

(2) 基本設計概要説明

MINUTES OF DISCUSSIONS
ON
BASIC DESIGN STUDY
ON
THE PROJECT FOR THE DEVELOPMENT OF HYDROLOGICAL
AND METEOROLOGICAL OBSERVATION NETWORK
IN
SYRIAN ARAB REPUBLIC
EXPLANATION ON DRAFT REPORT

In February 2003, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for the Development of Hydrological and Meteorological Observation Network (hereinafter referred to as "the Project") to Syrian Arab Republic (hereinafter referred to as "Syria"), and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

In order to explain and to consult Syria on the components of the draft report, JICA sent to Syria the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Nagasawa, Resident Representative, JICA Syria Office, from June 22 to July 3, 2003.

As a result of discussions, both parties confirmed the main items described in the attached sheets.

Damascus, July 2, 2003



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Draft Report Explanation Team
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Syria Arab Republic

ATTACHMENT

1. Components of the Draft Report

The Government of Syria agreed and accepted in principle the components of the draft report explained by the Team.

2. Japan's Grant Aid Scheme

Syrian side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Syria as explained by the Team and described in Annex-4 of the Minutes of Discussions signed by both parties on February 27, 2003 and Annex-1 of the Minutes of Discussions signed by both parties on July 2, 2003.

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and send it to the Government of Syria by around October 2003.

4. Other Relevant Issues

4-1 Common Items

- (1) The Ministry of Irrigation shall establish a committee, consisting of the personnel related to the Project, for smooth implementation of the land acquisition, grading works, access road works etc. and installation of the equipment including their procedure related to the construction of proposed meteorological and hydrological stations. The committee will have periodical meetings among the members.
- (2) The Syrian Government shall provide tight security in and around the construction camps and plant yards and during transportation of material and equipment.
- (3) The both parties agreed on the following:
 - a. Scope of works is shown in ANNEX 2.
 - b. The equipment covered by the Project is as shown in ANNEX 3 and list of main equipment is shown in ANNEX 4.
 - c. The Government of Syria shall construct all locations of the riverbed fairing works except



two locations each in the Barada-Awaji Basin and the Coastal Basin, which are related to the proposed automatic surface water level stations.

- d. The Government of Syria shall acquire the lands required for the meteorological stations and grade them for the installation of the equipment. Syrian side shall cover the fence works.
- e. The Government of Syria shall secure the access roads to the meteorological and hydrological stations.
- f. The Government of Syria shall prepare the budget and personnel required for the operation and maintenance of the equipment.



JAPAN'S GRANT AID

2.1 Japan's Grant Aid Scheme

The Grant Aid scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

(1) Grant Aid Procedures

Japan's Grant Aid Scheme is executed through the following procedures:

- Application (Request made by a recipient country)
- Study (Basic Design Study conducted by JICA)
- Appraisal & Approval (Appraisal by the Government of Japan and Approval by Cabinet)
- Determination of Implementation (The Notes exchanged between the Governments of Japan and the recipient country)

Firstly, the application or a request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for the Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Scheme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Governments of Japan and the recipient country.

Finally, for the smooth implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

(2) Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereafter referred to as "the Study") conducted by JICA on a requested project (hereafter referred to as "the Project") is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

- i) Confirmation of the background, objectives, and benefits of the requested Project and also institutional capacity of agencies concerned of the recipient

- country necessary for the Project's implementation.
- ii) Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view.
- iii) Confirmation of items agreed upon by both parties concerning the basic concept of the Project.
- iv) Preparation of a Basic Design of the Project,
- v) Estimation of costs of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

The consulting firm(s) used for the Study is (are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

(3) Japan's Grant Aid Scheme

1) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

2) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consulting firm(s) and (a) contractor(s) and final payment to them must be completed.

However in case of delays in delivery, installation or construction due to unforeseen factors such as natural disaster, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

3) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the

purchase of the products or services of a third country.

