REPUBLIC OF CAMEROON
MINISTRY OF AGRICULTURE

EXPLANATORY NOTE
FOR
THE COMMENTS OF CAMEROONIAN GOVERNMENT
ON
THE DRAFT FINAL REPORT OF FEASIBILITY STUDY
ON BAIGOM AGRICULTURAL DEVELOPMENT PROJECT

SEPTEMBER 1986

INTERNATIONAL COOPERATION AGENCY
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TOKYO, JAPAN

This note is to give the explanations of the JICA study team for the comments of Cameroonian government on the draft final report of feasibility study on the Baigom Agricultural Development Project.

The explanations and recommendations are described following the order of comments mentioned in the Minutes of Meeting dated the 14th of July, 1986, between the Ministry of Agriculture of Cameroon and JICA study team.

1. Detailed study of financial analysis

JICA study team conducted economic and financial analyses in the feasibility study of the Baigom project in accordance with the ordinary method which is usually carried out by the World Bank.

The financial internal rate of return (FIRR) was calculated based on the method mentioned above using market prices for cost and benefit. The results of calculation of FIRR are as follows.

The FIRR for 50 years is 4.26% and this figure exceeds 3.5% which is the interest rate of proposed fund for the project. This means that the project has financial viability for the evaluation period of 50 years ; the life time of the project (Table 1-1).

The FIRR for 31 years is 2.25%. This shows that the project has financial difficulty under the proposed financing condition such as 3.5% of interest rate and 30 years of repayment period (Table 1-2). Consequently subsidy of the government is required.

The period which FIRR becomes 3.5% is 40 years.

Generally speaking, it is common policy of the governments of many countries including developing countries that the governments will give a subsidy to provision of agricultural infrastructures such as land reclamation, construction of irrigation and drainage systems in order to lighten the burden imposed on beneficial farmers.

As shown in the F/S report , the revenue and expenditure of the project are well balanced except for the repayment for initial investment. And in this case, some amount of

net reserve for the farmers is ensured so that the farmers would have incentives for their farming.

From the aspects of national economy, the economic internal rate of return (EIRR) of the project is estimated at 12.1% as shown in the report, and economic viability of the project is confirmed.

Furthermore, when it takes account of intangible direct benefits and indirect benefits of the project, more economic return for Cameroonian economy would be expected.

2. Early achievement of profitability of the project and decrease of government subsidy

The Government of Cameroon has contemplated aguricultural development of the Baigom plain extending about 3,000 ha.

The proposed development plan described in the F/S reports is an optimum plan for the Baigom plain in order to meet the request of the Government of Cameroon.

Therefore, it is considered that to make more profitable plan and/or to achieve more faster realization of the project are very difficult.

If the government will undertake such measures decreasing of costs and increasing of benefits in connection with the elements mentioned below, improvement of profitability of the project might be able to realize for some extent.

- Operation and maintenance cost (including personnel expenditure)
- Buying price of paddy from farmers
- Selling price of milled rice (in relation to the policy of rice import)
- Prices of another agricultural production (including improvement of marketing systems)

If the all farmer's payment capacity is allotted to the project in order to cover not only the operation and maintenance but also repayment for the initial investment, the government subsidy will be reduced in some amount (about 24%), as shown in Table 2.

However, such a policy to take out all farmer's payment capacity to the project management will make the farmers no longer have their incentive for agricultural development.

The national economy of Cameroon would have big return through the intangible direct benefits and indirect benefits from the Baigon project as mentioned previous clause. So, the subsidy of government to the project is necessary in order to promote the deveropment of agriculture in Cameroon.

3. Portion of foreign and local currencies

The portion of foreign and local currencies shown in the F/S report was estimated based on the procurement condition of each material in Cameroon, and shows minimum requirement of the foreign currency for the project implementation.

So, the portion of currencies would be reviewed in accordance with the political and financing situations in Cameroon, and settled through negotiation between the government of Cameroon and the international financing agencies.

4. Compensation of crop

At present some farmers are cultivating on the marginal zone of the project site. The compensations for their crops which are affected by the project construction works will be paid from the physical contingency of the project cost.

5. Relationship of implementation schedule between the pilot scheme and the development of the whole Baigom project

When the development of the whole Baigom project is implemented, the actual farming works in the newly reclaimed land of the Baigom plain will be started about five years after the commencement of the detailed design for the project.

