

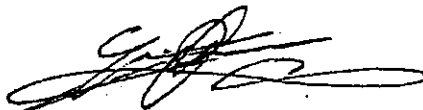
MINUTES OF MEETING
ON
PREPARATION OF SCOPE OF WORK
FOR
STUDY
ON
AUGMENTATION
OF
WATER SUPPLY AND SANITATION
FOR THE GOA STATE
IN THE REPUBLIC OF INDIA

AGREED UPON BETWEEN
PUBLIC WORKS DEPARTMENT;
THE GOVERNMENT OF GOA
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

New Delhi, September 22, 2004



Mr. M Rajamani
Joint Secretary
Ministry of Urban Development,
The Government of India



Mr. Omura Yoshiki
Leader
Preparatory Study Team
Japan International Cooperation Agency
(JICA)



Ms. Debashree Mukherejee
Secretary
Public Works Department,
The Government of Goa

In response to the official request of the Government of the Republic of India, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Study Team (hereinafter referred to as "the Team") headed by Mr. Omura Yoshiki, to India from September 12 to September 28, 2004 to discuss and agree on the Scope of Work (hereinafter referred to as "S/W") for "Study on Augmentation of Water Supply and Sanitation for the Goa State in the Republic of India.

During its stay in India, the Team carried out field surveys in the study area, and held a series of discussions with Public Works Department, the Government of Goa (hereinafter referred to as "PWD"), and other authorities concerned.

The Minutes of Meeting have been prepared for the better understanding of the S/W agreed upon between Indian side and the Team on September 22, 2004.

The main items that were discussed and agreed by both sides are summarized as follows. The list of participants is attached in the Appendix 1:

1 The title of the study

Both sides agreed that the title of the study would be "Study on Augmentation of Water Supply and Sanitation for the Goa State in the Republic of India" (hereinafter referred to as "the Study").

2 Target year

Both sides agreed that the target year of the Master Plan should be 2020.

3 Study areas

The Study shall cover the areas shown in Scope of Work. Regarding the master plan for sanitation, the following areas will be covered.


- Margao municipality
- Ponda municipality
- Mapusa municipality
- Coastal belt of south Goa
- Coastal belt of north Goa
- Panaji municipality and its surrounding area (Provorim, Taleigao, Dona Paula, Caranzalem, St. Cruz, Mercedes, Ribandar)

4 Water supply system

PWD explained that the current water supply system consisted of 7 centralized piped subsystems and future plan should be of the same nature.

5 Counterpart personnel

The Team requested PWD to assign counterpart personnel in the each expertise corresponding to the Study Team members. PWD agreed to select counterpart personnel before the commencement of the Study and assign them in timely manner.



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6 Steering Committee

Both sides agreed that PWD would set up a steering committee for the smooth implementation of the Study. It will consist of the representatives of relevant organizations under the chairmanship of PWD. Organizations as follows are assumed to join the committee at the present moment. The Japanese Study Team and JICA resident representative will also attend the committee.

(The Government of India)

- Ministry of Urban Development

(The Government of Goa)

- Department of Environment.
- Department of Water Resources
- Department of Financial and Planning
- Department of Municipal Administration
- Municipalities and Panchayats relevant to the Study

7 Environmental and social considerations

The Team explained JICA's environmental and social consideration guidelines, and that it will be applied to the Study.

PWD understood the policy of JICA's guidelines, and agreed in principle to the following responsibilities and requirements.

- Based on the guidelines, PWD shall be responsible for conducting Initial Environmental Examination (IEE) in collaboration with the Study Team.
- The Study Team shall provide PWD with technical support in order to conduct IEE.
- In the course of conducting IEE, public consultation with communities and stakeholders shall be included if necessary.
- The disclosure of information such as study reports is necessary to ensure the participation and dialogues with various stakeholders, in order to achieve appropriate environmental and social considerations.
- The above-mentioned responsibilities and requirements will also be applied when EIA is judged to be necessary.

8 Training of Counterpart personnel

PWD requested that counterpart personnel take advantage of training in Japan related to the Study to promote effective technology transfer.

The Team agreed to convey this request to JICA headquarters.

9 Workshop

Workshops will be jointly held by PWD and the Study Team to provide opportunities of dialogue with stakeholders.

Both sides agreed that the subjects of workshops would be discussed and settled during the Study period.

10 Reports

Both sides agreed that the results of the Study would be open to the public, in principle, in



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in

order to achieve maximum use of the study results.

11 Undertaking of the Government of Goa

- 1) The Government of Goa agreed to provide the Study Team all available data (including geographical maps and photographs) and information related to the Study.
- 2) The Government of Goa agreed that 2 vehicles with drivers and office space with office furniture, air-conditioning, telephone lines and electricity would be provided in the Goa State for the use by the Study Team.
- 3) The Government of Goa agreed to allocate enough number of secretaries for the Study Team if needed.

12 Work Schedule

The Team explained PWD that the Study was scheduled for approximately 20 months as shown in Scope of Work, Appendix 2.

13 Others

Upon PWD's enquiry on duration needed up to implementation, the Team suggested as general information, the following example:

- Process in an external financing agency
(fact finding, project appraisal and loan agreement): 12 months
- Consultant selection, Detailed design, Prequalification of contractors, Tendering, and Contract signing : 25 months
- Construction works : 36 months- 48 months

in

付属資料 4. 主要面談者リスト

List of Participants

<Indian side>

Government of India

Mr. Prashant I.A.S

Mr. M Rajamani I.A.S

Mr. Savitur Prasad I.D.A.S

Director, Ministry of Finance (Japan)

Joint Secretary, Ministry of Urban Development

Director, Ministry of Urban Development

Government of Goa

Mr. Monohar Parrikar

Chief Minister (Home, Finance,

General Administration, Education)

Mr. Shri Digambar Kamat

Minister

for Power, Urban Development & Mines

Mr. Ramakrishna Dhavlikar

Minister for PWD, Archives,

Archaeology, Museum, & Fisheries

Mr. Dev Singh Negi I.A.S

Chief Secretary

Mr. Alban Couto

Advisor

Mr. N.P.S. Varde I.A.S

Director & Joint Secretary,

Department of Environment

Mr. Dharmendra Sharma

Secretary (Finance) and Planning

Public Works Department, Government of Goa

Ms. Debashree Mukherjee I.A.S

Secretary

Mr. Prakash P. Borkar

Principal Chief Engineer

Mr. V. L. Kamat

Chief Engineer

Mr. Arvind A. Patil

Executive Engineer

<Japanese side>

Preparatory Study Team

Mr. Yoshiki Omura

Leader / Water Supply Planning

Mr. Haruo Iwahori

Sanitation Planning

Ms. Akiko Bushimata

Study planning / Preliminary Evaluation

Mr. Itsuo Nozawa

Water Supply System

Mr. Taketoshi Fujiyama

Sanitation management /

Environmental Consideration

Mr. Kenichiro Sugiyama

Organization and Management /

Social Consideration

JBIC

Mr. Fusato Tanaka

JBIC Indian Office

Ms. Kumiko Uchida

JBIC H.D.Q.


