また、建設事業完了後、コンサルタントは1年間サイロの運転、管理の指導をするとともに、サイロ運営に関する合理化のためのアドバイザーを準備すべきである。コンサルタントが実施する業務の内容は、資料編F－1に示す。現地に駐在するコンサルタントは、業務月報を作成し、コーデネーターを通じて日本政府に提出、説明をする。

入札は施工機械の調達、据付け、サイロ建設付属建物、附帯施設一切を含めたフルターンキーベースで入札を行う。従って応札者は、機械メーカー、日本建設業者、地元建設業者の3社ジョイントの応札となるであろう。この入札評価は、低価格のみでなく、工期、技術面、海外国内での業務実績等も考慮の上、評価し、NCPBが決定する。

工事施工は、NCPBより選定されたプロジェクトマネージャーの下に、コンサルタント技術者がつき、工事が早く完了するブンゴマ サイロは工期内でも、建設業者よりNCPBに引渡しを行い、サイロの利用を開始する。

各サイロの引き渡し完了後1年間は、メーカー、建設業者は技術的に責任を持つとともにコンサルタントは運営の専門家を現地に常駐させて、このサイロが十分に活用されるよう、また、事故のないように指導する。

5．6　運転、保守管理経費

5．6．1　施設の要員とその数

必要人員は、施設の規模により異なるのは当然であるが、本計画のように、貯蔵量30,000 t_{on}、50,000 t_{on}と大規模になるとほとんど変わらないので、ここでは3施設とも同一要員として積算した。なお、24時間作業の場合は3交替制とした。

要　　員	BUNGOMA SILO，NAKURU SILO，KISUMU SILO
(a) Manager	現在の各StationのManagerが兼務する。
(b) Sub—Manager（施設担当）	1　名
〃　〃（集、出荷担当）	1　名
(c) 運転要員	18　名
主任オペレーター	1名×3交替＝3名
張込係	1〃×2〃　＝2〃

要　　員	BUNGOMA SILO, NAKURU SILO, KISUMU SILO
乾　燥　係	1名×3交替＝3名
サイロ替係	1〃×3〃＝3〃
出　荷　係	1〃×1〃＝1〃
機械保守係	1〃×3〃＝3〃
予備オペレーター（病気、急用、他）	1〃×3〃＝3〃
(d) 荷受計量要員	2　名
(e) 自主検査要員	5　名
検　査　係	3　名
サンプル係	2　名
(f) 場内輸送機械運転要員	2　名
(g) 保守管理要員	6　名
機　械　係	2　名
電　気　係	2　名
サイロ、建物保守係	1　名
塗　装　係	1　名
(h) 事　務　要　員	3　名
(i) 労　務　者	14　名
保守管理係	4　名
張入、出荷、清掃等	10　名
合　　計	52　名

5. 6. 2　燃料消費量

乾燥機の燃料は軽油を使用する。

項　　目	BUNGOMA SILO KISUMU SILO	NAKURU SILO
毎時消費量（ℓ）	112.5 ℓ	198 ℓ
1日当り運転時間（hr）	10 hr	10 hr
運転日数（day）	144 day	144 day
合計消費量（ℓ）	162,000 ℓ/year	285,000 ℓ/year

5. 6. 3　運転、保守管理経費（1年当り）

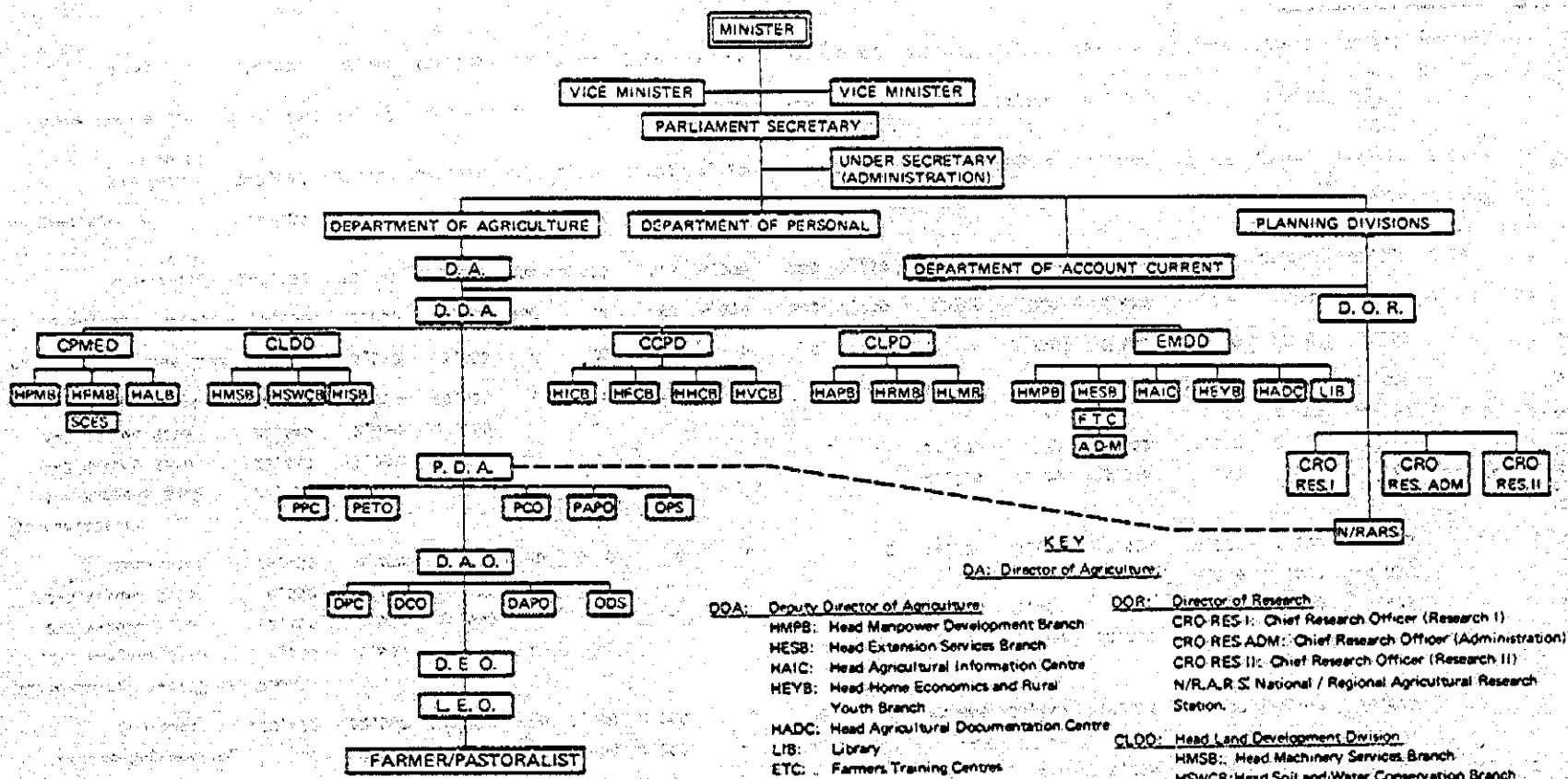
項　　目	BUNGOMA, KISUMU SILO	NAKURU SILO
(a) 人件費	860,000 ksh	860,000 ksh
Sub－Manager	2名×3,500 ksh/mon×12mon=84,000	2名×3,500 ksh/mon×12 mon=84,000 ksh
運転、管理要員（残業、夜間作業含む）	36名×1,200 ksh/mon×12 mon×1.3=673,920 ksh	36名×1,200 ksh/mon×12 mon×1.3=673,920 ksh
労務者	14名×700 ksh/mon×10 mon=98,000 ksh	14名×700 ksh/mon×10 mon=98,000 ksh
その他	4,080 ksh	4,080 ksh
(b) 燃料費	642,000 ksh	1,130,000 ksh
	162,000 ℓ/Year ×3.96 ksh/ℓ ≒640,000 ksh	285,000 ℓ/year ×3.96 ksh/ℓ ≒1,130,000 ksh
(c) 電力費	264,000 ksh	396,000 ksh
	22,000 ksh/mon ×12 mon=264,000 ksh	33,000 ksh/mon ×12 mon=396,000 ksh
(d) 水道、光熱費	6,000 ksh	6,000 ksh
	500 ksh/mon ×12 mon=6,000 ksh	500 ksh/mon ×12 mon=6,000 ksh
(e) 燻蒸費	90,000 ksh	150,000 ksh
	62,500 m^3×30 g/m^3=1,875 kg	104,100 m^3×30 g/m^3=3,123 kg
	1,875 kg×48 ksh≒90,000 ksh	3,123 kg×48 ksh≒150,000 ksh

項　　目	BUNGOMA, KISUMU SILO	NAKURU SILO
(f) 修　理　費	76, 000 ksh	102, 000 ksh
(g) 保　険　料	38, 000 ksh	51, 000 ksh
(h) その他管理費	60, 000 ksh	81, 000 ksh
合　　計	2, 036, 000 ksh	2, 776, 000 ksh

表 5－1　資 金 支 出 計 画 表

Description	Total F.C.	Total L.C.	Total Total	1st Fiscal Year (Aug. 1981 - Jul. 1982) F.C.	1st L.C.	1st Total	2nd Fiscal Year (Aug. 1982 - Jul. 1983) F.C.	2nd L.C.	2nd Total	3rd Fiscal Year (Aug. 1983 - Jul. 1984) F.C.	3rd L.C.	3rd Total	4th Fiscal Year (Aug. 1984 - Jul. 1985) F.C.	4th L.C.	4th Total	5th Fiscal Year (Aug. 1985 - Jul. 1986) F.C.	5th L.C.	5th Total
1. Civil Works																		
1-1 Bungoma Silo	30,090	14,203	44,293	-	-	-	-	-	-	30,090	14,203	44,293	-	-	-	-	-	-
1-2 Nakuru Silo	47,518	22,062	69,580	-	-	-	-	-	-	45,779	21,276	67,055	1,739	786	2,525	-	-	-
1-3 Kisumu Silo	41,864	14,642	56,506	-	-	-	-	-	-	7,796	410	8,206	34,068	14,232	48,300	-	-	-
1-4 Pre-Engineering	-	2,000	2,000	0	2,000	2,000	-	-	-	-	-	-	-	-	-	-	-	-
Sub-total	119,472	52,907	172,379	0	2,000	2,000	0	0	0	83,665	35,889	119,554	35,807	15,018	50,825	0	0	0
2. Building (Facilities Room)																		
2-1 Bungoma Silo	8,550	1,800	10,350	-	-	-	-	-	-	8,550	1,800	10,350	-	-	-	-	-	-
2-2 Nakuru Silo	12,350	2,600	14,950	-	-	-	-	-	-	6,175	1,300	7,475	6,175	1,300	7,475	-	-	-
2-3 Kisumu Silo	8,550	1,800	10,350	-	-	-	-	-	-	-	-	-	8,550	1,800	10,350	-	-	-
Sub-total	29,450	6,200	35,650	0	0	0	0	0	0	14,725	3,100	17,825	14,725	3,100	17,825	0	0	0
3. Facilities																		
3-1 Bungoma Silo	21,448	2,650	24,098	-	-	-	-	-	-	21,218	2,120	23,338	230	530	760	-	-	-
3-2 Nakuru Silo	29,433	2,790	32,223	-	-	-	-	-	-	28,403	279	28,682	1,030	2,511	3,541	-	-	-
3-3 Kisumu Silo	21,549	2,650	24,199	-	-	-	-	-	-	-	-	-	21,549	2,650	24,199	-	-	-
Sub-total	72,430	8,090	80,520	0	0	0	0	0	0	49,621	2,399	52,020	22,809	5,691	28,500	0	0	0
4. Administration Cost	-	3,550	3,550	0	25	25	0	0	0	0	2,330	2,330	0	1,195	1,195	0	0	0
5. Consultancy Services	22,000	3,000	25,000	450	48	498	6,390	840	7,230	6,038	840	6,878	6,328	888	7,216	2,794	384	3,178
Sub-total (1 to 5)	243,352	73,747	317,099	450	2,073	2,523	6,390	840	7,230	154,049	44,558	198,607	79,669	25,892	105,561	2,794	384	3,178
6. Contingency	24,335	7,374	31,709	45	207	252	639	84	723	15,405	4,456	19,861	7,967	2,589	10,556	279	38	317
Sub-total (1 to 6)	267,687	81,121	348,808	495	2,280	2,775	7,029	924	7,953	169,454	49,014	218,468	87,636	28,481	116,117	3,073	422	3,495
7. Price Escalation	57,225	27,243	84,468	30	194	224	853	116	1,016	32,603	14,704	47,307	22,742	11,962	34,704	997	217	1,214
Total	324,912	108,364	433,276	525	2,474	2,999	7,882	1,090	8,972	202,057	63,718	265,775	110,378	40,443	150,821	4,070	639	4,709

図 5－1　農業省組織図



KEY

DA: Director of Agriculture

DDA: Deputy Director of Agriculture
- HMPB: Head Manpower Development Branch
- HESB: Head Extension Services Branch
- HAIC: Head Agricultural Information Centre
- HEYB: Head Home Economics and Rural Youth Branch
- HADC: Head Agricultural Documentation Centre
- LIB: Library
- ETC: Farmers Training Centres
- ADM: Administration

CPMED: Chief Project Management & Evaluation Division
- HPMB: Head Programme Management Branch
- HFMB: Head Farm Management Branch / Head Arid/Semi Arid Land Branch
- SCES: Soil Conservation Extension Service Section

PDA: Provincial Director of Agriculture
- PPC: Provincial Programme Co-ordinator
- PETO: Provincial Extension & Training Officer
- PCO: Provincial Crops Officer
- PAPO: Provincial Animal Production Officer
- OPS: Other Provincial Specialist

DOR: Director of Research
- CRO RES I: Chief Research Officer (Research I)
- CRO RES ADM: Chief Research Officer (Administration)
- CRO RES II: Chief Research Officer (Research II)
- N/R.A.R.S: National / Regional Agricultural Research Station.

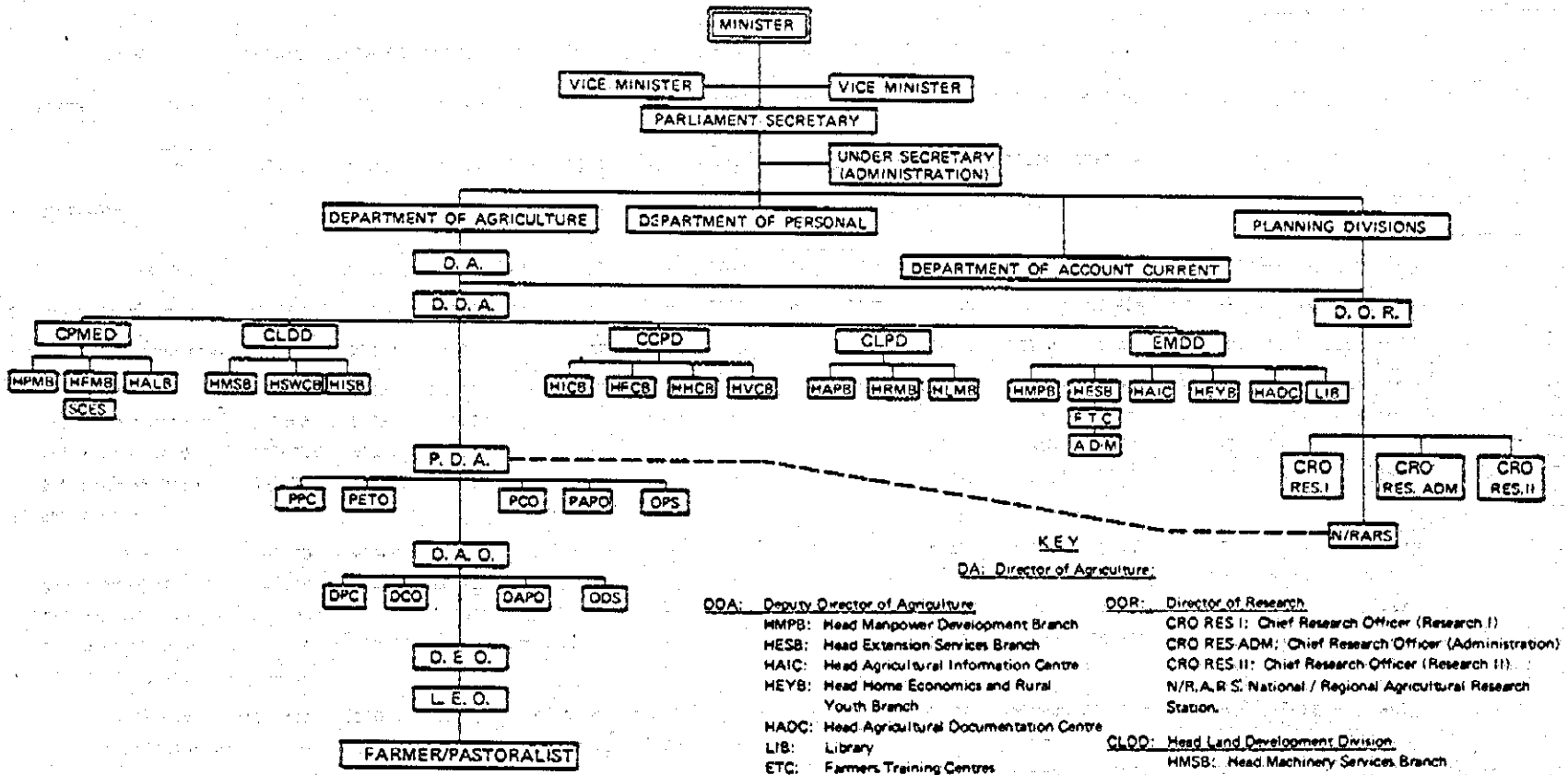
CLDO: Head Land Development Division
- HMSB: Head Machinery Services Branch
- HSWCB: Head Soil and Water Conservation Branch
- HISB: Head Irrigation Services Branch

CCPD: Chief Crop Production Division
- HICB: Head Industrial Crops Branch
- HFCB: Head Food Crops Branch
- HHCB: Head Horticultural Crops Branch
- HVCB: Head Crops Pests & Vermin Control Branch

CLPD: Chief Livestock Production Division
- HAPB: Head Animal Production Branch
- HRMB: Head Range Management Branch
- HLMB: Head Livestock Marketing Branch

DAO: District Agricultural Officer
- DPC: District Programme Co-ordinator
- DCO: District Crops Officer
- DAPO: District Animal Production Officer
- ODS: Other District Specialist

図 5－1　農業省組織図



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- HICB: Head Industrial Crops Branch
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- DCO: District Crops Officer
- DAPO: District Animal Production Officer
- ODS: Other District Specialist
- DEO: Divisional Extension Office
- LEO: Locational Extension Officer

図 5－2　N. C. F. B 組織図

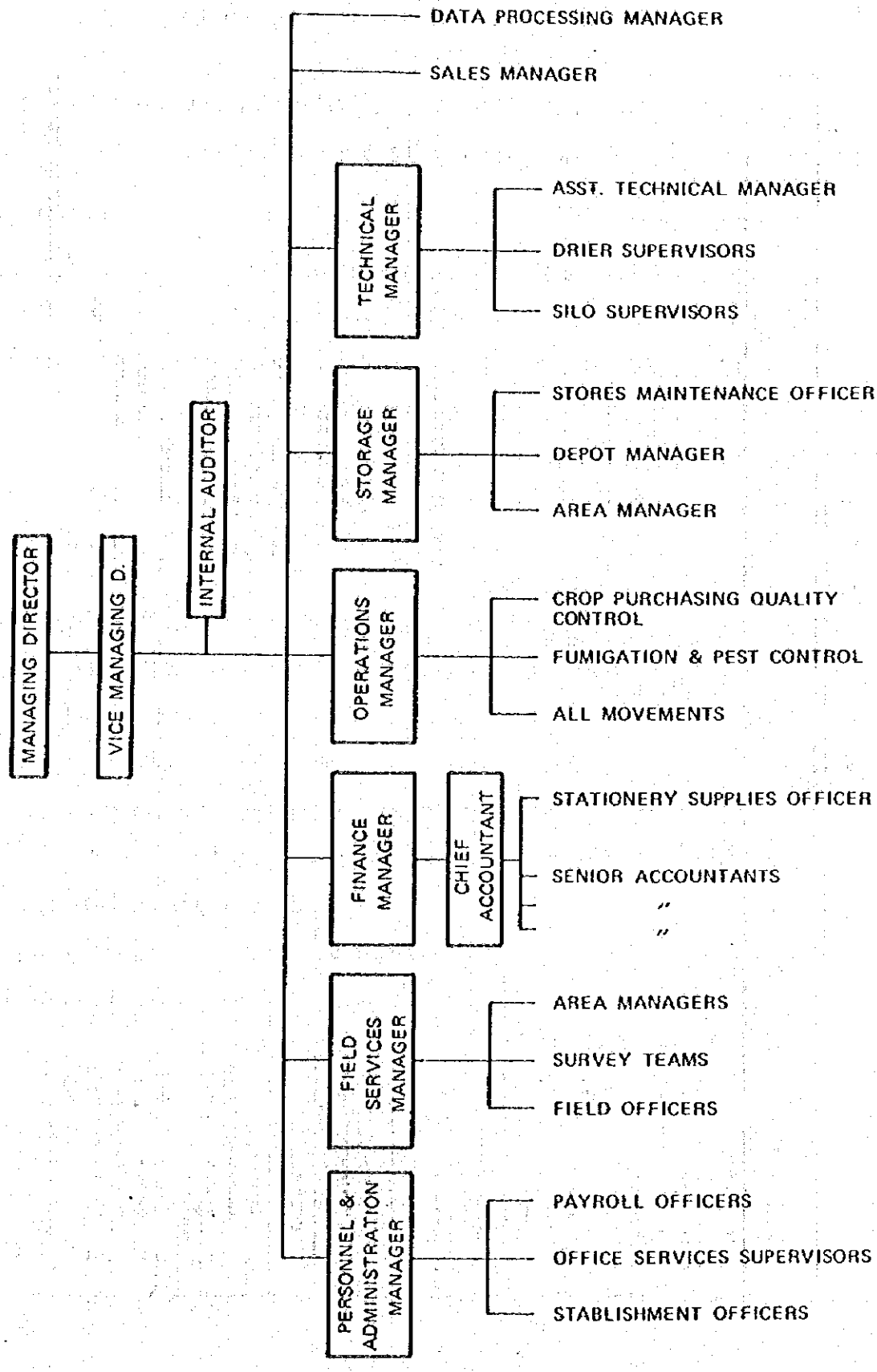
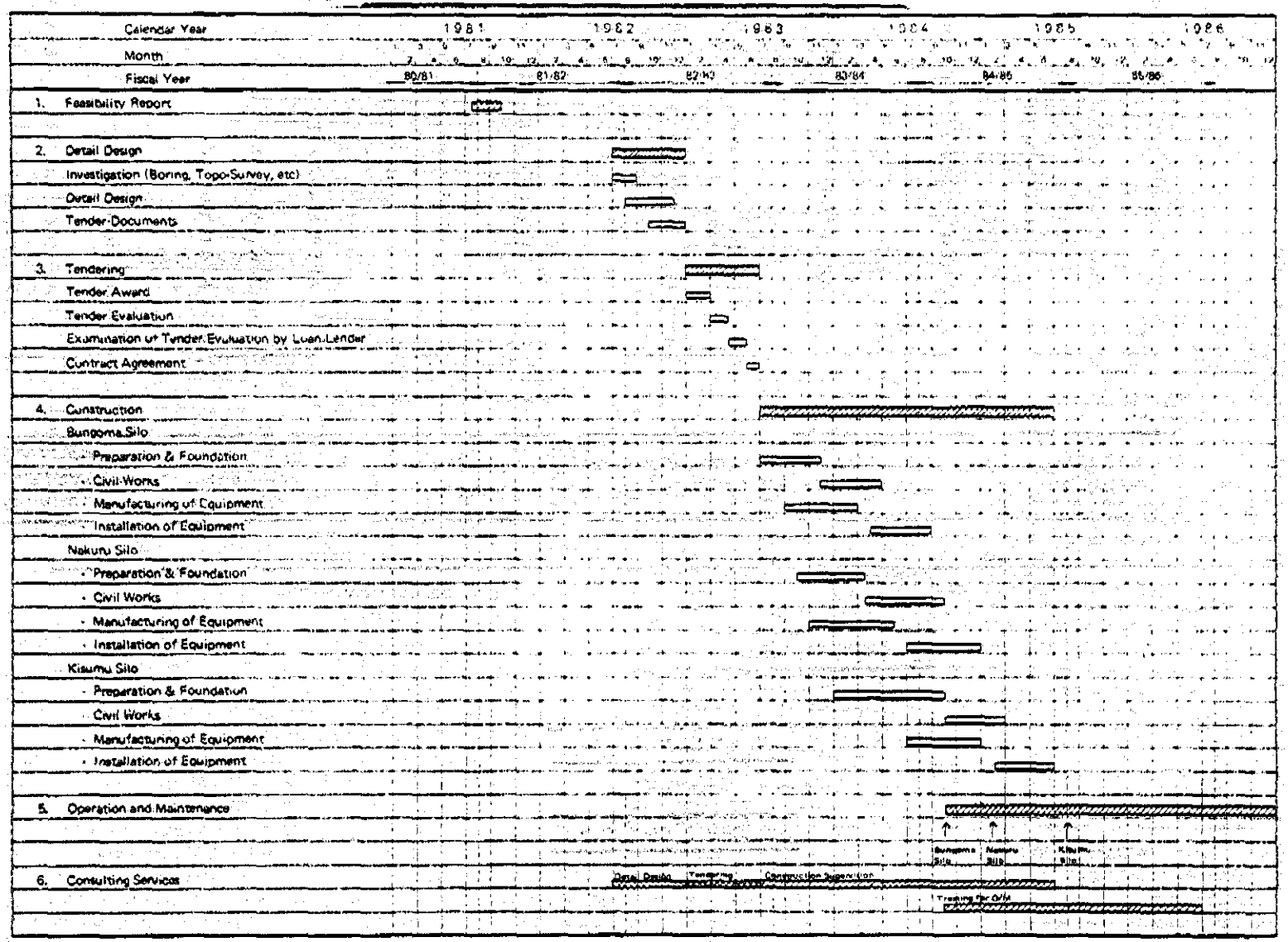

