M.A.P.P.M., Universitatea Politehnica-Bucuresti, IPROMED, PROED, ICIM.
	Tulcea
	Galati
	Braila
	Calarasi
	Giurgiu
	Turnu Magurele
	Turnu Severin

- (2) Available data, information, documents, maps etc. related to the study  
(Please attach the list)

Please list up availability of following information by each city :

- Population/Industry
- Water supply
- Land use
- Sewerage development plan
- Existing sewerage facilities plan
- Maps and drawings of existing sewerage facilities
- Topographic/geographic maps of the area

- (3) Information on the security conditions in the study area

Please fill up, if any particular conditions

#### **4. Global Issues**

- (1) Environmental components of the Project, if any

This is a feasibility study on improvement of the existing sewerage facility to upgrade a treatment level that reduces pollutants loads to the Danube River. Therefore, projects to be studied will contribute to the realization of the Strategic Action Plans for the Danube River Basin.

- (2) Anticipated environmental impacts (both natural and social) by the Project, if any

No adverse environmental impacts are anticipated while it would contribute to the improvement of the water quality of the Danube River.

- (3) Women as main beneficiaries or not

No

- (4) Projects components which requires special considerations for women (such as gender difference, specific role of women, woman's participation) if any

None

- (5) Anticipated impacts of the Project on women, if any

No

- (6) Poverty reduction components of the Project, if any

No

- (7) Any constraints to be caused by the Project on the low-income people

No

#### **5. Undertakings of the Government of Romania**

In order to facilitate a smooth and efficient conduct of the study, the Government of Romania shall take necessary measures :

- to secure the safety of the Study Team
- to permit the members of the Study Team to enter, leave and sojourn in Romania in connection with their assignments therein, and exempt them from alien registration requirement and consular fees.
- to exempt the Study Team from taxes, duties and any other charges on equipment, machinery and other materials brought into and out of Romania for the conduct of the study.
- to exempt 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.
- to provide necessary facilities to the Study Team for remittance as well as utilization of the funds introduced in Romania from Japan in connection with the implementation of the study.
- to secure permission or entry into private properties or restricted areas for the conduct of the study.
- to secure permission for the study to take all data, documents and necessary materials related to the study out of Romania to Japan.
- to provide medical services as needed. Its expenses will be chargeable to members of the Study Team.

6. The Government of Romania shall bear claims, if any arises against member(s) of the Japanese 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 member of the Study Team.

7. The Ministry of Public Works shall act as a counterpart agency to the Japanese Study team and also as a coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the study.

The Government of Romania assures that the matters referred to in this form will be ensured for the smooth conduct of the Development Study by the Japanese Study team.

Signed: \_\_\_\_\_

AURELIU DUMITRESCU - Manager Municipal  
Titled: \_\_\_\_\_ Services

On behalf of the Government of Romania

D a t e : the 3rd of June, 1996

Annex-1

Present conditions of Sewerage concerned matters in the proposed cities

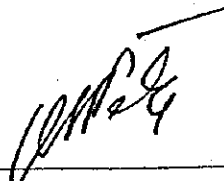
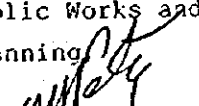
Items	Unit	Name of cities						
		Tulcea	Galati	Braila	Calarasi	Giurgiu	T. Magrele	T. Severin
Population	persons	97,786	400,000	300,000	80,000	12,000	40,000	118,359
No. of employees In Autonomia	persons	800	2,814		1,000	600	400	179
No. of employees in sewerage section	persons	70	268		300	100	63	40
Revenue	(Mil. Lei)		2,200	2,000	36000	2,000	143	230
Water supply	(m3/day)	112,320	236,226	160,000	26,667	40,000	11,315	58,600
Water Charge (domestic)	(Lei/m3)	280	296	165	400	274	208	155
Water Charge (industrial)	(Lei/m3)	600	1,037			624	500	355
Sewer coverage	(ppln.%)	65	80	70	63	70	85	90
Sewage amount	(m3/day)	112,320	170,000	160,000		25,000	12,329	46,800
Percentage of Industrial waste	(%)	40	25			30		42
Sewerage charge (domestic)	(Lei/m3)	90	54	41	250	200	85	15
Sewerage charge (industrial)	(Lei/m3)	280	237				119	26
Treatment plant		No	No	No	primary	primary	primary	No
Treatment Capacity	(m3/day)				39,744	35,720	24,200	
Trunk mains		single	6 series	3 series	single	single	single	multi


including water supply revenue

資料2. Scope of Work

SCOPE OF WORK  
FOR  
THE FEASIBILITY STUDY  
ON  
WASTEWATER TREATMENT  
ALONG  
THE DANUBE RIVER DOWNSTREAM REACH  
IN  
ROMANIA  
AGREED UPON BETWEEN  
MINISTRY OF PUBLIC WORKS AND TERRITORIAL PLANNING  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY

Bucharest, August 4, 1998

  
Mr. Peter DERER  
Secretary of State  
Ministry of Public Works and  
Territorial Planning  
Romania  


  
Mr. Osamu FUJIKI  
Team Leader,  
Preparatory Study Team,  
Japan International Cooperation  
Agency (JICA)



## I. INTRODUCTION

In response to the request of the Government of Romania, the Government of Japan has decided to conduct the Feasibility Study on Wastewater Treatment along the Danube River Downstream Reach (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 the Government of Romania.

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

## II. OBJECTIVES OF THE STUDY

The objectives of the Study are:

1. to conduct a basic survey on environmental and existing wastewater management in seven cities,
2. to conduct a feasibility study for wastewater treatment in existing sewer system in targeted cities, and
3. to carry out technology transfer to the Romanian counterpart personnel in the course of the Study.

## III. STUDY AREA

The Study will cover the seven cities within city boundaries of Galati, Braila, Turnu Magurele, Tulcea, Turnu Severin, Giurgiu, and Calarasi.

## IV. SCOPE OF THE STUDY

In order to achieve the objectives mentioned above, the Study will cover the following items.