JICA India Office

Mr. Toshifumi Sakai

Resident Representative

Mr. Daisuke Iijima

Assistant Resident Representative



<インド国側>

(1) 公共事業局 (Public Works Department : PWD)

Ms. Debashree Mukherjee	Secretary
Mr. Prakash P. Borkar	Principal Chief Engineer
Mr. V. L. Kamat	Chief Engineer
Mr. Pradeep V. Kaundinya	Superintending Engineer
Mr. A. M. Wachasundar	Superintending Engineer
Mr. J. N. Ambikar	Superintending Engineer
Mr. Arvind A. Patil	Executive Engineer
Mr. P. Paranjape	Executive Engineer

(2) ゴア政府 (Government of Goa)

Mr. Monohar Parrikar	Chief Minister
Mr. Shirí Digambar Kamat	Minister for Power, Urban Development & Mines
Mr. Ramakrishan Dhavlikar	Minister for PWD, Archives, Archaeology, Museum & Fisheries
Mr. Dev Singh Negi	Chief Secretary
Mr. Alban Couto	Advisor
Dr. N. P. S. Varde	Director & Joint Secretary / Department of Science, Technology & Environment
Mr. Dharmendra Sharma	Secretary (Finance & Planning)

(3) インド中央政府

Mr. Prashant I.A.S	Director, Ministry of Finance (Japan)
Mr. M. Ragamani	Joint Secretary, Ministry of Urban Development

(4) JICA インド事務所

酒井 利文	所長
飯島 大輔	所員
Mr. Subroto Talukdar	所員

インド中央政府の組織とスタッフ

I. POLITICANS (下院議員: MEMBER OF PARLIAMENT)

1. MINISTER (閣内大臣: 閣議に常時出席)
2. MINISTER OF STATE (閣外大臣/担当大臣: 閣議には必要に応じて出席)
3. DEPUTY MINISTER (政務大臣/副大臣: 閣議には必要に応じて出席)

II. GAZETTED OFFICERS (官僚)

4. SECRETARY (事務次官)
 5. SPECIAL SECRETARY (副次官)
 6. ADDITIONAL SECRETARY (次官補)
 7. JOINT SECRETARY (局長)
 8. DIRECTOR (部長/課長)
 9. DEPUTY SECRETARY (ASSISTANT COMMISSIONER) (副部長/担当課長)
 10. UNDER SECRETARY (P.P.S.: PERSONAL PRIVATE SECRETARY) (課長/課長補佐)
 11. DESK OFFICER (課長補佐/係長)
 12. SECTION OFFICER (P.S.: PERSONAL/PRIVATE SECRETARY) (係長/主任)
- } 6. ADVISOR (顧問)

III. NON-GAZETTED STAFF (事務スタッフ)

13. ASSISTANT (P.A.: PERSONAL ASSISTANT)
14. UPPER DIVISION CLERK (STENO)
15. LOWER DIVISION CLERK

ADVISOR は、ラインではなくスタッフ。5~7のランクの人が担当する。

DIRECTOR は組織や権限により部長になったり、課長になったりする。9~12も同様。

UNDER SECRETARY および SECTION OFFICER は、1~3の秘書官になる場合がある。

ASSISTANT は4~8の個人秘書 (P.A.: PERSONAL ASSISTANT) になる場合がある。

IAS (INDIAN ADMINISTRATIVE SERVICE) (インド高級官僚) は通常 UNDER SECRETARY から上のランクになる。

州政府の官僚のポジションは中央政府のポジションより一つ下がる。

SECRETARY (州政府) = JOINT SECRETARY (中央政府)

A. QUESTIONS AND ANSWER

1. Implementation body, relevant organizations and Institutions.

Please clarify the role, functions, responsibility of the main ministry, department both of central and the Goa State government to implement this project with the interface among each organization. (Refer to table A 1.1)

The Project is designed to be implemented by P.W.D. of Goa Government. Water supply and sanitation is the state subject under the Constitution of India. The responsibility of planning and execution lies within the competence of the State Government. The Project has been posed for Central external assistance, in particular, assistance from Japan and its agencies JICA/JBIC. As far as this Project is targeted at receiving external assistance, it has to be approved by the Government of India at the nodal ministry of external affairs. The sponsoring technical ministry for this Project is the Ministry of Urban Development.

The Government of Goa and the Government of India at the Ministry of External Affairs and the Ministry of Urban Development have approved the Project for Augmentation of Water Supply and Sanitation and the request for assistance from Japan.

So far as the Government of Goa is concerned, the involved authorities are P.W.D. Department of Finance and the Chief Secretary Department.

2. Confirmation of the priority and contents of the requested project (Augmentation of Water Supply and Sanitation for the Goa State).

2-1 Background of the project

(1) Please explain clearly the relation of this project with the national policy.

The Project is given the highest priority in the State Five Year Plan of the Planning Commission of Government of India as well as in the National Policy of both the State and Central Government.

(2) It is understood that this project has been authorized as the one of the highest priority projects both by the national and state government. Does it automatically mean that this project is the highest priority one selected from various national highest priority projects when the 10th State Five Year Plan was approved by the National Planning Commission?

This Project has to follow up the Master Plan, which is currently under implementation. Hence, in terms of criteria, it has the highest priorities in the Five Year Plan of the State. (NOTE: Answers to the sub-questions (1) and (2) are closely interrelated)

- (3) Please describe clearly the relation between this project and such regional plans as the urban development plan, land use plan, irrigation plan etc.**

Salient features of each segment of the Project are related to:

1. Salaulim Water Supply Project

2. Margao Sewerage Project

(Both are ready for implementation).

3. South Coastal Belt Sewerage Scheme

4. North Coastal Belt Sewerage Scheme

5. Mapusa Town Sewerage Scheme

6. Ponda Town Sewerage Scheme

(They are given in the enclosures with the Master Plan of Which above-mentioned segment are the part.

- (4) Please clarify the priority of this project with the selection criteria in the 10th State Five Year Plan (2002-2007) from the overall, water supply and sanitation viewpoints.**

Note: No concrete information is given in relation to point (4).

2-2 Outline of the project

- (1) Please clarify the project area with location and size, and with present and projected total population, urban and rural population, served population from the viewpoint of water supply and sanitation.**

Note: No information given.

- (2) Project schedule and components**

Please describe the project schedule in detail with allocation of fund from central, state, foreign and own fund respectively including design, temporary works, construction, installation, testing and commissioning, etc.

Note: No information given.

- (3) Electric source for the Project**

Please explain if the enough electricity supply is ensured for operation of the water supply system and sewage treatment facility of the project.

At present Electricity is provided through Electric Sub-stations connected with two feeder

mains: 1. Xelpem 2. Vaddem. Present sub-station has transformers of 2 MVA capacities. The required electricity for 220 MLD project is available.

2-3 Counterpart organization

- (1) Please explain the role and responsibility of P.W.D. and PHEW in water supply and sanitation works.**

The Public Health Engineering Wing (PHEW) is a part of P.W.D. The PHEW functions under the control of Principal Chief Engineer assisted by Chief Engineer I, Superintending Surveyor of Works (SSW) and Chief Engineer II. The specialized functions of the PHEW are performed by 3 Superintending Engineers, 7 Executive Engineers and 35 Assistant Engineers (refer chart at Annexure VIII).

- (2) There is no mentioning of the institution or organization for management, operation and maintenance of the plants and facilities after construction. Please explain who will be in charge of and how the staff allocation for the above**

Note: No information given.

- (3) Which body has an authority to decide water tariff increase?**

P.W.D. is the Technical organization and Department that proposes water Tariff increase, while the Government of Goa gives relevant approval.