However, the prime contractors, namely, consulting, constructing and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

4) Necessity of the "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

5) Undertakings required to the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

- i) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction,
- ii) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,
- iii) To secure buildings prior to the procurement in case the installation of the equipment,
- iv) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,
- v) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,
- vi) To accord Japanese nationals, whose services may be required in connection with the supply of the products and services under the Verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

6) "Proper Use"

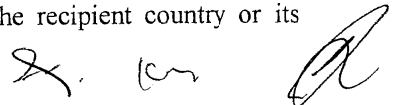
The recipient country is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

7) "Re-export"

The products purchased under the Grant Aid should not be re-exported from the recipient country.

8) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its



designated authority under the Verified Contracts.

- b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

2.2 Grant Aid Procedure

(1) Flowchart of Japan's Grant Aid Procedures

Refer to **Fig. 1**.

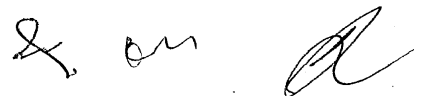
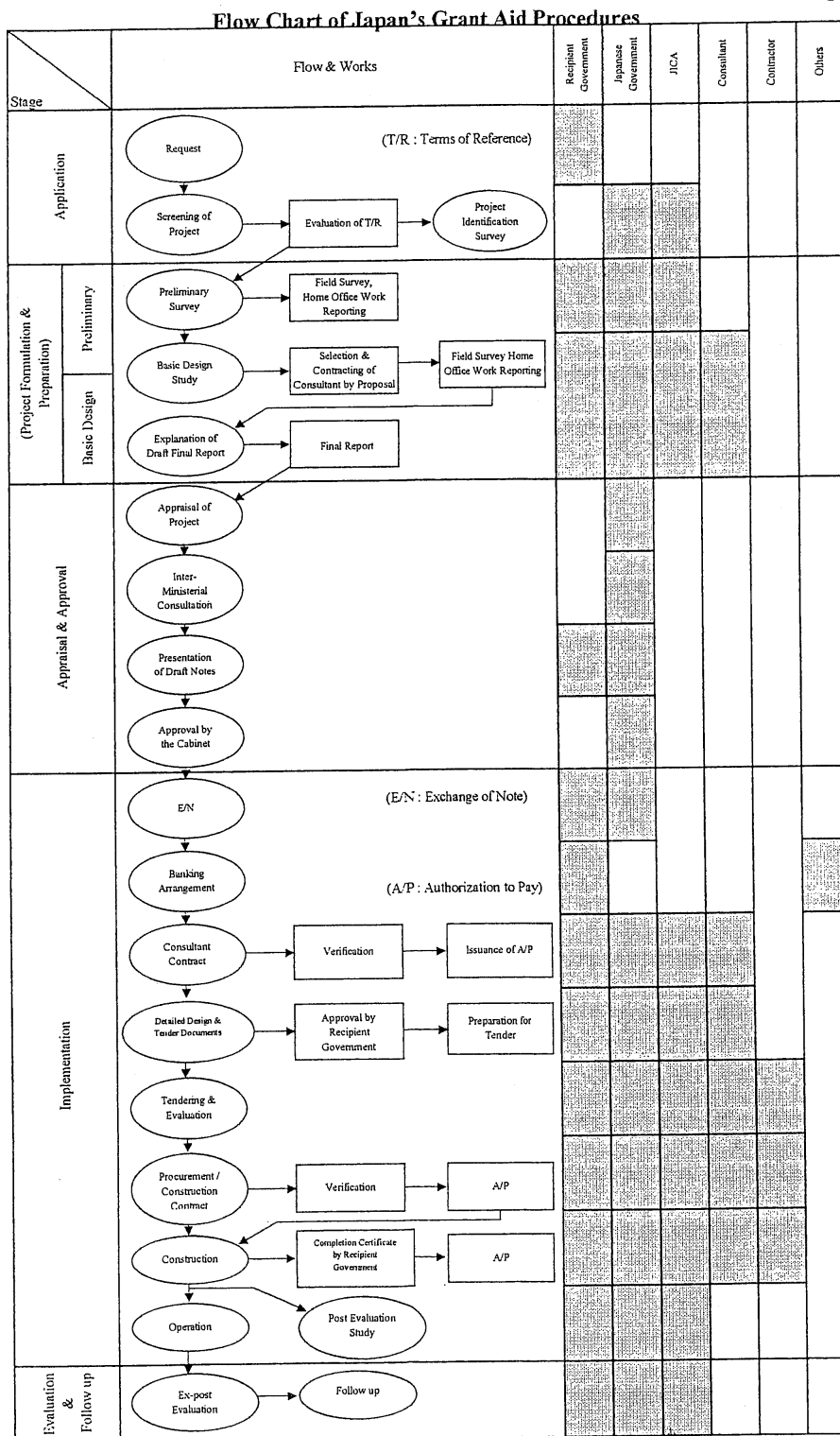


