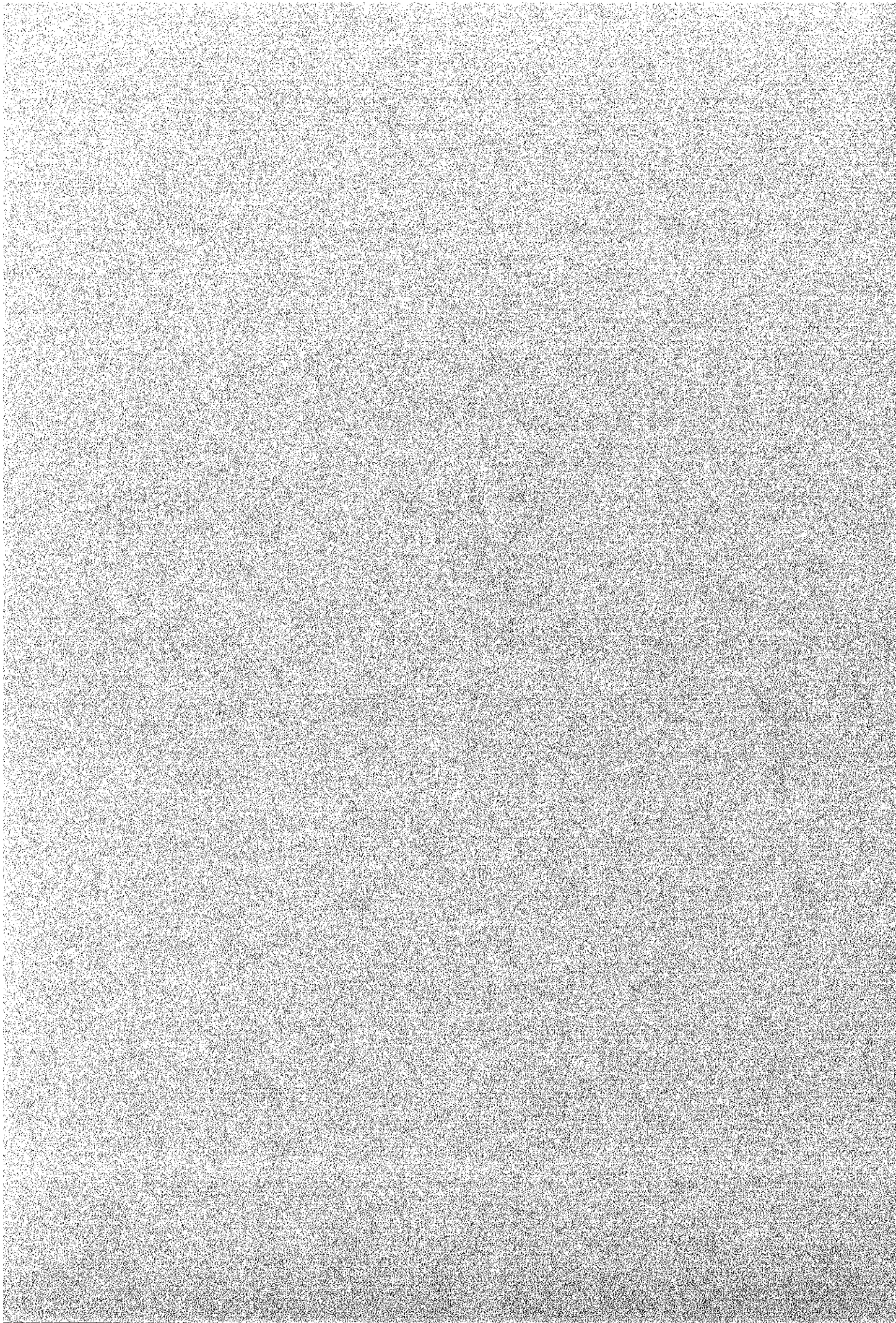


添 付 資 料

1. 要 請 書
2. 実施細則 (S/W)
3. 協議議事録 (M/M)
4. 収集資料リスト



1. 要 請 書

Our Ref. No. IERD/22/AS/1
Your Ref. No. _____
Tel. No. _____



MINISTRY OF FINANCE AND
ECONOMIC PLANNING
P O. BOX M.40
ACCRA

27 - 10 - 1983

REQUEST FOR DEVELOPMENT SURVEY FOR THE
REHABILITATION OF SELECTED IRRIGATION PROJECTS

As you are aware, the unreliability of rainfall in Ghana has compelled the Government of Ghana to supplement rainfed agriculture with irrigation projects.

Unfortunately, owing to the grave economic problems that the Government faced in the 70's and early 80's, some of the irrigation projects could not be well maintained and that has adversely affected their efficiency.