- (4) Is tariff increase of 100% by 2011 practical and applicable to all users? Please explain the reason why the tariff is increase in more detail in conjunction with the financial plan.**

The Tariff increase by 100% by 2011 includes the Capital cost premium, which has been indicated in the financial status. The other factors contributing to increase are according to the yardstick already applied for O & M, which have been operational in terms of present and past Tariffs.

3. Questions on water resources

- (1) Please explain in detail if the additional water source of 53Mm³ from spared irrigation water is secured and enough for your proposed 220MLD water treatment plant based on the irrigation plan prepared by the irrigation Department and on the necessary raw water volume for the plant.**

The Project is for 220 MLD i.e. 2,20,000 m³/day

Requirement per month = 30x2,20,000
= 66,00,000 m3
= 6.6 million m3

Requirement per year considering 8 months excluding 4 months of rainy season = 6.6 x8 =
52.8 Mm3 - say 53 Mm3.

1. Intake works Jackwell cum pumphouse
2. Raw water pumping 1100 mm and M.S. (2 Nos) rising main raw water
3. 220 MLD treatment plant
4. 1100 mm and 2 No rising main treated water (8.5 km)
5. 40 M.L. storage Reservoir at storage
6. 1600 mm and M.S. Gravity main (22 km)
7. 900 mm M.S. pipeline 15 (kms)
750 mm M.S. pipeline (1 km)
8. 5 ML sump at Borim
9. 20 ML storage Reservoir at Borim
10. Connecting to existing network at Margao, Ponda and Vasco

4. Questions on social and environmental issues

4-1 Land acquisition of the project sites

- (1) Please explain land acquisition plan including dimension, location, cost and schedule for this project in detail. And provide detail maps.**

Note: (1) No information given.

- (2) Please explain the procedure of land expropriation.**

Note: (2) No information given.

Land for the implementation of the Salaulim Project and the Margao Sewerage Project is already in possession of PWD.

4-2 Relocation of houses on project sites (Refer to the Attached sheet A 4.1)

- (1) If it is probable to relocate houses on the project site for this project, please describe the followings:**
- a. **Number of houses to be relocated**
 - b. **The rough estimate of expenses**
 - c. **The necessary period**
 - d. **Necessary procedures and related government organizations**

(1) Other projects concerned with the proposed sites at present will have to be finalized on the

basis of D.P. R. to be undertaken. The proposed sites are on public land namely the land belonging to Comunidade under Government control, which only require formal Land acquisition from Land acquisition officer (Collector). The Suggested sites are from habitation/buildings and are vacant.

NOTE: Points A and D are partially covered in the above paragraph; however, there is no information about points B and C

4-3 Social and Environmental matter

(1) Please explain the procedure for the preparation of EIA on the projects

Note: No information given.

(2) Please introduce local stakeholders

Note: No information given.

(3) Please fill the attached sheets for social and environmental consideration. (Refer to attached sheet A 4.1)

The Project is free from Social and Environmental consideration; in fact it is designed to enhance Environmental Protection and Social Welfare.

5. Plan and project list by other donors

Please list up the plans and projects regarding water supply and sanitation performed by other donors commenting donor's name, outline of project, served population, project area, cost, present situation of progress and describe, if any, the relation between this project and those listed project and plan.

The Water Supply and Sanitation sectors in Goa have not received any Donor assistance so far. For the first time the sector is being recommended for external assistance from Japan.

B. REQUESTED DATA AND INFORMATION

No.	Item	Availa-bility (Y/N)	Agency of Information Source	Name of Materials
1.	Development Plan			
1.1	National and regional development plan			
(1)	National development plan for water supply and sanitation sector	Y	-Planning Commission Govt. of India	-Tenth Five year plan (2002-07)
(2)	10 th Five Year Plan	Y	-Planning Commission Govt. of India	-Tenth Five year plan (2002-07)
(3)	Public Investment Program	Y	-Planning Commission Govt. of India	-Annual Plan 2002-2003
(4)	Regional development plan for Goa State	Y	-Directorate of Planning Statistics and Evaluation, Govt. of Goa	-Draft Annual Plan 2004-05
(5)	Land use plan of Goa state	Y	-Town and Country Planning Department, Govt. of Goa	-Revised Regional Plan Goa Perspective-2011
(6)	Economic Survey 2002-2003 of the Government of Goa			
(7)	Other related plan or project both of central and Goa state government			
1.2	Water supply development plan			
(1)	Development plan of Water Supply for the entire state	Y	-Directorate of Planning Statistics and Evaluation, Govt. of Goa	-Draft Annual Plan 2004-05
(2)	Full content of "Augmentation of Water Supply from Salaulim Impoundage Project Feasibility Report"	Y	-Public Works Department (P.W.D.)	- AUGMENTATION OF WATER SUPPLY & SANITATION FOR GOA STATE: AUGMENTATION OF SELAULIM WATER SUPPLY SCHEME
(3)	Report of Water Supply Plan of OPA Water Supply Scheme(QWSS)			
1.3	Sanitation development plan			
(1)	Development plan of Sanitation for the entire state	Y	-Directorate of Planning Statistics and Evaluation, Govt. of Goa	-Draft Annual Plan 2004-05
(2)	Full content of "Margao Sewerage Scheme"	Y	-P.W.D	-AUGMENTATION OF WATER SUPPLY & SANITATION FOR GOA STATE: SEWERAGE SCHEME FOR MARGAO (SOUTH ZONE)

B. REQUESTED DATA AND INFORMATION

No.	Item	Availa-bility (Y/N)	Agency of Information Source	Name of Materials
(3)	Full content of "Ponda Sewerage Scheme"	Y	-P.W.D	-AUGMENTATION OF WATER SUPPLY AND SANITATION FOR GOA STATE: SEWERAGE SCHEME FOR PONDA
(4)	Full content of "Mapusa Sewerage Scheme"	Y	-P.W.D	-AUGMENTATION OF WATER SUPPLY & SANITATION FOR GOA STATE: SEWERAGE SCHEME FOR MAPUSA TOWN
1.4	Other related project			
2.	Related Organization & Counterpart Agency			
2.1	Main Ministry of Central Government	Y	-Ministry of Urban Development	
(1)	Organization chart			
(2)	Number of personnel			
(3)	Budgetary arrangement			
2.2	Public Works Department of the Government of Goa	Y	-Govt. of Goa	-P.W.D. reports
(1)	Organization chart			
(2)	Number of personnel			
(3)	Budgetary arrangement	Y	-P.W.D	-Annual Report 2004-2005
2.3	Public Health Engineering Wing of P.W.D. (PHEW)	Y	-Govt. of Goa	-P.W.D. reports -Sector Status Study Water & Sanitation, Goa
(1)	Organization chart			
(2)	Number of personnel			
(3)	Income and expenditures in water supply and sanitation in the past five years			
(4)	Plan of income and expenditures in water supply and sanitation in the next ten years			
2.4	Organization responsible for OPA and Salaulim dams	Y	-Govt. of Goa	-P.W.D. reports
(1)	Organization chart			
(2)	Number of personnel			
(3)	Role on the dams			
3.	Law and regulation regarding water supply and sanitation			
(1)	Water laws	Y	-P.W.D	-Bye Law for water works