Figure 1.



2. 100

Scope of Works (Draft)

Work Item	Japanese Side	Syrian Side	Remarks
1. Procurement costs of Equipment and / Materials <ul style="list-style-type: none"> - Procurement - Packing - Transportation to the port - Inland transportation - Carrying in, Installation & Backup - Provision of facility to store the equipment 	<ul style="list-style-type: none"> ● ● ● ● 	<ul style="list-style-type: none"> ● ● 	
2. Installation Works <p>(1) Automatic surface water level stations</p> <ul style="list-style-type: none"> - Protection box - Protection pipe and pit for sensor and their fixing, and protection box support - Data logger, sensor, cable and fixing - Riverbed faring <p>(2) Automatic groundwater level/water quality stations</p> <ul style="list-style-type: none"> - Protection box and related works - Data logger, sensor, cable and fixing 	<ul style="list-style-type: none"> ● ● ● ● 	<ul style="list-style-type: none"> ● ● ● 	*
3. Tax exemption		●	
4. Custom clearance		●	

*Note: Two locations in the Barada-Awaji Basin and two locations in the Coastal Basin will be covered by Japanese Side.

2. km 

ANNEX 3 (1)

Comparison between the Request and the Basic Design

No	Items	Request		M/D & Discussions No	Basic Design	Q'ty (Quantity)			
		Specifications and etc.	No			Reasons	GD BAB	GD CB	MC
I	Equipment for Meteorological Observation								
1	Automatic weather station (Automatic weather observation system)	Wind direction & speed sensor	20	21	1. Quantities were evaluated considering the actual conditions of the existing stations. 2. The stations proposed by JICA F/S were reviewed in the course of the examination of the equipment. 3. The duplication of the stations with those of other organization 4. The stations proposed by JICA F/S were reviewed in the examination of the equipment. 5. The duplication of the stations with those of other organizations was avoided in the Basic Design 6. One weather station was planned to be set in GDBAB for the staff training 7. Snow gauge was excluded in this automatic system because of the difficulty in electricity supply to the stations. Instead, the amount of snowfall would be measured with snow sampler and weight balance (see No.5). 8. Evaporation is excluded in this system and was planned to be set at the main dam sites in GBCB (see No.3) 9. Air pressure meter is excluded because of less importance for water resources management	14	7	0	21
		Relative humidity and air temperature meter	20	21		14	7	0	21
		Global solar radiation sensor	20	21		14	7	0	21
		Evaporation gauge	20	21		0	0	0	0
		Air pressure meter	20	21		0	0	0	0
		Sunshine duration sensor	20	21		14	7	0	21
		Rain/snow gauge	20	21		14	7	0	21
		Manual rain gauge	0	0		0	0	0	0
		Data loggers and others	20	21		14	7	0	21
		Logger box	20	21		14	7	0	21
		Pole, arm & others	20	21		14	7	0	21
		Solar panel, battery & others	20	21		14	7	0	21
		Snow depth meter	0	7		4	3	0	7
2	Rain gauge (Automatic precipitation observation system)	Automatic rain gauge	0	9	Automatic rain gauge is planned to set every 100km ² to 250km ² . Automatic rain/snow gauge was excluded (see "5" above).. Snowfall is measured by manual with snow sampler and weight balance shown in No.5. Manual rain gauge was excluded because automatic rain gauge would cover its performance	14	10	0	24
		Automatic rain/snow gauge	60	15		0	0	0	0
		Manual rain gauge	60	0		0	0	0	0
3	Recording evaporation gauge (Automatic evaporation observation system)	Standard pan (Class A pan)	80	5	The automatic evaporation gauges are planned near six existing reservoirs in GDCB for estimation of evaporation from the reservoirs. Small sized pan to be used for the comparison with standard pan is excluded.	0	6	0	6
		Small sized pan		6		0	0	0	0
4	Digital wind direction & speed sensor (additional)	Sensor and logger	6	0	Additional sensors are excluded because the automatic weather stations could act for their performances	0	0	0	0
5	Snow sampler	Sampler & weight balance	0	0	Newly introduced for measurement of snowfall	15	7	0	22
II	Equipment for Surface Water Observation								
6	Auto current meter (potable)	For river flow measurement	12	12	To be equipped for all hydrological observation teams of GDBAB & GDCB	4	4	1	9
7	Ultrasonic water meter (current meter)	Ultrasonic type	4	1	Ultrasonic water meter is excluded because the auto current meter and auto water level recorder could act for its performance	0	0	0	0
8	Mobile measuring devices, cable-suspended current meter	Portable type	1	1	For large flow measurement of main rivers in GDCB One set for each of four teams is required.	0	4	0	4
9	Portable water level meter	Manual type, 20m	10	10	Deleted. Not practical for surface water	0	0	0	0
10	Auto water level recorder	For river, 10m	70	57	Five stations were cancelled due to the difficulties in discharge measurement	33	19	0	52
		For reservoir, 20m		1	To be equipped at a reservoir in GDBAB	1	0	0	1
11	Multi-parameter water quality meter, portable	EC, Ph, DO meter	5	9	To be equipped for all hydrological & groundwater observation teams of GDBAB & GDCB	4	4	1	9
III	Equipment for Groundwater Observation								
12	Portable water level meter (for groundwater)	Level+ Temp, 100m	15	13	Temperature is excluded, to be equipped for all groundwater observation teams of GDBAB & GDCB	4	4	1	9
		Level+ Temp, 200m	20	8	Excluded because equipment of 300m could act for the equipment of 200m	0	0	0	0
		Level+ Temp, 300m	20	7	Same as the equipment of 100m	4	4	1	9

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Comparison between the Request and the Basic Design