During the period of the implementing stage, the experiments and training will be carried out in the pilot scheme, and the results of the pilot scheme would be transferred to the whole project without any interruption.

6. Effects for water quality in downstream of the Nkoup river

The effects of the project for water quality of the Nkoup river in the downstream would be very small, because dilution by discharge from the additional watershed in the downstream area and natural purification of the flow in the river channel are expected.

In order to minimize the effects for water quality by the project, it is recommended to use the least toxic fertilizers and agro-chemicals such as those materials used in Japan as shown in Table 3 ,4 and 5.

The periodical observation of water quality of the Nkoup river at the outlet of the Baigom plain is recommended in order to confirm the change of water quality by the project implementation.

Table 1-1 FINANCIAL COST AND BENEFIT FLOW (1/2)

(Unit: CFA F 10^6)

No.	Year	Capital Cost		Replacement Cost	O&M Cost	Total Cost	Revenue from Forest	Agricultural Benefit	Total Benefit
		Foreign Currency	Local Currency						
1.	1987	443	175	0	0	618	0	0	0
2.	1988	1,053	1,253	0	0	2,306	0	0	0
3.	1989	1,861	2,000	0	0	3,861	14	0	14
4.	1990	1,476	1,829	0	88	3,393	20	−58	−38
5.	1991	1,249	1,692	0	125	3,066	34	63	97
6.	1992	1,007	1,494	0	142	2,644	68	283	350
7.	1993	0	0	0	299	299	0	711	711
8.	1994	0	0	0	308	308	0	987	967
9.	1995	0	0	0	362	362	0	1,167	1,167
10.	1996	0	0	0	363	363	0	1,270	1,270
11.	1997	0	0	0	363	363	0	1,289	1,289
12.	1998	0	0	0	363	363	0	1,289	1,289
13.	1999	0	0	228	363	591	0	1,289	1,289
14.	2000	0	0	0	363	363	0	1,289	1,289
15.	2001	0	0	0	363	363	0	1,289	1,289
16.	2002	0	0	0	363	363	0	1,289	1,289
17.	2003	0	0	0	363	363	0	1,289	1,289
18.	2004	0	0	0	363	363	0	1,289	1,289
19.	2005	0	0	0	363	363	0	1,289	1,289
20.	2006	0	0	0	363	363	0	1,289	1,289
21.	2007	0	0	0	363	363	0	1,289	1,289
22.	2008	0	0	0	363	363	0	1,289	1,289
23.	2009	0	0	228	363	591	0	1,289	1,289
24.	2010	0	0	0	363	363	0	1,289	1,289
25.	2011	0	0	0	363	363	0	1,289	1,289
26.	2012	0	0	0	363	363	0	1,289	1,289
27.	2013	0	0	153	363	516	0	1,289	1,289
28.	2014	0	0	0	363	363	0	1,289	1,289
29.	2015	0	0	0	363	363	0	1,289	1,289
30.	2016	0	0	0	363	363	0	1,289	1,289
31.	2017	0	0	0	363	363	0	1,289	1,289
32.	2018	0	0	0	363	363	0	1,289	1,289
33.	2019	0	0	228	363	591	0	1,289	1,289
34.	2020	0	0	0	363	363	0	1,289	1,289
35.	2021	0	0	0	363	363	0	1,289	1,289
36.	2022	0	0	0	363	363	0	1,289	1,289
37.	2023	0	0	0	363	363	0	1,289	1,289
38.	2024	0	0	0	363	363	0	1,289	1,289
39.	2025	0	0	0	363	363	0	1,289	1,289
40.	2026	0	0	0	363	363	0	1,289	1,289
41.	2027	0	0	0	363	363	0	1,289	1,289
42.	2028	0	0	0	363	363	0	1,289	1,289
43.	2029	0	0	228	363	591	0	1,289	1,289
44.	2030	0	0	0	363	363	0	1,289	1,289
45.	2031	0	0	0	363	363	0	1,289	1,289
46.	2032	0	0	0	363	363	0	1,289	1,289
47.	2033	0	0	0	363	363	0	1,289	1,289
48.	2024	0	0	0	363	363	0	1,289	1,289
49.	2035	0	0	0	363	363	0	1,289	1,289
50.	2036	0	0	0	363	363	0	1,289	1,289