B. REQUESTED DATA AND INFORMATION

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
(2)	Laws and regulations for drinking water quality	Y	-P.W.D	-Design Manual
(3)	Laws and regulations regarding water right	N		
(4)	Laws and regulations regarding water supply facility			
(5)	Laws and regulations regarding sanitation and sewage facility	Y	-P.W.D	-Draft bye laws for sewerage works
(6)	Law on securing sewerage construction cost			
(7)	Law on securing sewerage maintenance cost			
(8)	Law enacting effluent standards	Y	-State Environment and Pollution Control Board	-Hand book of Environmental, Laws, Acts, Guidelines, Compliance & Standards Vol. 1
(9)	Law enacting the standard of environmental water quality in water body			
(10)	Sewerage ordinances in the State of Goa and relevant cities			
(11)	Other relevant laws			
(12)	Procedure for securing the water right	Y	-Water Resource Department, Govt. of Goa	
(13)	Law and regulations regarding water resource development and its maintenance			
4.	Data and Information regarding natural conditions of the project area			
4.1	Maps and other information			
(1)	Topographic maps; scale 1/100,000, 1/50,000 and 1/25,000	Y	-Through P.W.D	
(2)	Geological maps; scale 1/100,000, 1/50,000 and 1/25,000	Y	-Through P.W.D	
(3)	Other geological data	Y	-Through P.W.D	
(4)	Hydro-geological maps 1/100,000, 1/50,000 and 1/25,000	Y	-Through P.W.D	
(5)	Other hydrological and hydro-geological data	Y	-Through P.W.D	
(6)	Land use maps and vegetation maps	Y	-Through P.W.D	
(7)	Earthquake data (acceleration)	N		
(8)	Maps that distinguish between urban and rural area; scale 1/10,000 or 1/25,000	N		
4.2	Meteorological and hydrological data			

B. REQUESTED DATA AND INFORMATION

No.	Item	Avallability (Y/N)	Agency of Information Source	Name of Materials
(1)	<p>Meteorological data for the project area for the last 10 years</p> <ol style="list-style-type: none"> 1) Air temperature – monthly mean 2) Humidity - monthly mean 3) Wind direction & velocity- monthly mean 4) Evaporation – monthly 5) Precipitation - daily, monthly & annual 6) Measurement stations and its maps 7) Climate maps 	Y	-Meteorological Department, Govt. of Goa	
(2)	<p>Hydrological data of the water sources as long as possible in OPA and Salaulim dams</p> <ol style="list-style-type: none"> 1) Discharge - daily, monthly & annual 2) Water level - daily & monthly 3) Water quality - turbidity or COD or BOD, Suspended solid – sedimentation 4) Measurement stations and maps 			
5.	Data and information regarding water supply system			
5.1	Data and information regarding water supply system			
(1)	Water production capacity	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(2)	Service area and covered household	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(3)	Served population and category of consumer (types of water use)	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(4)	Operation and maintenance of the system	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(5)	Administrative area map or service area map	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(6)	Drawing s, specifications and Bill of Quantities, implementation schedule	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(7)	Calculation statement of planning			
(8)	Break down of project cost			
(9)	<p>Financial plan</p> <p>-P/L statement</p> <p>-Balance Sheet</p>			

B. REQUESTED DATA AND INFORMATION

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
(10)	Financial resources (past five years) -Subsidy from the Central Gov. -Subsidy from the State Gov. Water Tariff -Transfer from the general account -Others			
(11)	Financial resources for the planned projects -Subsidy from the Central Gov. -Subsidy from the State Gov. -Own fund -International aid -Others			
5.2	Outline of existing water supply system			
(1)	Water production capacity in OPA and Salaulim dam	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(2)	Served population and category of consumer (types of water use)	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(3)	Operation and maintenance of the system	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(4)	Present problem related to the above operation and maintenance system	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(5)	History of the system (construction, maintenance, improvement & rehabilitation etc.)			
(6)	Administrative map or service area map			
(7)	Key performance indicator (Refer to table B 5.2.1)	Y		
5.3	Detail data and information of existing water supply facilities			
(1)	Inventory sheets of water supply facilities such as intake facility, transmission pipeline, purification plant, distribution facilities and etc.	Y (partly)	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(2)	Brief specification, general layout, typical sectional drawings construction cost, construction schedule and year of construction system	Y (partly)	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(3)	Control, instrumentation, and record and data communication			
(4)	History of improvement or rehabilitation			
(5)	Maintenance record	Y(partly)	-P.W.D.	
(6)	Organization of Operation and maintenance including personnel for administration, operation and maintenance	Y	-P.W.D.	

B. REQUESTED DATA AND INFORMATION

No.	Item	Availa-bility (Y/N)	Agency of Information Source	Name of Materials
(7)	Electric power supply and consumption			
(8)	Fuel supply and consumption			
(9)	Present condition and problem with related to the function, operation and personnel, etc;(quantity, quality of water, water pressure, electric power shortage, ability of personnel and management, etc.)			
(10)	Supply and consumption of chemical agent especially for purification facility and distribution facility			
(11)	Financial statement (past five years)			
(12)	Rate/amount of leakage and illegal connections especially for distribution pipeline			
(13)	Design code and standard: for civil, electrical, mechanical work, pipe installation etc.	Y	-P.W.D.	-Design Manual
(14)	Water right and other rights in connection with water source and water supply facilities.			
(14)	National standard of water quality: Both raw water and treated water	Y	State Environment and Pollution Control Board	-Hand book of Environmental, Laws, Acts, Guidelines, Compliance & Standards Vol. 1
5.4	Water tariff and income per household			
(1)	Water tariff per household per month (past five years)			
(2)	Collection conditions (collection ratio) of water tariff (past five years) and collection system			
(3)	Annual average income per household (Upper class, Middle class and Lower class)			
(4)	Water tariff system and regulation on water tariff	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
6.	Data and information regarding sanitation system			
6.1	Data and information regarding requested sanitation project			

B. REQUESTED DATA AND INFORMATION

No.	Item	Avallability (Y/N)	Agency of Information Source	Name of Materials
(1)	Project area and the priority for implementation	Y	-P.W.D.	-AUGMENTATION OF WATER SUPPLY & SANITATION FOR GOA STATE- SEWERAGE SCHEME FOR MARGAO, etc. (SOUTH ZONE)
(2)	Population (Residential and floating) served by sewerage system	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(3)	Waste water per capita per a day	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(4)	Waste water per unit factory area	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(5)	Amount of commercial wastewater and others	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(6)	The entire future plans of sewerage system in the state of Goa	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(7)	The drawings of sewerage system in project area such as Coastal Belt of North Goa and South Goa, Ponda, Mapusa and Margao			
(8)	Cost breakdown of the project requested	N		
(9)	Current status of land acquisition			
(10)	Financial plan P/L statement Balance Sheet			
(11)	Financial resources for the planned projects Subsidy from the Central Gov. Subsidy from the State Gov. Own fund International aid Others			
6.2	Outline of existing Sanitation system			

B. REQUESTED DATA AND INFORMATION

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
(1)	General layout drawings of the existing sewerage system including treatment plant, pumping station, etc.	Y	-P.W.D.	-PLAN SHOWING DRAINAGE DISTRICTS OF VASCO SEWERAGE NETWORK -INDEX PLAN SHOWING EXISTING MAIN SEWER LINES, PUMP HOUSES & SEWER ZONES OF PANAJI-CITY -MAP OF MARGAO MUNICIPAL AREA
(2)	Population (Residential and floating) served by sewerage system	Y	-P.W.D	-AUGMENTATION OF WATER SUPPLY & SANITATION FOR GOA STATE: SEWERAGE SCHEME FOR MARGAO, etc. (SOUTH ZONE)
(3)	Domestic waste water per a day	Y	-P.W.D	-AUGMENTATION OF WATER SUPPLY & SANITATION FOR GOA STATE: SEWERAGE SCHEME FOR MARGAO, etc. (SOUTH ZONE)
(4)	Amount of commercial wastewater and others	Y	-P.W.D	-AUGMENTATION OF WATER SUPPLY & SANITATION FOR GOA STATE: SEWERAGE SCHEME FOR MARGAO, etc. (SOUTH ZONE)
(5)	Distribution maps of community toilet	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa

B. REQUESTED DATA AND INFORMATION

No.	Item	Availa-bility (Y/N)	Agency of Information Source	Name of Materials
(6)	Service area maps	Y	-P.W.D	-PLAN SHOWING DRAINAGE DISTRICTS OF VASCO SEWERAGE NETWORK -INDEX PLAN SHOWING EXISTING MAIN SEWER LINES, PUMP HOUSES & SEWER ZONES OF PANAJI-CITY -MAP OF MARGAO MUNICIPAL AREA
6.3	Detail data and information on management and maintenance			
(1)	Inventory sheets of sanitation facilities	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(2)	Brief specification and year of construction	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(3)	Control, instrumentation, and record and data communication system			
(4)	History of improvement or rehabilitation			
(5)	Maintenance record			
(6)	Organisation chart of Operation and maintenance including number of administration, operation and maintenance	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(7)	List of stocked parts and its present condition, and list of maintenance vehicle			
(8)	Present condition and problem with related to the function, operation and personnel, etc.; (quantity, quality of raw and treated water, electric power shortage, ability of personnel and management, etc.)			
(9)	Design code and standard: for civil, electrical, mechanical work, pipe installation etc.	Y	-P.W.D.	-Design Manual

B. REQUESTED DATA AND INFORMATION

No.	Item	Availa-bility (Y/N)	Agency of Information Source	Name of Materials
(10)	Financial resources for maintenance (past five years) Subsidy from the Central Gov. Subsidy from the State Gov. Waste water Tariff Transfer from the general account Others			
6.4	Sanitation tariff			
(1)	Sewage tariff system	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(2)	Collection conditions (collection ratio) of sewage tariff (past five years) and collection system	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(3)	Annual average income per household (Upper class, Middle class and Lower class)			
(4)	Connection charge for sewage pipe	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
7.	Socio- Economic, Environmental matters			
7.1	Statistic data			
(1)	Census of the country			
(2)	Census of the State	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(3)	Social and economic index (both of the country and the state)			
7.2	Others			
(1)	Existing and planned electrical supply capacity with the unit price for the project area.			
(2)	Fuel availability with price			
(3)	Public health 1) Statistical data of epidemic disease including water-borne disease in project are (for the last five years) 2) List of hospitals	Y	-P.W.D.	-Sector Status Study Water & Sanitation, Goa
(4)	Social environment 1) Administrational border map 2) Information on distribution of low income people settlement 3) List of NGOs			
(5)	Natural environment 1) Location of particular area officially protected for natural conservation and environmental protection in and around project area			
8.	Others			

B. REQUESTED DATA AND INFORMATION

No.	Item	Availability (Y/N)	Agency of Information Source	Name of Materials
8.1	Capable Consultants list with company profile	Y	-P.W.D.	
	1) Water supply and sanitation engineering 2) Topographic survey 3) Geological investigation for construction of water supply and sanitation 4) Hydrological survey 5) Environmental study 6) Social survey			
8.2	Capable contractor for water supply and sanitation project with company profiles			
8.3	Engineering cost			
	1) Water supply and sanitation engineering 2) Topographic survey 3) Geological investigation for construction of water supply and sanitation 4) Hydrological survey 5) Environmental study			
8.4	Unit Price for construction			
	1) Unit price regarding construction material for waterworks 2) Unit price regarding construction equipment, vehicles etc. for waterworks 3) Unit price of design and construction engineers for waterworks 4) Unit price of labours for waterworks	Y (partly)	-P.W.D	

Table A 1.1 Roles and Responsibility among the concerned organizations

Please provide present role and responsibility with demarcation between organizations below.

	Roles	Authorization	Implementation	Related Activity
Water Resource Development & Maintenance	Policy making	P.W.D.	P.W.D.	P.W.D.
	Guideline / Regulation	P.W.D.	P.W.D.	P.W.D.
	Project Planning	P.W.D.	P.W.D.	P.W.D.
	Study / Survey	P.W.D.	P.W.D.	P.W.D.
	Designing facilities	P.W.D.	P.W.D.	P.W.D.
	Construction	P.W.D.	P.W.D.	P.W.D.
	Operation & Maintenance	P.W.D.	P.W.D.	P.W.D.
	Water quality monitoring	P.W.D.	P.W.D.	P.W.D.
Water Supply System (Rural)	Policy making	P.W.D.	P.W.D.	P.W.D.
	Guideline / Regulation	P.W.D.	P.W.D.	P.W.D.
	Project Planning	P.W.D.	P.W.D.	P.W.D.
	Study / Survey	P.W.D.	P.W.D.	P.W.D.
	Designing facilities	P.W.D.	P.W.D.	P.W.D.
	Water quality monitoring & control for drinking	P.W.D.	P.W.D.	P.W.D.
	Construction	P.W.D.	P.W.D.	P.W.D.
	Operation & Maintenance	P.W.D.	P.W.D.	P.W.D.
Water Supply System (Urban)	Policy making	P.W.D.	P.W.D.	P.W.D.
	Guideline / Regulation	P.W.D.	P.W.D.	P.W.D.
	Project Planning	P.W.D.	P.W.D.	P.W.D.
	Study / Survey	P.W.D.	P.W.D.	P.W.D.
	Designing Facilities	P.W.D.	P.W.D.	P.W.D.
	Water quality monitoring & control for drinking	P.W.D.	P.W.D.	P.W.D.
	Construction	P.W.D.	P.W.D.	P.W.D.
	Operation & Maintenance	P.W.D.	P.W.D.	P.W.D.
Sewerage System (Rural)	Policy Making	P.W.D.	P.W.D.	P.W.D.
	Guideline / Regulation	P.W.D.	P.W.D.	P.W.D.
	Project Planning	P.W.D.	P.W.D.	P.W.D.
	Study / Survey	P.W.D.	P.W.D.	P.W.D.
	Designing Facilities	P.W.D.	P.W.D.	P.W.D.
	Construction	P.W.D.	P.W.D.	P.W.D.
	Operation & Maintenance	P.W.D.	P.W.D.	P.W.D.
	Promotion Planning	P.W.D.	P.W.D.	P.W.D.
Sewerage System (Urban)	Policy Making	P.W.D.	P.W.D.	P.W.D.
	Guideline / Regulation	P.W.D.	P.W.D.	P.W.D.
	Project Planning	P.W.D.	P.W.D.	P.W.D.
	Study / Survey	P.W.D.	P.W.D.	P.W.D.
	Designing Facilities	P.W.D.	P.W.D.	P.W.D.
	Construction	P.W.D.	P.W.D.	P.W.D.
	Operation & Maintenance	P.W.D.	P.W.D.	P.W.D.
	Promotion Planning	P.W.D.	P.W.D.	P.W.D.
Hygiene education	P.W.D.	P.W.D.	P.W.D.	

Please put the initials of Ministries, Departments and other organizations in applicable columns and describe each full name in the footnote.

(Ramkrishna R.M. Dhavalikar) Hon. Minister for P.W.D.