1. Basic survey in seven cities  
(1) Collection, review and analysis of the following related data

(4)

OK

- and information on the Study
  - a. physical, socio-economic and financial conditions
  - b. environmental conditions (sanitation, environmental laws and regulations, etc.)
  - c. laws, regulations and policies
  - d. current land use and plans
  - e. on-going and planned projects relevant to the Study
  - f. other relevant data and information.
- (2) Understanding of the present conditions of sewerage system in seven cities
  - a. existing sewerage facilities,
  - b. sewerage covering area, and
  - c. conditions of wastewater management
- (3) Supplemental data collection on actual conditions
  - a. quality and quantity of current wastewater
  - b. water quality of the Danube River
  - c. initial environment evaluation (IEE)
- 2. Feasibility study for wastewater treatment in existing sewer system in targeted cities
  - (1) Supplemental survey
  - (2) Field survey
    - a. topographical and geological survey
    - b. Public awareness on environmental protection and their willingness and affordability to pay
  - (3) Evaluation of present conditions of wastewater management and identification of problems and issues
  - (4) Formulation of planning framework
    - a. population and urbanization
    - b. quality and quantity of wastewater
  - (5) Establishment of basic policies, goal and strategies
    - a. sewerage facility
    - b. wastewater treatment method
    - c. operation and management
    - d. treatment and disposal of sewage sludge
  - (6) Preliminary design of facilities
  - (7) Formulation of equipment procurement plan
  - (8) Formulation of construction plan
  - (9) Formulation of operation and maintenance plans

- (10) Formulation of organization, institution and human resource development plans
- (11) Cost estimation
- (12) Formulation of financial plan
- (13) Conduct of environment impact assessment (EIA)
- (14) Comprehensive project evaluation
- (15) Formulation of implementation plan

#### V. SCHEDULE OF THE STUDY

The Study will be carried out in accordance with the attached tentative schedule.

#### VI. REPORTS

JICA will prepare and submit the following reports in English to the Government of Romania.

1. Inception Report

Thirty (30) copies at the commencement of the first work period in Romania

2. Progress Report

Thirty (30) copies at the commencement of the second work period in Romania

3. Interim Report

Thirty (30) copies at the end of the second work period in Romania

4. Draft Final Report

Thirty (30) copies at the commencement of third work period in Romania

The Government of Romania will present its comments to JICA within one (1) month after the receipt of the Draft Final Report.

5. Final Report

Sixty (60) copies within two (2) months after JICA's receipt of comments on the Draft Final Report

#### VII. UNDERTAKINGS OF THE GOVERNMENT OF ROMANIA

1. To facilitate the smooth conduct of the Study, the Government of Romania shall take necessary measures:

(54)

W

- (1) to secure the safety of the Japanese study team;
  - (2) to permit the members of the Japanese study team to enter, leave and sojourn in Romania for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees;
  - (3) to exempt the members of the Japanese study team from taxes, duties, and other charges on equipment, machinery and other materials brought into Romania for the conduct of the Study;
  - (4) to exempt the members of the Japanese 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 Japanese study team for their services in connection with the implementation of the Study;
  - (5) to provide necessary facilities to the Japanese study team for remittance as well as utilization of the funds introduced into Romania from Japan in connection with the implementation of the Study;
  - (6) to secure permission for entry into all areas concerned for the implementation of the Study within the laws and regulations in force in Romania;
  - (7) to secure permission for the Japanese study team to take all data and documents to Japan, as necessary for analysis during the implementation of the Study within the laws and regulations in force in Romania, and
  - (8) to provide medical services as needed. Its expenses will be chargeable to members of the Japanese study team.
2. The Government of Romania shall bear claims, if any arise against members of the Japanese 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 Japanese study team.
  3. Ministry of Public Works and Territorial Planning (hereinafter referred to as "MPWTP") shall act as a counterpart agency to the Japanese study team and also as a coordinating body in relations with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.
  4. MPWTP shall, at its own expense, provide the Japanese study team

(5)

AW

with the following, in cooperation with other organizations concerned:

- (1) available data and information related to the Study,
- (2) counterpart personnel,
- (3) suitable office space with necessary equipment in Bucharest and cities to be studied,
- (4) credentials or identification cards, and
- (5) appropriate number of vehicles with drivers.

#### VIII. UNDERTAKINGS OF JICA

For the implementation of the Study, JICA shall take the following measures:

1. to dispatch, at its own expense and on a grant basis, study teams to Romania, and
2. to pursue technology transfer to the Romanian counterpart personnel in the course of the Study.

#### IX. OTHERS

JICA and MPWTP shall consult with each other in respect of any matter that may arise from or in connection with the Study.

(14)

*[Handwritten signature]*

TENTATIVE SCHEDULE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Work in Romania														
Work in Japan														
Report														

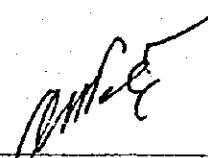
IC/R : Inception Report  
P/R : Progress Report  
IT/R : Interim Report  
DF/R : Draft Final Report  
F/R : Final Report

Handwritten signature and stamp.

資料 3. Minutes of Meeting


MINUTES OF MEETING  
ON  
SCOPE OF WORK  
FOR  
THE FEASIBILITY STUDY  
ON  
WASTEWATER TREATMENT  
ALONG  
THE DANUBE RIVER DOWNSTREAM REACH  
IN  
ROMANIA  
AGREED UPON BETWEEN  
MINISTRY OF PUBLIC WORKS AND TERRITORIAL PLANNING  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY

Bucharest, August 4, 1998



---

Mr. Peter DEVER  
Secretary of State  
Ministry of Public Works and  
Territorial Planning,  
Romania



---

Mr. Osamu FUJIKI  
Leader,  
Preparatory Study Team,  
Japan International Cooperation  
Agency (JICA)

In response to the official request of the Government of Romania, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Study Team, headed by Mr. Osamu FUJIKI (hereinafter referred to as "the Team"), to Romania from July 26 to August 14, 1998 to discuss the Scope of Work for the Feasibility Study on Wastewater Treatment along the Danube River Downstream Reach (hereinafter referred to as "the Study"). During its stay in Romania, the Team held a series of meetings with Ministry of Public Works and Territorial Planning (hereinafter referred to as "MPWTP") and other authorities concerned of the Government of Romania and conducted a reconnaissance on the Study area. The list of those who attended these meetings is shown in the Appendix I.

The main items which were discussed and agreed by both sides are as follows.

1. Targeted Cities for the Feasibility Study

Both the Team and the Romanian side agreed that the feasibility study would be implemented in Galati, Braila and Tulcea as targeted cities.