FIRR = 4.26 %

Table 1-1 FINANCIAL COST AND BENEFIT FLOW (2/2)

(UNIT: CFAF 10^6)

DISCOUNT RATE(%)	PRESENT WORTH		B−C	C/B
	COST	BENEFIT		
4.30	19,323	19,225	−98	1.0050900
4.29	19,340	19,266	−74	1.0038400
4.28	19,357	19,307	−50	1.0025910
4.37	19,375	19,349	−26	1.0013430
4.26	19,392	19,390	−2	1.0000970
4.25	19,410	19,432	22	0.9988517
4.24	19,427	19,474	47	0.9976077
4.23	19,445	19,516	71	0.9963650
4.22	19,463	19,558	95	0.9951235
4.21	19,480	19,600	120	0.9938776
4.20	19,498	19,643	144	0.9926443

FIRR = 4.26 %

Table 1-2 FINANCIAL COST AND BENEFIT FLOW (1/2)

(Unit: CFA F 10^6)

No.	Year	Capital Cost		Replacement Cost	O&M Cost	Total Cost	Revenue from Forest	Agricultural Benefit	Total Benefit
		Foreign Currency	Local Currency						
1.	1987	443	175	0	0	618	0	0	0
2.	1988	1,053	1,253	0	0	2,306	0	0	0
3.	1989	1,861	2,000	0	0	3,861	14	0	14
4.	1990	1,476	1,829	0	88	3,393	20	−58	−38
5.	1991	1,249	1,692	0	125	3,066	34	63	97
6.	1992	1,007	1,494	0	142	2,644	68	283	350
7.	1993	0	0	0	299	299	0	711	711
8.	1994	0	0	0	308	308	0	987	967
9.	1995	0	0	0	362	362	0	1,167	1,167
10.	1996	0	0	0	363	363	0	1,270	1,270
11.	1997	0	0	0	363	363	0	1,289	1,289
12.	1998	0	0	0	363	363	0	1,289	1,289
13.	1999	0	0	228	363	591	0	1,289	1,289
14.	2000	0	0	0	363	363	0	1,289	1,289
15.	2001	0	0	0	363	363	0	1,289	1,289
16.	2002	0	0	0	363	363	0	1,289	1,289
17.	2003	0	0	0	363	363	0	1,289	1,289
18.	2004	0	0	0	363	363	0	1,289	1,289
19.	2005	0	0	0	363	363	0	1,289	1,289
20.	2006	0	0	0	363	363	0	1,289	1,289
21.	2007	0	0	0	363	363	0	1,289	1,289
22.	2008	0	0	0	363	363	0	1,289	1,289
23.	2009	0	0	228	363	591	0	1,289	1,289
24.	2010	0	0	0	363	363	0	1,289	1,289
25.	2011	0	0	0	363	363	0	1,289	1,289
26.	2012	0	0	0	363	363	0	1,289	1,289
27.	2013	0	0	153	363	516	0	1,289	1,289
28.	2014	0	0	0	363	363	0	1,289	1,289
29.	2015	0	0	0	363	363	0	1,289	1,289
30.	2016	0	0	0	363	363	0	1,289	1,289
31.	2017	0	0	0	363	363	0	1,289	1,289

FIRR = 2.25 %

Table 1-2 FINANCIAL COST AND BENEFIT FLOW (2/2)

(UNIT: CFAF 10^6)

DISCOUNT RATE(%)	PRESENT WORTH COST	PRESENT WORTH BENEFIT	B−C	C/B
2.30	20,812	20,717	−95	1.0045960
2.29	20,828	20,753	−75	1.0036230
2.28	20,845	20,790	−55	1.0026500
2.27	20,862	20,827	−35	1.0016790
2.26	20,878	20,863	−15	1.0007060
2.25	20,895	20,900	5	0.9997382
2.24	20,911	20,937	26	0.9987694
2.23	20,928	20,974	46	0.9978015
2.22	20,945	21,011	67	0.9968345
2.21	20,962	21,045	87	0.9959684
2.20	20,978	21,086	108	0.9949033

FIRR = 2.25 %

Table 2 CASH FLOW STATEMENT (with Farmer's Repayment)