Sheet No. I-2 Social Consideration

I-2-1 Does the project include any of the following items? No

Check	Item
	Involuntary resettlement (Scale: household persons)
	Groundwater pumping (Scale: m ³ /year)
	Land reclamation, development and cleaning (Scale: hectors)
	Logging (Scale: hectors)

I-2-2 Did the proponent have meetings with related stakeholders before this request?

This is for the welfare and users and stake holder in the beneficiary areas comprises project area.

Yes No

If Yes, please mark the corresponding stake holders:

Check	Stakeholder
	Administrative body MLA, Municipality, Village Panchayats
	Local residents Yes
	NGO Yes
	Others ()

I-2-3 Did the proponent consider alternative before this request?

Yes: Please describe outline of the alternatives

No Does not arise

I-2-4 Is the project a new one or an on-going one? In the case of on-going one, have you received strong complaints, etc., from local residents?

New On-going (there are complaints) On-going (there are no complaints)

Others

()

Sheet No. I-3 Overall Confirmation

I-3-1 Are any of the following areas located inside or around the project site?

Yes No Not identified

If Yes, please mark corresponding items.

Check	Stakeholder
	National park, Protected area designated by the Gol (e.g. Coast line, wetlands, Reserved area for ethnic or indigenous people, Cultural heritage), and areas being considered for national parks or protected areas
	Virgin forests, tropical forests
	Ecological important habitat areas (Coral reef, mangrove, wetland, tidal flats)
	Habitat of valuable species protected by domestic laws or international treaties
	Likely salts cumulus or soil erosion areas on a massive scale
	Remarkable desertification trend areas
	Archaeological, historical or cultural valuable areas
	Living areas of ethnic indigenous people or nomads who have a traditional lifestyle or special socially valuable areas

I-3-2 Does the project have adverse impacts on the environment and local communities?

Yes No Not identified

Reason: ()

I-3-3 Please mark related environmental and social impacts, and describe their outlines.

Check	E & S Impacts	Check	E & S Impacts
	Air pollution		Involuntary resettlement
	Water pollution		Local economy such as employment and livelihood etc.
	Soil pollution		Land use and utilization of local resources
	Waste		Social institutions such as social infrastructure and local decision-making institutions
	Noise and vibration		Existing social infrastructure and services
	Ground subsidence		The poor, indigenous of ethnic people
	Offensive odors		Misdistribution of benefit and damage
	Geographical features		Local conflict of interests
	Bottom sediment		Gender
	Biota and ecosystem		Children's rights
	Water usage		Cultural heritage
	Accidents		Infectious disease such as HIV/AIDS etc.
	Global warming		Others
			()

Outline of related impacts: ()

Table B 5.2.1 Key performance Indicator for Water supply

ITEM	Unit	Value
2.Total yearly production	Person	
3.Total sold volume	m ³	
(1) Domestic	m ³	
(2) Commercial	m ³	
(3) Industrial	m ³	
(4) Administrative	m ³	
(5) Others	m ³	
4. Consumption	(l/c/d)	
5. UFW	%	
6. Total length of Distribution pipe	Km	
7. Number of leaks repaired on distribution pipe	Nos.	
7. Average water tariff	Rs/m ³	
8. Annual expenditure	Rs.	
9. Unit annual expenditure (Rs./m ³ of water sold)		
10. Annual revenue	Rs	
11. Unit annual revenue (Rs./m ³ of water sold)	Rs/m ³	
12. Number of employee	Nos.	
13. Ratio of employee (Number of employee/1000m ³ of water sold)		

※ As per sector study of Feedback venture report

付属資料7. 収集資料リスト

1. 参考資料/入手資料リスト

番号	資料の名称	形態	収集資料	専門著作 成書料	JICA作成 資料	テキスト	発行機関	取り扱 い区分	図書館 記入所	備考
A-1	DRAFT TENTH FIVEYEAR PLAN 2002-07 AND ANNUAL PLAN 2002-03	コピー	○				DIRECTORATE OF PLANNING, STATISTICS & EVALUATION			2002年3月
A-2	ANNUAL PLAN 2004-05 (DRAFT)	図書	○				DIRECTORATE OF PLANNING, STATISTICS AND EVALUATION			2004年7月
A-3	ANNUAL PLAN 2003-04	図書	○				DIRECTORATE OF PLANNING, STATISTICS AND EVALUATION			2003年8月
A-4	REVISED REGIONAL PLAN GOA PERSPECTIVE - 2011	図書	○				TOWN AND COUNTRY PLANNING DEPARTMENT			
B-1	WATER SUPPLY BYE-LAW	コピー	○				GOV. OF GOA, DAMAN & DAU			
B-2	BYE-LAWS FOR SEWERAGE WORK	コピー	○				PWD			
B-3	WATER (PREVENTION & CONTROL OF POLLUTION) RULES 1988 WITH LATEST AMENDMENTS; AIR (PREVENTION & CONTROL OF POLLUTION) ACT & RULES 1989 WITH LATEST AMENDMENTS	コピー	○				GOA STATE POLLUTION CONTROL BOARD			1988年9月
B-4	COASTAL REGULATION ZONE NOTIFICATION	コピー	○				MINISTRY OF ENVIRONMENT & FORESTS (DEPARTMENT OF ENVIRONMENT, FORESTS AND WILDLIFE)			2003年5月
B-6	THE ENVIRONMENT IMPACT ASSESSMENT NOTIFICATION	コピー	○				MINISTRY OF ENVIRONMENT & FORESTS			1984年5月
C-1	SECTOR STATUS STUDY: WATER & SANITATION GOA. DRAFT FINAL REPORT	図書	○				PWD, FEEDBACK VENTURES			2004年8月
C-2	SECTOR STATUS STUDY: WATER & SANITATION GOA. DRAFT FINAL REPORT (APPENDICES)	コピー	○				PWD, FEEDBACK VENTURES			2004年8月
C-3	AUGMENTATION OF WATER SUPPLY & SANITATION FOR GOA STATE: PROJECT REPORT	コピー	○				PWD			
C-4	AUGMENTATION OF WATER SUPPLY & SANITATION	コピー	○				PWD			