The Government of Ghana would therefore be grateful if the Japanese Government could provide assistance under "Development Survey" for the determination of the requirements and economic feasibility for rehabilitation works. Attached hereto, please, is the Request Form.

Accept, Sir, the assurances of my highest esteem.

(CHARLES ABAKAH)
DIRECTOR, IERD
for MINISTER OF FINANCE AND
ECONOMIC PLANNING

H.E. THE AMBASSADOR OF JAPAN
EMBASSY OF JAPAN,
ACCRA.

REQUEST FOR DEVELOPMENT SURVEY PROGRAMME BY THE JAPANESE GOVERNMENT

1. NAME OF PROJECT

Master Plan Study for Rehabilitation of Irrigation Projects

2. TYPE OF SURVEY

M/P (Master Plan) and F/S (Feasibility Study)

3. NAME OF IMPLEMENTING AGENCY

Ghana Irrigation Development Authority (GIDA)

4. PRIORITY OF THE REQUEST AMONG ALL THE PROPOSED REQUEST FOR DEVELOPMENT SURVEY PROGRAMME

High priority

5. BACKGROUND, OBJECTIVE & CONTENT OF THE REQUEST

Background: Agriculture plays a pivotal role in the national economic growth of Ghana, that is, occupying 50% of GDP, 70% of export earning, 66% of total employment and supporting 80% of livelihood of total population.

Since early 1970's Agriculture Sector had been in decline until 1983 when the Economic Recovery Programme (ERP) was launched. Then the GDP grew successfully with high growth rate, namely 5.3% per year, to which the agriculture sector also contributed.

In order to consolidate such a past performance, Ministry of Food & Agriculture launched the 10-Year Medium Term Agricultural Development Programme (MTADP) for the period from 1991 to 2000, in which following key policies are set out:

- 1) to provide food security for all population by way of adequate and nutritionally balanced diets at affordable prices.
- 2) to create rural employment opportunities to reduce rural unemployment.
- 3) to generate foreign exchange through export promotion of cash crops and timber: import substitution (rice, palm oil and cotton) and export diversification (horticulture, rubber, coffee and tobacco) and thereby improve the balance of payments.
- 4) to provide raw materials for industrial development, and
- 5) to promote balanced regional development

Modern irrigation started in the early 1960s by receiving the ~~technical and financial~~ assistance from various donors. The Irrigation Development Authority of Ghana (GIDA) has constructed and been operating the small and medium scale irrigation projects with the service areas ranging from 100 to 2,000 ha at about 20 locations throughout the country. The total area already developed is about 6,700 ha and present conditions of the existing projects are summarized in Attachment-1.

Many projects have been suffered from low level of performance due to a combination of various factors. The prevailing constraints are represented by low productivity due to deterioration of irrigation facilities (reservoir dam, pumping station, canal system etc), water shortage, soil problems and weak linkage with institutional supporting services.

To overcome the unfavorable situation, GIDA is directed to concentrate on improving the management and operation of existing projects before embarking on the development of any new large scheme on the basis of the World Bank's review of irrigation in 1986. Similarly, the optimum use of existing irrigation projects is focused in the MTADP. To this end the reactivation of existing projects is a very important component of the MTADP.

Objectives: The project aims at rehabilitation and expansion of the selected irrigation projects after justification of technical and economic feasibility.

Content of Request: The request contains both master planing for rehabilitation and expansion of the following ten (10) irrigation projects, of which location is given in Attachment-2.

Project	(Region)	Area Developed	Potential
		Ha	Ha
1) Ashaiman Irrigation Project	(Greater Accra)	135	176
2) Weijsa Irrigation Project	(" ")	109	1,590
3) Amate Irrigation Project	(Eastern)	100	300
4) Afife Irrigation Project	(Volta)	800	880
5) Aveyne Irrigation Project	(")	80	280
6) Kpando-Torkor Irrig. Project	(")	40	400
7) Mankessim Irrigation project	(Central)	12	320
8) Akumadan Irrigation Project	(Ashanti)	175	730
9) Tanoso Irrigation project	(Brong Ahafo)	130	130
10) Bontanga Irrigation Project	(Northern)	485	435
Total		2,067	5,202

6. *ITEM OF SURVEY*

Throughout the study, the detailed analysis will be made on the constraints, which hinder the appropriate irrigation farming in the irrigation projects focusing on the following aspects:

- 1) Conditions of irrigation system.
- 2) Operation and maintenance of the irrigation system.
- 3) Accessibility of project site and communication facilities.
- 4) Farm management facilities such as sheds, drying yards, etc.
- 5) Marketing system and facilities.
- 6) Agricultural support services including credit/input supply, extension services, etc.
- 7) Research activities linked with extension services, and
- 8) Farmer's association and institutional structure.