2. Target Year for the Study

Both sides agreed that the target year in the Study would be 2010.

3. Sewerage Facilities to be focused on in the Feasibility Study

Both sides agreed that the feasibility study would focus on the planning of the following items in targeted cities:

- (1) new wastewater treatment plants, and
- (2) new interceptors to convey the wastewater to the treatment plant, if necessary.

Both sides also confirmed that consideration for the expansion of the existing sewer network would be out of the scope.

4. Wastewater to be covered in the Study

Both sides agreed that the industrial wastewater accepted to the sewer network should satisfy the Romanian water quality standards within the Study





5. Candidate Sites for the New Sewerage Facilities

Both sides agreed that the Romanian side would acquire the candidate sites based on the result of the Study. The Romanian side will take necessary measures to permit conducting topographic and geological survey within the sites.

6. Environmental Impact Assessment (EIA)

Both sides agreed that EIA would be carried out based on the Romanian regulations.

7. Steering Committee

Both sides agreed that the Romanian side would organize the steering committee which would be responsible for overall supervision of the Study and decision making on policy matter related to the Study. The member of the steering committee would be from MPWTP and other authorities concerned as listed in the Appendix II.

8. Counterpart Team

Both sides agreed that the Romanian side would organize the counterpart team which would cooperate with the Study Team. The members of the counterpart team are shown in the Appendix III.

9. Reports

Both sides agreed that all the reports would be prepared in English and be open to the general public.

10. Counterpart Training in Japan

The Team explained that counterpart training in Japan would be one of the effective methods for the technology transfer. The Romanian side requested to dispatch the Romanian counterpart personnel to Japan. The Team replied that the Team would convey it to JICA.

11. Technology Transfer Seminar

The Team suggested that it would be necessary to organize a technology transfer seminar in the course of the Study. The Romanian side agreed to the suggestion and requested to perform the seminar when the Study Team would submit the draft final report. The details of the seminar will be discussed in the course of the Study.



## 12. Undertakings of the Romanian Side

- (1) The Team confirmed that the Romanian side would provide a suitable office space in MPWTP office and each municipal government office, with necessary equipment such as furniture and telephone before the commencement of the Study.
- (2) The Romanian side explained that MPWTP and each city would make effort to provide vehicles with drivers, however, requested of the Team that the Japanese side would provide vehicles in short when it is difficult. The Team mentioned that the Team would convey those situations to JICA.

(14)

at

Appendix I

List of Participants

(Romanian side)

Ministry of Public Works and Territorial Planning (MPWTP)

Mr. Gheorghe TOMOIALA	Secretary General of Ministry
Mr. Ion STANESCU	Director General, Technical General Directorate
Mr. Jeni IONITA	Deputy Director General, General Directorate for Public Works
Mr. Marius RADU	Director of Programme Coordinating Unit General Directorate for Public Works
Mr. Sorin Mugur DUMITRESCU	Deputy Director, Department of European Integration and External Cooperation
Ms. Georgeta VASILACHE	Inspector, Division of Municipal Services, General Directorate for Public Works

Ministry of Finance

Ms. Elena TIGLARU	Department of International Fiscal Agreement
Ms. Oana GHEORGHIU	Department of International Fiscal Agreement
Ms. Livia MARIN	General Directorate for Financial Relation with International Organizations
Ms. Georgeta SOVIANI	General Directorate for State Budget

Ministry of Water, Forest and Environmental Protection

Ms. Liliana MARA	Director, Directorate for Strategy and Regulation of Water Resources
------------------	---

Galati Municipality

Mr. Podaru NITA	Production Manager, S.C. Apaterm Galati
-----------------	---



Braila Municipality

Mr. Anton LUNGU

Mr. Romeo FIDRIHAN

Mayor

R.A.APTERCOL

Tulcea Municipality

Mr. Constantin MOCANU

Mr. Dumitru DUDUCA

Vice Mayor

Director, S.C.-A.C.E.T.-

Calarasi Municipality

Mr. Octavian BEZNEA

Mr. Marcel NUTU

Mr. Liviu CRETU

Vice Mayor

Director, S.C.Apa

Head of Sewage Section, S.C.Apa

Turnu Magurele Municipality

Mr. Rodica ROVENTA

Ms. Traian DRAGAN

Mr. Stefan AVRAM

Head of Urbanism and Territorial  
Planning Office

Inspector

Regia S.A.G.O.

(Japanese side)

Preparatory Study Team

Mr. Osamu FUJIKI

Mr. Satoshi FURUYAMA

Mr. Masahiro UEKI

Mr. Kazufumi MOMOSE

Mr. Masahiro TAJIMA

Team Leader / Sewerage Planning

Member / Sewage Treatment Planning

Member / Project Officer

Member / Sewerage Facility

/ Organization and Maintenance

Member / River Water Quality

/ Environmental Consideration



Handwritten signature or mark.

STEERING COMMITTEE:

1. Laszlo BORBELY - Chairman M.P.W. & T.P.
2. Jeni IONIȚĂ - M.P.W. & T.P.
3. Liliana MĂRA - M.W.F & E.P.
4. Representative - M o F
5. Representative - D.L.P.A.
6. Pamfil TAPAI - Vice-Mayor TURNU MĂGURELE
7. Octavian BEZNEA - Vice-mayor CĂLĂRAȘI
8. Marin AXENTE - Vice-mayor GALAȚI
9. Representative - Local Govt. TULCEA
10. Anton LUNGU - Mayor BRĂILA
11. Constantin CREȚESCU - Vice-mayor TURNU SEVERIN
12. Gabriel MARCOCI - Vice-mayor GIURGIU



*Handwritten signature or mark.*

WORKING GROUP:

1. Georgeta VASILACHE - Specialist Inspector M.P.W. & T.P.
2. Constantin GHEORGHE - Expert M.W.F & E.P.
3. Livia MARIN - Expert MoF
4. Ion TITEL - Director "REGIA SAGO" TURNU MĂGURELE
5. Marcel NUȚU - Director, S.C. APĂ CANAL S.A. CĂLĂRAȘI
6. Niță PODARU - Director, R.A.G.C. GALAȚI
7. Dumitru DUDUCA - Director, S.C. ACET S.A. TULCEA
8. Romeo FINDRIHAN - General Director, R.A. APTERCOL BRĂILA
9. Octavian BOȘOANCĂ - General Director, SECOM S.A. TURNU SEVERIN
10. Constantin IONESCU - General Director, AQUATERM S.A. GIURGIU