番号	資料の名称	形態	収集費 料	専門製作 成果料	JICA作成 費料	子キス ト	発行機関	取り扱 い区分	図書館 記入欄	備考
	FOR GOA STATE: SALIENT FEATURES									
C-5	AUGMENTATION OF WATER SUPPLY & SANITATION FOR GOA STATE: AUGMENTATION OF SELAULIM WATER SUPPLY SCHEME	コピ-	○				PWD			
C-6	AUGMENTATION OF WATER SUPPLY AND SANITATION FOR GOA STATE: SEWERAGE SCHEME FOR PONDA TOWN	コピ-	○				PWD			
C-7	AUGMENTATION OF WATER SUPPLY & SANITATION FOR GOA STATE:SEWERAGE SCHEME FOR MARGAO (SOUTH ZONE)	コピ-	○				PWD			
C-8	AUGMENTATION OF WATER SUPPLY & SANITATION FOR GOA STATE: ENVIRONMENTAL UPGRADATION FOR COASTAL BELT OF SOUTH GOA	コピ-	○				PWD			
C-9	AUGMENTATION OF WATER SUPPLY & SANITATION FOR GOA STATE: ENVIRONMENTAL UPGRADATION FOR COASTAL BELT OF NORTH GOA	コピ-	○				PWD			
C-10	AUGMENTATION OF WATER SUPPLY & SANITATION FOR GOA STATE: SEWERAGE SCHEME FOR MAPUSA TOWN	コピ-	○				PWD			
C-11	PLAN SHOWING DRAINAGE DISTRICTS OF VASCO SEWERAGE NETWORK	コピ-	○				PWD			
C-12	INDEX PLAN SHOWING EXISTING MAIN SEWER LINES, PUMP HOUSES & SEWER ZONES OF PANAJI-CITY	コピ-	○				PWD			
C-13	MAP OF MARGAO MUNICIPAL AREA	コピ-	○				PWD			
C-14	VASCO SEWERAGE SCHEME: LAYOUT OF SEWER NETWORK	青紙	○				PWD			
C-15	SALIENT FEATURES OF SEWERAGE SCHEME FOR MARGAO	青紙	○				PWD			
C-16	DETAILS OF SINGLE SEATER POUR FLUSH WATER SEAL LATRINES CUNSTRUCTED IN GOA	コピ-	○				SULABH INTERNATIONAL SOCIAL SERVICE ORGANISATION. GOA STATE BRANCH			2004年8月
C-17	SAMPLE ANALYSIS - SEWAGE	コピ-	○				DIRECTORATE OF HEALTH SERVICES; ENVIRONMENTAL &			2003年5月

番号	資料の名称	形態	収録資料	専門案件 成案件	JICA作成 資料	ディスク ト	発行機関	取り扱い 区分	図書館 記入欄	備考
C-18	SAMPLE ANALYSIS - SEWAGE	コピー	○				POLLUTION CONTROL WING DIRECTORATE OF HEALTH SERVICES; ENVIRONMENTAL & POLLUTION CONTROL WING PHE LABORATORY WORKS - GOA			2004年9月
C-19	ANALYSIS REPORT OF RAW SEWAGE AND TREATED EFFLUENT	コピー	○				PHE LABORATORY WORKS - GOA			2004年2月
C-20	PERMIT TO DISCHARGE EFFLUENT	コピー	○				GOA STATE POLLUTION CONTROL BOARD			2002年10月
C-21	ANALYSIS REPORT OF THE RIVERS IN GOA	コピー	○				GOA STATE POLLUTION CONTROL BOARD			2004年9月
C-22	PANAJI WASTE WATER ZONE XI	コピー	○				PWD			
C-23	SEWERAGE SCHEME TO PANAJI; ZONE NO 1	コピー	○				PWD			
C-24	SEWERAGE SCHEME TO PANAJI; ZONE NO 2	コピー	○				PWD			
C-25	SEWERAGE SCHEME TO PANAJI; ZONE NO 3	コピー	○				PWD			
C-26	SEWERAGE SCHEME TO PANAJI; ZONE NO 4	コピー	○				PWD			
C-27	SEWERAGE SCHEME TO PANAJI; ZONE NO 5	コピー	○				PWD			
C-28	SEWERAGE SCHEME TO PANAJI; ZONE NO 6	コピー	○				PWD			
C-29	SEWERAGE SCHEME TO PANAJI; ZONE NO 7	コピー	○				PWD			
C-30	SEWERAGE SCHEME TO PANAJI; ZONE NO 8	コピー	○				PWD			
C-31	SEWERAGE SCHEME TO PANAJI; ZONE NO 9	コピー	○				PWD			
C-32	SEWERAGE SCHEME TO PANAJI; ZONE NO 10	コピー	○				PWD			
C-33	SEWERAGE SCHEME TO PANAJI; ZONE NO 11	コピー	○				PWD			
C-34	MANUAL ON WATER SUPPLY AND TREATMENT	図書	○				MINISTRY OF URABN DEVELOPMENT			
C-35	MARGAO 市下水道施設仕様	コピー	○				PWD			
C-36	SALALUM IRRIGATION PROJECT	コピー	○				WATER RESOURCES DEPARTMENT			2003年11月
C-37	SALALUM 浄水場予定地図面・所要用地面積	コピー	○				PWD			
C-38	配管敷設用地図面・所要用地面積	コピー	○				PWD			
C-39	SIRVOI 配水池用地図面・所要用地面積	コピー	○				PWD			
C-40	VILLAGE MAP SIRVOI, MOLKORNEM & XELPEM	コピー	○				PWD			
C-41	220MLD SALALUM 給水システム水源確保についてのレ ター	コピー	○				PWD			
C-42	220MLD SALALUM 給水システム用地確保についてのレ ター	コピー	○				PWD			

付属資料 8 . ローカルコンサルタントリスト

ローカルコンサルタントリスト

1. Tetra Tech India Limited
E-7/14, Vasant Vihar,
New Delhi.
Pin code 110057

Fax 91 11 26144380
email ttl@nda.vsnl.net.in
info@tetrachindia.com

Upendra Chugh - Director
2. Black & Veatch International Ltd.
Office-301, Delta Building,
Technology Street,
Hiranandani Gardens, Powai,
Mumbai 400076.

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Fax 91 22 56945065
3. Abel Engineering Consultants, Bangalore
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IInd stage,
Rajajinagar, Bangalore-10

Tel 23322352, 23320747

Fax 23322352

Mobile 3448049367
email abeleng@vsnl.com
4. Multi Mantech International Pvt. Ltd.
Multi House,
Near C.N. Vidyalaya,
Ambawadi,
Ahmedabad 380006.

Tel 91 79 26401297, 26401298
fax 91 79 26568332
email [buisness @multimantech.com](mailto:buisness@multimantech.com)
website www.multimantech.com
5. Consulting Engineering services (I) Ltd.,
41 – A, Maker Tower, “ E ” wing,
4th floor, Cuffe Parade,
Mumbai 400 005

Ph (072) 22182772
Fax 022 – 22188430

- 6 Ramky Enviso Engineers Ltd.,
Ramky House, Gulmohar Ave, Rajbhavan Rd.,
Somajiguda, Hyd –500 082
Ph. 040 – 23306773 / 23328305 / 23310091
Fax : 040 – 23302353 / 23305726
e mail : consultancy @ ramky.com, ramky @ hd2.vsnl.net.in
- 7 Walei and Power Consultancy Services (India) Ltd.,
(A Govt. of India Undertaking)
76 – C, Sector – 18, Gurgaon, Haryana.
Ph.- 0524 – 2397389 / 2399227
Fax : 2397392
- 8 MWH India Private Ltd.,
133, Udyog Bhavan
Sonawala Road, Goregaon (East)
Mumbai 400 063
India
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e mail : info @ mwhindia.co.in
- 9 Shah Technical Consultants Pvt. Ltd., Mumbai
407, Raheja Centre,
Nariman Point
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- 10 FeedBack Turnkey Engineers Pvt. Ltd.
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web site : www.feedbackventures.com
- 11 Kirloskar Consultants Ltd.,
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事業事前評価表（開発調査）