Development concepts and measures will be set up to eliminate the constraints and exploit the land and water resources at maximum. All the study results will be incorporated into the master plan. Following the master planning, the feasibility study will be carried out for the most urgent works identified through the study.

Stage I (M/P) - Data collection and review

- Reconnaissance survey and problem identification
- Determination of the requirements for rehabilitation
- Environmental impact assessment
- Preliminary cost estimate for each project
- Ranking and prioritisation of projects for rehabilitation

Stage II (F/S) - Detailed survey on the prioritised projects

- Design and the derivation of cost estimate
- Economic and financial evaluation

7. *PROCESS REACHING TO THE REQUEST*

Irrigation Development Center (IDC), Ashaiman, GIDA in 1992
Agricultural Development Consultants Association (ADCA), Japan in 1993

8. *PLEASE STATE IF THERE IS ANY SURVEY DONE ON THE SAHE PROPOSED PROJECT AND IF ANY, PLEASE STATE THE TIME OF SURVEY AND CONTENT OF SURVEY*

In collaboration with the World Bank, GIDA carried out the preliminary study on some existing irrigation projects including Weija, Amate, Kpando-Torkor, Akumadan, Tanoso within the framework of

National Small Scale Irrigation Programme (NSSIP) in 1990/91. As a result, it is concluded that the most of existing projects need the urgent rehabilitation to sustain the projects and the expansion of irrigated areas to exploit the maximum benefit of the projects. This recommendation was incorporated into the MTADP as irrigation development strategy of Ghana in a period between 1991 and 2000.

9. *PLEASE STATE HOW THE REQUESTED PROJECT RELATES WITH THE ECONOMIC & TECHNICAL COOPERATION BY JAPAN, THIRD COUNTRY OR INTERNATIONAL ORGANIZATIONS*

A recent Japanese Technical Cooperation programme has resulted in the establishment of the Irrigation Development Center (IDC) at Ashaiman, about 30km east of Accra. The IDC has the objectives of technically supporting the improvement and development of GIDA projects by conducting adaptive research on irrigated farming to introduce appropriate technology. In addition, the center provides training for technical staff and farmers involved in the irrigation projects. Since the beginning of 1993, the activities at the center have been enhanced under Mini-Project Type Technical Cooperation programme.

10. *POSSIBILITY OF IMPLEMENTATION OF PROJECT*

a) *ESTIMATE OF COST OF PROPOSED PROJECT*

The study will require about 80 man-month of expert services.

The rehabilitation will be implemented by phases. Total cost will be ¥2,000 million for 10 projects, however, the rehabilitation will be implemented by phases in accordance with the priority determined during the study.

b) *SOURCE OF FUND*

Grant Aid

11. *URGENCY OF REQUEST*

The request is very urgent. The existing irrigation projects for which this request is being made are fast deteriorating due to lack of funds for maintenance works. The facilities have deteriorated to such a condition that immediate action is required for remedy to prevent a total breakdown of the facilities.

12. EFFECT OF TECHNOLOGY TRANSFER

By working together with Ghanaian counterparts who should be assigned specific duties, the effect of technology transfer would be expected.

13. SAFETY OF SURVEY SITES

It is safe in general. Japanese experts will be domiciled in Accra, the capital city. Visits to the project sites will be undertaken in proper vehicle with professional drivers. All project sites are accessible to regional cities where water and electricity are available.

14. COOPERATION EXTENDED BY THE COUNTERPART ORGANIZATION

A strong cooperation will be extended by GIDA in order to achieve its objectives of arresting the deterioration of its facilities and making them more productive.