MANAGING DIRECTOR
VICE MANAGING D.
INTERNAL AUDITOR
DATA PROCESSING MANAGER
SALES MANAGER
TECHNICAL MANAGER
ASST. TECHNICAL MANAGER
DRIER SUPERVISORS
SILO SUPERVISORS
STORAGE MANAGER
STORES MAINTENANCE OFFICER
DEPOT MANAGER
AREA MANAGER
OPERATIONS MANAGER
CROP PURCHASING QUALITY CONTROL
FUMIGATION & PEST CONTROL
ALL MOVEMENTS
FINANCE MANAGER
CHIEF ACCOUNTANT
STATIONERY SUPPLIES OFFICER
SENIOR ACCOUNTANTS
〃
〃
FIELD SERVICES MANAGER
AREA MANAGERS
SURVEY TEAMS
FIELD OFFICERS
PERSONNEL & ADMINISTRATION MANAGER
PAYROLL OFFICERS
OFFICE SERVICES SUPERVISORS
STABLISHMENT OFFICERS

図 5－3 事 業 実 施 工 程 表


Calendar Year
1981
1982
1983
1984
1985
1986
Month
Fiscal Year
80/81
81/82
82/83
83/84
84/85
85/86
1. Feasibility Report
2. Detail Design
Investigation (Boring, Topo-Survey, etc)
Detail Design
Tender Documents
3. Tendering
Tender Award
Tender Evaluation
Examination of Tender Evaluation by Loan Lender
Contract Agreement
4. Construction
Bungoma Silo
- Preparation & Foundation
- Civil Works
- Manufacturing of Equipment
- Installation of Equipment
Nakuru Silo
- Preparation & Foundation
- Civil Works
- Manufacturing of Equipment
- Installation of Equipment
Kisumu Silo
- Preparation & Foundation
- Civil Works
- Manufacturing of Equipment
- Installation of Equipment
5. Operation and Maintenance
6. Consulting Services
Detail Design
Tendering
Construction Supervision
Training for O/M

第 6 章　事業の経済および財務分析

この章においては、事業期間の経済的便益、事業に用いられる諸費用、そして両者から求められる内部収益率、ならびに財務分析を通じて事業の経済的、財務的正当性が確められる。

6. 1　経済便益

いかなる事業からもたらされる経済的便益にも、計量化できるものとできないものとが含まれる。この事業も例外ではない。まして、これはケニア共和国政府とNCPBとが管理、運営する穀物倉庫の拡張建設であり、その目的は、国内市場向け穀類の取扱量を拡大し、これによってメイズ生産に対する農民の生産意識を向上させ、この国の農業生産によるGNP向上を計るものである。又、庫腹を拡大することによって、食糧の緊急備蓄に役立てる事も考慮している。従って、その便益は国民経済全体の中に取込まれ、計量できないものも多く包含されることは言うまでもない。

6. 1. 1　まず、直接的でかつ計量化できる便益について述べよう。その一つは、この事業がなければそのまま農場段階に取残され、生産者の不備な保管に晒らされ、大きな損失を余儀なくされるであろう多量のメイズが事業によって損失を受けないで済むという経済便益である。政府やNCPBの発表によると、農場段階でのメイズの収穫後の保管損失は小農で30%以上、大農でも保管設備が不全のため、15%内し16%に達すると見られている。もし、NCPBがすみやかにそれらを倉庫に収納すれば、この損失は全く救われ、その分だけの経済便益が得られることは確実である。

メイズ損失の減少によってもたらされる経済便益について、グロスベースで計量したのが下表である。

事業による粗便益　　（100万シリング）

	メイズ損失の減少による便益
1984／88	23. 9
1985／87	53. 4
1986／86	53. 4
1987／85	53. 4

	メイズ損失の減少による便益
1988／89	53. 4
1989／90	53. 4
1990／91	53. 4
1991／92 〜 2000／2001	534. 0
合　　計	878. 3

詳細は資料編表G－1で示されているが、便益額は、メイズの農場損失率を変えることによって異なる。分析では、大農と小農のメイズ市場占有率をそれぞれ65％、35％と見積り、両者の加重平均値20％を採用した。なお、現地NCPBの穀物集荷担当者の話では、最近、小農の市場占有率が高まる方向にあるといわれる。

便益発生期間は、それぞれのサイロが操業を開始した時期から事業期間の最終予定年の2000／2001穀物年度までとした。また、メイズ価格は、シャドウプライスとして1981年ケニア輸入メイズ価格を採用した。事業遂行期間の経済的粗便益は約8億9,800万ケニアシリングで邦貨にして287億7,100万円（年平均約12億円）に相当する。

6.1.2　次に計量化ができる事業からの便益は、庫腹拡大によって惹起される穀物取引き量の増大からくる商業、加工マージンの増加である。建設予定されるサイロによって増加される取扱量は、倉庫の回転率を1.37とすると、市場出回り増量分は、150,000袋となり将来1.5になると165,000袋となる。

これら取引き量の拡大に伴う便益計算に必要なマージン率はケニア政府の公示した1981年メイズ価格構成表によると（資料編表D－10参照）経済便益は下表の通りである。

	1.37回転（100万シリング）	1.5回転（100万シリング）
1984／85	7. 8	8. 5
1985／86	17. 4	19. 0
1986／87 〜	17. 4	19. 0
1991／92	17. 4	19. 0

6. 1. 3　この事業遂行によってもたらされる非計量的な経済便益も無視できないものがいくつかあげられる。その1つはメイズ生産者に対する経済的な刺激である。

既述のごとく、ケニア共和国の主要穀物は国内流通市場がNCPBによって統制支配されているためにNCPBの購売力によって余剰農産物の産出に影響してくる。

1975年77年にかけてケニアではメイズや小麦の豊作で大量の余剰物が産出されたが、NCPBは収納すべき倉庫不足から買控えざるを得なかった。このため多量の穀物が農場段階に残されたばかりでなく、そのことが農民の生産意欲を減退させることになった。メイズの作付面積は1978年から特にリフトバレイの主産地を中心に減退傾向をみせている。

収納倉庫許容量の不足が作付面積の減退やメイズ産出高に直接どれだけの影響力を持ったかは計測できないが、メイズ生産者の増産意欲を削いだことは否めない。従って、今回の生産地における穀物サイロ増設計画は、周辺のメイズ生産者のみならずケニア全体の農民の穀物生産意欲をかき立てるという経済便益があることは疑いない。

その外、このプロジェクトのケニア共和国における社会、経済的影響について列記しよう。

(1) 政府の新食糧政策に盛られた穀物の戦略的備蓄計画の一翼を担い、ケニア国民の民生安定と、飢餓からの解放に大きく貢献する。

(2) 乾害、その他自然災害の発生年次に当然予想される不慮の食糧輸入を回避することができるので、政府の財政、なかんづく、外資保有高の減少をカバーすることができる。

(3) 政府の、消費者に対する食糧の公平、かつ、十分な配分が全うされ、消費者価格の長期的安定をもたらす。

(4) そして、このサイロ新設と運営は、120人の技術者に、新たな職業を与え、また、40万人日分の新規労働需要を建設期間に換起し、不完全就業者の多いケニア労働市場に新たな刺激を与えることになる。

これらの事項が全国民経済全体に与える便益は、民生安定、食糧飢餓感からの解放といった社会心理的効果と相まって、極めて大きいといわなければならない。

6.2 投資費用

6.2.1 この事業の総額は物価上昇分を除いて、外貨分は26,768万シリング（約71億）で、内貨は8,112万シリングと見積られている。この事業費は、投資評価を行う場合のシャドープライスにする為に資機材等輸入に要する費用、事務費用、補償費等の事務経費及び一般労働者の賃金の50％を控除すると下記の表の通りとなる。

投　資　額　　（千 シリング）

項　目	1981/82	1982/83	1983/84	1984/85	1985/86	合　計
1. 土木工事	2,000	—	111,658	47,521	—	161,179
2. 建築工事	—	—	17,825	17,825	—	35,650
3. 施設工事	—	—	52,020	28,500	—	80,520
4. 事務費	—	—	—	—	—	—
5. 技術費	498	7,230	6,878	7,216	3,178	25,000
6. 予備費	252	728	19,861	10,556	317	31,709
合　計	2,750	7,958	208,242	111,618	3,495	334,058

6.2.2 各サイロの維持管理費は、第5章に示す通り。

ゾンゴマサイロ	2,036,000	シリング／年
ナクルサイロ	2,776,000	〃
キスムサイロ	2,036,000	〃
計	6,848,000	〃

また、間接的な便益として考えられている、流通工程における商業・加工マージンに対する費用は、1袋当り1.88シリングであるので総額では、180万袋として3,384,000 シリングとなる。

6.3 事業の内部経済収益率と感度分析

上述の便益と投資総費用に基づいて、内部経済収益率を求めると11.3％となる。（資料提表G－4参照） この11.3％は事業期間を着手から20年間として求められたもので、サ

イロなどは後の残存価値が考えられなくもないが、NCPB Financial Manager の意見も取入れて、あえてそれは考慮しなかった。しかし、得られた内部収益率には結果的に若干残存価値が含まれている。

しかしながら、この事業の内部経済収益率は、メイズの農場段階の在庫損失率を20%、非熟練労働者のシャドウプライスを平常賃金の50%、メイズのシャドウプライスを1981年におけるメイズ輸入価格として推計したものである。もちろん、こうした条件を変えれば当然収益率は異なり、事業に対する判断が変わってくることはいうまでもない。

メイズ在庫の損失率が20%から25%へと5%引上げられれば、総収益は9%増大するし、メイズ価格にシャドウプライスの適用をしなければ反対に総便益は約25%減少する。従って、内部経済収益率もそれに応じて、それぞれ高められたり、引下げられるであろう。ただ、非熟練労働者の賃金は、建設費に400,000人×28シリング＝11,200,000シリング含まれている。また、サイロ運営費には、年間25,000シリングが含まれているが、これは全体の運営費より見て、少額のため控除しなかった。いずれにしろ、未熟練労働者のシャドウプライスの適用による内部経済収益率への影響はあまり大きいとは思われない。

感度分析は、次の項目について検討した。

項　　目	内部収益率
1. 便益にマージン計上	16 %
2. 便益の10%増	13 %
3. 便益の10%減	9 %
4. 費用の10%増	9 %
5. 着工1年遅れ	10 %

6.4　事業の財務分析

この事業によるサイロ建築後のサイロ運営は政府の指導の下にNCPBによって行われる。NCPBは、いわゆる非営利公共企業体であるから、事業の財務分析は経済分析ほど重要視されるものではない。次の表は新設サイロ運営の損益計算を独立採算的に試みたものである。

新設サイロの損益計算

1,000トン
単位： 100万シリング

	1984／85まで		1985／86		1986／87		1987／88～2000／01		合計	
	数量	金額	数量	金額	数量	金額	数量	金額	数量	金額
メイズの購入	135.0	180.0	165.0	219.9	165.0	219.9	2,310.0	3,079.2	2,775.0	3,699.0
減耗（0.3%）	0.4		0.5		0.5		6.9		8.3	
メイズの売却	134.6	220.6	164.5	269.6	164.5	269.6	2,303.1	3,774.8	2,766.7	4,534.6
粗収益		40.6		49.7		49.7		695.6		835.6
費用		20.9		26.6		26.6		372.3		446.4
サイロ諸経費		6.2		6.5		6.5		91.3		110.5
鉄道輸送費		14.5		19.9		19.9		278.2		332.5
その他諸費用		0.2		0.2		0.2		2.8		3.4
差引残高		19.7		23.1		23.1		323.3		389.2
減価償却引当		32.6		16.8		16.3		228.9		294.2

メイズの購入と売却による収支は、NCPBのメイズ倉庫インプット価格とアウトプット価格に取扱い数量を乗じて求めたものであり、一方費用は、事業費用の中のサイロ運営費と政府のメイズ価格構成表に示された鉄道輸送コスト〔1 bag（90kg)当り 11シリング〕を売却数量に乗じて求めた鉄道輸送費からなる。

試算結果によると、事業期間の新設サイロの粗収益は総額8億230万シリングで、それに要する費用は4億4,600万シリング程度ですむから、差引き残高は、3億7,600万程度に達する。これから、サイロ建設費に投じた純建設投資の減価償却引当額見積りを差引いても、なお若干の黒字が見込まれる。

NCPBの現行メイズ貯蔵庫の損益計算表（資料編表G－5）と、これを比べても、新サイロ建設事業は、財務的に損色のないことが伺われ、財務的にみて採択されうるものといえよう。

資　　料　　編

資　料　編　A

経　済　の　背　景

表 A－1　国 民 経 済 の 成 長 率

	Average growth rate of production 1976 - 85	Actuals 1975	Actuals 1976	Provisional 1977	Forecast 1978	Target 1979	Target 1980	Target 1981	Target 1982	Target 1983
Semi-Monetary products	2.6	1.1	-1.3	3.4	1.9	1.5	3.1	2.8	2.8	2.8
Real Monetary GDP	7.1	1.2	8.0	8.3	5.8	5.2	8.0	7.4	7.6	7.7
Real GDP (at factor cost)	6.3	1.2	6.1	7.3	5.0	4.5	7.0	6.5	6.7	6.9
Real out put per capita	2.8	-2.5	2.7	3.7	1.5	1.0	3.5	3.0	3.2	3.4

Source: Development Plan 1979 - 83, Part I, Republic of Kenya

表 A－2　1976年価格による1983年の国民総生産

	K sh million in 1976 price		Annual Growth percent		Share of Total percent	
	1976	1984	Actual 1972-76	Targets 1976-83	1976	1983
Institutions Enterprises and non-profit	812.90	1,320.20	4.2	7.2	64.4	68.3
Agriculture	219.64	341.30	1.5	6.5	17.4	17.6
Forestry	6.33	10.70	5.9	7.8	0.5	0.6
Fishing	2.36	3.20	0.2	4.5	0.2	0.2
Mining and Quarring	4.15	7.10	11.2	8.0	0.3	0.4
Manufacturing	167.41	306.20	9.4	9.0	13.3	15.8
Electricity and water supply	14.20	24.30	10.1	8.0	1.1	1.3
Building and construction	46.20	84.50	-4.7	9.0	3.7	4.4
Wholsale Retail Trade, etc.	144.46	211.30	2.0	5.6	11.4	10.9
Transport, storage and communication	69.15	109.60	4.1	6.8	5.5	5.7
Finance Insurance, Realestate etc.	68.03	114.30	9.9	7.7	5.4	5.9
Ownership of dwelling	46.13	69.40	2.4	6.0	3.7	3.6
Other services	24.84	38.10	5.1	6.3	2.0	2.0
Private Household	10.93	21.30	13.6	10.1	0.9	1.1
Producers of Government services	178.91	281.20	6.7	6.7	14.2	14.5
Total monetary sector	1,002.74	1,622.70	4.8	7.1	79.4	83.9
Semi-monetary sector	260.11	311.30	0.8	2.6	20.6	16.1
Total DGP at Factor cost	1,262.85	1,934.00	4.0	6.3	100.8	100.0
Indirect Business takes Less subsidies	166.23	259.70	-4.1	7.0	13.2	13.8
GDP at Market prices	1,429.08	2,193.70	2.9	6.3	113.2	113.4

表 A－3　大・小農場別粗貨幣経済生産

	Large farms		Small farms		Total		
	K sh million	Annual percent change	K sh million	Annual percent change	K sh million	Annual percent change	Percentage share of small farms
1975	71.8	-2.2	90.1	20.1	162.0	9.2	55.6
1976	122.1	70.1	128.0	42.1	250.0	54.3	51.2
1977	206.0	68.7	208.5	62.9	414.6	65.8	50.3
1978	147.2	-28.5	186.2	-10.7	333.4	-19.6	55.8
1979 1/	143.3	-2.6	177.0	-4.9	320.2	-4.0	55.3

Note: 1/ Tentative Figure

Source: "Economic Survey 1980" Central of Economic Planning and Development

表 A－4　主要作物の貨幣経済的生産

	1975 ton	1976 ton	1977 ton	1978 ton	1979 ton
Wheat	145,459	186,774	169,880	165,941	200,968
Maize	487,826	564,748	423,964	236,268	241,717
Rice Paddy	32,113	39,299	41,415	35,816	37,466
Pyrethrum	203.9	166.1	131.1	114.0	113.7
Sugar-cane	1,654,583	1,652,597	1,888,140	2,349,206	3,147,580
Cotton	16,121	15,803	16,257	27,190	27,597
Coffee	66,152	80,303	97,066	84,328	75,082
Sisal	43,639	33,555	33,196	31,456	36,457
Tea	56,730	61,984	86,291	93,373	99,275

Source: Economic Survey 1980

	1974/75 ton	1975/76 ton	1976/77 ton	1977/78 ton	1978/79 ton	1979/80 ton
Wheat	161,912	180,716	165,969	154,612	155,186	189,949
Maize	450,704	555,667	542,822	244,205	236,610	222,693

Source: Annual Report of NCPB

表 A－5　月　別　メ　イ　ズ　輸　入　量

Imported Maize

1979/80 Financial Year

		Yellow Bags	White Bags	Total
March	1980	285,144	-	285,144
April	1980	41,956	302,221	344,177
May	1980	261,398	424,016	685,414
June	1980	462,919	59,653	522,572
		1,051,417	785,890	1,837,307

1980/81 Financial Year

July	1980	459,621	182,812	642,433
August	1980	673,711	19,841	693,552
September	1980	426,924	-	426,924
October	1980	491,593	-	491,593
November	1980	139,477	-	139,477
December	1980	407,436	-	407,436
January	1981	87,526	-	87,526
February	1981	47,396	-	47,396
March	1981	379,286	-	379,286
April	1981	864,260	-	864,260
May	1981	218,676	-	218,676
June	1981	468,479	-	468,479
		4,664,385	202,653	4,867,038

1981/82 Financial Year

July	1981	11,207	336,122	347,329
Grand Total		5,727,009	1,324,665	7,051,674

White Maize Exports - 1979/80 Financial Year

August	1979	177,889
Septemger	1979	49,684
Total		227,573

資　料　編　B

人　口

表 B－1 ケ ニ ア の 人 口

(Unit: 1,000 Persons)

Years/	1978	1979	1980	1981	1982	1983	1984	1989
1. Central Province	2,359	2,476	2,585	2,698	2,817	2,941	3,081	3,882
2. Coast Province	1,284	1,342	1,390	1,440	1,492	1,546	1,616	1,956
3. Eastern Province	2,637	2,756	2,869	2,987	3,109	3,237	3,403	4,261
4. N. Eastern Province	312	325	339	357	375	394	417	502
5. Nyanza Province	2,745	2,863	2,977	3,096	3,220	3,349	3,500	4,335
6. Nairobi Province	818	863	913	963	1,016	1,072	1,054	1,286
7. Rift Valley Province	3,236	3,415	3,568	3,729	3,897	4,072	4,269	5,289
8. Western Province	1,820	1,896	1,981	2,070	2,162	2,261	2,362	3,015
9. Whole Kenya	15,221	15,934	16,622	17,340	18,088	18,872	19,702	24,506
Population of the Project related districts								
Kisii	858	895	931	968	1,007	1,047	1,095	1,356
*Kisumu	534	557	579	602	626	651	680	842
S. Nayaza	877	915	951	989	1,029	1,071	1,119	1,386
*Kericho	805	848	886	926	967	1,011	1,060	1,313
*Nakuru	445	470	491	513	536	560	587	727
Narok	162	171	179	187	195	204	214	265
Uasin Gishu	316	333	348	357	380	397	417	516

資　料　編　C

気　象

表 C－1　ブッシアの気象概要

STATION NAME BUSIA COTTON EXPERIMENTAL STATION　　STATION NUMBER 89.34/105

LATITUDE 00° 28' N　　LONGITUDE 34° 07' E　　ALTITUDE 4000 FEET (1220 METRES)