(H)

Ar

#### 資料4. 主要面談者リスト

##### ルーマニア国側

##### 公共事業省 (MPWTP : Ministry of Public Works and Territorial Planning)

- |                            |   |
|----------------------------|---|
| Mr. Peter DERER            | : Secretary of State  |
| Mr. Gheorghe TOMOIALA      | : Secretary General of Ministry   |
| Mr. Ion STANESCU           | : Director General,<br>Technical General Directorate                                    |
| Ms. Jeni IONITA            | : Deputy Director General,<br>General Directorate for Public Works                      |
| Mr. Marius RADU            | : Director of Programme Coordinating Unit General<br>Directorate for Public Works       |
| Mr. Sorin Mugur DUMITRESCU | : Deputy Director, Department of European Integration and<br>External Cooperation       |
| Ms. Georgeta VASILACHE     | : Inspector,<br>Division of Municipal Services,<br>General Directorate for Public Works |

##### 大蔵省 (MOF : Ministry of Finance)

- |                      |   |
|----------------------|---|
| Ms. Elena TIGLARU    | : Department of International Fiscal Agreement  |
| Ms. Oana GHEORGHIU   | : Department of International Fiscal Agreement  |
| Ms. Livia MARIN      | : General Directorate for International Financial Relations with<br>International Organization                      |
| Ms. Mioara IONESCU   | : General Director,<br>General Directorate for International Financial Relations with<br>International Organization |
| Ms. Veronica MOHORA  | : Head of Division  |
| Ms. Georgeta SOVIANI | : Head of Division  |

##### 水・森林・環境保護省 (Ministry of Water, Forest and Environmental Protection)

- |                       |   |
|-----------------------|---|
| Ms. Liliana MARA      | : Director, Directorate for Strategy and Regulation of Water<br>Resources |
| Mr. Mircea VINTILESCU | : Senior researcher   |

Dr. Varduca AUREL : Head of Water Quality Monitoring Department  
 Mr. Constantin GHEORGE : Water Management Directorate Deputy Director  
 Ms. Alexandrina Renate SEACLAT : Water Expert

トゥルチャ市

Mr. Nicolae MIHAI : Mayor  
 Mr. Constantin MOCANU : Vice Mayor  
 Mr. Dumitru DUDUCA : Director, S.C.-A.C.E.T.

ガラチ市

Mr. Marin AXENTE : Vice Mayor  
 Mr. Podaru NITA : Production Manager, S. C. Apaterm Galati  
 Mr. Aurel POP : Director Tehnic, S. C. Proiect S. A. Galati  
 Mr. Ileana MOHOR : Engineer, S. C. Proiect S. A. Galati  
 Mr. Octavian F. Eosovlin : Structural and Civil Engineer

ブレイラ市

Mr. Anton LUNGU : Mayor  
 Mr. Romeo FIDRIHAN : R.A. Apetercol

カララシ市

Mr. Nicolae DRAGU : Mayor  
 Mr. Octavian BEZNEA : Vice Mayor  
 Mr. Marcel NUTU : Director, S.C. Apa  
 Mr. Liviu CRETU : Head of Sewage Section, S.C. Apa

ジュルジュ市

Mr. Ionescu Constantin VICENTIU : General Director, AQUATERM S.A.

トゥルヌ・マグレレ市

Mr. Nicolae MOHANU : Mayor  
 Mr. Rodica ROVENTA : Head of Urbanism and Territorial Planning Office  
 Ms. Traian DRAGAN : Inspector



Mr. Stefan AVRAM : Regia S.A.G.O  
Mr. Ioan BAN : Technical Director, S. C. TURNU S. A.

トゥルヌ・セヴェリン市

Mr. Constantin CRETESCU : Vice Mayor

水資源公社 (Romanian Water Authority)

Mr. Ane Marie PELIN : Department of International Relations  
Mr. Petru Terban : Director,  
Water Management, Hydrology and Meteorology Division

ドナウデルタ研究所 (Danube Delta Institute)

Dr. Romulus STIUCA : Director  
Ms. Monica MOLDOVAN : Biologist

環境工学研究所 (Environmental Research and Engineering Institute : ICIM)

Mr. Ioan JELBV : Director  
Mr. Corneliu A. L. NEGULESCU : Deputy Scientific Director  
Mr. Robert GELLIN : Environmental Engineer

設計院 (Studies and Design Institute for Public Works : PROED S.A.)

Mr. Alexandru GHEORGHIU : Director Tehnic, PROED S. A.  
Mr. Victor MOLDOVEANU : Managing director, PROED S. A.  
Mr. Valentin HASEGAN : Chief of Marketing, PROED S. A.  
Mr. Mihai Sandu : Water and Wastewater Process Division Manager

SETA S.A

Mr. Adrian POPESCU : Technical Director

ブカレスト事業公社

Mr. Florea DUMITRU : Manager,  
Wastewater Treatment Plants, Bucharest General Water  
Company

欧州復興開発銀行 (EBRD)

Ms. Dana Craciunescu : Associate Banker

日本側

在ルーマニア日本国大使館

小山 嘉昭 : 特命全権大使

西村 舜治 : 公使

大内 真理子 : 専門調査員

JICAルーマニア駐在員事務所

大久保 宏明 : 事務所長

大野 龍男 : 青年海外協力隊調整員

資料 5. 質問票及びその回答

## 質問状の回答状況

### A. GENERAL ASPECTS (FOR MINISTRY OF PUBLIC WORKS)

Item/Description	Availability
<b>1. Upper-ranked plans / policies related to the wastewater treatment plan</b>	
(1) National environmental policies / strategies	?
(2) Industrial policies	?
(3) Development programs	?
(4) International agreements or conventions	?
(5) Sanitary policy	?
(6) Others	-
<b>2. Concrete environmental issues in the Danube River Basin, and undertaken or planned countermeasures to solve the issues</b>	To be obtained by ICIM and DDI
<b>3. Recent tendency of environmental assistance implemented or sponsored by donor agencies or countries in Romania</b>	?
<b>4. Present situation of EBRD-financed projects</b>	To be obtained by EBRD or MPWTP during the Study