No	Items	Request		M/D & Discussions	Reasons	Basic Design			
		Specifications and etc.	No			No (Quantity)			
						GD BAB	GD CB	MC	Total
13	Data logger (Automatic groundwater level recorder)	Groundwater level and groundwater quality (DO, Ph, EC, Temperature was excluded)	100	79	Depth: 100m, quantity and location are examined according to actual conditions of observation wells	61	18	0	79
				19	Depth: 200m, quantity and location: same as above	16	3	0	19
				4	Depth: 300m, quantity and location: same as above	4	0	0	4
				4	Depth: 400m, quantity and location: same as above	2	2	0	4
14	Data logger with cable (Automatic groundwater level and water quality recorder)	Level + quality Depth: 100m	20	41	Quantity and location were examined according to the actual conditions of the observation wells	28	13	0	41
		Level + quality Depth: 200m	20	5	Same as above	5	0	0	5
		Level + quality Depth: 300m	20	0	There is no suitable observation well	0	0	0	0
IV	Related Equipment								
15	Water sampler	Depth: 100m	8	12	To be equipped for all groundwater observation teams of GDBAB & GDCB	4	4	1	9
16	GPS	Portable type	16	0	To be excluded because GPS will be provided by WRIC Project	0	0	0	0
17	Well logging equipment	Depth: 200m	1	1	It is necessary for acquisition of important data for WRIC, logging depth should be 1,500m to 2,000m according to the actual depth of the observation wells	1	0	0	1
18	Geo-electrical device (Electric sounding device)	AB=2,000m	2	0	Excluded because it is used for purposes of study	0	0	0	0
19	Refraction seismic device (Seismic exploration device)	Refraction method	2	0	Same as above	0	0	0	0
20	Field photometer	Water quality analysis device of photometer type	5	0	Excluded because photometer will be provided by WRIC Project	0	0	0	0
21	Field Vehicle	4 WD type	5	5	Additional four 4WD vehicles would be needed according to increase in field work using the equipment to be prepared by this project	2	2	0	4
					One pick-up type vehicle is needed for well logging equipment	1	0	0	1
22	Digital camera	For field survey	8	0	Excluded because some digital cameras would be provided by WRIC Project	0	0	0	0
23	Personal computer	Note type	8	0	Same as above	0	0	0	0
V	Office Equipment								
24	Personal computer	Desk-top type	20	0	It was excluded because it had been already provided by WRIC Project	0	0	0	0
25	Scanner	A0 size	2	0	Same as above	0	0	0	0
26	Plotter	A0 size	2	0	Same as above	0	0	0	0
27	Digitizer	A0 size	2	0	Same as above	0	0	0	0
28	Colored laser printer	A3 size	2	0	Same as above	0	0	0	0
29	Laser printer	A3 size	5	0	Same as above	0	0	0	0