MONTH	ATMOSPHERIC PRESSURE ( )		TEMPERATURE (1959–70)									RELATIVE HUMIDITY			RAINFALL (1957–70)			
			MEANS			EXTREMES		DRY BULB		DEW POINT								
	0600 GMT	1200 GMT	MAX.	MIN.	RANGE	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0300 GMT	0600 GMT	1200 GMT	MEAN	HIGHEST	LOWEST	MAX 24 HOUR FALL
	mb.	mb.	°C	°C	°C	°C	°C	°C	°C	°C	°C	%	%	%	mm	mm	mm	mm
January			29.4	15.5	13.9	37.8	10.6	20.4	27.4	14.6	15.2		69	47	71	146	10	55.6
February			29.3	15.9	13.4	34.4	11.5	20.7	27.3	15.4	16.1		73	51	85	236	23	61.7
March			29.1	16.6	12.5	34.4	11.7	21.3	27.2	16.5	17.1		74*	54	158	245	95	44.2
April			28.0	16.8	11.2	32.5	14.4	21.0	26.2	17.4	18.3		80	62	280	394	97	112.0
May			27.4	16.5	10.9	30.0	11.0	20.7	25.9	17.4	18.2		82	61	240	343	184	54.6
June			27.2	15.7	11.5	31.1	9.0	19.8	25.9	16.4	16.6		81	56	106	161	63	52.3
July			26.8	15.7	11.1	29.5	12.2	19.2	25.2	15.9	16.0		81	56	81	208	22	90.7
August			26.9	15.5	11.4	30.0	11.5	19.5	25.6	16.0	16.3		80	56	138	256	71	77.5
September			27.5	15.6	11.9	32.2	12.0	20.0	26.3	16.1	16.8		78	56	159	266	43	51.3
October			28.1	16.4	11.7	32.5	13.9	20.9	26.2	16.5	17.0		76	57	183	333	129	62.2
November			27.7	16.2	11.5	31.5	12.2	20.8	25.7	16.1	16.8		75	58	170	302	79	69.1
December			28.3	15.8	12.5	31.7	10.0	20.4	26.5	15.6	16.2		73	50	104	232	58	69.3
Year			28.0	16.0	12.0	37.8	9.0	20.4	26.3	16.2	16.7		77	55	1775	2176	1639	112.0

*1962–70

MONTH	NUMBER OF DAYS OF		DAILY SUNSHINE (1966–70)			DAILY RADIATION (1965–70) INSTRUMENT GB			MONTHLY EVAPORATION (1960–70) PAN TYPE A			CLOUD AMOUNT ( ) TOTAL		LOW		DAILY WIND RUN (1963–70)	WIND SPEED ( )		CALMS ( )		VISIBILITY ( ) FOG		MIST, HAZE	
	RAIN	THUNDER	MEAN	MAX. MEAN	MIN. MEAN	MEAN	MAX. MEAN	MIN. MEAN	MEAN	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT		0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT
	≥1mm	days	hours	hours	hours	langleys	langleys	langleys	mm	mm	mm	oktas	oktas	oktas	oktas	miles	knots	knots	days	days	days	days	days	days
January	7		7.7	8.4	6.7	591	649	499	199	270	142					95.4								
February	10		8.1	9.3	5.9	572	607	513	181	229	144					90.5								
March	14		7.3	8.3	6.3	555	615	504	198	254	148					84.5								
April	19		7.5	8.6	5.9	557	610	525	172	200	122					76.6								
May	19		8.4	9.6	7.7	561	590	525	167	200	133					68.4								
June	13		8.5	9.2	8.1	547	567	512	148	164	128					62.6								
July	9		6.8	7.0	6.6	505	535	483	133	179	125					64.3								
August	13		7.5	8.3	6.1	538	587	477	159	187	143					69.5								
September	16		7.9	8.3	7.5	596	623	550	180	209	150					75.4								
October	19		8.6	9.0	8.3	592	664	542	196	248	155					78.5								
November	15		8.2	9.1	7.6	553	626	471	166	206	126					74.6								
December	10		9.4	9.6	9.2	600	634	569	198	243	151					75.2								
Year	164		8.0	–	–	564	575	553	2097	2289	1881					76.3								

表 C－2　ケリチョの気象概要

STATION NAME KERICHO, TIMILIL T.R.I.　　STATION NUMBER 90.35/244

LATITUDE 00°22'S　　LONGITUDE 35°21'E　　ALTITUDE 7000 FEET (2134 METRES)

MONTH	ATMOSPHERIC PRESSURE (1963–70) 0600 GMT	ATMOSPHERIC PRESSURE (1963–70) 1200 GMT	TEMPERATURE (1963–70) MEANS MAX.	MEANS MIN.	MEANS RANGE	EXTREMES HIGHEST	EXTREMES LOWEST	DRY BULB 0600 GMT	DRY BULB 1200 GMT	DEW POINT 0600 GMT	DEW POINT 1200 GMT	RELATIVE HUMIDITY 0300 GMT	RELATIVE HUMIDITY 0900 GMT	RELATIVE HUMIDITY 1200 GMT	RAINFALL (1964–70) MEAN	RAINFALL HIGHEST	RAINFALL LOWEST	RAINFALL MAX. 24 HOUR FALL
	mb.	mb.	°C	°C	°C	°C	°C	°C	°C	°C	°C	%	%	%	mm	mm	mm	mm
January			24.0	8.7	15.3	27.5	2.5	17.0	21.7	9.2	9.7		60	47	78	289	14	47.8
February			23.8	9.1	14.7	29.0	2.8	16.7	21.1	10.4	10.7		67	51	114	226	10	41.4
March			23.6	9.5	14.1	27.7	5.6	16.7	20.8	11.2	11.5		70	56	138	321	120	58.9
April			22.3	10.1	12.2	26.2	6.1	16.5	18.7	12.2	13.5		77	73	275	482	114	79.3
May			22.1	9.6	12.5	28.5	6.0	16.5	18.2	12.3	13.6		77	74	262	455	120	70.0
June			21.3	8.7	12.6	27.8	4.5	15.5	18.3	11.4	12.5		77	68	202	282	128	53.4
July			20.5	9.1	11.4	24.0	5.5	14.7	17.7	11.3	12.0		81	70	199	334	118	62.7
August			20.7	8.9	11.8	25.0	5.6	15.4	17.3	11.1	11.9		76	71	212	340	45	57.2
September			21.9	8.4	13.5	26.6	5.4	16.9	18.5	10.9	11.4		68	63	172	223	107	57.1
October			22.1	8.8	13.3	26.3	4.2	17.3	18.6	11.1	12.0		66	65	168	208	119	30.4
November			21.9	9.5	12.4	25.6	5.6	17.1	18.6	11.4	12.2		69	67	131	222	70	37.2
December			22.7	8.6	14.1	27.3	5.0	17.0	20.1	10.5	10.7		65	53	80	129	8	48.8
Year			22.2	9.1	13.1	29.0	2.5	16.4	19.1	11.1	11.8		71	63	2081	2555	1583	79.3

MONTH	NUMBER OF DAYS OF RAIN ≥1mm	NUMBER OF DAYS OF THUNDER	DAILY SUNSHINE (1963–70) MEAN	DAILY SUNSHINE MAX. MEAN	DAILY SUNSHINE MIN. MEAN	DAILY RADIATION (1958–70) INSTRUMENT GR MEAN	DAILY RADIATION MAX. MEAN	DAILY RADIATION MIN. MEAN	MONTHLY EVAPORATION (1963–70) PAN TYPE A MEAN	MONTHLY EVAPORATION HIGHEST	MONTHLY EVAPORATION LOWEST	CLOUD AMOUNT TOTAL 0600 GMT	CLOUD AMOUNT TOTAL 1200 GMT	CLOUD AMOUNT LOW 0600 GMT	CLOUD AMOUNT LOW 1200 GMT	DAILY WIND RUN (1963–70)	WIND SPEED 0600 GMT	WIND SPEED 1200 GMT	CALMS 0600 GMT	CALMS 1200 GMT	VISIBILITY FOG 0600 GMT	VISIBILITY FOG 1200 GMT	VISIBILITY MIST, HAZE 0600 GMT	VISIBILITY MIST, HAZE 1200 GMT
		days	hours	hours	hours	langleys	langleys	langleys	mm	mm	mm	oktas	oktas	oktas	oktas	miles	knots	knots	days	days	days	days	days	days
January	6		8.3	9.8	5.7	551	638	428	151	178	112					91.6								
February	11		7.5	9.5	4.9	551	664	417	131	161	101					84.0								
March	15		7.2	8.7	5.1	538	625	450	144	169	116					81.6								
April	21		5.6	8.0	4.2	443	505	362	106	137	78					67.7								
May	22		6.3	7.6	4.0	440	534	366	105	124	87					70.6								
June	20		7.0	8.3	4.9	498	544	385	106	121	92					81.0								
July	20		5.8	6.7	4.9	414	478	370	100	113	88					79.3								
August	21		5.7	6.7	4.1	418	480	344	102	121	87					75.7								
September	19		6.5	7.5	5.0	454	492	329	115	130	93					87.0								
October	21		6.3	7.1	5.2	439	504	375	111	127	96					81.3								
November	15		5.9	6.7	5.1	431	517	356	101	118	87					80.9								
December	11		7.5	8.9	5.0	498	583	414	123	141	108					80.7								
Year	204		6.6	7.2	6.2	470	492	436	1396	1468	1324					81.0								

表 C－3　キ ス ム の 気 象 概 要

STATION NAME KISUMU AIRPORT MET. STATION.　　STATION NUMBER 90.34/025

LATITUDE 00°06'S　　LONGITUDE 34°45'E　　ALTITUDE 3795 FEET (1157 METRES)

MONTH	ATMOSPHERIC PRESSURE (1931–70)		TEMPERATURE (1931–70)									RELATIVE HUMIDITY			RAINFALL (1938–70)			
			MEANS			EXTREMES		DRY BULB		DEW POINT								
	0600 GMT	1200 GMT	MAX.	MIN.	RANGE	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0300 GMT	0600 GMT	1200 GMT	MEAN	HIGHEST	LOWEST	MAX. 24 HOUR FALL
	mb.	mb.	°C	°C	°C	°C	°C	°C	°C	°C	°C	%	%	%	mm	mm	mm	mm
January	886.7	883.1	30.6	17.0	13.6	36.0	11.0	22.3	29.3	14.3	14.6	78	60	41	63	186	0	77.5
February	886.5	882.8	30.8	17.4	13.4	36.9	12.8	22.3	29.4	14.9	14.9	80	62	42	87	258	0	81.1
March	886.5	882.9	30.3	17.8	12.5	36.6	13.0	22.5	29.1	16.2	15.8	83	68	45	162	334	25	81.5
April	886.9	883.7	28.8	17.9	10.9	35.5	13.3	22.0	27.6	17.4	17.3	91	76	53	206	405	93	154.9
May	887.7	884.8	28.2	17.4	10.8	32.2	14.1	21.6	26.9	17.3	17.3	92	77	55	171	358	77	105.0
June	888.5	886.0	28.0	16.4	11.6	31.4	12.4	20.7	26.8	15.9	16.1	90	74	52	95	192	14	78.7
July	888.5	886.1	27.7	16.2	11.5	31.4	11.9	20.0	26.6	15.3	15.2	88	74	49	63	147	27	90.2
August	888.2	885.4	28.2	16.1	12.1	33.1	11.4	20.4	27.0	15.1	15.3	87	72	49	88	220	17	101.6
September	887.8	884.5	29.4	16.3	13.1	34.3	12.4	21.5	28.0	14.7	15.3	85	65	46	79	151	2	69.3
October	887.3	883.5	30.5	17.1	13.4	34.7	13.1	22.6	29.1	14.8	14.9	82	62	42	72	195	9	69.3
November	886.9	883.0	30.2	17.3	12.9	34.4	12.8	22.8	28.6	15.4	15.3	81	63	45	116	449	6	128.3
December	886.9	883.2	29.9	17.1	12.8	35.7	12.0	22.4	28.6	15.2	15.3	80	64	45	104	301	1	84.1
Year	887.4	884.1	29.4	17.0	12.4	36.9	11.0	21.7	28.1	15.5	15.6	85	68	47	1306	1884	942	154.9

MONTH	NUMBER OF DAYS OF		DAILY SUNSHINE (1958–70)			DAILY RADIATION (1967–70) INSTRUMENT CB			MONTHLY EVAPORATION (1958–70) PAN TYPE A			CLOUD AMOUNT (1931–70)				DAILY WIND RUN ( )	WIND SPEED (1939–70)		CALMS 0900–70		VISIBILITY (1961–70)			
												TOTAL		LOW							FOG		MIST, HAZE	
	RAIN ≥1mm	THUNDER	MEAN	MAX. MEAN	MIN MEAN	MEAN	MAX. MEAN	MIN. MEAN	MEAN	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT		0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT
	days	days	hours	hours	hours	langleys	langleys	langleys	mm	mm	mm	oktas	oktas	oktas	oktas	miles	knots	knots	days	days	days	days	days	days
January	7	10	9.3	10.5	7.4	530	537	522	236	325	176	4.4	4.9	1.2	2.5		3	12	9	1	0	0	1	0
February	11	12	9.2	10.6	7.1	554	602	527	218	248	178	4.5	5.0	1.4	2.5		3	13	9	1	0	0	1	0
March	12	16	8.7	9.6	6.4	504	570	407	227	272	158	5.2	5.5	1.6	2.8		3	11	9	1	0	0	0	1
April	17	21	7.9	9.9	5.5	509	559	420	193	243	134	5.9	5.9	2.0	3.3		3	10	10	1	0	0	1	1
May	13	23	8.0	9.0	7.0	502	527	470	186	211	146	4.9	5.4	1.6	3.3		3	8	8	1	0	0	1	1
June	8	18	8.4	9.3	7.5	497	523	461	178	228	137	4.8	4.9	1.2	2.7		4	8	5	0	0	0	0	0
July	6	14	7.7	8.7	6.0	468	495	446	174	217	136	5.3	5.3	1.8	2.5		4	8	6	1	0	0	1	1
August	8	18	7.7	8.6	6.2	496	536	464	181	229	145	5.1	5.3	1.7	2.9		4	9	4	1	0	0	1	1
September	8	20	7.9	9.3	7.1	529	555	489	202	256	166	4.3	5.3	1.2	3.3		4	10	4	0	0	0	0	1
October	10	19	8.2	9.1	6.6	533	569	495	215	274	181	4.9	5.7	1.2	3.5		4	10	5	1	0	0	0	1
November	13	18	7.8	9.0	5.0	524	555	492	200	239	154	5.2	6.0	1.8	3.6		3	10	8	0	0	0	1	1
December	9	13	8.9	9.8	6.8	557	569	543	211	292	173	4.6	5.1	1.3	3.0		3	10	6	0	0	0	0	1
Year	121	202	8.3	8.8	7.8	517	542	501	2421	2759	2015	4.9	5.3	1.5	3.0		3	10	83	8	0	0	7	9

表 C－4　ナクル（ラネト飛行場）の気象概要

STATION NAME NAKURU LANET AIRFIELD MET. STATION　　STATION NUMBER 90.36/236

LATITUDE 00°18 S　　LONGITUDE 36°09 E　　ALTITUDE 6200 FEET (1890 METRES)

MONTH	ATMOSPHERIC PRESSURE (1958–62)		TEMPERATURE (1957–62) MEANS			EXTREMES		DRY BULB		DEW POINT		RELATIVE HUMIDITY			RAINFALL (1956–70)			
	0600 GMT	1200 GMT	MAX	MIN.	RANGE	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0300 GMT	0600 GMT	1200 GMT	MEAN	HIGHEST	LOWEST	MAX. 24 HOUR FALL
	mb.	mb.	°C	°C	°C	°C	°C	°C	°C	°C	°C	%	%	%	mm	mm	mm	mm
January	814.0	810.0	27.1	7.4	19.7	30.8	2.4	16.4	25.3	11.0	9.1	93	70	36	35	116	0	66.0
February	814.1	810.0	28.1	6.8	21.2	30.6	1.3	16.3	26.1	10.5	8.1	91	68	32	35	127	0	30.5
March	813.6	809.6	27.8	8.2	19.6	31.7	2.2	16.7	25.5	11.8	9.7	90	74	39	63	138	18	40.1
April	813.4	810.1	25.7	9.5	16.2	30.8	4.6	16.7	22.5	13.4	12.6	94	81	54	133	232	41	65.5
May	814.3	811.1	25.1	9.9	15.2	27.8	4.5	16.6	22.4	13.6	12.9	96	82	55	106	184	44	48.1
June	814.9	811.8	24.9	7.7	17.2	28.2	2.7	15.4	23.2	11.9	11.6	95	80	49	67	110	12	38.9
July	814.8	811.9	23.9	8.5	15.4	27.5	1.0	14.9	22.4	11.2	11.2	93	76	50	74	188	31	62.5
August	814.7	811.5	24.1	8.5	15.6	27.0	3.0	15.3	22.3	11.5	11.6	93	77	51	92	172	33	51.1
September	814.2	810.8	25.3	6.9	18.4	29.1	2.0	16.0	22.5	11.5	10.9	94	75	48	74	157	10	29.7
October	814.3	810.6	25.3	7.7	17.6	28.9	2.5	16.9	22.1	12.0	11.2	95	73	50	86	132	23	32.0
November	813.9	810.2	24.4	8.6	15.8	28.0	3.4	16.4	21.5	12.5	12.0	96	78	55	95	307	31	54.1
December	813.9	810.2	25.2	8.2	17.0	29.0	2.7	16.8	23.1	12.0	11.0	94	75	47	49	156	1	35.6
Year	814.2	810.7	25.6	8.2	17.4	31.7	1.0	16.2	23.2	11.9	11.0	94	76	47	909	1089	654	66.0

MONTH	NUMBER OF DAYS OF		DAILY SUNSHINE (1959–63)			DAILY RADIATION ( ) INSTRUMENT			MONTHLY EVAPORATION (1958–63) PAN TYPE A			CLOUD AMOUNT (1957–62) TOTAL		LOW		DAILY WIND RUN ( )	WIND SPEED (1957–62)		CALMS (1958–62)		VISIBILITY (1957–62) FOG		MIST, HAZE	
	RAIN	THUNDER	MEAN	MAX. MEAN	MIN. MEAN	MEAN	MAX. MEAN	MIN. MEAN	MEAN	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT		0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT
	≥1mm	days	hours	hours	hours	langleys	langleys	langleys	mm	mm	mm	oktas	oktas	oktas	oktas	miles	knots	knots	days	days	days	days	days	days
January	5	4	7.9	9.1	7.3				190	227	167	4.1	6.1	2.0	5.5		1	11	22	1	1	0	1	1
February	6	4	8.4	9.6	7.9				199	237	168	3.8	5.7	1.4	5.3		2	12	19	1	1	0	1	1
March	9	9	7.2	8.1	5.9				193	237	162	4.7	6.4	2.2	5.9		2	11	21	2	1	1	2	1
April	17	13	6.0	6.6	5.2				128	166	102	5.4	6.9	3.4	6.8		3	8	15	4	1	0	2	2
May	13	18	6.7	7.3	6.1				136	156	121	5.6	6.5	3.4	5.9		4	10	13	3	1	0	3	2
June	8	14	7.9	8.6	7.5				139	172	114	4.5	5.9	2.6	5.4		5	9	9	2	1	0	3	1
July	11	12	7.5	7.7	7.2				148	212	93	5.5	6.3	3.7	5.5		7	10	7	2	1	0	4	2
August	12	17	6.9	7.9	5.9				148	157	128	5.0	6.4	3.5	5.9		7	9	8	2	0	0	3	2
September	11	15	7.2	8.0	6.3				150	163	139	4.2	6.5	2.2	6.3		7	10	7	1	0	0	1	3
October	15	11	6.3	6.8	5.0				138	149	122	5.0	7.0	2.8	6.6		4	9	12	3	0	0	2	3
November	14	12	5.5	7.0	3.9				117	138	99	5.3	7.0	3.7	6.5		2	7	17	3	1	0	3	3
December	6	5	7.5	7.9	6.6				147	175	121	5.0	6.4	3.0	6.1		2	11	21	2	1	0	2	1
Year	127	134	7.1	7.2	6.9				1833	2082	1773	4.8	6.4	2.8	6.0		4	10	171	26	9	1	27	22

表 C－5　ナクル（ショーグランド）の気象概要

STATION NAME NAKURU – SHOWGROUND MET. STATION　　STATION NUMBER 90.36/261

LATITUDE 00°16'S　LONGITUDE 36°04'E　　ALTITUDE 6139 FEET (1871 METRES)

MONTH	ATMOSPHERIC PRESSURE (1966–70)		TEMPERATURE (1964–70)									RELATIVE HUMIDITY			RAINFALL (1964–70)			
			MEANS			EXTREMES		DRY BULB		DEW POINT								
	0600 GMT	1200 GMT	MAX.	MIN	RANGE	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0300 GMT	0600 GMT	1200 GMT	MEAN	HIGHEST	LOWEST	MAX. 24 HOUR FALL
	mb.	mb.	°C	°C	°C	°C	°C	°C	°C	°C	°C	%	%	%	mm	mm	mm	mm
January	815.9	812.4	27.0	7.8	19.2	31.5	1.5	16.0	25.4	10.4	8.9	90	69	36	33	105	0	36.0
February	815.6	812.1	27.2	9.2	18.0	30.8	2.2	16.5	25.9	11.1	8.9	91	71	35	43	130	0	42.1
March	815.6	812.0	27.1	10.1	17.0	31.2	5.0	16.5	25.2	12.3	10.1	92	77	40	105	191	33	51.6
April	815.9	812.8	25.2	11.3	13.9	29.5	6.0	16.4	23.0	13.5	12.9	95	83	54	164	264	28	67.8
May	816.6	813.7	24.7	10.8	13.9	27.7	5.5	16.1	23.0	13.4	12.7	96	84	52	113	172	34	36.4
June	817.3	814.5	24.5	9.3	15.2	28.0	3.8	14.8	23.1	11.8	11.5	94	82	48	57	128	24	31.4
July	817.3	814.7	23.8	10.1	13.7	27.2	5.0	14.6	22.4	11.7	11.7	92	82	51	100	180	36	33.3
August	817.0	814.1	24.3	9.4	14.9	28.4	4.4	14.7	22.7	11.2	11.2	92	80	48	87	178	52	36.2
September	816.7	813.4	25.5	8.3	17.2	29.3	4.4	15.2	23.6	11.3	10.7	93	77	45	94	196	23	32.3
October	816.4	812.9	25.1	8.8	16.3	28.8	4.7	16.3	22.0	11.9	11.8	94	76	52	65	115	33	25.1
November	816.0	812.5	24.0	9.6	14.4	27.6	4.6	16.2	21.7	12.5	12.5	95	78	56	68	104	47	40.5
December	815.9	812.5	25.7	8.0	17.7	29.3	3.4	16.3	24.3	10.9	9.1	91	70	39	28	56	4	26.2
Year	816.3	813.1	25.3	9.4	15.9	31.5	1.5	15.8	23.5	11.8	11.0	93	77	46	956	1167	614	67.8