15. BENEFIT BROUGHT BY THE PROJECT

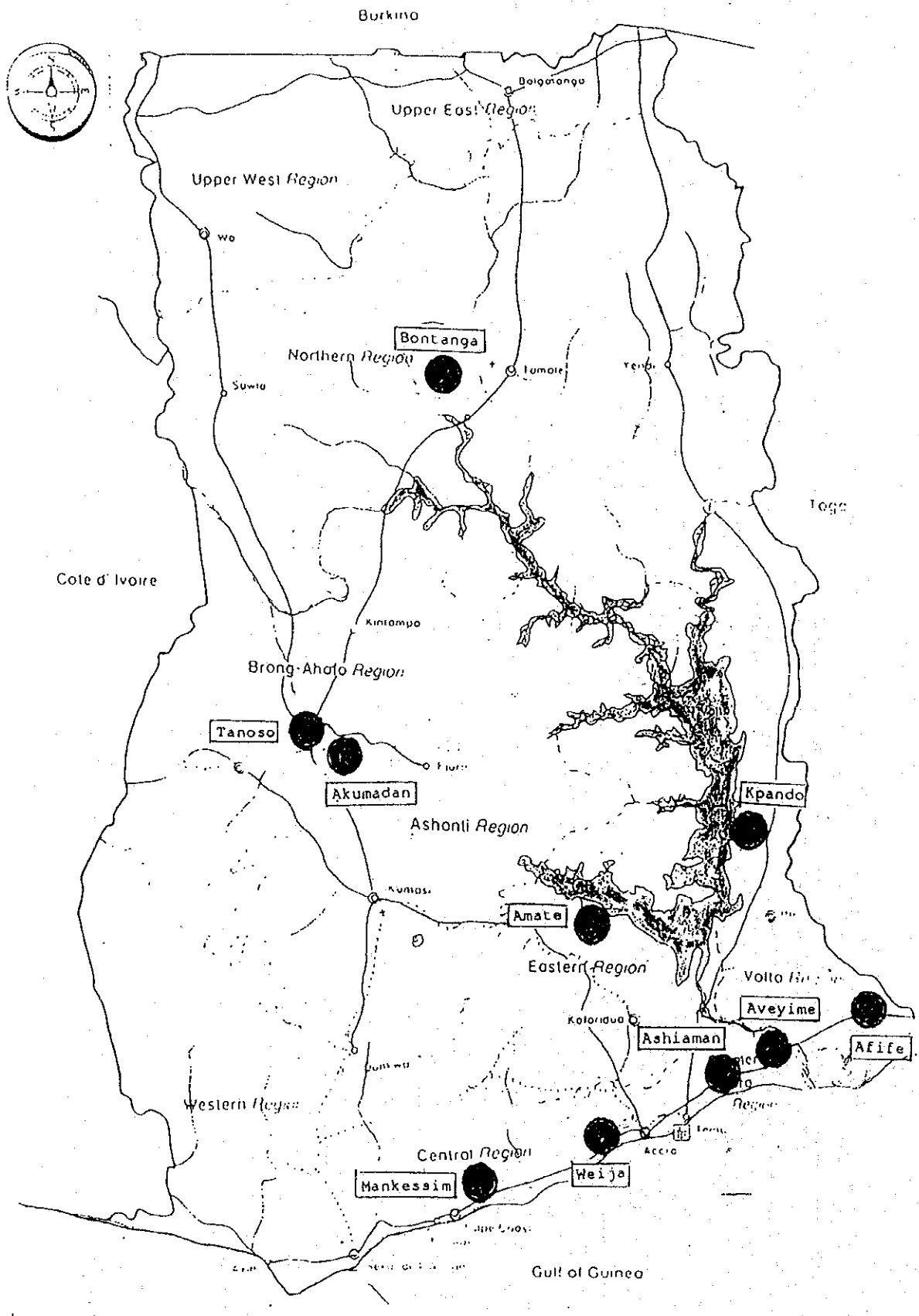
The project would bring about increased food production and hence increase in earnings of local farmers (more than 10,000 farmers).

16. BRIEF SKETCH OF SITE

A location map of the project sites is attached.

PRESENT CONDITIONS OF SMALL SCALE IRRIGATION PROJECTS IN GHANA

No.	Region	Project	Irrigable Area (ha)	Completed (ha)	Construction	Finance	Technical Co-operat.	Facility	No. of Farmers	Crop	Problems/Constraints
1.	Greater Accra	Ashiaman	152	152	1966-78	GOG	JICA	dam		Rice	water shortage
2.		Dawhenya	500	244	1959	EEC		pump		Rice	canals, drainage, land levelling, farmers' participation
3.		Weija	1,500	200	1977-p	EEC		pump		Vegetables, Rice	soils, farmers' participation
4.		Asutuaare	1,000	660	1960	GOG	FAO/UNDP	pump		Rice	canals, drainage, land levelling, farmers' participation
5.	Eastern	Amate	300	100	1974-p	GOG		pump		Rice	pumps, sprinkler equipments
6.		Dedeau	100	20	NA	GOG		pump		Vegetables	sprinkler equipments, transport, marketing
7.	Volta	Afife	880	880	1969-83	China		dam		Rice	credit, land preparation, farmers' participation
8.		Aveyime	280	40	-	GOG/Japan	DPK	pump		Rice, Vegetables	sandy soils, operation costs
9.		Kpando-Tork	400	40	-	GOG		pump		Vegetables	land levelling, pumps
10.	Central	Okyerako	160	70	1974-p	GOG/MB		dam		Rice	water shortage
11.		Nankessim	320	33	1970-p	GOG		dam, pumps		Rice, Vegetables	drainage
12.	Ashanti	Akumadan	730	80	1973-p	GOG		dam		Vegetables	pumps, sprinkler equipments
13.		Afranchho	360	80	-	-		-		-	-
14.	Brong Ahafo	Tanoso	130	130	1977-p	GOG		pump		Vegetables	sprinkler equipments, pumps
15.		Subinja	60	60	-	GOG		pump		Vegetables	sprinkler equipments, pumps
16.	Northern	Bontanga	450	450	1977-87	GOG		dam		Rice, Vegetables	credit
17.		Galinga	40	24	-	-		-		-	-
18.		Libga	20	8	-	-		-		-	-
19.	Upper West	Tono	2,440	2,440	1974-84	GOG		dam, pump		Rice, Vegetables	land holding
20.	West	Vea	1,000	1,000	1966-84	GOG		dam		Rice, Vegetables	Nematodes
TOTAL			10,822	6,711							