30	Soft wares	Analysis for surface water, groundwater and meteorology	1 set	0	Excluded because necessary soft wares will be provided by WRIC Project	0	0	0	0
VI	Staff Training								
31	Soft component	Training of operation and maintenance of equipment	Lump sum	Lump sum	Excluded. Training is planned to carry out by the contractor during installation work.	0	0	0	0

M/D: Minutes of Discussion, GDBAB: General Directorate of Barada-Awaji Basin,
 GDCB: General Directorate of Coastal Basin, MC: Main Center

ANNEX 4 (1)

List of Main Equipment

No	Name of Equipment	Main Specifications or Components	Quantity	Unit
1	Metrological Observation			
1-1	Automatic weather station system	Wind speed and direction with heater, Air temperature/Relative humidity, Global radiation, Sunshine, Rain gauge, Data logger, Solar panel system including mast (H=10m)	21	set
		Wind direction Measuring range: 0-360°, Accuracy: Within ±3%, Height: 10m above ground level		
		Wind speed Measuring range: More than 0.5m~60m/s, Accuracy: Within ±0.5m (Less than 10m/s), Height: 10m above ground level		
		Air temperature Measuring range: More than -20~+50°C, Accuracy: Within ±3°		
		Relative humidity Measuring range: 0~100%, Accuracy: Within ±2% (Less than 90%)/Within ±5% (90-100%)		
		Global radiation sensor Measuring range: 0 ~ 1.5kw · m ⁻² Within ±3%, Sensitivity: 7mV/kw · m ²		
		Sun shine (Hour) Detection method: Solar-powered type, Output voltage: DC20mV (0.12kw/m ²)		
		Rain gauge Measuring range: overturning/0.5mm, Accuracy: Within 0.5%		
1-2	Snow observation equipment			
1-2-1	Snow scale(Pole)	Height: 2m, Graduation: 1cm	7	set
1-2-2	Snow sampler	Edge diameter: about 5cm, Area: about 20cm ² , Length: about 75cm x 2	22	set
1-2-3	Digital platform scale	Weighing: About 15kg, Minimum display: About 0.005kg	22	set
1-3	Auto recording rainfall system	Rain gauge: Overturning type, Measuring range: 0.5mm/overturning, Data Logger, (Solar pannel system)	24	set
2	Surface Water Observation			
2-1	Portable auto water current meter	Measuring range: More than 0.1~0.3m/s, Display: Digital display	9	Unit
2-2	Portable auto water current meter (Cable-suspended)	Measuring range: More than 0.1~6m/s, Display: Digital display	4	Unit
2-3	Portable auto water level measuring system			
2-3-1	Auto water level measuring system (For river)	Type: Pressure type, Measuring range: About 10m (Maximum), Data logger	52	set
2-3-2	Auto water level measuring system (For dam)	Type: Pressure water level, Measuring water depth: About 20m (Maximum), Data logger	1	set