作成日：平成16年10月07日

担当グループ：地球環境部第三グループ

1. 案件名
インド国ゴア州上下水道強化計画調査
2. 協力概要
<p>(1) 事業の目的</p> <ul style="list-style-type: none"> 対象地域の給水計画及び下水道（以下、下水道まで含めた広義の衛生施設を指す。）計画が策定される（目標年次2020年）。 優先プロジェクトに対するフィージビリティ調査が実施される。 先方カウンターパート機関職員に対する技術移転が実施され、その結果、能力開発が促進される。 <p>(2) 調査期間 2005年2月～2006年9月（20ヶ月）</p> <p>(3) 総調査費用 3.0億円</p> <p>(4) 協力相手先機関 インド国都市開発省(MOUD)、ゴア州公共事業局(PWD)</p> <p>(5) 計画の対象（対象分野、対象規模等） 対象分野：上下水道 対象地域：(上水道)ゴア州全域、(下水道)ゴア州一部地域 技術移転の対象：ゴア州公共事業局(PWD)</p>
3. 協力の必要性・位置付け
<p>(1) 現状及び問題点</p> <p>ゴア州（人口134万人、面積3,702km²）は交通の要衝としての地理的位置、鉄鉱石などの豊かな天然資源、そして質の高い人的資源を背景として、観光産業をはじめ各種産業の誘致に積極的であり、インド国の中でも開発・発展が進んでいる州である。</p> <p>当地域は年間2,000mmを超える水資源に恵まれており、現在南部地域の水源となっているSalaulimダムを利用したSalaulim水源系水道を始めとして、ゴア州全体で7系統の水道が整備されている。しかしながら、既存施設は地域の発展により増大する需要に対応できるものではないため、これが社会・経済開発の隘路ともなっている。</p> <p>一方、汚水処理については、いわゆる公共下水道を有するのは州都Panaji市、Vasco市、Margao市の北部と中部のみである。その他の地区は基本的に浄化槽等のオンサイト衛生施設で対応しており、シーズンには人口が倍近くに増加すると言われている観光地である海岸部では、処理量の増加に加え地下水上昇等の影響を受けるなどして、十分な処理がなされないまま汚水が公共水域に流れ込んでいるのが現状である。同州の下水道普及率は全国平均を下回る5%となっており、今後、環境への悪影響を最小限に抑えながら同州が発展するためには下水道整備が必要とされるが、その持続性をいかに確保するかは大きな検討課題である。</p> <p>特に南部を中心とする地方都市・工業地・観光リゾート地区で給水施設と下水道の抜本的な整備が必要となっており、マスタープラン策定とその計画に基づいた施設整備が課題となっている。</p> <p>(2) 相手国政府国家政策上の位置づけ</p> <p>本件は第10次5カ年国家計画(2002-2007)、そして、その国家計画を土台に策定された第10次5カ年ゴア州計画(2002-2007)、及びゴア州Annual Plan(2004-2005)において優先課題と位置づけられている。</p> <p>(3) 他国機関の関連事業との整合性</p> <p>国際機関及び国連機関が資金協力している関連事業はゴア州には存在しない。</p>

(4) 我が国援助政策との関連、JICA 国別事業実施計画上の位置づけ
援助重点課題「環境保全」の開発課題「水資源開発・管理」のプログラムに該当する。

4. 協力の枠組み

(1) 調査項目

ア) 【第一段階：基礎調査】

- ア 7 既存資料及び情報の収集・分析(先方作成の M/P、F/S レポートのレビューを含む。)
- イ 関連計画のレビュー
- ウ 既存給水・下水道施設現況調査、現地踏査(技術移転型の漏水調査含む。)
- エ 社会経済調査(水利用・下水処理実態調査、住民意識調査含む。)
- オ 衛生状況調査
- カ 組織・法制度調査

イ) 【第二段階：M/P の策定】

- ア 7 社会フレームの設定
- イ 長期構想策定
- ウ 施設計画
- エ 初期環境調査実施支援
- オ 維持管理計画
- カ 概略事業費積算
- キ 組織強化・制度改善計画
- ク 事業評価
- ケ 実施計画及び優先プロジェクトの選定

ウ) 【第三段階：フィージビリティ調査】

- ア 7 計画諸元の設定
- イ 施設計画・設計
- ウ 施工計画
- エ 運営維持管理計画
- オ 事業費積算・資金計画
- カ 環境影響評価(EIA)実施支援
- キ 事業評価
- ク 事業実施計画

(2) アウトプット(成果)

- ・ ゴア州の上水道および下水道マスタープラン
- ・ 優先プロジェクトの特定
- ・ 上記優先プロジェクトに係るフィージビリティスタディ
- ・ 漏水調査・対策に関する C/P の能力向上

(3) インプット(投入)：以下の投入による調査の実施

(a) コンサルタント(分野)

1	総括/上水道計画	8	運営維持管理計画
2	副総括/下水道計画	9	組織/制度
3	上水道施設計画	10	財務・経済分析
4	上水道管路計画	11	社会配慮
5	下水道施設計画	12	環境配慮
6	下水道管路計画	13	漏水調査・対策
7	施工計画/積算		

(b) その他 / 研修員受入れ

- ・ C/P 研修
- ・ 技術移転セミナーの実施
- ・ 漏水対策の技術移転(一部エリア)

5. 協力終了後に達成が期待される目標

(1) 提案計画の活用目標

<ul style="list-style-type: none"> ・ 策定された M/P や F/S に基づき、提案計画の事業化や州セクター計画への反映等給水の安定供給や衛生改善に必要な具体的な行動が実施される。 ・ 関係機関に対し漏水調査・対策に関する技術移転がなされる。 <p>(2) 活用による達成目標</p> <ul style="list-style-type: none"> ・ 適正な給水・下水道施設が機能することで、ゴア州対象地域の給水状況及び衛生環境が改善される。
<p>6. 外部要因</p> <p>(1) 協力相手国内の事情</p> <ul style="list-style-type: none"> ・ 政策的要因：開発政策の変更による提案事業の優先度の低下等 ・ 行政的・要因：予算措置、関係組織職員の不足 ・ 経済的・要因：経済状況の悪化、ドナーによる資金協力の停止 ・ 社会的・要因：対象地区における治安の急激な悪化 <p>(2) 関連プロジェクトの遅れ</p> <p>特になし。</p>
<p>7. 貧困・ジェンダー・環境等への配慮 (注)</p> <p>(1) 他の州と比較すると、ゴア州は貧困層の占める割合が少ない。ゴア州としても、中央政府の資金を使い、貧困層に対するインフラ整備は実施している。本件でも、対象地域に貧困層の集落が含まれているかを十分に確認する。</p> <p>(2) ゴア州では、'Uniform Civil Code' を策定し、ジェンダー平等を強調している。他地域に見られるように、水汲み作業が女性の仕事という習慣もなく、特に危惧される事項は見受けられない。</p> <p>(3) スクリーニング及びスコーピングの結果から、下水処理場等の用地取得にかかわる社会的影響、騒音・振動等工事期間の環境に対する配慮が必要である。</p>
<p>8. 過去の類似案件からの教訓の活用 (注)</p> <p>本件のような上下水道分野の開発調査においては、事業化の目途、財務・維持管理等十分な実施体制の確立、住民への啓蒙等の配慮事項に留意が必要である。</p>
<p>9. 今後の評価計画</p> <p>(1) 事後評価に用いる指標</p> <p>(a) 活用の進捗度</p> <ul style="list-style-type: none"> ・ 本調査結果による提言事項がインド側で実施された度合い。 <p>(b) 活用による達成目標の指標</p> <ul style="list-style-type: none"> ・ 水道普及率 ・ 下水道普及率 <p>(2) 上記 (a) および (b) を評価する方法および時期</p> <p>(a) フォローアップ調査によるモニタリング (毎年)</p> <p>(a) 及び (b) 必要に応じて調査終了後 3 年後以降に評価を実施する。</p> <p>(注) 調査にあたっての配慮事項</p>