Year in Order	Year (Tentative)	Cash Outflow								Cash Inflow								
		Capital Cost		Loan/1 Repayment		Replacement Cost	O&M Cost	Fund for Purchase of Paddy	Total	Foreign Currency	Local Currency	Revenue from Forest Expl.	Revenue from Milled Rice	O&M/2 Service Fee	Farmer's/2 Repayment	Government Subsidy	Total	Balance
		Foreign Currency	Local Currency	Interest	Principal													
1.	1987	444.3	174.7	0	-	-	-	-	619.0	443.3	174.7	-	-	-	-	-	619.0	0
2.	1988	1,052.6	1,253.4	15.6	-	-	-	-	2,321.6	1,052.6	1,253.4	-	-	-	-	15.6	2,321.6	0
3.	1989	1,860.5	2,000.3	52.4	-	-	-	-	3,913.2	1,860.5	2,000.3	13.6	-	-	-	38.8	3,913.2	0
4.	1990	1,476.2	1,829.2	117.5	-	-	88.0	48.7	3,559.6	1,476.2	1,829.2	20.3	60.7	21.1	37.3	114.8	3,559.6	0
5.	1991	1,249.2	1,691.7	169.2	-	-	125.4	128.7	3,364.2	1,249.2	1,691.7	33.9	160.5	52.8	93.4	82.7	3,364.2	0
6.	1992	1,007.2	1,494.3	212.9	-	-	142.3	267.9	3,124.6	1,007.2	1,494.3	67.8	333.9	105.7	115.7	-	3,124.6	0
7.	1993	-	-	248.2	-	-	299.4	543.3	1,090.9	-	-	-	677.5	211.3	202.1	-	1,090.9	0
8.	1994	-	-	248.2	-	-	308.0	604.6	1,160.8	-	-	-	753.8	211.3	195.7	-	1,160.8	0
9.	1995	-	-	248.2	-	-	362.1	654.0	1,264.3	-	-	-	815.5	211.3	237.5	-	1,264.3	0
10.	1996	-	-	248.2	-	-	362.6	681.9	1,292.7	-	-	-	850.2	211.3	231.2	-	1,292.7	0
11.	1997	-	-	248.2	354.5	-	362.9	695.8	1,661.4	-	-	-	867.5	211.3	373.3	209.3	1,661.4	0
12.	1998	-	-	235.7	354.5	0.2	362.9	695.8	1,649.1	-	-	-	867.5	211.3	373.3	197.0	1,649.1	0
13.	1999	-	-	223.3	354.5	228.1	362.9	695.8	1,864.6	-	-	-	867.5	211.3	373.3	412.5	1,864.6	0
14.	2000	-	-	210.9	354.5	-	362.9	695.8	1,624.1	-	-	-	867.5	211.3	373.3	172.0	1,624.1	0
15.	2001	-	-	198.5	354.5	-	362.9	695.8	1,611.7	-	-	-	867.5	211.3	373.3	159.6	1,611.7	0
16.	2002	-	-	186.1	354.5	-	362.9	695.8	1,599.3	-	-	-	867.5	211.3	373.3	147.2	1,599.3	0
17.	2003	-	-	173.7	354.5	-	362.9	695.8	1,586.9	-	-	-	867.5	211.3	373.3	134.8	1,586.9	0
18.	2004	-	-	161.3	354.5	-	362.9	695.8	1,574.5	-	-	-	867.5	211.3	373.3	122.4	1,574.5	0
19.	2005	-	-	148.9	354.5	-	362.9	695.8	1,562.1	-	-	-	867.5	211.3	373.3	110.0	1,562.1	0
20.	2006	-	-	136.5	354.5	-	362.9	695.8	1,549.7	-	-	-	867.5	211.3	373.3	97.6	1,549.7	0
21.	2007	-	-	124.1	354.5	-	362.9	695.8	1,537.3	-	-	-	867.5	211.3	373.3	85.2	1,537.3	0
22.	2008	-	-	111.7	354.5	0.2	362.9	695.8	1,525.1	-	-	-	867.5	211.3	373.3	73.0	1,525.1	0
23.	2009	-	-	99.3	354.5	228.1	362.9	695.8	1,740.6	-	-	-	867.5	211.3	373.3	288.5	1,740.6	0
24.	2010	-	-	86.9	354.5	-	362.9	695.8	1,500.1	-	-	-	867.5	211.3	373.3	48.0	1,500.1	0
25.	2011	-	-	74.4	354.5	-	362.9	695.8	1,487.6	-	-	-	867.5	211.3	373.3	35.5	1,487.6	0
26.	2012	-	-	62.0	354.5	-	362.9	695.8	1,475.2	-	-	-	867.5	211.3	373.3	23.1	1,475.2	0
27.	2013	-	-	49.6	354.5	153.0	362.9	695.8	1,615.8	-	-	-	867.5	211.3	373.3	163.7	1,615.8	0
28.	2014	-	-	37.2	354.5	-	362.9	695.8	1,450.4	-	-	-	867.5	211.3	373.3	-	1,450.4	0
29.	2015	-	-	24.8	354.5	-	362.9	695.8	1,438.0	-	-	-	867.5	211.3	371.6	-	1,438.0	0
30.	2016	-	-	12.4	354.5	-	362.9	695.8	1,425.6	-	-	-	867.5	211.3	346.8	-	1,425.6	0
31.	2017	-	-	0	0	-	362.9	695.8	1,058.7	-	-	-	867.5	211.3	-	-	1,078.8	20.1