2. km 

ANNEX 4 (2)

List of Main Equipment

No	Name of Equipment	Main Specifications or Components	Quantity	Unit
2-4	Water quality device			
2-4-1	EC meter	Type: Handy type, Measuring range: 0~1,999 μ s or 0~199.9ms or more, Accuracy: \pm 1%(Full Scale)	9	Unit
2-4-2	pH meter	Type: Handy type, Measuring range: More than 0~14 pH, Resolution: More than 0.1 pH, Measuring accuracy: Within 0.2pH	9	Unit
2-4-3	Do meter	Type: Handy type, Measuring range: More than 0~19.9mg/L, Resolution: More than 0.1 %, Measuring accuracy: Within \pm 0.1%	9	Unit
3	Groundwater Observation			
3-1	Portable water level detector			
3-1-1	Portable water level detector 1	Type: Seal wire reinforced rope type, Measuring depth: More than 100m, Minimum graduation: 100mm, Water level appreciation method: Buzzer	9	Unit
3-1-2	Portable water level detector 2	Type: Seal wire reinforced rope type, Measuring depth: More than 300m, Minimum graduation: 100mm, Water level appreciation method: Buzzer	9	Unit
3-2	Auto groundwater measuring system			
3-2-1	Auto groundwater measuring system 1	Type: Pressure type water level, Installation depth: 100m, Measuring depth: About 20 m below water level, Includes data logger	79	Set
3-2-2	Auto groundwater measuring system 2	Type: Pressure type water level, Installation depth: 200m, Measuring depth: About 20 m below water level, Includes data logger	19	Set
3-2-3	Auto groundwater measuring system 3	Type: Pressure type water level, Installation depth: 300m, Measuring depth: About 20 m below water level, Includes data logger	4	Set
3-2-4	Auto groundwater measuring system 4	Type: Pressure type water level, Installation depth: 400m, Measuring depth: About 20 m below water level, Includes data logger	4	Set
3-3	Auto water quality measuring system			
3-3-1	Auto water quality measuring system 1	Type: Fixed type, Installation depth : 100m, Observation item: EC/Water temperature/pH, Includes data logger	41	Set
3-3-2	Auto water quality measuring system 2	Type: Fixed type, Installation depth : 200m, Observation item: EC/Water temperature/pH, Includes data logger	5	Set
		EC sensor, Measuring range: More than 0~1,999 μ s or More than 0~19.9ms, Accuracy: \pm 1%(Full scale) Includes data logger		
		Water temperature sensor, Measuring range: 0 ~ 30°Accuracy: Within \pm 1%		
		pH sensor, Measuring range: More than 0~14 pH, Resolution: More than 0.1 pH , Accuracy: Within 0.2pH		
4	Related Equipment			
4-1	Water sampler	Water sampling depth: More than 100 m, Water sampling volume: About 1000 cc	9	Unit
4-2	Well logging equipment	Measuring depth: More than 1,500 m, Measuring item: Resistant ratio/Electrical conductivity/Rest potential/Water temperature/Natural gamma ray, Lifting method: electric winch (Rated output, Well diameter: 10"	1	Unit
4-3	Generator	Type: Diesel, Rated electric voltage, More than KVA, Engine rated output: More than 11 kw	1	Unit
4-4	Vehicle	Type: Pick up type/Single cabin, Driving type: 4 x 4, Load: About 1 ton	5	Unit

Note: For each measuring part of the automatic stations, 2 sets of spare parts of data logger and sensor is proposed for the measurement during repairing. One set for evaporation is planned considering its small in number.