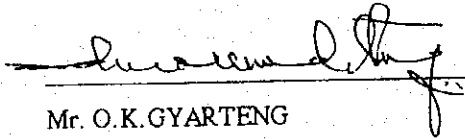


2. 実施細則 (S/W)

SCOPE OF WORK
FOR
THE STUDY
ON
THE REHABILITATION OF IRRIGATION PROJECTS
IN
THE REPUBLIC OF GHANA

AGREED UPON
BETWEEN
GHANA IRRIGATION DEVELOPMENT AUTHORITY
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

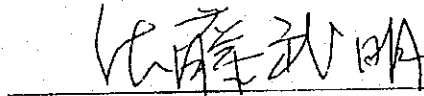
ACCRA, 19 APRIL, 1995



Mr. O.K. GYARTENG

Chief Executive,

Ghana Inigation Development Authority



Mr. TAKEAKI SATO

Leader,

Preparatory Study Team,

Japan International Cooperation Agency

I. INTRODUCTION

In response to the request of the Government of the Republic of Ghana, the Government of Japan has decided to conduct the Study for the Rehabilitation of Irrigation Projects in the Republic of Ghana (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 Government of Japan, will undertake the Study in close cooperation with the authorities concerned of the Republic of Ghana.

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 field reconnaissance survey in order to prioritize the existing twelve (12) irrigation projects and to select priority project(s) for a feasibility study.
2. To conduct a feasibility study on the selected project(s) in order to formulate rehabilitation plans for each project.
3. To carry out, in the course of the Study, technology transfer to the Ghanaian counterpart personnel concerned.

III. Study area

The study area is made up of 12 irrigation projects scattered over the country, an area of approximately 3,500ha in total. (See the location map attached as ANNEX 1)

IV. Scope of the Study

In order to achieve the above objectives, the Study will consist of two (2) phases and will cover the following items.

1. Phase I (Selection of priority project(s) out of 12 proposed projects)

1.1. Review of existing development plans and projects related to the Study.

1.2. Collection and analysis of the following data and information, through the field survey ;

- (1) natural condition
 - a) topography
 - b) meteorology
 - c) hydrology
 - d) geology
 - e) soil
 - f) water quality
 - g) water resources
 - h) environment
 - i) others



- (2) social and economic condition
 - a) population
 - b) regional socio-economic condition
 - c) social infrastructure
 - d) social organization
 - e) regional development plan
 - f) others
- (3) agriculture
 - a) land use
 - b) land tenure
 - c) cultivation technique
 - d) cropping pattern and yield
 - e) production
 - f) agricultural machinery
 - g) water management
 - h) others
- (4) agro-economy
 - a) farmers' economy
 - b) agricultural credit
 - c) processing
 - d) marketing and transportation system
 - e) others
- (5) agricultural infrastructure
 - a) irrigation and drainage facilities
 - b) farm roads
 - c) post-harvest and marketing facilities
 - d) others
- (6) agricultural supporting system
 - a) government institutions
 - b) farmers' organizations
 - c) supporting organizations
 - d) extension service organizations
 - e) others
- (7) other information related to the projects
 - a) WID
 - b) administrative organizations related to the projects
 - c) others

1.3. Composition of inventory list of projects through investigations on structure scale, superannuation, damage of facilities, etc.

1.4. Identification of constraints (technically and financially) of operation and maintenance of the irrigation facilities.