**B. DATA AND INFORMATION RELATED TO WASTEWATER TREATMENT AND URBAN SANITATION (FOR MINISTRY OF PUBLIC WORKS)**

Item/Description	Availability
1. Role or function of the following organizations and relationships between each organizations regarding to the sewerage facilities, and provide organizational chart (including number of staff) and information on legislative aspects in each organization	
(1) Ministry of Public Works	To be obtained
(2) Romanian Water Authority (Apele Romane), Department of Water, Ministry of Water, Forests and Environmental Protection	To be obtained
(3) Ministry of Treasury or Finance (?)	To be obtained
(4) Municipality	To be obtained
(5) Public Enterprise in municipality	To be obtained
2. Role or function of the following organizations regarding to the water supply facilities, and provide organizational chart (including number of staff) and information on legislative aspects in each organization	
(1) Ministry of Public Works	To be obtained
(2) Romanian Water Authority (Apele Romane), Department of Water, Ministry of Water, Forests and Environmental Protection	To be obtained
(3) Ministry of Treasury or Finance (?)	To be obtained
(4) Municipality	To be obtained
(5) Public Enterprise in municipality	
3. Role or function of the following organizations regarding to the solid waste management, and provide organizational chart (including number of staff) and information on legislative aspects in each organization	
(1) Ministry of Public Works	To be obtained
(2) Ministry of Treasury or Finance (?)	To be obtained
(3) Municipality	To be obtained
(4) Public Enterprise in municipality	To be obtained
4. Survey facilities and equipment for feasibility study (especially for water quality tests)	
(1) Possibility of their local procurement	Yes
(2) Local cost for survey facilities or equipment	Yes
(3) Others	-
5. Local consultants	
(1) Availability of local consultants, research institutes, etc. as sub-contractor for master-plan formulation (in particular for water pollution survey, EIA, etc.)	Yes
(2) Survey experiences, working ability, number of experts, available facilities / equipment, survey cost and so on of the local consultants	Yes

### C. DATA AND INFORMATION RELATED TO EACH MUNICIPALITY

	Tulcea	Galati	Braila	Calarasi	Giurgiu	Turnu Magurele	Turnu Severin
1. Data / Information related to formulation of the wastewater treatment plan							
(1) Urban development plan	Y	Y	Y	Y	Y	Y	Y
(2) Land use and water use (including groundwater)	Y	Y	Y	Y	-	Y	Y
(3) Topography and geology	Y	Y	Y	Y	-	Y	Y
(4) Meteorology							
1) Wind speed and direction	Y	Y	Y	Y	Y	-	-
2) Seasonal wind patterns	Y	Y	Y	Y	Y	-	-
3) Precipitation	Y	Y	Y	Y	Y	-	-
4) Temperature	Y	Y	Y	Y	-	-	-
5) Others	-	-	-	-	-	-	-
(5) Hydrology (including groundwater)	Y	Y	Y	Y	-	Y	-
(6) Water quality of the River							
1) Water temperature	Y	Y	Y	Y	Y	Y	-
2) PH	Y	Y	Y	Y	-	Y	-
3) BOD	Y	-	Y	-	-	Y	-
4) COD	Y	-	Y	-	-	Y	-
5) Suspended solids (SS)	Y	Y	Y	Y	-	Y	-
6) Oil and grease	Y	-	-	-	Y	Y	-
7) Heavy metals	Y	-	-	-	Y	Y	-
8) Others (phenols, fluorides, etc.)	Y	-	Y	Y	-	Y	-
(7) Physical structures / facilities for the River management	Y	-	Y	-	-	Y	-
(8) Flora and fauna (including vegetation, terrestrial animals, aquatic organism, etc.)	Y	Y	Y	Y	Y	Y	-
(9) Maps and satellite images on the above data / information	Y	Y	-	Y	-	-	-
(10) Others	-	-	-	-	-	-	-
2. Present situation of socio-economic aspects in each municipality							
(1) Population	Y	Y	Y	Y	Y	Y	Y
(2) Economic / industrial activities	Y	-	Y	-	Y	Y	-
(3) Exports and imports	-	-	-	-	Y	Y	-
(4) Number of households	Y	-	Y	-	Y	Y	-
(5) Occupation	Y	-	Y	-	Y	Y	-
(6) Income distribution	-	-	-	-	-	-	-
(7) Land use	Y	-	Y	-	Y	Y	-
(8) Others	-	-	-	-	-	Y	-

<b>3. Present situation concerned with sanitation in each municipality</b>							
(1) Sewage systems	Y	Y	Y	Y	-	Y	-
(2) Solid waste management	Y	-	Y	-	-	Y	-
(3) Water-borne diseases	Y	Y	Y	Y	Y	Y	-
(4) Others	-	-	-	-	-	-	-
<b>4. Outline of water supply system</b>							
(1) Water resource	Y	Y	Y	Y	Y	-	-
(2) Water quality	Y	Y	Y	Y	Y	-	-
(3) Water treatment plants	Y	Y	Y	Y	Y	-	-
(4) Damage in water use due to water pollution	Y	Y	Y	Y	-	-	-
(5) Damage in eco-system due to water pollution	Y	-	Y	-	Y	-	-
(6) Related legislation	Y	-	Y	-	Y	-	-
(7) Others	-	-	-	-	-	-	-
<b>5. Data / information on formulation of wastewater treatment plan</b>							
Progress of the formulation of master plan on wastewater system	Y	Y	Y	Y	-	-	-
<b>6. Data / information on factories (Kinds and number of discharge sources)</b>							
1) Number and kinds of factories by industrial sub-sector	Y	Y	Y	Y	Y	-	Y
2) Number of factories by industrial sub-sector for each scale classified based on number of employees	Y	-	-	-	Y	-	Y
3) Amount and kinds of products by industrial sub-sector	-	-	-	-	Y	-	-
4) Location of factories	Y	Y	-	Y	Y	-	Y
5) Where effluent is discharged, river or sewer?	Y	Y	Y	Y	Y	-	Y
6) Others	-	-	-	-	-	-	-
<b>7. Organizations in charge of sewage / waste water treatment</b>							
(1) Organizational structure and functional system (including organizational chart and number of staff)	Y	Y	Y	Y	Y	-	Y
(2) Major activities (including the past results)	Y	Y	Y	Y	-	-	-
(3) Technical aspects (including technical level of staff)	Y	Y	Y	Y	-	-	-
(4) Revenue and expenditure	Y	Y	Y	Y	-	-	-
(5) Contribution from the central government (capital or operation cost)	Y	-	Y	-	-	-	-