MONTH	NUMBER OF DAYS OF		DAILY SUNSHINE (1964–70)			DAILY RADIATION (1967–70) INSTRUMENT GB			MONTHLY EVAPORATION (1965–70) PAN TYPE A			CLOUD AMOUNT (1965–70) TOTAL		LOW		DAILY WIND RUN ( )	WIND SPEED (1964–70)		CALMS (1966–70)		VISIBILITY (1964–70) FOG		MIST, HAZE	
	RAIN ≥1mm	THUNDER	MEAN	MAX. MEAN	MIN. MEAN	MEAN	MAX. MEAN	MIN. MEAN	MEAN	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT		0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT
	days	days	hours	hours	hours	langleys	langleys	langleys	mm	mm	mm	oktas	oktas	oktas	oktas	miles	knots	knots	days	days	days	days	days	days
January	5	3	8.6	10.3	5.9	556	600	503	198	220	165	3.2	5.4	1.5	4.8		2	11	9	0	0	0	1	1
February	6	5	8.3	10.3	6.2	532	627	450	183	230	127	4.0	5.9	1.8	5.1		2	11	9	1	1	0	1	1
March	11	9	7.0	8.4	5.9	491	556	427	177	236	142	5.1	6.4	2.5	5.7		2	10	12	1	1	0	1	1
April	18	14	5.9	8.3	4.8	470	541	382	135	170	102	5.9	6.8	3.9	6.1		2	9	10	1	1	0	1	1
May	13	14	7.5	8.6	6.4	473	508	433	138	152	113	5.0	6.3	3.7	5.8		3	8	5	1	1	0	1	1
June	9	7	7.9	8.8	7.2	488	518	462	131	150	115	4.3	6.1	2.8	5.4		3	8	6	2	1	0	1	1
July	12	10	6.9	7.7	6.1	463	485	450	129	150	108	5.6	6.2	3.8	5.4		4	8	5	2	0	0	1	1
August	13	11	7.0	8.0	5.7	486	524	458	134	163	106	4.7	6.2	3.2	5.5		4	8	4	1	0	0	1	1
September	12	12	7.5	8.5	6.2	510	536	492	139	170	110	3.6	6.3	2.0	5.9		3	8	7	1	1	0	1	1
October	14	13	6.4	7.5	5.0	500	539	451	132	159	105	4.8	6.8	2.5	6.3		3	9	5	1	1	0	1	2
November	14	6	5.8	6.9	4.9	450	492	399	120	139	95	5.2	6.8	3.5	6.4		3	9	8	1	1	0	1	1
December	4	2	7.8	9.2	4.8	555	605	517	175	200	161	3.5	5.8	1.8	5.2		2	10	11	1	1	0	1	1
Year	131	106	7.2	7.5	6.7	498	513	464	1791	1935	1546	4.6	6.3	2.7	5.6		3	9	91	13	9	0	12	13

表 C－6　ナイロビ（ダコレテイ）の気象概要

STATION NAME NAIROBI DAGORETTI F.A.M.D. HEADQUARTERS　　STATION NUMBER 91.36/164

LATITUDE 01°18'S　　LONGITUDE 36°45'E　　ALTITUDE 5900 FEET (1798 METRES)

MONTH	ATMOSPHERIC PRESSURE (1955–70)		TEMPERATURE (1955–70) MEANS			EXTREMES		DRY BULB		DEW POINT		RELATIVE HUMIDITY			RAINFALL (1956–70)			
	0600 GMT	1200 GMT	MAX	MIN	RANGE	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0300 GMT	0600 GMT	1200 GMT	MEAN	HIGHEST	LOWEST	MAX. 24 HOUR FALL
	mb.	mb.	°C	°C	°C	°C	°C	°C	°C	°C	°C	%	%	%	mm	mm	mm	mm
January	822.7	819.5	24.5	11.3	13.2	29.7	3.3	17.2	23.6	12.9	11.8	94	77	48	82	253	0	77.0
February	822.5	819.1	25.6	11.2	14.4	29.7	4.7	17.7	24.6	12.9	11.1	93	74	44	65	201	4	104.6
March	822.6	819.3	25.4	13.0	12.4	30.0	6.7	17.4	24.4	14.3	12.2	95	81	47	101	207	23	66.3
April	822.7	819.7	23.9	13.9	10.0	28.8	7.8	16.9	22.7	14.6	13.8	95	86	58	211	428	20	76.5
May	823.9	821.1	22.5	13.1	9.4	26.2	7.2	16.1	21.4	13.9	13.8	96	89	62	198	478	85	84.6
June	824.7	822.1	21.7	10.7	11.0	26.2	4.4	14.6	20.7	12.2	12.1	94	86	59	33	82	2	77.3
July	824.8	822.4	20.6	9.7	10.9	25.8	2.5	13.5	19.5	11.2	11.5	92	87	60	15	85	1	46.7
August	824.6	821.9	21.4	9.9	11.5	27.9	2.9	13.7	20 3	11.2	11.2	93	85	56	29	67	1	53.7
September	824.3	821.0	23.7	10.3	13.4	29.1	3.9	14.8	22.6	11.8	10.8	94	85	48	24	62	2	54.4
October	824.0	820.3	24.7	12 5	12.2	28.3	5.0	16.3	23.6	13.0	11.3	94	81	46	52	164	12	45.2
November	823.4	819.9	23.0	13.1	9.9	27.8	6.7	16.2	21.9	13.9	13.1	93	87	58	167	623	41	70.4
December	822.9	819.6	23.3	12.5	10.8	27.4	5.3	16.9	22.5	13.5	12.6	95	81	54	101	379	8	112.3
Year	823.6	820.5	23.3	11.6	11.5	30.0	2.5	15.9	22.3	12.9	12.1	94	83	53	1079	1632	653	112.3

MONTH	NUMBER OF DAYS OF		DAILY SUNSHINE (1955–70)			DAILY RADIATION (1957–70) INSTRUMENT E			MONTHLY EVAPORATION (1964–70) PAN TYPE A			CLOUD AMOUNT (1955–70) TOTAL		LOW		DAILY WIND RUN (1964–70)	WIND SPEED (1955–70)		CALMS (1966–70		VISIBILITY (1961–70) FOG		MIST, HAZE	
	RAIN	THUNDER	MEAN	MAX. MEAN	MIN. MEAN	MEAN	MAX. MEAN	MIN. MEAN	MEAN	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT		0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT
	≥1mm	days	hours	hours	hours	langleys	langleys	langleys	mm	mm	mm	oktas	oktas	oktas	oktas	miles	knots	knots	days	days	days	days	days	days
January	5	2	9.1	11.0	6.8	545	624	457	205	247	153	4.8	4.5	3.0	3.3	112.9	7	11	2	1	1	0	5	1
February	5	3	9.3	10.5	7.6	568	608	497	191	242,	139	4.6	4.6	3.1	3.6	108.7	6	11	1	1	1	1	5	1
March	11	3	8.4	9.6	6.2	534	584	476	192	255	143	6.1	5.1	5.3	4.2	107.5	6	12	2	1	1	0	11	1
April	16	5	7.1	8.9	5.7	460	531	398	148	171	129	6.9	6.0	6.0	5.2	91.5	5	9	4	1	1	1	13	1
May	15	4	6.1	7.9	4.4	404	464	354	129	173	111	6.7	6.1	6.0	5.4	68.3	4	6	6	1	1	1	11	1
June	5	1	5.8	7.5	3.6	383	427	341	105	150	90	6.4	5.7	5.8	5.3	61.0	3	6	6	1	2	0	11	1
July	2	1	4.2	6.2	2.3	325	388	241	90	104	72	6.9	6.5	6.1	5.9	54.2	3	6	8	1	2	0	14	2
August	4	1	4.3	5.3	2.4	345	423	267	101	125	78	6.9	6.2	6.4	5.8	62.3	3	7	6	1	2	1	12	1
September	3	1	6.2	7.6	4.3	451	529	319	147	176	103	6.4	5.6	5.9	5.0	90.7	6	8	6	1	1	1	10	1
October	6	1	7.3	9.0	5.7	479	526	374	172	211	139	6.4	5.5	6.1	5.0	102.2	7	10	1	0	1	0	11	1
November	16	3	7.0	8.5	5.1	456	532	379	142	165	123	6.8	5.6	6.4	4.8	113.5	7	10	1	0	2	0	13	1
December	7	3	8.5	10.2	5.7	516	587	386	178	197	139	5.6	4.8	4.5	3.9	121.1	7	11	1	1	1	1	8	1
Year	95	28	6.9	7.5	6.2	455	477	394	1800	1951	1605	6.2	5.5	5.4	4.8	91.2	5	9	44	10	16	6	124	13

表 C－7　ナイロビ（エアストリー飛行場）の気象概要

STATION NAME NAIROBI, EASTLEIGH AIRPORT MET STATION　　STATION NUMBER 91.36/087

LATITUDE 01°17'S　　LONGITUDE 36°50'E　　ALTITUDE 5371 FEET (1637 METRES)

MONTH	ATMOSPHERIC PRESSURE (1942–57) 0600 GMT	ATMOSPHERIC PRESSURE (1942–57) 1200 GMT	TEMPERATURE (1942–57) MEANS MAX.	MEANS MIN.	MEANS RANGE	EXTREMES HIGHEST	EXTREMES LOWEST	DRY BULB 0600 GMT	DRY BULB 1200 GMT	DEW POINT 0600 GMT	DEW POINT 1200 GMT	RELATIVE HUMIDITY 0300 GMT	RELATIVE HUMIDITY 0600 GMT	RELATIVE HUMIDITY 1200 GMT	RAINFALL (1943–58) MEAN	HIGHEST	LOWEST	MAX. 24 HOUR FALL
	mb.	mb.	°C	°C	°C	°C	°C	°C	°C	°C	°C	%	%	%	mm	mm	mm	mm
January	839.2	836.0	26.6	13.2	13.4	30.6	8.1	17.9	25.6	13.2	11.0	88	74	41	43	166	1	54.4
February	839.3	835.9	27.8	13.3	14.5	31.8	9.2	18.1	26.7	13.2	10.1	86	73	35	29	257	0	67.3
March	839.3	836.2	27.3	14.5	12.8	31.6	9.8	18.0	26.0	14.6	11.4	90	80	41	78	214	0	116.3
April	839.8	836.8	25.7	15.4	10.3	30.8	10.3	17.8	24.4	15.4	13.7	94	86	52	182	406	105	76.7
May	840.7	838.0	24.4	14.8	9.6	28.7	9.2	17.1	23.1	14.7	13.9	95	85	57	108	254	33	73.7
June	841.6	839.2	23.4	13.1	10.3	29.2	7.6	15.4	22.2	12.7	12.4	91	84	54	39	170	0	74.7
July	841.7	839.5	22.5	11.8	10.7	28.1	6.1	14.3	21.2	11.7	11.3	90	84	53	14	27	1	27.2
August	841.5	839.1	22.9	12.2	10.7	29.7	7.3	14.6	21.6	11.8	11.2	90	84	52	21	59	1	30.0
September	841.4	838.1	25.4	12.6	12.8	30.0	6.4	15.6	23.9	12.2	10.5	90	81	43	32	74	1	55.9
October	841.0	837.3	26.3	13.8	12.5	29.9	7.9	17.0	25.1	13.3	10.3	91	79	40	50	197	4	80.8
November	840.2	836.9	24.6	14.6	10.0	30.0	10.6	17.1	23.4	14.7	12.9	94	85	52	117	223	64	63.5
December	839.7	836.7	24.8	14.0	10.8	29.7	9.1	17.4	23.7	14.4	12.7	94	82	51	70	230	7	97.0
Year	840.5	837.5	25.2	13.6	11.6	31.8	6.1	16.7	23.9	13.5	11.8	91	81	48	783	1436	482	116.3

MONTH	NUMBER OF DAYS OF RAIN ≥1mm	NUMBER OF DAYS OF THUNDER	DAILY SUNSHINE MEAN	DAILY SUNSHINE MAX. MEAN	DAILY SUNSHINE MIN. MEAN	DAILY RADIATION INSTRUMENT MEAN	DAILY RADIATION INSTRUMENT MAX. MEAN	DAILY RADIATION INSTRUMENT MIN. MEAN	MONTHLY EVAPORATION PAN TYPE MEAN	MONTHLY EVAPORATION PAN TYPE HIGHEST	MONTHLY EVAPORATION PAN TYPE LOWEST	CLOUD AMOUNT (1942–57) TOTAL 0600 GMT	CLOUD AMOUNT (1942–57) TOTAL 1200 GMT	CLOUD AMOUNT (1942–57) LOW 0600 GMT	CLOUD AMOUNT (1942–57) LOW 1200 GMT	DAILY WIND RUN	WIND SPEED (1942–57) 0600 GMT	WIND SPEED (1942–57) 1200 GMT	CALMS (1953–57) 0600 GMT	CALMS (1953–57) 1200 GMT	VISIBILITY (1949–57) FOG 0600 GMT	VISIBILITY (1949–57) FOG 1200 GMT	VISIBILITY (1949–57) MIST, HAZE 0600 GMT	VISIBILITY (1949–57) MIST, HAZE 1200 GMT
	days	days	hours	hours	hours	langleys	langleys	langleys	mm	mm	mm	oktas	oktas	oktas	oktas	miles	knots	knots	days	days	days	days	days	days
January	5	1										4.3	4.0	2.8	3.2		5	11	1	0	1	0	1	1
February	3	1										4.2	4.0	2.7	3.1		5	12	1	0	1	0	2	1
March	6	2										5.8	5.1	4.5	3.7		5	12	0	0	1	0	1	1
April	13	5										6.8	5.9	5.7	5.1		4	10	1	0	1	0	1	1
May	13	3										6.6	6.0	5.9	5.3		4	7	0	0	0	0	2	1
June	3	1										6.5	6.1	5.9	5.7		4	7	1	0	0	0	2	0
July	2	0										6.6	6.6	6.1	6.3		4	7	1	0	1	0	2	0
August	4	1										6.7	6.6	5.7	6.1		4	7	1	0	1	0	2	1
September	3	1										6.3	5.6	5.9	5.4		4	7	0	0	0	0	1	1
October	4	1										6.4	5.4	5.9	4.7		5	10	0	0	1	0	1	0
November	14	1										6.8	5.7	6.5	5.2		7	11	0	0	0	0	3	1
December	7	1										6.1	5.5	5.1	4.0		5	9	0	0	1	0	1	1
Year	77	18										6.1	5.5	5.2	4.8		5	9	6	0	8	0	19	9

表 C－8　ナイロビ（エンバカシ飛行場）の気象概要

STATION NAME NAIROBI, EMBAKASI AIRPORT MET STATION　　STATION NUMBER 91.36/168

LATITUDE 01°19'S　　LONGITUDE 36°55'E　　ALTITUDE 5327 FEET (1624 METRES)

MONTH	ATMOSPHERIC PRESSURE (1959–70)		TEMPERATURE (1959–70)									RELATIVE HUMIDITY			RAINFALL (1958–70)			
			MEANS			EXTREMES		DRY BULB		DEW POINT								
	0600 GMT	1200 GMT	MAX.	MIN	RANGE	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0300 GMT	0600 GMT	1200 GMT	MEAN	HIGHEST	LOWEST	MAX. 24 HOUR FALL
	mb.	mb.	°C	°C	°C	°C	°C	°C	°C	°C	°C	%	%	%	mm	mm	mm	mm
January	840.4	836.8	26.7	12.3	14.4	32.2	4.7	18.3	25.6	14.2	12.4	94	77	44	56	151	0	60.2
February	840.1	836.4	27.9	12.6	15.3	31.4	7.4	18.7	26.8	14.5	12.1	92	78	40	48	305	3	69.9
March	840.2	836.6	27.5	13.6	13.9	32.1	7.9	18.6	26.3	15.7	13.2	95	84	45	79	178	7	66.3
April	840.3	837.0	26.0	14.4	11.6	31.5	9.8	18.2	24.6	15.9	14.7	98	87	55	144	251	9	101.9
May	841.3	838.3	24.7	13.6	11.1	28.8	6.3	17.4	23.5	15.0	14.5	97	85	57	124	373	12	71.9
June	842.3	839.5	24.0	11.4	12.6	28.9	6.1	15.8	22.9	13.3	12.8	96	85	53	22	85	0	30.0
July	842.5	839.9	22.5	10.7	11.8	27.5	4.6	14.8	21.4	12.2	12.0	94	85	55	6	58	0	19.8
August	842.4	839.4	23.1	10.8	12.3	28.9	4.4	14.9	21.9	12.3	12.2	94	85	54	15	40	0	38.0
September	842.1	838.3	25.6	11.1	14.5	31.1	4.2	16.2	24.4	12.7	11.9	94	79	46	13	33	0	26.9
October	841.6	837.5	26.7	12.6	14.1	30.4	5.4	18.0	25.3	14.0	12.0	96	77	44	45	159	1	32.3
November	840.9	837.1	25.1	13.4	11.7	30.2	9.0	17.7	23.7	15.2	13.9	98	85	54	152	484	28	54.4
December	840.5	836.9	25.6	12.9	12.7	29.6	7.9	18.1	24.5	14.8	13.3	97	81	50	81	276	12	112.3
Year	841.2	837.8	25.5	12.5	13.0	32.2	4.2	17.2	24.2	14.1	12.9	95	82	50	785	1285	487	112.3

MONTH	NUMBER OF DAYS OF		DAILY SUNSHINE (1960–70)			DAILY RADIATION ( ) INSTRUMENT ____			MONTHLY EVAPORATION (1968–70) PAN TYPE A			CLOUD AMOUNT (1959–70)				DAILY WIND RUN (1963–70)	WIND SPEED (1959–70)		CALMS (1966–70)		VISIBILITY (1961–70)			
												TOTAL		LOW							FOG		MIST, HAZE	
	RAIN ≥1mm	THUNDER	MEAN	MAX. MEAN	MIN. MEAN	MEAN	MAX. MEAN	MIN. MEAN	MEAN	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT		0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT
	days	days	hours	hours	hours	langleys	langleys	langleys	mm	mm	mm	oktas	oktas	oktas	oktas	miles	knots	knots	days	days	days	days	days	days
January	4	2	9.5	11.1	6.4				226	292	171	4.6	4.5	2.9	3.2	165.3	7	11	2	1	1	0	1	1
February	4	2	9.5	10.9	7.5				199	226	164	4.4	4.6	3.0	3.5	168.4	5	12	3	0	1	0	1	1
March	9	5	8.3	9.9	6.0				177	219	144	5.9	5.0	4.8	4.2	163.5	6	12	3	1	1	0	1	1
April	13	4	7.2	8.9	5.8				154	192	135	6.5	5.7	5.6	5.0	127.3	5	10	4	1	0	0	1	1
May	12	3	6.1	7.7	4.8				125	141	116	6.2	5.8	5.2	5.2	140.0	4	7	11	2	0	0	1	1
June	3	1	5.7	7.2	4.6				108	123	95	5.9	5.5	4.9	4.9	106.1	4	7	7	3	1	0	3	1
July	1	1	4.2	6.1	2.4				103	123	87	6.4	6.3	5.5	5.7	107.0	5	6	5	2	1	0	4	1
August	3	1	4.1	5.5	2.6				109	133	89	6.5	6.3	5.9	5.8	110.8	4	7	8	1	1	0	5	1
September	1	1	5.9	7.7	4.1				168	175	158	6.0	5.5	5.4	5.1	140.8	4	7	6	1	0	0	2	1
October	4	1	7.1	8.9	5.7				214	230	204	6.1	5.6	5.7	5.1	161.8	5	10	4	1	1	0	1	1
November	11	2	7.0	8.1	4.7				166	188	129	6.6	5.6	6.2	4.9	182.0	7	11	2	0	1	1	3	1
December	7	1	8.7	10.2	5.9				206	232	185	5.3	4.7	4.5	3.9	183.4	7	12	2	0	1	0	2	1
Year	72	24	6.9	7.6	6.1				1955	2042	1894	5.9	5.4	5.0	4.7	146.4	5	9	57	13	9	1	25	12

表 C－9　ナイロビ（カベテ天文台）の気象概要

STATION NAME NAIROBI, KABETE OBSERVATORY.　　STATION NUMBER 91.36/30

LATITUDE 01°16'S　　LONGITUDE 36°45'E　　ALTITUDE 5971 FEET (1820 METRES)

MONTH	ATMOSPHERIC PRESSURE (1931–54)		TEMPERATURE (1931–54)									RELATIVE HUMIDITY			RAINFALL (1929–63)			
			MEANS			EXTREMES		DRY BULB		DEW POINT								
	0600 GMT	1200 GMT	MAX	MIN	RANGE	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0300 GMT	0600 GMT	1200 GMT	MEAN	HIGHEST	LOWEST	MAX. 24 HOUR FALL
	mb	mb	°C	°C	°C	°C	°C	°C	°C	°C	°C	%	%	%	mm	mm	mm	mm
January	821.9	818.6	25.1	12.2	12.9	28.9	8.2	16.9	23.9	12.3	10.3	84	76	43	47	218	0	72.1
February	821.8	818.5	26.3	12.7	13.6	30.3	8.9	17.3	25.2	12.6	9.8	80	75	37	51	190	0	71.9
March	821.7	818.6	25.6	13.7	11.9	29.9	9.6	17.1	24.3	13.9	11.1	84	81	44	100	279	2	68.6
April	822.3	819.3	23.8	14.3	9.5	29.6	11.1	16.6	22.6	14.6	13.3	90	90	56	210	436	40	99.1
May	823.0	820.4	22.3	13.6	8.7	27.8	8.7	15.8	21.1	13.9	13.7	90	90	62	171	488	47	79.8
June	823.9	821.5	21.2	11.9	9.3	26.7	6.9	14.3	20.1	12.3	12.2	86	89	60	44	187	0	56.1
July	823.9	821.7	20.6	10.9	9.7	26.4	5.7	13.3	19.6	11.1	11.1	86	87	58	19	131	0	87.9
August	823.8	821.4	21.1	11.1	10.0	27.6	6.6	13.3	19.7	11.1	10.9	86	87	57	26	77	0	62.2
September	823.7	820.5	23.7	11.4	12.3	27.8	5.1	14.4	22.3	11.6	10.1	86	83	46	29	127	1	40.9
October	823.2	819.7	24.6	12.7	11.9	30.0	7.2	15.6	23.2	12.6	10.1	87	83	44	60	203	2	67.3
November	822.4	819.2	23.1	13.4	9.7	27.9	9.2	15.9	21.9	13.7	12.1	88	88	54	127	642	30	56.6
December	822.1	819.0	23.2	12.9	10.3	27.8	8.3	16.4	21.9	13.2	12.0	88	81	53	93	385	6	102.9
Year	822.8	819.9	23.4	12.6	10.8	30.3	5.1	15.6	22.1	12.7	11.3	86	84	51	977	1716	543	102.9