1.5. Initial Environmental Examination

1.6. Prioritization of twelve (12) projects.

Jhu

[Signature]

1.7. Selection of the priority project(s) for a feasibility study.

1.8. Preparation of topographic map(s) at the scale of 1/5,000 for the priority project(s)

2. Phase II (Feasibility Study for the selected project(s))

2.1. Field survey to collect supplementary data and information on the priority project(s).

2.2. Formulation of the optimum rehabilitation plan(s) for priority project(s) considering following items;

- (1) hydrology and meteorology
- (2) geology
- (3) soil classification and land use
- (4) land tenure
- (5) cropping pattern and yield
- (6) water resources
- (7) irrigation and drainage
- (8) socio-economic and farmers' economy
- (9) social and farmers' organization
- (10) rural infrastructure
- (11) agricultural supporting system
- (12) environment
- (13) others

2.3. Preliminary design for the rehabilitation of facilities.

2.4. Formulation of operation and maintenance plans.

2.5. Environmental Impact Assessment, if necessary.

2.6. Preparation of implementation schedule.

2.7. Estimation of the project costs and benefits.

2.8. Overall evaluation of the project.

2.9. Recommendations.

V. STUDY SCHEDULE

The Study will be carried out in accordance with the attached tentative schedule. (ANNEX II)

VI. REPORTS

JICA shall prepare and submit the following reports in English to the Government of the Republic of Ghana.

1. Inception Report

Twenty (20) copies at the commencement of the Phase I field work



2. Progress Report (1)
Twenty (20) copies at the end of the Phase I field work.
3. Interim Report
Twenty (20) copies at the commencement of the Phase II field work.
4. Progress Report (2)
Twenty (20) copies at the end of the Phase II field work.
5. Draft Final Report
Thirty (30) copies at the end of the Phase II home office work. The Government of Ghana shall provide its comments on the Draft Final Report to JICA within one (1) month after receiving the Draft Final Report.
6. Final Report
Fifty (50) copies within Two (2) months after the receipt of comments on the Draft Final Report.

VII. UNDERTAKING OF THE GOVERNMENT OF GHANA.

1. To facilitate the smooth conduct of the Study, the Government of Ghana shall take necessary measures:
 - (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 the Republic of Ghana 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, fees and other charges on equipment, machinery and other materials to be brought into and out of the Republic of Ghana 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 the Republic of Ghana from Japan in connection with the implementation of the Study;
 - (6) to secure permission for entry into project area and its vicinity for the implementation of the Study;
 - (7) to secure permission for the Japanese study team to take all data and documents (including photographs and maps) related to the Study out of the Republic of Ghana to Japan,
 - (8) to provide medical services as needed with expense chargeable to members of the Japanese study team.



2. The Government of Ghana shall bear claims, if any arise, against the 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. Ghana Irrigation Development Authority (hereinafter referred to as "GIDA") 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.
4. GIDA shall act as the implementing agency and shall, at its own expense, provide the Japanese study team with the following, in cooperation with other organizations concerned:
 - (1) available maps, data and information (hydrological and meteorological etc.) related to the Study.
 - (2) counterpart personnel.
 - (3) suitable office space with necessary equipment and furniture in Accra, Techiman and Tamale.
 - (4) credentials or identification cards.

VIII. Undertakings of JICA

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

- (1) to dispatch, at its own expense, the study team to the Republic of Ghana.
- (2) to pursue technology transfer to the Ghanaian counterpart personnel in the course of the Study.

IX. Consultation

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

TENTATIVE SCHEDULE

MONTH ITEM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	20	21	
Work in Ghana		■	■	■									■	■	■					■				
Work in Japan	□				□	□																	○	
Mapping								■																
PHASE	← PHASE I						← PHASE II →																	
REPORTS	△ IC/R			△ P/R (1)		△ IT/R									△ P/R (2)				△ DF/R				△ F/R	

(Remarks) IC/R : Inception Report P/R (1) : Progress Report (1)
 IT/R : Interim Report P/R (2) : Progress Report (2)
 DF/R : Draft Final Report F/R : Final Report

◎ Comments on DF/R by the Ghanaian side

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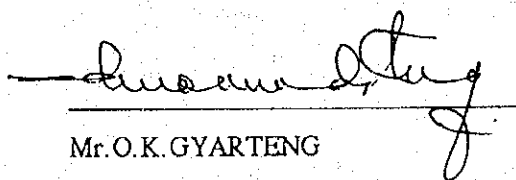
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3. 協議議事録 (M/M)

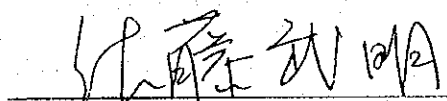
MINUTES OF MEETING
ON
SCOPE OF WORK
FOR
THE STUDY
ON
THE REHABILITATION OF IRRIGATION PROJECTS
IN
THE REPUBLIC OF GHANA

AGREED UPON
BETWEEN
GHANA IRRIGATION DEVELOPMENT AUTHORITY
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

ACCRA, 19 APRIL, 1995



Mr. O.K. GYARTENG
Chief Executive,
Ghana Irrigation Development Authority



Mr. TAKEAKI SATO
Leader,
Preparatory Study Team,
Japan International Cooperation Agency

The preparatory study team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), and headed by Mr. Takeaki SATO, visited the Republic of Ghana April 9 to April 21, 1995 for the purpose of discussing and confirming the Scope of Work for the the Study on the Rehabilitation of Irrigation Project in the Republic of Ghana (hereinafter referred to as "the Study").