付属資料 6 基本設計概要書

基本設計概要表

1. 協力対象事業名
シリア国 水資源情報管理センター機材整備計画基本設計調査
2. 我が国が援助することの必要性・妥当性
<p>(1) 我が国が当該国に対し援助することの必要性・妥当性</p> <p>我が国は、シリア（以下「シ」国とする）が、中東和平実現の鍵を握る重要な国であり、中東和平プロセスに当事国として参加していることに鑑み、各形態による経済協力を実施している。また、今後とも、中東和平プロセスへの「シ」国の積極的な参加を促すべく、同国民生活の向上に資する援助実施を検討していく方針である（ODA 白書より）。</p> <p>(2) 当該プロジェクトを実施することの必要性・妥当性</p> <p>「シ」国の南部には、広大なシリア砂漠が広がっており、国土の大部分が年間降水量 250 mm に満たない水資源に乏しい乾燥地である。一方で、人口は年 2.7% の高率で増加し、2002 年で 1,692 万人に達している。「シ」国では、1960 年以来、人口増加および産業発展に伴う水需要増加に対処するべく水資源開発と水管理計画を実施してきた。しかし、近年における高い頻度の旱魃、地下水の過剰取水による地下水位低下や水質悪化の障害が発生している。この状況を鑑み、水資源問題は、第 9 次 5 ヶ年開発計画(2001～2005)においても重要課題として取り上げられている。</p> <p>現水系の水資源有効利用のためには、水資源賦存量が比較的乏しく水需要の高いバラダ・アワジ流域と、賦存量が比較的豊富で、将来の水資源として有望とされている沿岸部流域に対して、詳細且つより精度の高い水資源管理システムを構築すること、及びデータ集積/分析を早急に行なうことが必要である。</p>
3. 協力対象事業の目的（プロジェクト目標）
バラダ・アワジ流域および沿岸部流域において、水資源情報の適切な管理体制を構築するための気象・水文情報のデータ収集、処理システムが整備される。
4. 協力対象事業の内容
<p>(1) 対象地域 バラダ・アワジ流域および沿岸部流域</p> <p>(2) アウトプット 対象流域内において、気象・水文情報にかかるデータ収集・処理システム機材が整備される。</p> <p>(3) インプット 日本側：本システム構築のための機材供与 <ul style="list-style-type: none"> ・気象観測機材：自動気象観測システム、自動降水量観測システム、自動蒸発量観測システム、スノーサンプラー ・表流水観測機材：手動流速計、自動水位観測システム、手動水位計、手動水質測定器 ・地下水観測機材：手動地下水位計、自動地下水位観測システム、自動地下水位水質観測システム他 ・関連機材：採水器、検層器、野外作業用車輛 「シ」国側：日本側インプットの実施に必要な主な条件整備 機材内陸輸送費、機材置場の確保、河道整形他</p> <p>(4) 総事業費 6.74 億円（日本側：6.07 億円、「シ」国側：0.67 億円）</p>

(5) スケジュール

詳細設計期間を含め約 14.5 ヶ月を予定

(6) 実施体制

実施機関：灌漑省

運営機関：バラダ・アワジ流域総局、沿岸部流域総局、メインセンター

5. プロジェクトの成果

(1) プロジェクトの裨益対象の範囲及び規模

対象の範囲：バラダ・アワジ流域および沿岸部流域

裨益対象人口：両流域の住民

バラダ・アワジ流域のダマスカス 297 万人

沿岸部流域のラタキア 104 万人

沿岸部流域のタルトス 81 万人

482 万人

(2) 事業の目的（プロジェクト目標）達成を示す成果指標

気象・水文情報にかかるデータ収集状況およびデータベース蓄積状況を指標とする。

	2003 年（実施前）		2005 年（実施後）	
	データ項目	測定頻度	データ項目	測定頻度
気象データ	ほとんどの観測所で、降雨量のみ	1 回 / 日*	風向、風速、温度、湿度、日射、日照時間、降雨量、降雪量	1 回 / 時間**
地表水データ	水位、流速	2 回 / 月*	水位、流量	1 回 / 時間**
			水質(EC、pH、DO)	1 回 / 日*
地下水データ	地下水位	1 回 / 日*	地下水位、水質(EC、pH、水温)	1 回 / 6 時間**