MONTH	NUMBER OF DAYS OF		DAILY SUNSHINE (1931–55)			DAILY RADIATION (1938–43) INSTRUMENT KIPP			MONTHLY EVAPORATION PAN TYPE			CLOUD AMOUNT (1931–54) TOTAL		LOW		DAILY WIND RUN	WIND SPEED (1934–54)		CALMS (1959–54)		VISIBILITY (1949–55) FOG		MIST, HAZE	
	RAIN	THUNDER	MEAN	MAX. MEAN	MIN. MEAN	MEAN	MAX. MEAN	MIN. MEAN	MEAN	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT		0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT
	≥1mm	days	hours	hours	hours	langleys	langleys	langleys	mm	mm	mm	oktas	oktas	oktas	oktas	miles	knots	knots	days	days	days	days	days	days
January	7	1	9.7	11.2	6.8	628	694	580				4.4	4.5	3.1	3.3		5	11	4	0	1	0	1	0
February	4	2	9.0	11.0	6.8	627	640	602				4.6	4.5	2.8	3.5		4	12	2	0	1	0	1	0
March	9	4	8.6	10.1	6.7	595	662	537				6.0	5.3	4.7	4.0		4	11	1	0	0	0	1	0
April	13	7	7.1	8.7	4.5	525	573	485				6.9	5.9	6.2	5.2		4	9	3	0	1	0	2	0
May	13	3	6.1	8.3	4.0	446	482	414				6.9	6.0	5.9	5.5		3	8	3	0	1	0	4	0
June	5	2	4.8	7.3	2.8	372	427	321				6.9	6.3	6.1	5.6		3	7	5	0	1	0	4	1
July	4	1	4.2	5.9	2.9	350	383	299				6.9	6.5	6.3	6.1		3	6	3	0	1	0	5	1
August	4	1	4.0	5.5	2.6	373	411	344				7.0	6.6	5.8	5.9		3	7	2	0	1	0	8	1
September	4	1	6.1	8.1	4.3	518	584	407				6.5	5.4	6.0	5.0		3	9	2	0	1	0	4	1
October	6	1	7.2	8.9	5.2	547	583	485				6.7	5.5	6.3	4.6		5	10	1	0	1	0	3	0
November	14	2	7.2	8.9	5.4	522	556	476				7.0	5.7	6.5	4.3		6	10	1	0	1	0	3	1
December	7	2	8.5	10.1	6.2	575	628	518				5.9	5.2	5.1	3.2		6	11	2	0	0	0	2	0
Year	90	27	6.9	7.7	5.9	506	532	439				6.3	5.6	5.4	4.7		4	9	28	0	10	0	38	5

表 C－10　ナイロビ国立研究所の気象概要

STATION NAME NAIROBI NATIONAL LABORATORIES　　STATION NUMBER 91.36/025

LATITUDE 01°15'S　　LONGITUDE 36°45'E　　ALTITUDE 5700 FEET (1737 METRES)

MONTH	ATMOSPHERIC PRESSURE ( )		TEMPERATURE (1921–70)									RELATIVE HUMIDITY			RAINFALL (1923–70)			
			MEANS			EXTREMES		DRY BULB		DEW POINT								
	0600 GMT	1200 GMT	MAX.	MIN.	RANGE	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0300 GMT	0600 GMT	1200 GMT	MEAN	HIGHEST	LOWEST	MAX. 24 HOUR FALL
	mb.	mb.	°C	°C	°C	°C	°C	°C	°C	°C	°C	%	%	%	mm	mm	mm	mm
January			25.3	12.4	12.9	30.8	3.3	18.3	24.3	12.8	10.9		70	43	52	230	0	77.3
February			26.5	12.8	13.7	33.3	3.9	18.9	25.6	13.1	10.2		69	39	46	169	0	122.4
March			25.9	13.7	12.2	32.2	3.9	18.5	25.1	14.5	11.7		78	44	106	291	3	73.7
April			24.2	14.3	9.9	30.6	7.8	17.7	23.0	15.3	13.6		86	55	223	493	26	99.2
May			22.9	13.3	9.6	27.8	3.9	16.9	21.7	14.4	13.8		85	60	168	415	34	96.8
June			21.9	11.8	10.1	28.9	2.8	15.3	21.0	12.6	12.4		84	58	42	199	0	61.5
July			21.0	10.8	10.2	27.1	2.2	14.4	19.9	11.8	11.2		84	58	15	103	0	75.7
August			21.6	11.0	10.6	29.4	1.7	14.3	20.2	11.7	11.1		84	57	27	85	1	80.3
September			23.9	11.5	12.4	30.0	2.2	15.7	22.7	11.9	10.3		78	45	22	111	1	44.2
October			24.8	12.7	12.1	30.6	2.2	17.1	23.6	13.2	10.9		78	45	54	187	3	58.4
November			23.3	13.4	9.9	29.4	5.0	17.1	22.0	14.2	13.1		82	57	133	587	33	71.1
December			23.6	13.0	10.6	31.4	2.8	17.1	22.4	13.8	13.0		78	55	85	348	4	110.2
Year			23.7	12.6	11.1	33.3	1.7	16.8	22.6	13.3	11.9		80	51	973	1829	511	122.4

MONTH	NUMBER OF DAYS OF		DAILY SUNSHINE (1939–70)			DAILY RADIATION (1963–70) INSTRUMENT GB			MONTHLY EVAPORATION ( ) PAN TYPE			CLOUD AMOUNT ( )				DAILY WIND RUN (1963–70)	WIND SPEED ( )		CALMS ( )		VISIBILITY ( )			
												TOTAL		LOW							FOG		MIST, HAZE	
	RAIN	THUNDER	MEAN	MAX. MEAN	MIN. MEAN	MEAN	MAX. MEAN	MIN. MEAN	MEAN	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT		0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT
	≥1mm	days	hours	hours	hours	langleys	langleys	langleys	mm	mm	mm	oktas	oktas	oktas	oktas	miles	knots	knots	days	days	days	days	days	days
January	6		9.2	11.1	6.2	510	620	392								75.6								
February	5		9.4	10.6	6.4	503	600	355								74.5								
March	10		8.3	9.8	6.4	469	594	366								72.7								
April	17		6.5	8.5	4.1	386	444	308								62.4								
May	16		5.7	8.0	3.6	358	447	261								52.3								
June	4		4.9	7.5	2.0	341	459	270								46.6								
July	3		4.1	5.3	2.4	301	394	196								45.2								
August	5		4.1	5.2	2.4	335	391	264								47.6								
September	2		6.1	8.3	4.2	432	491	308								59.8								
October	6		7.1	9.1	5.8	452	524	324								70.1								
November	15		6.5	8.3	3.7	389	455	254								70.2								
December	7		8.1	10.1	4.9	471	567	380								73.6								
Year	96		6.7	7.4	5.7	412	458	346								62.6								

表 C－11　ナイロビ（ウィルソン飛行場）の気象概要

STATION NAME NAIROBI WILSON AIRPORT MET. STATION　　STATION NUMBER 91,36,130

LATITUDE 01°19'S　　LONGITUDE 36°49'E　　ALTITUDE 5525 FEET (1683 METRES)

MONTH	ATMOSPHERIC PRESSURE (1965–70)		TEMPERATURE (1961–70)									RELATIVE HUMIDITY			RAINFALL (1951–70)			
			MEANS			EXTREMES		DRY BULB		DEW POINT								
	0600 GMT	1200 GMT	MAX.	MIN	RANGE	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0300 GMT	0600 GMT	1200 GMT	MEAN	HIGHEST	LOWEST	MAX. 24 HOUR FALL
	mb.	mb.	°C	°C	°C	°C	°C	°C	°C	°C	°C	%	%	%	mm	mm	mm	mm
January	835.1	831.7	26.4	12.5	13.9	31.1	7.2	18.1	25.3	13.1	10.1	90	73	39	69	251	0	64.0
February	834.8	831.4	27.3	12.9	14.4	30.4	7.7	18.7	26.0	13.5	10.1	89	72	39	51	185	0	70.4
March	834.9	831.6	26.9	14.3	12.6	31.5	10.3	18.2	25.3	14.9	11.5	93	81	43	83	197	0	74.7
April	835.2	832.2	25.2	14.6	10.6	28.9	10.9	17.7	23.6	15.4	13.8	95	86	55	188	362	19	109.2
May	836.3	833.5	23.8	13.7	10.1	28.1	8.3	16.9	22.5	14.6	13.9	96	86	58	170	577	43	110.7
June	837.2	834.8	23.1	11.6	11.5	28.0	7.2	15.4	21.7	12.9	12.0	93	85	54	33	171	0	107.2
July	837.5	835.1	22.0	10.8	11.2	27.0	5.4	14.4	20.7	11.7	10.9	93	83	54	13	68	1	27.4
August	837.2	834.4	22.6	10.9	11.7	28.8	5.9	14.4	21.2	11.8	10.6	93	84	51	21	137	0	82.4
September	836.8	833.3	25.2	11.4	13.8	31.1	5.9	15.7	24.4	12.1	9.9	91	79	40	20	67	0	41.1
October	836.3	832.4	26.1	13.3	12.8	29.6	6.9	17.3	24.9	13.5	10.6	93	78	41	45	143	5	47.0
November	835.6	832.2	24.3	14.0	10.3	28.4	9.6	17.1	22.7	14.6	13.1	95	84	55	146	551	13	82.0
December	835.2	831.8	24.9	13.5	11.4	28.6	8.6	17.7	24.6	14.1	11.5	92	79	44	70	269	9	72.6
Year	836.0	832.9	24.8	12.8	12.0	31.5	5.4	16.8	23.6	13.5	11.5	93	81	48	909	1395	581	109.2

MONTH	NUMBER OF DAYS OF		DAILY SUNSHINE ( )			DAILY RADIATION ( ) INSTRUMENT ____			MONTHLY EVAPORATION ( ) PAN TYPE ____			CLOUD AMOUNT (1961–70)				DAILY WIND RUN ( )	WIND SPEED (1961–70)		CALMS (1966–70)		VISIBILITY (1961–70)			
												TOTAL		LOW							FOG		MIST, HAZE	
	RAIN	THUNDER	MEAN	MAX. MEAN	MIN. MEAN	MEAN	MAX. MEAN	MIN. MEAN	MEAN	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT		0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT
	≥1mm	days	hours	hours	hours	langleys	langleys	langleys	mm	mm	mm	oktas	oktas	oktas	oktas	miles	knots	knots	days	days	days	days	days	days
January	3	2										4.5	4.2	3.1	3.6		7	11	3	1	0	0	1	1
February	5	2										4.5	4.8	3.1	3.9		6	11	3	0	1	0	1	1
March	11	3										6.2	5.5	5.3	4.8		7	12	5	1	0	0	2	1
April	16	4										6.8	6.1	6.0	5.5		5	10	6	1	1	0	1	1
May	14	3										6.4	5.9	5.8	5.5		4	7	11	2	1	0	3	1
June	3	1										6.1	6.0	5.3	5.5		3	7	11	2	1	0	3	1
July	2	0										6.7	6.7	5.9	5.9		4	7	11	3	1	0	3	1
August	4	0										6.9	6.5	6.3	6.1		3	7	11	1	1	0	3	1
September	2	1										6.4	5.7	5.8	5.5		4	8	8	1	0	1	2	1
October	5	1										6.6	6.1	6.2	5.6		5	10	6	1	0	0	1	1
November	15	1										7.0	6.0	6.4	5.3		7	11	2	1	1	1	3	1
December	7	1										5.5	4.1	4.7	3.8		7	11	3	0	0	0	2	1
Year	87	19										6.1	5.6	5.3	5.1		5	9	80	14	7	2	25	12

表 C－12 モンバサの気象概要

STATION NAME MOMBASA, PORT REITZ AIRPORT MET. STATION　　STATION NUMBER 94.35/021

LATITUDE 04°02'S　　LONGITUDE 39°37'E　　ALTITUDE 186 FEET (57 METRES)

MONTH	ATMOSPHERIC PRESSURE (1946–70)		TEMPERATURE (1946–70) MEANS			EXTREMES		DRY BULB		DEW POINT		RELATIVE HUMIDITY			RAINFALL (1946–70)			
	0600 GMT	1200 GMT	MAX.	MIN	RANGE	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0300 GMT	0600 GMT	1200 GMT	MEAN	HIGHEST	LOWEST	MAX. 24 HOUR FALL
	mb.	mb.	°C	°C	°C	°C	°C	°C	°C	°C	°C	%	%	%	mm	mm	mm	mm
January	1006.2	1002.3	32.1	23.2	8.9	36.9	18.4	26.8	30.4	22.6	22.5	92	78	63	35	130	0	49.0
February	1005.8	1001.9	32.4	23.6	8.8	36.1	20.6	27.1	30.9	22.8	22.5	92	77	61	19	90	0	49.9
March	1005.6	1001.9	32.7	24.2	8.5	37.3	20.8	27.6	31.4	23.9	23.3	92	80	63	64	253	1	105.7
April	1006.0	1002.9	31.2	23.8	7.4	35.1	21.1	26.7	29.9	23.8	23.3	94	85	68	171	601	23	119.7
May	1008.2	1005.6	29.2	22.6	6.6	33.8	18.9	25.3	28.0	23.0	22.4	94	87	72	234	772	36	138.9
June	1010.5	1008.1	28.5	21.2	7.3	31.5	17.5	24.1	27.3	21.7	20.7	93	86	68	68	135	6	43.4
July	1011.2	1008.9	27.7	20.3	7.4	31.1	17.6	23.1	26.4	20.8	20.1	94	87	68	66	205	5	37.1
August	1011.2	1008.7	28.0	20.3	7.7	30.9	14.1	23.3	26.7	21.0	21.1	94	87	67	69	216	10	74.5
September	1010.5	1007.6	28.9	20.8	8.1	32.0	17.6	24.3	27.6	21.3	20.4	94	83	65	80	356	10	149.9
October	1009.2	1005.7	29.7	22.0	7.7	32.8	17.7	25.5	28.5	22.3	21.5	94	82	66	98	279	13	103.4
November	1007.5	1003.7	30.6	23.0	7.6	35.7	20.0	26.6	29.4	23.2	22.8	94	81	68	100	316	9	105.4
December	1006.4	1002.7	31.6	23.3	8.3	35.7	19.4	27.0	30.0	23.3	23.1	94	80	67	69	172	2	68.8
Year	1008.2	1005.0	30.2	22.4	7.8	37.3	14.1	25.6	28.8	22.5	21.9	93	83	66	1073	1784	585	149.9

MONTH	NUMBER OF DAYS OF		DAILY SUNSHINE (1949–70)			DAILY RADIATION (1963–70) INSTRUMENT GR			MONTHLY EVAPORATION (1958–70) PAN TYPE A			CLOUD AMOUNT (1946–70) TOTAL		LOW		DAILY WIND RUN ( )	WIND SPEED (1946–70)		CALMS (1966–70)		VISIBILITY (1961–70) FOG		MIST, HAZE	
	RAIN	THUNDER	MEAN	MAX. MEAN	MIN. MEAN	MEAN	MAX. MEAN	MIN. MEAN	MEAN	HIGHEST	LOWEST	0600 GMT	1200 GMT	0600 GMT	1200 GMT		0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT	0600 GMT	1200 GMT
	≥1mm	days	hours	hours	hours	langleys	langleys	langleys	mm	mm	mm	oktas	oktas	oktas	oktas	miles	knots	knots	days	days	days	days	days	days
January	4	2	8.6	9.6	6.7	530	580	444	220	244	201	5.6	4.1	4.7	2.9		6	12	2	0	0	0	1	1
February	2	1	9.1	10.2	7.5	535	609	423	211	238	173	5.5	3.4	4.3	2.3		5	13	3	1	0	0	1	1
March	6	5	9.0	9.9	7.3	544	618	445	225	261	162	5.3	3.9	4.0	2.5		4	12	9	1	0	0	1	1
April	11	6	7.5	9.8	6.0	453	509	405	184	221	154	5.7	5.2	3.7	3.1		5	12	6	1	1	0	1	1
May	13	1	6.5	9.2	4.4	387	451	326	159	211	129	5.8	5.7	4.1	3.6		7	13	3	1	0	0	2	2
June	9	0	7.5	9.5	5.5	390	450	327	148	187	119	5.2	5.3	3.8	3.8		7	13	3	1	0	0	2	1
July	11	0	7.0	7.9	5.8	386	431	340	144	171	111	5.5	5.6	4.2	4.1		6	13	3	0	0	0	2	1
August	9	0	7.9	9.2	6.4	420	471	352	164	192	136	5.4	5.4	4.4	4.2		6	13	2	1	0	0	1	1
September	9	0	8.5	9.6	7.0	489	550	402	187	218	162	5.5	4.7	5.2	3.7		6	13	2	0	1	0	1	1
October	11	0	8.7	10.0	7.3	506	564	413	200	243	155	5.8	3.9	5.5	3.3		5	12	5	1	0	0	2	1
November	10	2	9.0	10.0	7.0	529	647	433	195	242	148	5.5	3.9	4.9	3.2		3	12	10	1	0	1	2	1
December	6	4	8.8	10.1	7.0	520	589	462	197	213	185	5.5	4.2	4.4	3.2		5	11	3	1	0	0	1	1
Year	101	21	8.2	9.7	7.4	474	517	422	2234	2454	1976	5.5	4.6	4.4	3.3		5	12	51	9	2	1	17	13

資　料　編　D

穀物の生産および流通の現況

表 D－1　郡 別 メ イ ズ 生 産 量

(Unit: Bag)

Year	Kisumu	Kisii	Nandi	Kericho	Uasin Gishu
1977/78	226,000	1,207,000	1,632,700	1,487,200	1,070,500
1978/79	194,000	1,038,000	1,567,000	1,380,000	1,020,000
1979/80	146,000	1,000,500	1,580,000	1,470,000	750,000
1980/81	130,000	1,200,000	1,732,000	1,600,000	1,359,000
1981/82	200,000	1,200,000	1,800,000	1,700,000	1,600,000
Average	179,200	1,129,100	1,662,340	1,527,440	1,159,900

Year	Trans Nzoia	South Nyanza	Bungoma	Kakamega	Nakuru
1977/78	2,100,000	600,000	1,650,000	1,600,000	1,050,000
1978/79	1,700,000	516,000	1,370,000	1,330,000	1,270,000
1979/80	1,050,000	300,000	850,000	1,248,000	700,000
1980/81	2,390,000	500,000	1,750,000	750,000	600,000
1981/82	2,400,000	500,000	1,800,000	1,000,000	1,200,000
Average	1,928,000	483,200	1,484,000	1,185,600	964,000

Year	Coast Province	Busia	Narok	Meru	Embu
1977/78	617,000	536,000	169,600	731,000	248,000
1978/79	543,000	200,000	140,000	694,000	235,000
1979/80	541,000	196,000	180,000	679,000	209,000
1980/81	500,000	200,000	225,000	600,000	200,000
1981/82	600,000	250,000	300,000	650,000	240,000
Average	560,200	276,400	202,920	670,800	226,400

Year	Kitui	Baringo	Kirinyaga	Total
1977/78	255,000	133,000	-	15,313,000
1978/79	242,000	106,000	-	13,545,000
1979/80	250,000	160,000	310,000	11,619,000
1980/81	200,000	200,000	250,000	13,363,000
1981/82	250,000	250,000	300,000	16,240,000
Average	239,400	169,800	286,700	14,016,000

Source: NCPB

表 D－2　郡　別　小　麦　生　産　量

(Unit: Bag = 90 kg)

Zone	Year of Planting 1976	1977	1978	1979	1980	Average
Nakuru	607,255	616,242	535,289	443,060	636,085	567,586
Narok	293,371	305,179	114,605	82,937	229,366	205,092
Central Kenya	204,057	284,472	217,282	245,869	81,876	204,711
Nyandarua	151,290	101,614	105,135	57,552	86,746	100,467
Uasin Gishu	631,752	441,212	629,334	753,467	901,224	671,398
Trans-Nzoia	120,233	95,388	116,272	141,407	175,248	129,710
Total	2,007,958	1,844,106	1,717,917	1,724,292	2,110,547	1,878,964

Notes: (i) Figures for 1980 Planted crop are those as at 31st March, 1981. Total production however stands at 2,130,000 bags.

(ii) Uasin Gishu, Trans-Nzoia had poor harvest because of the heavy rains which fell at harvesting time. There were no drying facilities to salvage the crop.

(iii) Preliminary estimate for 1981 planted crop - 2,200,000 Bags.