The Team had a series of discussions with the officials concerned at Ghana Irrigation Development Authority (hereinafter referred to as "GIDA") and other organizations on the Scope of Work for the Study. The list of participants in the meetings is attached in the ANNEX I.

As a result of the discussions, The Team and GIDA agreed on the Scope of Work for the Study.

The following are the main issues discussed and agreed upon by both sides in relation to the Scope of Work for the Study.

1. GIDA requested that countermeasure(s) against soil erosion in the catchment area(s) be prepared in the Study.
The Team replied that general countermeasure(s), without cost estimate, in the catchment area(s) will be proposed in the Study.
GIDA agreed with the Team.
2. Thirty copies of the Draft Final Report will be submitted.
3. GIDA requested that "private properties or restricted areas" in the sentence of VII, 1., (6) be replaced with "project area and its vicinity".
4. Counterpart personnel will be assigned from GIDA staff members.
5. Offices for the Japanese study team equipped with telephone(s) or communication facilities, electricity, water supply and necessary number of desks and chairs will be provided in Accra, Techiman and Tamale.
6. GIDA requested that the equipment necessary for the Study (attached as ANNEX II) be provided by JICA and the Team promised to convey its request to the Government of Japan.
7. GIDA shall provide necessary number of drivers for vehicles at its own expense.
8. GIDA requested a counterpart training in Japan. The Team promised to convey its request to the Government of Japan.
9. GIDA requested that Subinja project and Okyereko project be included in the Study.
The Team agreed with GIDA.

LIST OF PARTICIPANTS

Ghanaian Side

Ministry of Food and Agriculture

Hon. Mr. Atsu-Ahedor

Deputy Minister of Food and Agriculture (Crops)

Ghana Irrigation Development Authority

Mr. O. K. Gyarteng

Chief Executive

Mr. Kwabena Wiafe

Deputy Chief Executive (Engineering)

Mr. A. K. Afram

Deputy Chief Executive (Agronomy)

Mr. Opoku-Mensah

Director of Planning

Mr. H. A. Torghor

Director of Project Development

Mr. D. M. Ohemeng

Director of Project Operation / Director of IDC

Japanese Side

Preparatory Study Team

Mr. Takeaki SATO

Leader

Mr. Izumi OBA

Member

Mr. Hideki NISHIJIMA

Member

Mr. Masahiro IIDA

Member

Mr. Sumio SHINDO

Member

Mr. Kenichi MATSUMOTO

Member

JICA Ghana Office

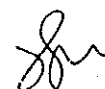
Mr. Toshiharu KAI

Deputy Resident Representative

Irrigation Development Center (IDC)

Mr. Akira OGAWA

Colombo Plan Expert



LIST OF EQUIPMENT

- copying machine
- communication equipment
- vehicles
- computing equipment and accessories (IBM compatible)
- air conditioner



4. 収集資料リスト

【地図】

1. 一般地形図 (1/50,000)
Sheet 0501B3, 0501B4, 0600A2, 0600C4, 0600D4, 0601B3, 0702C1, 0902B4
2. プロジェクト別地図
 - (1) Ashiaman : Irrigable Area
 - (2) Ashiaman : General Layout (2,400)
 - (3) Weija : General Layout of Area No.1
 - (4) Weija : Block C, Irrigation and Drainage Layout of Irrigation Network (1/2,000)
 - (5) Weija : Block B, Soil Map
 - (6) Afife : Contour Plan, Sheet No.1~No.6
 - (7) Afife : Soils (1/31,250)
 - (8) Afife : Plan of Afife Irrigation Project (10,000)
 - (9) Aveyime : Preliminary Irrigation Plan (1/5,000)
 - (10) Aveyime : Project Layout (2,000)
 - (11) Aveyime : Sugar and Rice Production in Accra Plains (2,500)
 - (12) Kpandu-torkor : Lake Shore Irrigation Project, Sheet 1~Sheet 6 (1/5,000)
 - (13) Kpandu-torkor : Detailed Soil Map
 - (14) Akumadan : Sprinkler Irrigation Network, No.7a~No.7e
 - (15) Akumadan : Soil Map
 - (16) Akumadan : Topographic Map (with spot heights), AK-1-1~AK-1-5
 - (17) Tanoso : Sprinkler Irrigation Network
 - (18) Tanoso : Topographic Map, TA-1-1~TA-1-3
 - (19) Bontanga : Irrigation, Roads and Drainage Networks, Sheet No.1~No.7 (1/2,500)
 - (20) Bontanga : Detailed Soil Survey, Land Irrigability Classification Map (1/5,000)
 - (21) Bontanga : Detailed Soil Survey, Soil Map (1/5,000)
3. Wildlife Protected Areas in Ghana
4. Vegetation Zones