(6) Contribution from the local government (capital or operation cost)	Y	Y	-	Y	-	-	-
(7) How the deficit is covered, if exists?	-	-	-	-	-	-	-
(8) Method and frequency of revenue collection	Y	Y	Y	Y	-	-	-
(9) Legislative aspects related to waste water treatment (laws, other authorized guidelines, etc.)	-	Y	-	Y	-	-	-
(10) Legislative aspects related to sludge treatment (laws, other authorized guidelines, etc.)	-	-	-	-	Y	-	-
(11) Others	-	-	-	-	-	-	-
8. Present status of sewerage facility							
(1) Served population and area	Y	Y	Y	Y	Y	-	Y
(2) Combined or separate system?	Y	Y	Y	Y	Y	-	Y
(3) Pipe network	Y	Y	Y	Y	Y	Y	Y
(5) Pumping station	Y	Y	Y	Y	Y	-	Y
(6) Wastewater treatment plant	Y	-	Y	-	Y	Y	-
(7) Effluent amount (maximum and average)	Y	-	Y	-	Y	-	-
(8) Are there any problems in operating sewerage facilities?	Y	Y	Y	Y	Y	-	-
(9) Existing and planned methods for waste water treatment (including domestic waste water)	Y	-	Y	?	Y	-	-
(10) Existing and planned methods for sludge treatment and dumping	-	-	-	?	Y	-	-
(11) Toilet system other than sewerage system	Y	Y	Y	Y	Y	-	-
(12) Others	-	-	-	-	-	-	-

**D. DATA AND INFORMATION RELATED TO ENVIRONMENTAL ASPECT**  
**(for Ministry of Waters, Forests and Environmental Protection)**

Item/Description	Availability
<b>1. Governmental organizations or non-governmental organizations related to environmental management / control (central level and city level)</b>	
(1) Name of organization	Yes
(2) Number of staff / members	To be obtained
(3) Major activities (including the past results)	Yes
(4) Others	?
<b>2. Institutional systems related to environmental management / control</b>	
(1) Title of institutional system	Yes
(2) Contents (including objectives and background)	Yes
(3) Progress situation or results of application	To be obtained
(4) Discussion on the reform under consideration	?
(5) Others	?
<b>3. Legislation or authorized standards related to environmental management / control (including Factory Act, Public Health Act, etc.)</b>	
(1) Title of legislation / standards	Yes
(2) Contents (including objectives, background and standard levels)	Yes
(3) Progress situation or results of application	Yes
(4) Discussion on the amendment under consideration	?
(5) Others	?
<b>4. Wastewater effluent / discharge standards</b>	
1) Water temperature	Yes
2) pH	Yes
3) BOD	Yes
4) COD	Yes
5) Suspended solids (SS)	Yes
6) Oil and grease	Yes
7) Heavy metals	Yes
8) Others (phenols, fluorides, etc.)	Yes
<b>5. Water quality standards for surface and groundwater bodies including rivers</b>	Yes
<b>6. Environmental Impact Assessment (EIA)</b>	
(1) Title and contents of back-supporting law or authorized guideline	Yes
(2) Procedure and framework for implementation of EIA (including "screening" and "scoping" process)	?
(3) Appraisal agencies and executing bodies of EIA studies	Yes
(4) Past experiences or results of application of EIA system	?
(5) Others	?
<b>7. Legislation or authorized standards related to</b>	



<b>water quality management / control</b>	
(1) Title of legislation / standards	Yes
(2) Contents (including objectives, background and standard levels)	Yes
(3) Progress situation or results of application (including existing data of water quality)	Yes
(4) Discussion on the amendment under consideration	?
(5) Others	?
<b>8. Existing monitoring system for water quantity &amp; quality of the Danube River basin area</b>	
(1) Organizational structure and functional system (including organizational chart and number of staff)	Yes
(2) Major activities (including the past results)	Yes
(3) International cooperation	Yes
(4) Financial and technical aspects (including technical level of staff)	No
(5) Others	?
<b>9. Romanian Water Authority</b>	
(1) Organizational structure and functional system (including organizational chart and number of staff)	Yes
(2) Major activities (including the past results)	Yes
(3) International cooperation	Yes
(4) Financial and technical aspects (including technical level of staff)	No
(5) Others	?

資料6. 収集資料リスト

## 収集資料リスト

番号	資料の名称	版型	ページ数	オリジナル コピーの別	部数	収集先名称又は 発行機関	寄贈・購入 (価格)の別	取扱 区分	利用 表示	備考
	1. 下水道									
1-1	Design Thematic for the Wastewater Treatment Plant 1998年8月	A4	8	オリジナル	1	R.A.Aptecol Braila	寄贈			下水 Braila
1-2	Achievement of the Braila Waste Water Treatment Plant (Draft) 1998年2月	A4	4	コピー	1	I.C.I.M Environmental Research and Engineering Institute PRODOMUS S.A. Design Institute Braila	寄贈			下水 Braila
1-3	Rehabilitation and Extension of Sewerage System and Waste Water Treatment Works in Braila 1997年?	A4	29	オリジナル	1	Institutul De Cercetare Si Proiectare Pentru Celuloza Si Hartie	寄贈			下水 Braila
1-4	S.C. Ceprohart S.A. Braila 1996年	A4	15	オリジナル	1		寄贈			下水 Braila
1-5	Data and Information Related to Braila City / Waste Water Treatment 1998年	A4	11	オリジナル	1	Braila City Hall	寄贈			下水 Braila
1-6	Date Si Informatii Referitoare La Municipiul Braila	A4	12	オリジナル	1	Braila City Hall	寄贈			下水 Braila
1-7	Optimizarea Sistemului De Canalizare a Apelor Uzate Din Municipiul Galati (ガチ市における排水・下水制度改良) 1992年9月	A4	105	オリジナル	1	PROED S.A. (公共建設設計研究所ブローード)	寄贈			下水 Galati
1-8	Studiu De Dezvoltare Privind Sistemul De Analizare Si Epurare A Municipiului In Vederea Protectiei Bazinului Dunarii (ドナウ川流域保護を目的とする都市下水処理制度に関する開発調査) (ガチ)	A4	19	オリジナル	1	B.A.G.C. Galati	寄贈			下水 Galati
1-9	Regia Autonoma De Gospodarie Comunaia Galati Romania 1995年8月	A4	35	オリジナル	1	Autonomous Department For Communal Services Galati	寄贈			下水 Galati
1-10	Regia Autonoma De Gospodarie Comunaia Galati Romania 1992年9月	A4	91	オリジナル	1	Autonomous Department For Communal Services Galati	寄贈			下水 Galati
1-11	Echiparea Actuala A Statilor De Pompare A Arai Menajere Si Pluviale	A4	11	オリジナル	1	R.A.P.S.P Tulcea Birou Mecano-Energetic	寄贈			下水 Tulcea