表 D－8　小麦生産量と小麦粉需要量

Year	Hectares	Net Wheat Production (Tonnes)	Wheat Imports (Tonnes)	Wheat Flour Consumption (Tonnes)
1970	128,004	176,871	Nil	94,092
1971	115,099	170,316	Nil	117,618
1972	104,859	149,586	64,826	113,489
1973	104,344	137,884	77,084	131,905
1974	105,101	157,833	13,744	128,673
1975	117,242	161,918	83,758	112,057
1976	119,653	180,716	Nil	136,478
1977	137,764	165,950	32,808	158,121
1978	118,970	157,500	90,980	184,733
1979	87,224	155,160	25,500	158,050
1980	99,914	190,681	92,386	225,242

表 D－4　NCPBのメイズ取扱量

Unit: 1 bag = 90 kg

Fiscal Year	Cultivated Area of Maize ha	Purchase bags	Export bags	Import bags	Domestic Consumption bags
1975/76	427,995	6,174,087	2,495,051	-	4,193,173
1976/77	488,959	6,031,336	162,009	-	4,252,341
1977/87	436,892	2,713,391	306,426	-	1,442,729
1978/79	367,696	2,648,070	1,545,784	-	4,149,422
1979/89	522,930	-	227,573	1,837,307	-

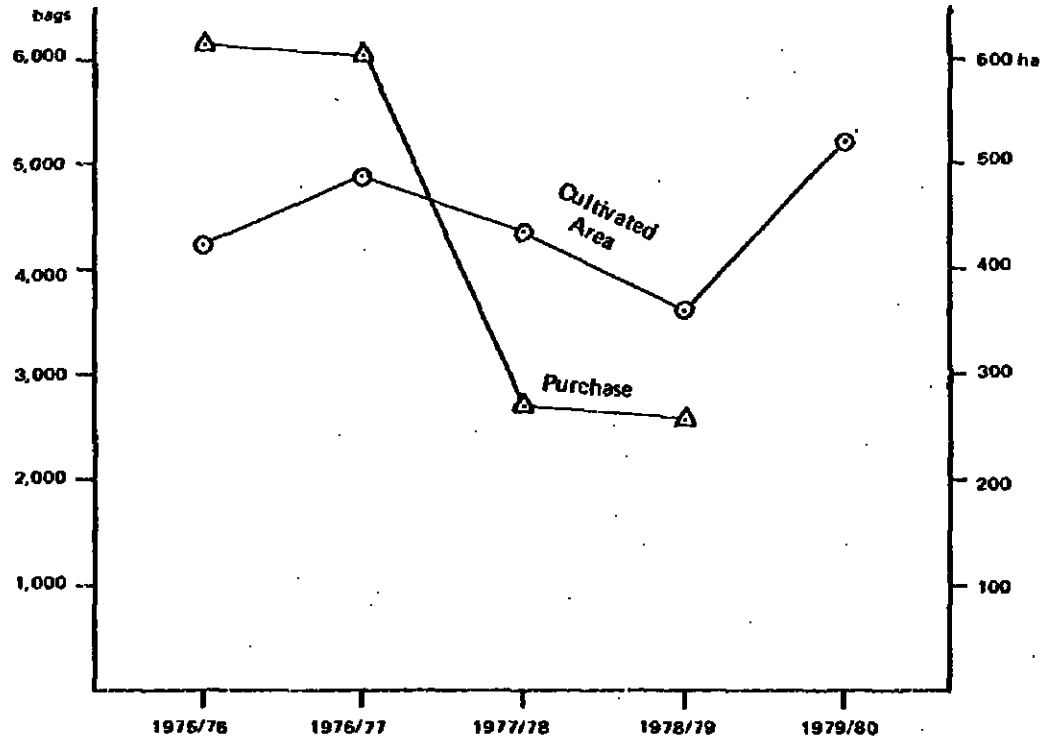


表 D－5　地区別、月別ウェート推移状況表

Unit: %

Month	NAKURU		BUNGOMA		KISUMU		Average in Kenya		
	77/78	78/79	77/78	78/79	77/78	78/79	77/78	78/79	Mean
8	0.1	-	0.3	-	-	6.4	1.4	0.5	0.9
9	-	2.9	2.1	-	-	27.8	3.0	2.6	2.8
10	-	3.0	6.6	1.2	-	13.4	6.0	2.3	4.2
11	-	1.3	10.1	-	1.4	20.4	8.4	3.9	6.1
12	-	3.2	6.8	-	8.5	9.7	6.5	6.0	6.2
1	3.2	1.4	14.7	29.8	43.1	13.4	16.0	10.9	13.5
2	13.1	12.9	15.9	37.0	12.0	8.6	15.6	21.6	18.6
3	38.3	30.2	13.8	22.4	24.7	0.1	14.5	21.9	18.2
4	17.4	21.6	16.8	7.8	5.2	0.1	13.6	13.1	13.3
5	16.1	20.2	10.4	1.8	2.4	0.1	9.6	9.2	9.4
6	8.7	3.3	2.5	0.1	1.8	-	4.8	5.1	5.0
7	3.1	-	-	-	0.9	-	0.6	2.9	1.8
Total	100	100	100	100	100	100	100	100	100

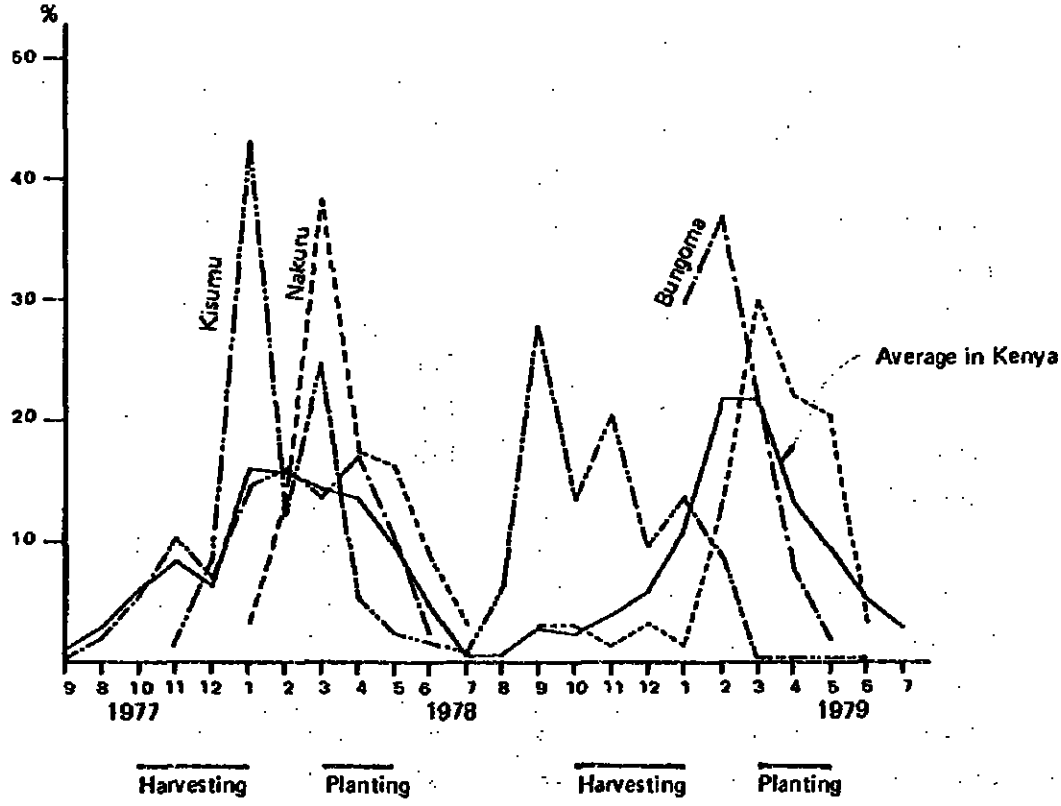


表 D－6　倉庫利用状況表（1975／76～78／79）

Storage	Capacity 1,000 bags	Train	Purchasing %	Transfer in %	Local Sale %	Transfer out %	Note		Mill Capacity 1,000bags
Butere	180	o	61	-	23	45	C	-	
Myunga	70	o	177	-	14	68	C	-	
Malaba	40	o	68	-	2	53	C	-	
Bungoma	310	o	97	-	31	63	C	-	
Webuye	330	o	96	-	22	88	C	-	
Kipharren	95	o	58	-	7	49	C	-	
Lugari	80	o	152	15	3	105	C	-	
Jurbo	120	o	161	-	20	134	C	-	
Kitale	1,100	o	71	-	15	55	C	-	970.32
Eldoret	300	o	192	1	112	76	C	S	962.00
Moi's Bridge	155	o	200	-	18	190	C	-	
Nakuru	465	o	62	1	35	25	C	S	1,550.88
Kericho	64	x	79	-	3	30	C	-	
Kipkelon	142	o	112	3	45	73	C	-	21.60
Nyahururo	125	o	86	-	50	49	C	S	
Kilgoris	4	x	193	-	10	200	C	-	
Kisii	50	x	37	-	9	21	C	-	
Kendu Bay	125	x	149	2	46	102	C	-	
Homa Bay	65	x	164	3	20	122	C	-	72.00
Kisumu	257	o	96	1	56	48	C	S	950.40
Yala	74	o	54	-	27	30	C	S	
Machakos	60	x	20	49	99	44	-	S	84.00
Konza	120	o	10	111	62	-	-	S	
Kibwezi	90	o	115	109	71	40	C	S	
Kitui	33	x	49	189	220	-	-	S	
Nanyuki	100	o	17	39	41	21	-	S	28.80
Meru	70	x	63	30	38	-	-	S	480.00
Thika	140	o	11	26	33	-	-	S	86.40
Sagann	392	o	24	12	23	8	-	S	768.72
Voi	13	o	0.4	144	189	94	-	S	
Mombasa	290	o	3	67	223	49	-	S	1,739.20
Nairobi	750	o	18	54	74	31	-	S	4,181.38
Total	6,209		71	19	41	53			

Note: C means storage for purchasing, S means storage for selling.

表 D－7　メイズ倉庫の利用状況表

Each storage capacity = 100%

Storage location	Transportation	Capacity Unit 1,000bag	Purchases 77/76	76/77	77/78	78/79	Local Sales 75/76	76/77	77/78	78/79	Stock Transfer 75/76	76/77	77/78	78/79
Butere	R	180	112.4	101.3	20.1	9.8	45.7	1.6	0.7	42.2	100.8	37.0	9.2	35.0
Myanga	R	70	173.9	88.5	26.2	18.1	4.2	-	0.2	53.2	190.9	52.2	-	30.8
Mulaba	R	40	113.7	66.3	91.0	-	2.3	0.4	0.5	3.7	115.1	31.3	25.0	40.4
Bungoma	R	310	146.6	108.8	89.5	44.2	21.8	19.7	0.4	82.8	184.3	44.0	39.3	83.9
Webuye	R	330	138.0	125.5	51.8	68.7	14.7	23.2	0.2	49.9	168.5	27.8	37.5	116.7
Kipkarren	R	95	54.0	116.3	19.5	44.1	-	-	-	29.1	50.8	16.3	35.1	93.9
Lugari	R	80	140.5	168.0	143.5	154.8	2.9	0.1	-	10.0	Δ59.2 114.2	167.0	-	139.9
Turbo	R	120	170.8	213.5	157.7	103.2	0.3	40.6	0.3	38.8	134.8	89.5	112.1	199.5
Kitale	R	1,100	95.0	87.6	45.9	54.4	22.4	9.5	7.8	22.0	74.8	59.5	22.1	64.8
Eldoret	R	300	304.8	224.4	127.1	113.9	78.8	E151.8 -	65.4	151.3	Δ3.4 223.2	44.1	3.8	32.3
Moi's Bridge	R	155	239.0	238.9	180.0	143.2	13.6	27.5	7.0	23.0	213.0	149.4	137.4	261.3
Nakuru	R	465	90.2	59.7	49.0	49.5	23.1	43.4	13.4	58.5	Δ4.0 69.4	Δ0.2 17.3	- 1.7	10.8
Kericho	T	64	49.9	106.6	65.8	94.4	1.8	1.0	1.7	5.6	38.9	48.5	0.8	32.3
Kipkelion	R	142	222.3	153.3	29.6	42.6	77.0	78.1	2.1	22.5	Δ12.6 178.4	45.8	Δ0.4 28.8	41.0
Nyahururo	R	125	143.2	72.4	32.1	96.9	37.9	27.0	2.0	134.1	96.5	64.8	-	33.0
Kilgoris	T	4	278.2	332.0	149.4	12.0	35.4	0.8	-	4.0	280.0	224.0	210.5	86.3
Kissi	T	50	30.2	48.5	58.5	10.9	20.6	1.8	3.6	9.7	3.0	25.4	55.4	-
Kendu Bay	T	125	224.7	244.3	71.7	53.6	6.8	52.1	130.8	14.7	Δ9.8 225.2	163.4	18.0	-
Homa Bay	T	65	240.4	307.7	81.4	24.5	17.3	8.1	30.9	24.7	Δ0.1 200.3	232.4	Δ12.?	53.4
Kisumu	R	257	141.3	163.4	45.9	34.6	50.0	88.2	11.2	75.1	Δ2.5 105.0	- 42.0	Δ2.5 36.7	10.2
Yala	R	74	89.4	71.3	33.7	19.6	31.9	13.9	8.4	52.0	59.5	55.0	3.6	-
Machakos	T	60	5.7	53.7	-	19.5	198.7	189.4	5.9	3.0	Δ197.4 -	- 175.0	- -	- -
Konza	R	120	1.6	-	-	36.4	124.7	70.4	10.3	39.6	Δ243.3 101.1	202.5 -	- -	- -
Kibwezi	R	90	-	154.1	129.7	175.5	170.6	66.9	3.9	45.5	Δ281.0 81.2	Δ154.3 70.8	- 8.4	- -
Kitui	T	53	-	-	24.3	172.0	265.7	E441.1 138.1	35.7	0.4	Δ268.5 -	Δ463.3 -	Δ22.9 -	- -
Sanyuki	R	100	33.9	32.9	-	-	34.3	76.1	9.9	42.5	Δ11.8 16.6	Δ143.1 67.8	- -	- -
Meru	T	70	101.9	104.5	0.4	44.4	39.4	100.5	3.4	10.4	Δ21.4 -	Δ96.9 -	- -	- -
Thika	R	140	12.6	12.6	0.4	16.5	56.1	55.0	2.1	18.9	Δ54.0 0.5	Δ48.4 0.1	- -	- -
Sagana	R	392	44.5	44.6	4.8	2.6	30.4	9.1	16.0	35.2	Δ22.6 4.8	- -	Δ25.3 27.1	- -
Voi	R	13	-	1.6	0.1	-	482.6	234.4	29.8	8.9	Δ551.8 59.1	- 255.1	Δ22.6 -	- 61.5
Mombasa	R	290	0.3	9.3	0.5	-	117.8	103.0	E62.7 21.1	E535.5 51.9	Δ165.0 197.1	Δ99.3 -	Δ3.6 -	- -
Nairobi	R	750	19.3	39.0	2.2	10.3	81.3	94.0	29.1	92.6	Δ139.5 100.5	Δ1.4 2.5	Δ76.7 14.4	- 6.9
Total		6,209	102.3	95.7	43.7	42.0	E9.7 47.4	E2.9 50.2	E25.0 15.5	Δ42.9 52.3	Δ19.9 107.9	Δ11.4 41.6	- 21.5	42.0

Note: T: Truck, R: Rail, E: Export, Δ: Stock transfer in

表 D－8　倉庫におけるメイズ欠減率

Shortage	1977/78 Handling Volume bag	1977/78 Shortage Volume bag	1977/78 Shortage Percent %	1978/79 Handling Volume bag	1978/79 Shortage Volume bag	1978/79 Shortage Percent %
Kisumu	134,492	+573	-	224,159	9	-
Nakuru Cyprus Bins	12,978	4,604	35.5	159,741	3,891	2.43
Nakuru M. Store	104,851	+302	-	171,222	7,778	4.54
Bungoma	122,931	5,415	4.4	510,949	13,831	2.70
Webye	124,265	+29	-	538,083	1,247	0.23
Moi's Bridge	217,354	1,000	0.46	466,088	2,583	0.55
Kitale	218,193	2,507	1.15	115,533	8,717	7.54
Mombasa	94,706	591	0.62	30,679	428	1.40
Eldoret	241,319	6,610	2.74	547,201	11,336	2.07
Total	2,411,207	50,088	2.07	8,838,078	182,613	2.07

Note: In Nakuru Cypras bins at 1977/78, sweat and head damages are included.

表 D－9　メイズ月別荷動き推移表（1）

1. Summary of Whole NCPB's Storage

Month	Stock at Beginning bag	Arrival of Goods: Purchasing bag	Arrival of Goods: Transfer in bag	Arrival of Goods: Sub-total bag	Consignment of Goods: Sale bag	Consignment of Goods: Transfer out bag	Consignment of Goods: Sub-total bag	Arrangement bag
1978								
8	5,321,352	12,527	19,846	32,373	249,308	20,701	270,009	36
9	5,083,752	68,149	50,178	118,327	254,902	58,455	313,357	-2,505
10	4,886,217	59,346	149,179	208,525	366,185	195,009	561,194	-14,225
11	4,519,323	99,786	163,656	263,442	432,470	114,632	547,102	-1,930
12	4,233,733	155,554	134,153	289,707	308,545	157,925	466,470	-6,669
1979								
1	4,050,301	282,692	238,771	521,463	351,480	291,489	642,969	+1,266
2	3,930,061	558,550	360,001	918,551	348,297	344,722	693,019	-5,404
3	4,150,189	566,062	393,759	959,821	608,140	436,101	1,044,241	-3,208
4	4,062,561	338,694	438,882	777,576	485,020	398,283	883,303	-39,560
5	3,917,274	238,078	569,481	807,559	804,125	654,712	1,458,837	-2,314
6	3,263,682	133,241	446,968	580,209	586,779	420,397	1,007,176	-10,665
7	2,826,050	74,974	392,252	467,226	649,424	300,986	950,410	-97,435
Total	end 2,245,431	2,587,653	3,357,126	5,944,779	5,444,675	3,393,412	8,838,087	-182,613

Note: Turn-over rate of storage 1977/78 = 1.30　1978/79 = 1.78　Mean: 1.54

表 D－9　メイズ月別荷動き推移表（2）

2. Bungoma Storage

Month	Stock at Beginning bag	Arrival of Goods			Consignment of Goods			Arrangement bag
		Purchasing bag	Transfer in bag	Sub-total bag	Sale bag	Transfer out bag	Sub-total bag	
1977								
8	241,025	746	-	746	52	-	52	-
9	241,719	5,893	-	5,893	300	30,528	30,828	+50
10	216,834	18,011	-	18,011	-	59,337	59,337	+372
11	175,880	27,843	-	27,843	-	24,740	24,740	-1,605
12	177,378	18,637	-	18,637	-	7,071	7,071	-962
1978								
1	187,982	40,555	-	40,555	2	-	2	-48
2	228,487	43,627	-	43,627	-	-	-	+295
3	272,409	37,966	-	37,966	98	-	98	-1,973
4	308,304	46,313	-	46,313	107	-	107	-
5	354,510	28,684	-	28,684	66	-	66	+475
6	383,603	6,797	-	6,797	150	-	150	-2,060
7	388,190	0	-	0	480	-	480	+41
Total		275,072	-	275,072	1,255	121,676	122,931	-5,415
1978								
8	387,751	-	-	-	206	-	206	-
9	387,545	-	-	-	100	10,173	10,273	-
10	377,272	1,590	-	1,590	24,822	25,157	49,979	+4
11	328,887	-	-	-	17,826	35,298	53,124	+320
12	276,083	-	-	-	18,837	23,986	42,823	-1,000
1979								
1	232,260	40,901	-	40,901	15,593	13,015	28,608	-998
2	243,555	50,692	-	50,692	37,255	1,591	38,846	+824
3	256,225	30,703	-	30,703	16,277	29,904	46,181	-3,188
4	237,559	10,741	-	10,741	1,446	25,499	26,945	-3,428
5	217,927	2,408	-	2,408	40,199	64,137	104,336	+149
6	116,148	90	-	90	59,368	37,667	97,035	-3
7	19,200	-	-	-	12,593	-	12,593	-6,607
(8	96)							
Total		137,125		137,125	244,522	266,427	510,949	-13,927

Note: Turn-over rate of storage 1977/78 = 1.30, 1978/79 = 1.78, mean = 1.54

表 D－9　メイズ月別荷動き推移表（3）

3. Nakuru Storage

Month	Stock at Beginning	Arrival of Goods			Consignment of Goods			Arrangement
		Purch.sing	Transfer in	Sub-total	Sale	Transfer out	Sub-total	
	bag	bag	bag	bag	bag	bag	bag	bag
1977								
8	365,934	160	-	160	3,721	130	3,851	+9
9	362,252	-	-	-	1,830	9,770	11,600	+92
10	350,744	-	328	328	1,025	-	1,025	-600
11	349,447	-	-	-	640	25,606	26,246	3,244
12	326,445	-	204	204	6,330	204	6,534	-
1978								
1	320,115	7,386	-	7,386	3,220	-	3,220	-
2	324,281	29,734	-	29,734	-	272	272	-8,716
3	345,027	87,309	-	87,309	1,868	2,948	4,816	+6,000
4	433,520	39,696	-	39,696	5,957	2,007	7,964	-
5	465,252	36,800	-	36,800	4,933	-	4,933	+20
6	497,139	19,925	-	19,925	15,487	-	15,487	-20
7	501,557	6,900	-	6,900	19,790	-	19,790	-4,311
Total		227,910	532	228,442	64,801	40,937	105,738	-4,282
1978								
8	484,356	-	-	-	17,513	-	17,513	-
9	466,843	6,689	-	6,689	18,774	-	18,774	-
10	454,758	6,928	-	6,928	16,065	-	16,065	-366
11	445,255	3,066	-	3,066	10,174	-	10,174	+993
12	439,141	7,229	-	7,229	28,478	-	28,478	-1,913
1979								
1	415,979	5,148	-	5,148	55,451	-	55,451	-
2	385,676	29,347	-	29,347	34,716	-	34,716	-33
3	380,274	68,969	1,328	70,297	22,691	10,257	32,948	-1,105
4	416,518	49,132	1,248	50,380	23,182	8,939	32,121	-884
5	433,893	46,044	1,378	47,422	23,125	16,684	39,809	-1,140
6	440,366	7,552	6,091	13,643	52,598	14,324	66,922	-7,234
7	379,253	-	-	-	-	-	-	-
(8	379,853)							
Total		228,104	10,045	238,149	280,767	50,204	330,971	-11,681

Note: Turn-over rate of storage 1977/78 = 1.28, 1978/79 = 1.55, mean = 1.42

表 D－9　メイズ月別荷動き推移表（4）

4. Kisumu Storage

Month	Stock at Beginning	Arrival of Goods			Consignment of Goods			Arrangement
		Purchasing	Transfer in	Sub-total	Sale	Transfer out	Sub-total	
	bag	bag	bag	bag	bag	bag	bag	bag
1977								
8	151,560	-	-	-	15,514	4,282	19,796	+184
9	131,948	-	-	-	18,163	3,031	21,194	-
10	110,754	-	-	-	640	4,950	5,590	+366
11	105,530	1,657	-	1,657	49	64,809	64,858	-
12	42,329	10,005	-	10,005	155	15,946	16,101	+33
1978								
1	36,266	50,899	6,400	57,299	524	670	1,194	-
2	92,371	14,164	-	14,164	381	505	886	-
3	105,649	29,187	-	29,187	787	-	787	-
4	134,049	6,161	-	6,161	918	-	918	-
5	139,292	2,817	-	2,817	1,500	-	1,500	-10
6	140,599	2,165	-	2,165	735	-	735	-
7	142,029	999	-	999	933	-	933	-
Total		118,054	6,400	124,454	40,299	94,193	134,492	+573
1978								
8	142,095	5,826	-	5,826	701	-	701	-
9	147,220	25,242	-	25,242	868	-	868	-
10	171,594	12,188	-	12,188	908	-	908	-
11	182,874	18,546	-	18,546	9,103	-	9,103	-
12	192,317	8,820	-	8,820	4,234	-	4,234	-
1979								
1	196,903	12,224	-	12,224	18,166	4,155	32,321	+23
2	186,829	7,832	-	7,832	28,385	5,241	33,626	-23
3	161,012	80	-	80	35,993	-	35,993	-
4	125,099	80	-	80	38,498	573	39,071	+20
5	86,128	81	-	81	19,951	10,075	30,026	+17
6	56,200	-	18,576	18,576	41,152	6,149	47,301	-46
7	27,429	-	-	-	-	-	-	-
(8	27,429)	-	-	-	-	-	-	-
Total		90,919	18,576	109,495	197,959	26,193	224,152	-9

Note: Turn-over rate of storage 1977/78 = 1.07, 1978/79 = 0.98, mean = 1.03

表 D－10　メイズおよび小麦の取扱価格

A. Maize

Purchasing price at buying center	(90 kg)	95.0 K.sh
Transportation rate to storage	(90 ")	8.5 "
(Sub-total)	(90 ")	103.5 "
Agent commission	(90 ")	4.6 "
Cost of bag	(90 ")	11.9 "
Sub-total (Price at storage)	(90 ")	120.0 "
Fumigation charge	(90 ")	0.35 "
Losses	(90 ")	1.2 "
Handling charge	(90 ")	5.0 "
Miscellaneous	(90 ")	10.0 "
Transportation rate	(90 ")	11.0 "
Sub-total (Sale price of the NCPB)	(90 ")	147.55 "
Milling cost	(90 ")	17.0 "
Price of maize flour	(72 ")	164.55 "
Ex-factory of maize flour	(24 ")	54.85 "
Whole saler's margine	(24 ")	1.05 "
Whole sale price	(24 ")	55.9 "
Retailer's margine	(24 ")	2.9 "
Retail price	(2 ")	4.9 "

B. Wheat

Price of producer including bag cost	(90 kg)	160.7 K.sh
Margine of the NCPB	(90 ")	29.0 "
Transportation rate	(90 ")	12.0 "
Sale price of the NCPB	(90 ")	201.7 "
Milling cost	(90 ")	23.37 "