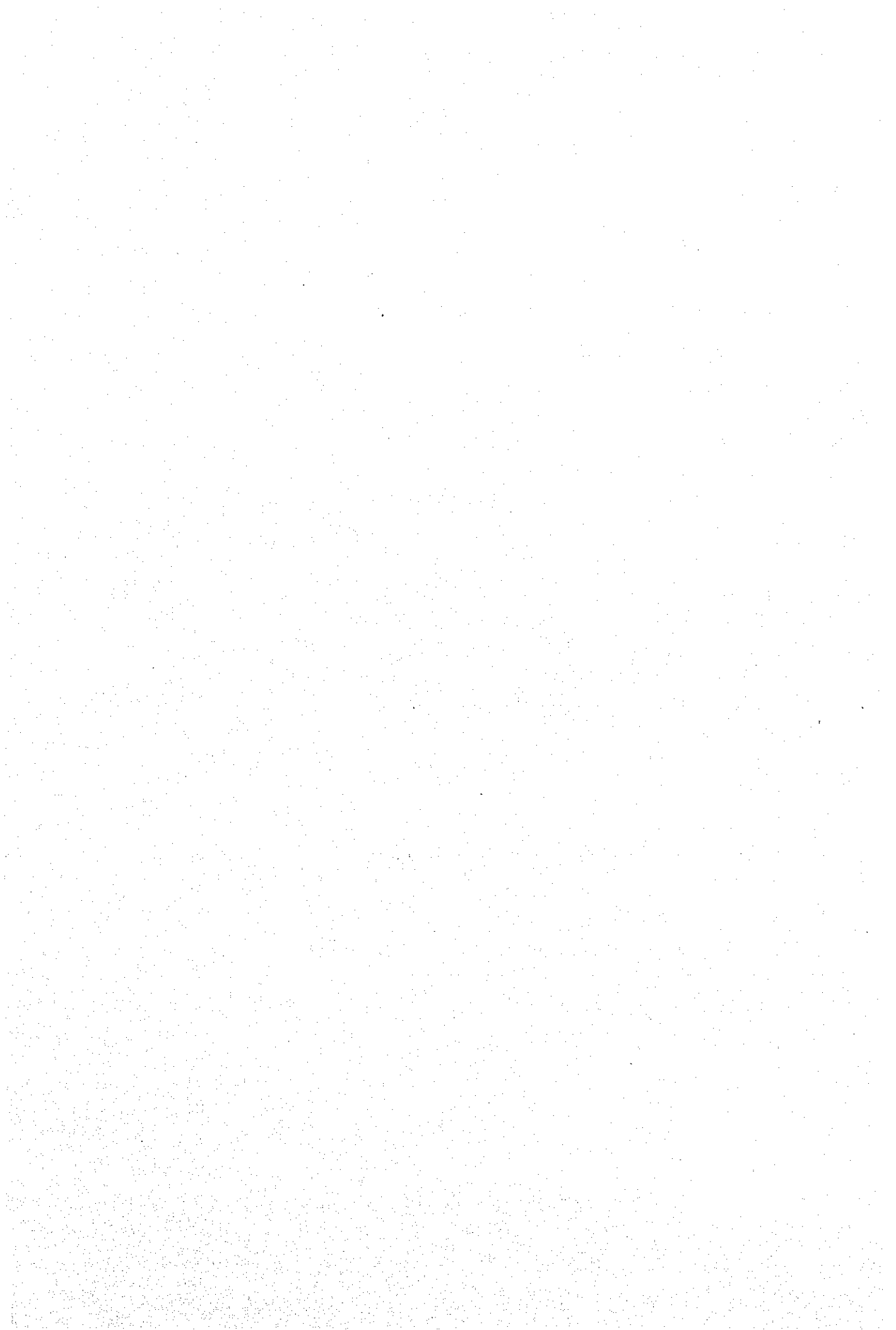
【報告書等】

1. Feasibility Report on Subprojects in Eastern, Central, Western, G.Accra, Volta, Ashanti and Brong Ahafo Regions : Volume I, Main Report, June 1991 (抜粋)
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