番号	資料の名称	版型	ページ数	オリジナル コピーの別	部数	収蔵先名称又は 発行機関	寄贈・購入 (価格)の別	取扱い 区分	利用 表示	備考
I-12	Regia Autonoma De Gospodarie Comunală Silicativa - Calarasi (水量/料金のインデク ター) 1998年7月	A4	3	コピー	1		寄贈			日本語訳 付 下水 Calarasi
I-13	Data and Information Regarding Calarasi Town Related to A.D.C.S Field	A4	3	コピー	1	Autonomous Department for	寄贈			下水 Calarasi
I-14	Extinderea Si Modernizarea Statiei De Epurare A Apelor Menajere In Municipiul Calarasi (Extension of Modernization Strategy of Wastewater Treatment Plant in Municipal Calarasi - F/S-) 1998年10月	A4	151	オリジナル	1	R.A.G.C.L. Calarasi	寄贈			下水 Calarasi 処理場の 図面2枚を 含む
I-15	7都市個別資料	A4	50	オリジナル	1		寄贈			下水 Calarasi 図面を含む
I-16	Problems of the Water Supply System in Localities Raparian to the Danube	A4	8	コピー	1		寄贈			上水 全体

II. 環境										
II-1	Environment Protection Strategy 1996年	A4	302	コピー	1	Ministry of Water, Forests and Environmental Protection	寄贈			英語 環境 全体
II-2	A Synthesis of Activities in the Framework of Bucharest Declaration, 1985-1997 1997年	A4	110	コピー	1	ICIM/Apele Romane	寄贈			英語 環境 全体
II-3	Situatie Lunaprivind Indicatori Chimici ai Apei Brute din sursa Danare 1998年	A4	12	コピー	1	R.A.G.C.L. Galati	寄贈			環境 Galati
II-4	Studiu de Impact Pentru "Extinderea si Modernizarea Statiei de Epurare a Municipiului CALARASI" 1998年	A4	59	コピー	1	ICIM	寄贈			環境 Calarasi
II-5	Law on the Environmental Protection 1997 年	A4	45	コピー	1	Ministry of Water, Forests and Environmental Protection	寄贈			英語 環境 全体
II-6	Report regarding the Danube water quality characteristics between I-XII 1991 1997年	A4	27	コピー	1	ICIM	寄贈			英語 環境 全体
II-7	Monitorul Oficial al Romaniei 1996-97年	A4	59	コピー	1	Ministry of Water, Forests and Environmental Protection	寄贈			環境 全体

番号	資料の名称	版型	ページ数	オリジナルコピーの数	部数	収蔵先名称又は発行機関	寄贈・購入(価格)の別	取扱区分	利用表示	備考
II-8	Ecological Restoration in the Danube Delta Biosphere Reserve/Romania 1997年	A4	120	オリジナル	1	Danube Delta Biosphere Reserve Authority, Danube Delta Research and Design Institute, WWF Germany	寄贈		英語	全体
II-9	STAS 4706-88 Surface Water Quality Categories and Conditions 1988年11月	A4	14	コピー	1	National Committee for Science and Technology Romanian Institute of Standards	寄贈			全体
II-10	Order No. 14/14 Technical Rules for Discharges into Public Sewer Systems 1983年3月	A4	7	コピー	1	National Council for Waters Committee for Popular Councils Problem.	寄贈			全体
II-11	Decree No.414 Admissible Pollution Limits for the Discharge of Waste Water Into Open Water Bodies 1979年5月	A4	5	コピー	1	State Council of the Socialist Republic of Romania	寄贈			全体
II-12	Apele Romane	A4	7	コピー	1	Apele Romane	寄贈			全体
II-13	STAS 1342-91 Standard for Drinking Water Quality	A4	7	コピー	1	Ministry of Water, Forests and	寄贈			全体
II-14	Surface Waters/Quality Categories and Conditions	A4	7	コピー	1	Ministry of Water, Forests and	寄贈			全体
II-15	Romanian Legislation/Water Law 1997年	A4	63	コピー	1	The Parliament of Romania	寄贈			全体
II-16	Permitting Procedure for Economic and Social Activities Having an Environmental Impact According to the Environmental Protection Law No.137/1995 1996年4月	A4	41	コピー	1	Ministry of Water, Forests and Environmental Protection	寄贈			全体
II-17	Strategic Action Plan for the Danube River Basin 1995-2005	A4	109	コピー	1	The Task Force for The Programme	寄贈			全体
II-18	The Evolution of the Danube Water along the Romanian Sector	A4	10	コピー	1	Ministry of Water, Forests and Environmental Protection	寄贈			全体
II-19	EIA認可機関リスト	A4	15	コピー	1	Ministry of Water, Forests and Environmental Protection	寄贈			全体
II-20	Romania Danube Delta Biodiversity -Project Document Aug.1994	A4	103	コピー	1	The World Bank	寄贈			ドナウデルタ