Remarks: /1: Interest: 3.5% Grace period: 10 years Repayment period including grace period: 30 years

/2: Revenue from operation and maintenance service fee to be collected from farmers. The total amount of this fee for each farm household occupying 2.1 ha was fixed at CFA F 222,000 per year.

/3: Net reserve

This analysis was made on the basis of price level and exchange rate (US$1.0 = CFA F 384.5) as of December, 1985.

Table 3 ENVIRONMENTAL QUALITY STANDARDS FOR WATER QUALITY IN JAPAN

(1) Standard relating to human health (Hazardous substances)
- *Standards are indiscriminate to all aquatic areas*

(unit: mg/ℓ)

Item	Standard Value
Cadmium	0.01
Cyanide	not detectable
Organic phosphorous*	not detectable
Lead	0.1
Hexavalent chromium	0.05
Arsenic	0.05
Total mercury	0.0005**
Alkyl mercury	not detectable
PCB (polychlorinated biphenyl)	not detectable

* Organic phosphorous includes parathion, methyl demeton and E.P.N

** Standard value for total mercury is based on the yearly average value

(2) Standards relating to living environment
- *Standards are set up by classifying the public water area into categories of utilization purposes*

(unit: mg/ℓ)

Category***		pH	BOD (max.)	COD (max.)	Suspended substance (max.)	Dissolved oxygen (min.)	No. of coliform group bacteria (max.) (MPN/100ml)	Others
River	AA	6.5~8.5	1	–	25	7.5	50	
	A	6.5~8.5	2	–	25	7.5	1,000	
	B	6.5~8.5	5	–	25	5.0	5,000	
	C	6.0~8.5	5	–	50	5.0	–	
	D	6.0~8.5	10	–	100	2.0	–	
	E	6.0~8.5	10	–	–*	2.0	–	* Floating matters and garbages should not be observed

*** AA, A, B and C can be used as drinking water by using suitable water treatment facilities in purification plant.

Table 4 PROHIBITED AND RESTRICTED FARM CHEMICALS

Name	Application
γ-BHC	Prohibited to sell
DDT	Prohibited to sell
Endrin	Can be used for control of insects on citrus, before seed-setting
Dyldrin	Can be used for control of insects on trees, except for fruit trees
Aldrin	Can be used for control of Scepticus griseus (Roelofs) on nursery stock

Table 5 RECOMMENDABLE FARM CHEMICALS AND FERTILIZERS IN THE PROJECT

(1) Farm Chemicals

Item	Production Name	LD_{50} (RAT)
Insecticides	Sumithion EC.	800 mg/kg
	Sumithion L. (60)	800 mg/kg
	Diazinon EC. (40)	500 mg/kg
	EPN EC. (1.5)	20 – 40 mg/kg
Pesticides	Rabcide EC.	2,500 mg/kg
	Rabcide EC., F.	2,500 mg/kg
	Rabcide - Validacin EC.	2,500 mg/kg
	Rabcide - Neoaso EC.	2,500 mg/kg

(2) Chemical Fertilizers

Name	Formula
Ammonium Sulfate	$(NH_4)_2SO_4$
Triple Super Phosphate	$Ca(H_2PO_4)_2 \cdot H_2O$
Mixed Fertilizer	N:P:K = 10:14:12

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