表 D－11　メイズ倉庫と製粉工場

Depot	Capacity	Mill	Capacity
Nairobi and its vicinity			
Nairobi	750,000	Nairobi	3,340,000
Sagana	392,000	Sagana	594,000
Thika	140,000	Kiambu	252,000
Kenza	120,000	Kangundo	209,560
Machakos	60,000	Limuru	162,000
		Ruiru	135,120
		Muranga	174,720
		Tala	98,400
		Thika	86,400
		Ngong	72,000
		Narok	10,800
		Machakos	84,000
Sub-total	1,462,000		5,217,000
Nakuru its vicinity			
Nakuru	465,000	Nakuru	1,489,680
Kipkelion	142,000	Rongai	36,000
Nyahururu	*125,000*	*Molo*	*21,600*
		Naivasha	25,200
Sub-total	732,000		1,572,480
Mombasa and its vicinity			
Mombasa	290,000	Mombasa	1,685,200
		Kwale	54,000
Sub-total	290,000		1,739,200

Nairobi
Depot $\frac{1,462}{6,309}$ = 23.2%　Mill $\frac{5,217}{11,967.8}$ = 43.6%
Nakuru
Depot 11.6%　Mill 13.1%
Mombasa
Depot 4.6%　Mill 14.5%
Total in abobe three
Depot 39.4%　Mill 71.2%
Kitale (large-farmer)　Eldoret
Depot 24.6%　Mill 16.1%
Kisumu
Depot 12.9%　Mill 7.7%

Total in above five Mill 96%

Depot	Capacity	Mill	Capacity
Kisumu and its vicinity			
Kisumu	257,000	Kisumu	816,000
Betere	180,000	Luanda	36,000
Yala	74,000	Homa Bay	72,000
Kericho	64,000		
Kenpu Bay	125,000		
Homa Bay	65,000		
Kisii	50,000		
Sub-total	815,000		924,000
Eldoret-Kitale			
Eldoret	300,000	Eldoret	962,000
Moi's Bridge	155,000	Kitale	851,520
Kitale	1,100,000	Kapenguria	118,800
Sub-total	1,555,000		1,932,320
Northern Mt. Kenya			
Nanyuki	100,000	Isiolo	28,800
Meru	*70,000*	*Meru*	*480,000*
Sub-total	170,000		580,000
Bungoma and its vicinity			
Bungoma	310,000		
Webuya	330,000		
Malaba	40,000		
Myanga	70,000		
Lugari	80,000		
Kipkarren	95,000		
Turbo	120,000		
Sub-total	1,045,000		

表 D－12　メイズ倉庫庫腹必要量推定表

	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1983/84	1985/86	1989/90
1. Maize Production	(Bags) 25,000,000 1/	25,000,000	25,000,000	20,000,000	16,000,000	18,000,000	22,000,000 1/	30,000,000 1/	33,000,000 1/	39,000,000 1/
2. Purchases by NCPB	(Bags) 6,324,935	5,864,871	5,460,000 (2,713,000)	4,500,000 (2,629,000)	2,474,367	2,400,000	-	-	-	-
3. Population in Kenya	Δ13,400,000	13,971,000	14,596,000	15,221,000 2/	15,934,000 2/	16,622,000 2/	17,340,000 2/	18,872,000 2/	Δ20,400,000	24,506,000 2/
4. Farmer's Population										
Rate of Urban	Δ12%	12.6%	Δ13.8%	15%	Δ16%	Δ17%	Δ18%	19%	Δ20%	25%
Rate of Non farmer	Δ10	10.4	10.2	10	10	10	10	10	10	10
Rate of Farmer	78	77	76	75	74	73	72	71	70	65
No. of Farmer	10,452,000	10,758,000	11,093,000	11,416,000	11,971,000	12,134,000	12,485,000	13,399,000	14,280,000	15,929,000
5. Demand in Kenya	(Bags) 17,659,000 (118kg)	18,318,000 (118kg)	19,137,000 (118kg)	19,956,000 (118kg)	20,891,000 (118kg)	21,793,000 (118kg)	22,735,000 (118kg)	25,163,000 (120kg)	27,200,000 (120kg)	32,675,000 (120kg)
6. Required Demand for Non farmer	(Bags) 3,865,000	4,213,000	4,593,000	4,989,000	5,196,000	5,884,000	6,365,000	7,297,000	8,160,000	11,436,000
(2) - (6) =	(Bags) -2,470,000	+1,652,000	-1,880,000	-2,360,000	-2,722,000					
7. Loss of Demand (4%)	155,000	169,000	184,000	200,000	208,000	235,000	255,000	292,000	326,000	457,000
8. Storage for Emergency	(Bags) 2,000,000	(2,000,000)	(2,000,000)	(2,000,000)	-	-	2,000,000	2,000,000	2,040,000	2,860,000
9. Required Storage (6) + (7) + (8)	(Bags) -	-	-	-	-	6,119,000	8,620,000	9,589,000	10,526,000	14,753,000
10. (-) Import (+) Export	+ 495,051	+162,009	+306,426	+1,545,784	-1,837,307	-4,867,038				

Note: 1/ from Sessional Paper No.4 of 1981 on National Food Policy
2/ from District Population Profiles by Roushdi A Henin
Δ Estimate by Consultant
Maize 90kg → Flour 72kg (80%)

表 D－18　小麦倉庫庫腹必要量推定表

	1976	1977	1978	1979	1980	1981	1983	1985	1989
1. Wheat Production	Bags 2,100,000	1,900,000	1,800,000	1,800,000	2,200,000	2,500,000	3,000,000	3,500,000	5,000,000
2. Wheat Flour	ton 135,000	124,100	115,600	116,000	142,000	169,000	202,500	236,000	337,500
3. Population in Kenya	13,971,000	14,596,000	15,221,000	15,934,000	16,622,000	17,340,000	18,872,000[2/]	20,400,000[2/]	/23,100,000[2/]
4. Demand in Kenya	Bags 2,040,000 (9.8kg/capita) (0.146 Bag)	2,131,000	2,222,000	2,326,000	2,427,000	2,532,000	2,831,000 (10kg =0.15 Bag)	3,060,000 (10kg)	3,465,000 (10kg)
5. Balance (-) Import	-32,042	-286,894	-504,083	-601,708	-316,453	-32,000	+171,000	+440,000	+1,535,000
6. Purchases by NCPB	2,007,958	1,844,106	1,717,917	1,724,294	2,110,547	-	-	-	-
7. Actual Import	Nil	364,500	1,010,900	283,000	1,305,000	-	-	-	-
8. Storage Capacity	1,305,000	1,305,000	1,305,000	1,305,000	Bags 1,305,000	———		1,860,000	

Note: Wheat 90kg → Flour 67.5kg (75%)

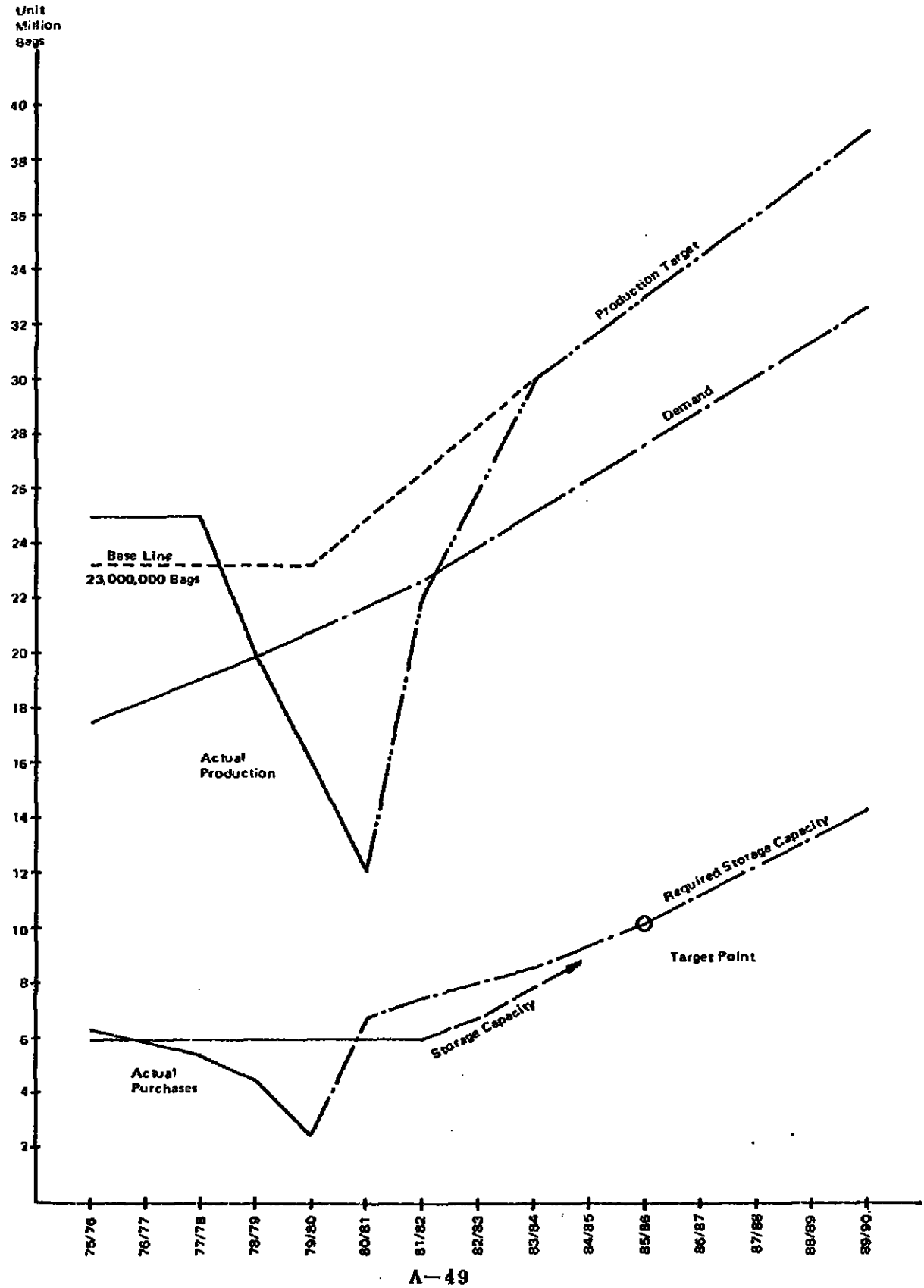
表 D－14　倉庫別貯蔵量

	Code Depot	Present Capacity	Extra Capacity Needed
A. Maize	1. Moi's Bridge	155,000	150,000 bags
	2. Kitale	560,000	-
	3. Kitale Cyprus Bins	540,000	-
	4. Nyahururu	125,000	-
	5. Kipkelion	142,000	50,000
	6. Kisumu	257,000	330,000
	7. Yala	74,000	-
	8. Kendu Bay	125,000	50,000
	9. Kisii	50,000	-
	10. Kilgoris	4,000	50,000
	11. Homa Bay	65,000	50,000
	12. Kericho	64,000	200,000
	13. Webuye	330,000	-
	14. Butere	180,000	-
	15. Malaba	40,000	-
	16. Myanga	70,000	-
	17. Bungoma	310,000	330,000
	18. Kinancha	50,000	-
	19. Mombasa	290,000	200,000
	20. Voi	13,000	100,000
	21. Kitui	33,000	-
	22. Konza	120,000	-
	23. Meru	70,000	150,000
	24. Kibwezi	90,000	-
	25. Machakos	60,000	40,000
	26. Kipkarren	95,000	80,000
	27. Turbo	120,000	-
	28. Lugari	80,000	70,000
	29. Thika	140,000	110,000
	30. Nanyuki	100,000	50,000
	31. Sagana	392,000	150,000

(Table D-14 Con't)

	Code Depot	Present Capacity	Extra Capacity Needed
	32. Nairobi	750,000	250,000
	33. Nakuru	125,000	550,000 bulk
	34. Nakuru Cyprus Bins	340,000	-
	35. Eldoret	300,000	200,000
	Eldoret silo	-	440,000
	36. Migori	-	100,000 bags
	37. Kakamega	-	200,000
	38. Maralal/Lodwar	-	10,000
	39. Marsabit	-	10,000
	40. Kabarnet	-	10,000
	41. Musoriot	50,000	-
	Total:	6,309,000	3,920,000 = 10,229,000
B. Wheat	42. Kitale	55,000	-
	43. Eldoret	260,000	-
	44. Nakuru Silo	550,000	
	45. Nakuru Store	100,000	-
	46. Njoro KFA	-	-
	47. Enangipiri	55,000	-
	48. Narok	55,000	-
	49. Naivasha	60,000	-
	50. Olkalou	45,000	-
	51. Kiganjo	50,000	-
	52. Nanyuki	30,000	55,000 bulk
	53. Nairobi	-	500,000 bulk
	Total:	1,260,000	555,000 = 1,815,000
	Grand Total:	7,569,000	4,475,000 bags

図 D－1　メイズ倉庫庫腹必要量推定図



資　料　編　E

事　業　費

表 E－1　工　事　費　明　細　書

Item	Description	Quantities	Unit	Rate (sh)	Total Cost (sh'000)	Foreign Currency (F.C) Depreciation (sh'000)	Material (sh'000)	Total (sh'000)	Local Currency (L.C) Fuel & Material (sh'000)	Labor (sh'000)	Total (sh'000)
1. Civil Works											
1-1.	Bungoma Silo										
a)	Reinforced Concrete	7,700	cu.m	935	7,200	1,185	2,750	3,935	2,843	422	3,265
b)	Formworks	51,000	sq.m	100	5,100	2,040	1,020	3,060	969	1,071	2,040
c)	Reinforcing Bar	1,500	ton	10,700	16,050	2,250	10,800	13,050	975	2,025	3,000
d)	Concrete Pile	250	No.	12,250	3,063	638	1,442	2,080	679	304	983
e)	Truck-scale, Office and Others				2,300	-	300	300	1,800	200	2,000
f)	Miscellaneous Works				10,580	2,555	5,110	7,665	1,945	970	2,915
	Sub-total				44,293	8,668	21,422	30,090	9,211	4,992	14,203
1-2.	Nakuru Silo										
a)	Reinforced Concrete	12,500	cu.m	935	11,688	1,924	4,464	6,388	4,615	685	5,300
b)	Formworks	82,800	sq.m	100	8,280	3,312	1,656	4,968	1,573	1,739	3,312
c)	Reinforcing Bar	2,500	ton	10,700	26,750	3,750	18,000	21,750	1,625	3,375	5,000
d)	Concrete Pile	400	No.	12,250	4,900	1,020	2,307	3,327	1,086	487	1,573
e)	Truck-scale, Office and Others				2,300	-	300	300	1,800	200	2,000
f)	Miscellaneous Works				15,662	3,595	7,190	10,785	3,252	1,625	4,877
	Sub-total				69,580	13,601	33,917	47,518	13,951	8,111	22,062
1-3.	Kisumu Silo										
a)	Reinforced Concrete	7,700	cu.m	935	7,200	1,185	2,750	3,935	2,843	422	3,265
b)	Formworks	51,000	sq.m	100	5,100	2,040	1,020	3,060	969	1,071	2,040
c)	Reinforcing Bar	1,500	ton	10,700	16,050	2,250	10,800	13,050	975	2,025	3,000
d)	Steel Pile	250	No.	54,700	13,676	1,636	11,357	12,993	515	168	683
e)	Truck-scale, Office and Others				2,300	-	300	300	1,800	200	2,000
f)	Miscellaneous Works				12,180	2,842	5,684	8,526	2,444	1,210	3,654
	Sub-total				56,506	9,953	31,911	41,864	9,546	5,096	14,642
	Total				170,379	32,222	87,250	119,472	32,708	18,199	50,907
2. Building of Facilities Room											
a)	Bungoma Silo				10,350	1,080	7,470	8,550	1,080	720	1,800
b)	Nakuru Silo				14,950	1,560	10,790	12,350	1,560	1,040	2,600
c)	Kisumu Silo				10,350	1,080	7,470	8,550	1,080	720	1,800
	Total				35,650	3,720	25,730	29,450	3,720	2,480	6,200
3. Facilities											
a)	Bungoma Silo				24,098	500	20,948	21,448	1,700	950	2,650
b)	Nakuru Silo				32,223	500	28,933	29,433	1,800	990	2,790
c)	Kisumu Silo				24,199	500	21,049	21,549	1,700	950	2,650
	Total				80,520	1,500	70,930	72,430	5,200	2,890	8,090

表 E－2　単　価　一　覧　表

Unit: K.Sh (Kenya Shilling)

Description	Unit	Total Unit Cost (Contract Works)	Foreign Currency (F.C.)			Local Currency (L.C.)		
			Description	Materials	Sub-Total	Materials	Labor	Sub-Total
Reinforced Concrete	cu.m	935	153.9	357.1	511	369.2	54.8	424.0
Formwork	sq.m	100	40	20	60	19	21	40
Reinforcing Bar	ton	10,700	1,500	7,200	8,700	650	1,350	2,000
Concrete Pile (ø800)	No.	12,250	2,550	5,768	8,318	2,715	1,217	3,932
Steel Pile (ø800)	No.	54,700	6,543	45,427	51,970	2,060	670	2,730
Building	cu.m	1,150	120	850	950	120	80	200

表 E－3　機 械 設 備 内 訳 書

	Bungoma Silo		Nakuru Silo		Kisumu Silo	
	F.C. Yen (1,000)	L.C. sh. (1,000)	F.C. Yen (1,000)	L.C. sh. (1,000)	F.C. Yen (1,000)	L.C. sh. (1,000)
1. Receiving Equipment	7,480		7,480		7,480	
2. Measurement Equipment	44,250		79,200		45,200	
3. Dryer	83,830		117,020		84,450	
4. Conveyer	38,930		54,000		38,930	
5. Rotation Equipment	40,300		56,480		40,300	
6. Attachment of Silo	16,800		27,370		16,800	
7. Cleaning Equipment	72,980		96,540		73,900	
8. Electric Equipment	27,100		35,350		27,100	
9. Remote Control Device	740		820		740	
10. Temperature Measurement Equipment	5,530		8,450		5,530	
11. Fumigation Equipment	32,000		39,150		32,000	
12. Testing Equipment	4,360		4,360		4,360	
13. Dust Collector	11,170		12,200		11,170	
14. Maintenance Equipment	7,600		7,600		7,600	
15. Packing	49,040		67,620		49,090	
16. Sub-total (F.O.B.)	442,110		613,640		444,650	
17. Ocean Freight & Insurance	95,330		136,160		95,440	
18. Sub-total (16 + 17) (C.I.F.)	537,440		748,800		540,090	
19. Inland Transportation		1,000		1,140		1,000
20. Installation	30,300	1,650	30,300	1,650	30,300	1,650
Sub-total (19 + 20)	30,300	2,650	30,300	2,790	30,300	2,650
Total (Yen)	567,740	2,650	779,100	2,790	570,390	2,650
Total (K.sh'000)	(21,448)		(29,433)		(21,549)	

Note: 1 Japanese Yen = 26.47 Kenya Shilling

資　料　編　F

コンサルタンツの技術供与

APPENDIX F-1. Detailed Consultants' Services for the Project

General

In order to implement the Project successfully and attain its full benefit, it is required to execute the final detailed design, tendering to select contractors inclusive of that for procurement of equipment, supervision for construction works and training for silo management.

It would be, therefore, necessary for the Kenyan Government to employ Consultants who are capable to achieve the said objectives of the Project and who shall be approved by the Loan Lender.

The Kenyan Government will select, for good performance of the Project, one consulting firm which has sufficient experience in construction of structures and agricultural development of Works.

The Consulting Services could be divided into four stages, that is, the final detailed design stage, tendering stage, supervision stage and training stage for silo management.

The final detailed design will take about six (6) months. In this stage, the selected Consultants shall prepare the final detailed design for the Project on the basis of additional surveys and investigations as recommended in the Feasibility Study Report as well as on supplemental data and topographic maps, and shall propose the detail of the Project works and a required budget for it for approval of the Government and the Loan Lender.

The Consultants shall prepare specifications of construction works inclusive of these for procurement of machinery, materials, equipment, and shall prepare tender documents for approval of the Government and the Loan Lender.

The Consultants shall prepare and submit a final detailed design report of the Project to the Government.

Within about six (6) months of the tendering stage, tasks from tender announcement to opening the letter of credit shall be completed inclusive of receiving approval of the Loan Lender on the tasks. These tasks will be carried out under the name of the Government, however, the Consultants shall assist the Government in carrying out all of these tasks.

In the supervision stage the Consultants shall supervise construction works based on the Contract Drawing and the Final Detailed Design Report reviewing construction drawings to be prepared and submitted by the Contractor.

The Consultants shall also watch and direct the entire progress of the Project works and report it to the Government and the Loan Lender.

In the final stage, that is, in the training stage, the Consultants shall prepare a guidebook necessary for operation and maintenance of the Project facilities.

In the training stage the Consultants shall give necessary advice to the Kenyan staff in charge as required in the operation and management of constructed silos for one-year period for each silo under the cooperation of the Contractor who shall guarantee his performance.

During this period the Consultants shall advise the Government and make the Contractor repair any damages, mis-constructions, errors or defects in the Contractor's performance if found.

Terms of Reference for Final Detailed Design Stage

The Consultants will be retained to carry out the sound implementation of the Project under the cooperation of selected local counterpart personnels.

In addition to handling detailed technical requirements, the training of local engineers will be a basic objectives of the Consultants' services.

Project Engineer cum Team Leader - should be a graduate engineer with more than 20 years' experience, and should be competent to undertake the following tasks;

a) To review the Feasibility Study Report and to establish a time table for the final design based on additional investigation and data collection;

b) To formulate a plan which can assure of the Project to create its full benefit and to be operated and maintained smoothly and effectively;

c) To formulate an implementation plan of the Project so that the Project could be implemented based on the final design without undue revision of the original Project plan;

d) To arrange and prepare the Final Detailed Report;

e) To review specifications and tender documents for civil works and for procurement of silo facilities and equipment;

f) To secure coordination among the Government, the Loan Lender and the Executing Agency (Agencies) for the Project implementation;

g) To evaluate the Project benefit and effects as created by modifications of the Project components and plan, if any; and,

h) To explain the Final Detailed Design Report and tender documents inclusive of specifications to the Executing Agency (Agencies) and the Loan Lender, if required.

Supervisor for Investigation: - should be a graduate engineer with experience over 10 years, specially in soil investigation for silos with a large capacity or high buildings, and should be competent to undertake the following tasks;

a) To prepare specifications for soil investigation and field survey of the proposed sites taking into consideration the proposed structures and the existing conditions;

b) To supervise the investigation works; and,

c) To review and submit reports on the investigation works.

Soil Expert: - should be a graduate engineer having more than 15 years' experience, specially in analysis of building foundation, and should be competent to undertake the following tasks;

a) To examine specifications for soil investigation to be prepared by the Supervisor for Investigation;

b) To analyse soil foundations based on the investigation report;

c) To advise the Design Engineer for Foundation of the conditions of soil foundations; and,

d) To advise of the seismic coefficient for structures.

Design Engineer for Foundation: - should be a graduate engineer with experience over 15 years, and should be competent to undertake the following tasks;

a) To be fully acquainted with the silo structures and soil conditions;

b) To determine a type of piles by comparing vaious piles inclusive of analysis against earthquakes;

c) To design the foundations;

d) To prepare a final detailed drawing for the foundations;

e) To estimate construction quantities and to select construction machines for foundation works;

f) To assist the Cost Estimator cum Construction Planner in preparation of construction plans and schedules, and also in cost estimate; and,

g) To assist the Specification Writer in preparation of specifications for foundation works.