番号	資料の名称	版型	ページ数	オリジナル コピーの別	部数	収集先名称又は 発行機関	寄贈・購入 (価格)の別	取扱い利用 区分表示	備考
II-21	Official Gazette of Romania No.327/25(NTPA-001),Nov 1997	A4	16	コピー	1	Ministry of Water, Forests and Environmental Protection	寄贈		環境 全体
II-22	Projects Portfolio	A4	79	コピー	1	World Bank Resident Mission Romania	寄贈		環境 全体
III. 組織経済									
III-1	Braila (Guid Book) 1997年	A4	18	オリジナル	1	Mun. Braila	寄贈		組織 経済 Braila
III-2	Organigrama Serviciilor Consiliului Local AI Municipiului Galati (ガチ市組織図)	A4	2	コピー	1	Mun. Galati	寄贈	日本語訳 付	組織 経済 Galati
III-3	Date Si Informatii Referitoare La Municipiul Tulcea 1996年5月	A4	13	コピー	1	Mun. Tulcea	寄贈		組織 経済 Tulcea
III-4	Giurgiu 組織図	A4	1	コピー	1	Mun. Giurgiu	寄贈		組織 経済 Giurgiu
III-5	The Travel Guide of Romania 1997-1998	B5	480	オリジナル	1	Publirom	寄贈		組織 全体
III-6	公共事業省組織図(英)	A4	3	コピー	1	Ministry of Public Works and Regional Planning	寄贈		
III-7	水・森林・環境省組織図	A4	1	コピー	1	Ministry of Water, Forests and Environmental Protection	寄贈		
IV. 関連									
IV-1	Memoriu General (Turnu Severin) 1980年	A4	15	コピー	1	PROED S.A. (公共建設 設計研究所プロエード)	寄贈		関連 Turnu Severin
IV-2	Memoriu General (Giurgiu)	A4	12	コピー	1	PROED S.A. (公共建設 設計研究所プロエード)	寄贈		関連 Giurgiu
IV-3	Completare Chestionar Pentru Echipa De Pregatire a Raportului De Fezabilitate Privind Masurile De Tratare a Apelor Reziduale (Menajere) De-A Lungul Si In Aval De Fluvii Dunare Pe Teritoriul Romaniei 1998年7月	A4	42	オリジナル	1	Judetul Teleorman Primaria Municipiului Turnu Magurele	寄贈		関連 Turnu Magurele
V. 地図									
V-1	Municipal Braila 1997年	A1	1	オリジナル	1	IGFCOT	寄贈		地図 Braila

番号	資料の名称	版型	ページ数	オリジナル コピーの別	部数	収集先名称又は 発行機関	寄贈・購入 (価格)の別	取扱 区分	備考
V-2	Urbanproiect Galati 1/10,000 1997年	A0	2	コピー	1		寄贈		地図 Galati
V-3	Optimizarea Sistemului De Canalizare A Apelor Uzate Din Municipiul Galati (8枚) 1992年9月	A0	8	オリジナル	1	PROED S.A. (公共建設 設計研究所ブローエード)	寄贈		地図 Galati
V-4	Optimizarea Sistemului De Canalizare a Apelor Uzate Din Municipiul Galati (管網図)	A0	1	オリジナル	1	PROED S.A.	寄贈		地図 Galati
V-5	Galati (工場配置図) 1/10,000	A0	1	オリジナル	1		寄贈		地図 Galati
V-6	Galati (市の全体図)	A4	2	コピー	1		寄贈		地図 Bucuresti
V-7	ブカレスト処理場図	A3	1	オリジナル	1		寄贈		地図 Bucuresti
V-8	Bucuresti Canalizare	A3	2	オリジナル	1		寄贈		地図 Calarasi
V-9	Municipiul Calarasi	A0	1	コピー	1	Regia Autonoma De Gospodarie Comunală Si Locativa (カラジ市公 共事業公社)	寄贈	写真付き 企業の公 共下水道 への接続 の有。	地図 Calarasi
V-10	Map of Municipiul Calarasi								
V-11	Fetesti (施設平面図) 1997年	A1	1	コピー	1	PROED S.A.	寄贈		地図 Fetesti
V-12	Fetesti 1997年	A1	1	コピー	1	PROED S.A.	寄贈		地図 Fetesti
V-13	Giurgiu (市の全体、施設等)	A0	5	オリジナル	1		寄贈		地図 Giurgiu
V-14	Tumu Magurele (市の全体図、施設等)	A0	2	コピー	1		寄贈		地図 Tumu Magurele
V-15	Retna Canalizare Si Alimentare Apa Potabila 1998年8月	A0	1	オリジナル	1		寄贈	上下水道 の管網図 国土地図	地図 Tumu Magurele 全体
V-16	Harta Fizico-Geografica Si Administrativa 1/1,000,000 1998年	A1	1	オリジナル	1	Harta Fizico- Geografica Si Administrativa	寄贈		地図 全体
V-17	Historical Map (Romania) 1/1,000,000 1938 年	A1	1	オリジナル	1	Bartholomew	購入		地図 全体
V-18	World Travel Map (Romania) 1/750,000	A1	1	オリジナル	1	Hallwag	購入		地図 全体
V-19	Road Map (Romania & Bulgaria) 1/1,000,000	A1	1	オリジナル	1	Amco Press	購入		地図 全体
V-20	Road Map (Romania) 1/850,000 1997年	A1	1	オリジナル	1	Editura Royal Company	寄贈		地図 全体
V-21	Municipal Tulcea	A4	2	オリジナル	1		寄贈		地図 全体
V-22	Arhitectura si Constructii in Sptiul Romanesc 1862-1997	A4	32	オリジナル	1	Ministry of Public Works and Regional Planning	寄贈		地図 全体
VI. その他									

番号	資料の名称	版型	ページ数	オリジナル 数 コピーの別	部数	収蔵先名称又は 発行機関	寄贈・購入 (価格)の別	取扱 区分	利用 表示	備考
VI-1	EBRD in Romania 1998年7月	A4	11	オリジナル	1	European Bank for Reconstruction and Development	寄贈			その他 全体
VI-2	Annual Report 1997 / EBRD 1997年	A4	108	オリジナル	1	European Bank for Reconstruction and Development	寄贈			その他 全体
VI-3	Financing with the EBRD 1998年5月	A4	24	オリジナル	1	European Bank for Reconstruction and Development	寄贈			その他 全体
VI-4	S.C. COMOTI S.A	A4	1	オリジナル・コ ピー	1	S.C. COMOTI S.A	寄贈			モーター等 の製品カ タログ その他 全体
VI-5	PROED S.A.(Brochure)	B5	6	オリジナル	1	PROED S.A.	寄贈			PROEDの 説明 その他 全体
VI-6	PROED S.A. Company Profile	A4	46	オリジナル	1	PROED S.A.	寄贈			その他 全体
VI-7	MLPAT	B5	13	オリジナル	1	Ministry of Public Works and Regional Planning	寄贈			その他 全体











JICA