*現場にて手動による計測。

**自記記録計(データロガー)による自動計測。定期的に(月 1 回)データを回収する。

(3) その他の成果指標

特に記載事項なし。

6. 外部要因リスク

(1) 必要とされる運営・維持管理費用と要員が確保されること、および

(2) 訓練された技術職員が、水資源情報センターにとどまることが必要である。

7. 今後の評価計画

(1) 事後評価に用いる成果指標

気象データの収集状況（データ項目、測定頻度）

水文データの収集状況（データ項目、測定頻度）

データベース蓄積状況（データ項目、データ記録数、更新頻度）

(2) 評価のタイミング

先にプロジェクト方式技術協力で実施されている「水資源情報センター整備計画」にて予定されている事後評価に合わせて行う。

付属資料 7 参考資料 / 入手資料リスト

資料収集リスト（ 収集資料/ 専門家作成資料）

主幹部長	文書管理課長	主幹課長	情報管理課長	技術情報課長	図書館受入日

プロジェクトID		調査団番号	
地域	中近東	調査団又は専門 家氏名	水資源情報管理センター機材整備 計画基本設計調査
国名	シリア	配属機関	現地調査機関又は派遣期間
			2003年2月22日～3月23日
		担当部課	無償業務第4課
		担当者氏名	深澤 公雄

番号	資料の名称	形態（図書、ビデオ、地図、写真等）	収集資料	専門家作成資料	JICA作成資料	発行機関	取り扱い区分	図書館記入欄
	Operation and Maintenance Manual of Monitoring Equipment, 2002	おじ'カ図書	*			Water Resources Information Center, Ministry of Irrigation	JR・CR（ ）・SC	
	The Ledger Observation Station in GDCB Groundwater Station (Latakia), 2003	おじ'カ図書	*			Water Resources Information Center, Ministry of Irrigation	JR・CR（ ）・SC	
	The Ledger Observation Station in GDCB Groundwater Station (Tartus), 2003	おじ'カ図書	*			Water Resources Information Center, Ministry of Irrigation	JR・CR（ ）・SC	
	The Ledger Observation Station in GDBAB Groundwater Station, 2003	おじ'カ図書	*			Water Resources Information Center, Ministry of Irrigation	JR・CR（ ）・SC	
	The Ledger Observation Station in GDCB Surface Water Station (Latakia), 2003	おじ'カ図書	*			Water Resources Information Center, Ministry of Irrigation	JR・CR（ ）・SC	
	The Ledger Observation Station in GDCB Surface Water Station (Tartus), 2003	おじ'カ図書	*			Water Resources Information Center, Ministry of Irrigation	JR・CR（ ）・SC	
	The Ledger Observation Station in GDBAB Surface Water Station, 2003	おじ'カ図書	*			Water Resources Information Center, Ministry of Irrigation	JR・CR（ ）・SC	
	The Ledger Observation Station in GDCB Meteorological Station (Latakia), 2003	おじ'カ図書	*			Water Resources Information Center, Ministry of Irrigation	JR・CR（ ）・SC	
	The Ledger Observation Station in GDCB Meteorological Station (Tartus), 2003	おじ'カ図書	*			Water Resources Information Center, Ministry of Irrigation	JR・CR（ ）・SC	
	The Ledger Observation Station in GDBAB Meteorological Station, 2003	おじ'カ図書	*			Water Resources Information Center, Ministry of Irrigation	JR・CR（ ）・SC	
	1/200,000 Topographic Map of Coastal Basin	コピー地図	*			Ministry of Defence	JR・CR（ ）・SC	
	1/200,000 Topographic Map of Barada-Awaji Basin	コピー地図	*			Ministry of Defence	JR・CR（ ）・SC	
	Location Map of Proposed Meteorological and Gauging Stations in GDCB, 2003	おじ'カ図面	*			General Directorate of Coastal Basin	JR・CR（ ）・SC	
	Location Map of Proposed Meteorological, Gauging & Groundwater Stations in GDBAB, 2003	おじ'カ図面	*			General Directorate of Barada-Awaji Basin	JR・CR（ ）・SC	