Design Engineer for Structure (1): - should be a graduate engineer having more than 15 years' experience, and should be competent to undertake the following tasks;

a) To conduct a survey on existing silos in Kenya and to recommend the points to improvement for the existing silos under the cooperation of Mechanical Engineer;

b) To make structural analysis for silos with or without aseismatic structures and to design the most suitable structures of silos;

c) To prepare final design drawings, to estimate the construction volume and to select construction machines;

d) To arrange all final design drawings for good tender drawings and contract drawings;

e) To assist the Cost Estimator cum Construction Planner in preparation of construction plans and schedules, and in cost estimate; and,

f) To assist the Specification Writers in preparation of specifications for civil works.

Design Engineer for Structure (2): - should be a graduate engineer with more than eight years' experience, and should be competent to undertake the following tasks;

a) To assist the Design Eenginner (1); and,

b) To assist the Cost Estimator cum Construction Planner.

Mechanical Engineers (1) and (2): - should graduate engineers. Mechanical Engineer (1) should have experience more than 15 years, and Mechanical Engineer (2) experience more than eight years. They should be competent to undertake the following tasks;

a) To make surveys on the existing silos in Kenya and recommend the points of improvement under the cooperation of Design Engineer;

b) To conduct a study for selection of silo facilities based on handling capacity per hour, operation program and other related information;

c) To design silo facilities in consideration of earthquakes;

d) To prepare technical specifications for manufacturing and installation of silo facilities to be incorporated in the tender documents; and,

f) To assist the Cost Estimator cum Construction Planner in preparation of construction plans and schedules, and in cost estimate.

Architect: - should be a graduate architect with more than 15 years' experience, and should be competent to undertake the following tasks;

a) To conduct surveys on high buildings in Kenya specially on aseismatic structure and on construction materials for buildings for machine rooms;

b) To layout of buildings in cooperation with the Design Engineer (1) and the Mechanical Engineer (1);

c) To make structural analysis of buildings with or without aseimatic structures and to design the most suitable structure of buildings to the local conditions;

d) To prepare the final design drawings and to estimate the construction quantity;

e) To assist the Cost Estimator cum Construction Planner in preparation of construction plans and schedules and in cost estimate; and,

f) To assist the Specification Writer in preparation of specifications for building.

Electric Engineer: - should be a graduate engineer with more than 15 years' experience, and should be competent to undertake the following tasks;

a) To conduct surveys on the conditions of power supply in Kenya specially standardized ways of electric power supply;

b) To prepare the electric design in cooperation with the Mechanical and Design Engineer for Structure (1);

c) To prepare the final detailed drawings and to estimate the construction quantity;

d) To assist the Cost Estimator cum Construction Planner in cost estimate and in preparation of construction schedules; and,

e) To prepare the technical specifications for materials and for installation of electric devices.

Marketing Expert: - should be a graduate economist with more than 10 years' experiences specially in marketing research, and should be competent to undertake the following tasks;

a) To review the Feasibility Study Report and to make survey on present systems for collecting and forwarding;

b) To establish a marketing program for the proposed silos;

c) To prepare a manual for the collecting program of the NCPB;

d) To advise managing staff of the NCPB of the collecting system; and,

e) To assist the Team Leader in study on the marketing and collecting system for the proposed silos, and to make proposal on equipment and facilities for collecting centers, if necessary.

Cost Estimator cum Construction Planner: - should be a graduate engineer with more than 15 years' experience specially in cost estimate and construction planning, and should be competent to undertake the following tasks;

a) To make surveys on construction materials available in Kenya and on prices of them;

b) To make surveys on labor efficiency per unit works in Kenya;

c) To prepare construction plans and schedules for construction works in cooperation with the Design Engineer for Foundation, Design Engineer for Structure (1), Mechanical Engineer (1), Architect, Electrical Engineer and Team Leader.

d) To arrange the estimated quantities prepared by the Engineers and the Architect

e) To estimate construction costs together with engineers, Architect and Team Leader; and,

f) To examine the construction cost estimated within a budget of the Agency concerned and the Loan, and to explain results of the examination to the Agency and the Loan Lender, together with the Team Leader.

Expert for Tender Documents: - should be a graduate specialist with more than 15 years' experience specially in preparation of tender documents, and should be competent to undertake the following tasks;

a) To make surveys on the laws and regulations on contracts in Kenya;

b) To prepare the tender documents on full turn-key basis in cooperation with Team Leader and the Governmental officials of

the Agency (Agencies) in accordance with the standard procedure of the Loan Lender and the Executing Agency concerned;

c) To explain, together with Team Leader, the tender documents to the Agency and Loan Lender for their approval;

Note: Tender documents shall consist of the following;

i) Invitation to Tender
ii) Instructions to Tenderers
iii) General Conditions of Contract
iv) Special Conditions of Contract
v) General Technical Specifications
vi) Special Technical Specifications
vii) Form of Technical Sheet
viii) Form of Bill of Quantities
ix) Local Conditions (if necessary)
x) Drawings

Specification Writer: - should be a graduate engineer with more than 15 years experience specially in specification writing and should be competent to undertake the following tasks;

a) To make surveys and collect data on local conditions for civil works and the manufacturing standard of local materials;

b) To prepare specifications for civil works, building works in cooperation with the Design Engineers, Architect, Electric Engineers and Team Leader;

c) To arrange specifications for manufacturing and installing silo facilities, prepared by the Mechanical Engineer; and,

d) To arrange all specifications to be incorporated in the tender documents.

Terms of Reference for Tendering Stage

In the tendering stage, all of the announcement of tender, opening of tenders, tender evaluation, approval on the tender evaluation by the Loan Lender, negotiation with successful tenderer, agreement with the successful tenderer, approval of the agreement by the Loan Lender and opening of the letter of credit shall be carried out based upon the tender documents having been approved by the Loan Lender. These procedures shall be followed by or under the name of the Executing Agency concerned, however, in order to shorten the period, to make smooth negotiations with the Loan Lender, and to carry out the fair adjudication, the Consultants shall carry out or assist the Agency in executing a part or all of the above-mentioned works;

Team Leader: - should be a graduate engineer with more than 20 years' experience. Furthermore, the Project Engineer in the final detailed design stage should be assigned to Team Leader of the Consultants in the Tendering stage. He should be competent to undertake the following tasks;

a) To prepare, together with the Agency concerned, necessary information to be given to tenderers in filling the questionnaires during the tender period.

b) To participate in the opening of tender;

c) To prepare the Tender Evaluation Report for approval of the Executing Agency;

d) To explain the Loan Lender of the tender evaluation report for its approval;

e) To assist the Agency in negotiating with the successful tenderer; and,

f) To assist the Agency in opening the letter of credit.

Assistant: - should be a graduate engineer with more than 10 years experience, and should be competent to undertake the following tasks;

a) To assist the Team Leader in administrative works during the tendering period;

Terms of Reference for Construction Supervision Stage

It is desirable that the same engineers and experts who engaged in the final detailed design will be assigned to the consultants' services in the construction supervision stage. In case of replacing such engineers and experts because of unavoidable circumstances of them,
the engineers and experts newly assigned shall be of higher grade than the engineers or experts to be replaced.

Project Engineer cum Team Leader: - shall undertake the following tasks;

a) To prepare the monthly disbursement schedule in accordance with the construction schedule having been agreed by the the Contractor;

b) To supervise the progress of construction works and performance of the works;

c) To make necessary arrangement for execution of consulting services and to secure coordination between the Agency and the Consultants;

d) To prepare and submit the monthly progress reports to the

Agency concerned and to the Loan Lender; and,

c) To make recommendations as regards the monthly payment to the Contractor from the Executing Agency.

Supervisor: - shall be a graduate engineer with more than 10 years' experience, and shall be competent to undertake the following tasks;

a) To supervise construction works of each silo in cooperation with the Civil Engineer, Mechanical Engineer, Electrical Engineer and Soil Expert;

b) To assist Team Leader in implementation of the construction works;

c) To prepare the plan for modernization of construction works;

d) To assist Team Leader in preparation of monthly progress reports;

e) To approve the construction drawings and schedules to be prepared by the Contractor; and,

f) To check the progress in construction works for controlling monthly invoices.

Terms of Reference for the Training Stage of Silo Management

The consulting services in the training stage shall consist of guidances in operation and maintenance inclusive of collecting grains from fields, inspection and quality control of grain and operation and maintenance of silos.

The Consultants will carry out these tasks in cooperation of the field staff and silo managment staff at each silo.

Mechanical Engineer: - shall be a graduate engineer with more than 15 years' experience in operation of silos, and shall be competent to undertake the following tasks;

a) To conduct training the Kenyan staff in silo management, operation and maintenance as described below;

i) Drying cereals
ii) Storage management of cereals
iii) Handling and storage of toxic chemicals
iv) Handling method of dangerous materials
v) Operation of each silo equipment, and,
vi) Maintenance and repair of each silo equipment

b) To find out the mis-installation, error or other defects due to the poor performance of the Contractor, and to instruct the Contractor to repair them for one year from the completion of each silo; and,

c) To prepare a guidebook needed for the operation and maintenance.

Civil Engineer: - shall be a graduate engineer with 15 years experience, and shall be competent to undertake the following tasks;

a) To assist the Mechanical Engineer in executing training;

b) To supervise and observe the maintenance in conformity with the general conditions of contract; and

c) To assist the Mechanical Engineer in preparation of the guidebook.

表 F－1　コンサルタンツ技術供与費計算書

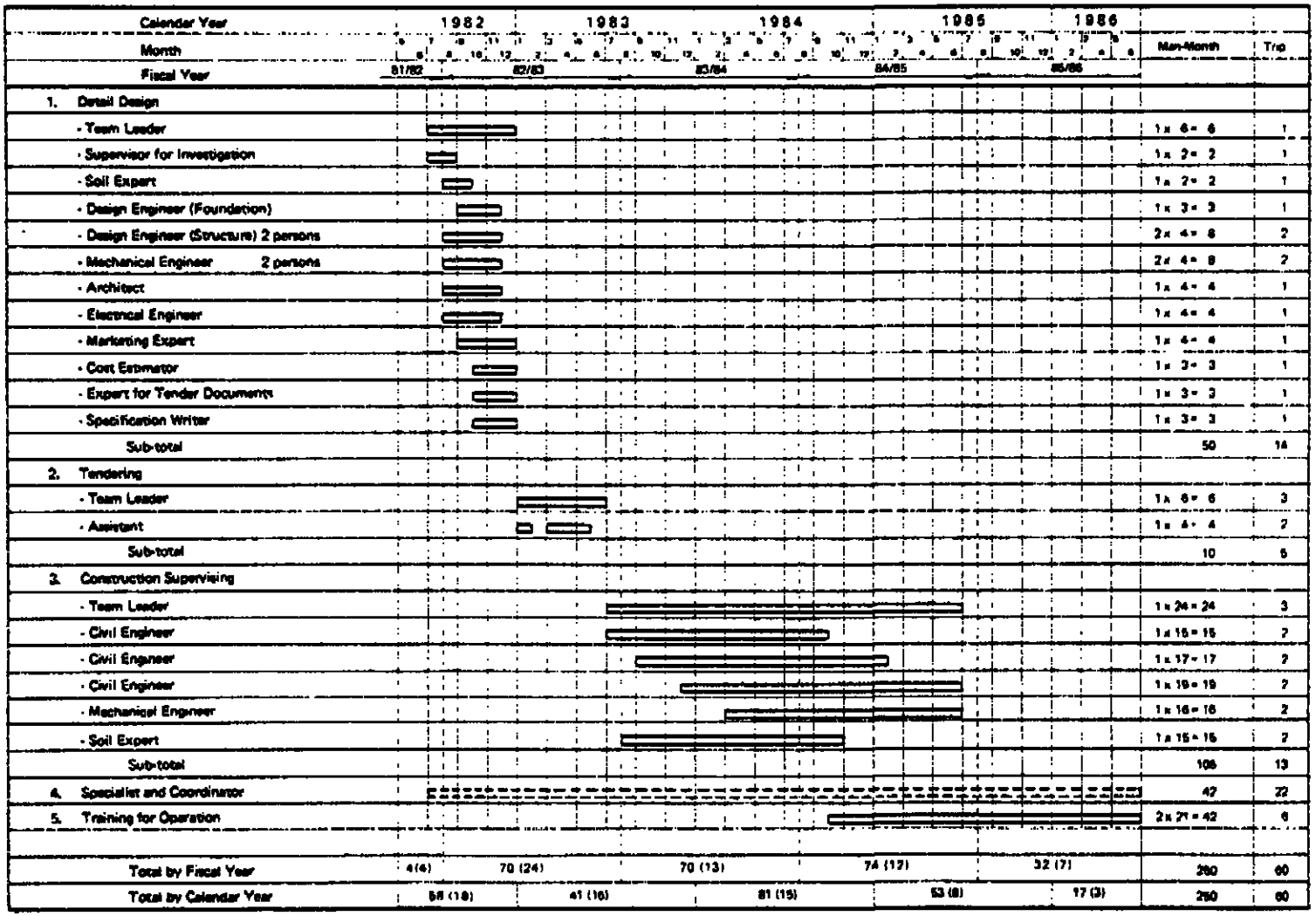
(Unit: sh'000)

Item	Description	Quantity	Unit	Rate	Amount
1.	I. Foreign Currency Cost				
	a) Final Design				
	Consultants remuneration	50	man-month	70	3,500
	International travel expenses	14	trip	32	448
	Miscellaneous & communication		L.S.		516
	Sub-total				4,464
	b) Tendering				
	Consultants remuneration	10	man-month	70	700
	International travel expenses	5	trip	32	160
	Miscellaneous & communication		L.S.		100
	Sub-total				960
	c) Construction Supervision				
	Consultants remuneration	106	man-month	70	7,420
	International travel expenses	13	trip	32	416
	Miscellaneous & communication		L.S.		1,098
	Sub-total				8,934
	d) Specialist and Co-ordinator				
	Consultants remuneration	42	man-month	70	2,940
	International travel expenses	22	trip	32	704
	Miscellaneous & communication		L.S.		433
	Sub-total				4,077
	e) Training for Operation				
	Consultants remuneration	42	man-month	70	2,940
	International travel expenses	6	trip	32	192
	Miscellaneous & communication		L.S.		433
	Sub-total				3,565
	Total of Foreign Currency				22,000

(Table F-1 Con't)

Item	Description	Quantity	Unit	Rate	Amount
2.	Local Currency Cost				
	a) Final Design				
	Consultant per diem	1,500	day	0.4	600
	b) Tendering				
	Consultant per diem	300	day	0.4	120
	c) Construction Supervision				
	Consultant per diem	3,180	day	0.4	1,272
	d) Specialist and Co-ordinator				
	Consultant per diem	1,260	day	0.4	504
	e) Training for Operation				
	Consultant per diem	1,260	day	0.4	504
	Total of Local Currency				3,000
	Grand Total				25,000

図 F－1　コンサルタンツ技術供与計画表



	Man-Month	Trip
1. Detail Design		
- Team Leader	1 x 6 = 6	1
- Supervisor for Investigation	1 x 2 = 2	1
- Soil Expert	1 x 2 = 2	1
- Design Engineer (Foundation)	1 x 3 = 3	1
- Design Engineer (Structure) 2 persons	2 x 4 = 8	2
- Mechanical Engineer 2 persons	2 x 4 = 8	2
- Architect	1 x 4 = 4	1
- Electrical Engineer	1 x 4 = 4	1
- Marketing Expert	1 x 4 = 4	1
- Cost Estimator	1 x 3 = 3	1
- Expert for Tender Documents	1 x 3 = 3	1
- Specification Writer	1 x 3 = 3	1
Sub-total	50	14
2. Tendering		
- Team Leader	1 x 6 = 6	3
- Assistant	1 x 4 = 4	2
Sub-total	10	5
3. Construction Supervising		
- Team Leader	1 x 24 = 24	3
- Civil Engineer	1 x 15 = 15	2
- Civil Engineer	1 x 17 = 17	2
- Civil Engineer	1 x 19 = 19	2
- Mechanical Engineer	1 x 16 = 16	2
- Soil Expert	1 x 15 = 15	2
Sub-total	106	13
4. Specialist and Coordinator	42	22
5. Training for Operation	2 x 21 = 42	6
Total by Fiscal Year: 4 (4) / 70 (24) / 70 (13) / 74 (17) / 32 (7)	260	60
Total by Calendar Year: 58 (18) / 41 (16) / 81 (15) / 53 (8) / 17 (3)	260	60

資　料　編　G

経　済　評　価

表 G－1　便　益　の　推　定

Units: 1,000 ton, 1,000 shilling

Year	Incremental Amount of Marketing Maize	Reduction of Losses				Value of Reduction Losses					
						With Domestic Price			With Importing Price		
		16%	18%	20%	25%	18%	20%	25%	18%	20%	25%
1984/85	74.0	11.8	13.3	14.8	18.5	14,031	15,614	19,517	21,520	23,947	29,934
1985/86	165.0	26.4	29.7	30.0	41.3	31,351	34,835	43,596	48,055	53,394	66,823
1986/87	165.0	26.4	29.7	33.0	41.3	31,351	34,835	43,596	48,055	53,394	66,823
1987/88	165.0	26.4	29.7	33.0	41.3	31,351	34,835	43,596	48,055	53,394	66,823
1988/89	165.0	26.4	29.7	33.0	41.3	31,351	34,835	43,596	48,055	53,394	66,823
1989/90	165.0	26.4	29.7	33.0	41.3	31,351	34,835	43,596	48,055	53,394	66,823
1990/91	165.0	26.4	29.7	33.0	41.3	31,351	34,835	43,596	48,055	53,394	66,823
1991/92	165.0	26.4	29.7	33.0	41.3	31,351	34,835	43,596	48,055	53,394	66,823
⋮											
2000/2001	1,650.0	264.0	297.0	330.0	413.0	313,510	348,350	435,960	480,550	533,940	668,230
Total	2,714.0	434.2	488.5	542.8	679.3	515,647	572,974	717,053	790,400	878,251	1,099,102

Notes: Domestic price .... 1 bag (90 kg) = 95 shilling ≒ 1,055.6 shilling per ton.

Importing period .. 1 ton ... 180 M$ = 1,618 shilling.

Exchange rate of US$ and Kenya shilling ... 1 US$ = 8.9891 shilling rate of 31st July, 1981.

表 G－2　便　益　の　現　在　価　格

*** PRESENT WORTH OF BENEFIT ***

(UNIT: 1000 SHILLING)

YEAR	B.STREAM	8.00 %	9.00 %	10.00 %	11.00 %	12.00 %	13.00 %	14.00 %	15.00 %
1	0.	0.	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.	0.	0.
4	23900.	17567.	16931.	16324.	15744.	15189.	14658.	14151.	13665.
5	53400.	36343.	34706.	33157.	31690.	30301.	28983.	27734.	26549.
6	53400.	33651.	31841.	30143.	28550.	27054.	25649.	24328.	23086.
7	53400.	31158.	29212.	27403.	25721.	24155.	22698.	21341.	20075.
8	53400.	28850.	26800.	24912.	23172.	21567.	20087.	18720.	17457.
9	53400.	26713.	24587.	22647.	20875.	19257.	17776.	16421.	15180.
10	53400.	24735.	22557.	20588.	18807.	17193.	15731.	14404.	13200.
11	53400.	22902.	20694.	18716.	16943.	15351.	13921.	12635.	11478.
12	53400.	21206.	18986.	17015.	15264.	13706.	12320.	11084.	9981.
13	53400.	19635.	17418.	15468.	13751.	12238.	10902.	9723.	8679.
14	53400.	18181.	15980.	14062.	12389.	10927.	9648.	8529.	7547.
15	53400.	16834.	14660.	12784.	11161.	9756.	8538.	7481.	6563.
16	53400.	15587.	13450.	11621.	10055.	8711.	7556.	6562.	5707.
17	53400.	14432.	12339.	10565.	9058.	7777.	6687.	5757.	4962.
18	53400.	13363.	11321.	9605.	8161.	6944.	5917.	5050.	4315.
19	53400.	12373.	10386.	8731.	7352.	6200.	5237.	4429.	3752.
20	53400.	11457.	9528.	7938.	6623.	5536.	4634.	3886.	3263.
TOTAL	878300.	364989.	331397.	301678.	275315.	251863.	230944.	212234.	195458.

表 G－3　事 業 費 の 現 在 価 格

*** PRESENT WORTH OF COST ***

(UNIT: 1000 SHILLING)

YEAR	C.STREAM	8.00 %	9.00 %	10.00 %	11.00 %	12.00 %	13.00 %	14.00 %	15.00 %
1	2750.	2546.	2523.	2500.	2477.	2455.	2434.	2412.	2391.
2	7953.	6818.	6694.	6573.	6455.	6340.	6228.	6120.	6014.
3	208242.	165309.	160801.	156456.	152265.	148223.	144323.	140558.	136923.
4	113654.	83539.	80516.	77627.	74868.	72229.	69706.	67292.	64982.
5	10343.	7039.	6722.	6422.	6138.	5869.	5614.	5372.	5142.
6	6848.	4315.	4083.	3866.	3661.	3469.	3289.	3120.	2961.
7	6848.	3996.	3746.	3514.	3298.	3098.	2911.	2737.	2574.
8	6848.	3700.	3437.	3195.	2972.	2766.	2576.	2401.	2239.
9	6848.	3426.	3153.	2904.	2677.	2469.	2280.	2106.	1947.
10	6848.	3172.	2893.	2640.	2412.	2205.	2017.	1847.	1693.
11	6848.	2937.	2654.	2400.	2173.	1969.	1785.	1620.	1472.
12	6848.	2719.	2435.	2182.	1957.	1758.	1580.	1421.	1280.
13	6848.	2518.	2234.	1984.	1763.	1569.	1398.	1247.	1113.
14	6848.	2331.	2049.	1803.	1589.	1401.	1237.	1094.	968.
15	6848.	2159.	1880.	1639.	1431.	1251.	1095.	959.	842.
16	6848.	1999.	1725.	1490.	1289.	1117.	969.	842.	732.
17	6848.	1851.	1582.	1355.	1162.	997.	858.	738.	636.
18	6848.	1714.	1452.	1232.	1047.	891.	759.	648.	553.
19	6848.	1587.	1332.	1120.	943.	795.	672.	568.	481.
20	6848.	1469.	1222.	1018.	849.	710.	594.	498.	418.
TOTAL	445662.	305144.	293132.	281919.	271426.	261581.	252324.	243599.	235360.

表 G－4　I R R の 計 算 表

****** CALCULATION OF INTERNAL RATE OF RETURN ******

(UNIT: 1000 SHILLING)

DISCOUNT RATE	+++++ PRESENT WORTH +++++ BENEFIT	COST	B/C RATIO
8.00 %	364989.	305144.	1.20
9.00 %	331397.	293132.	1.13
10.00 %	301678.	281919.	1.07
11.00 %	275315.	271426.	1.01
12.00 %	251863.	261581.	0.96
13.00 %	230944.	252324.	0.92
14.00 %	212234.	243599.	0.87
15.00 %	195458.	235360.	0.83

INTERNAL RATE OF RETURN ---------- 11.3 %

表 G－5　メイズ貯蔵庫の損益計算表

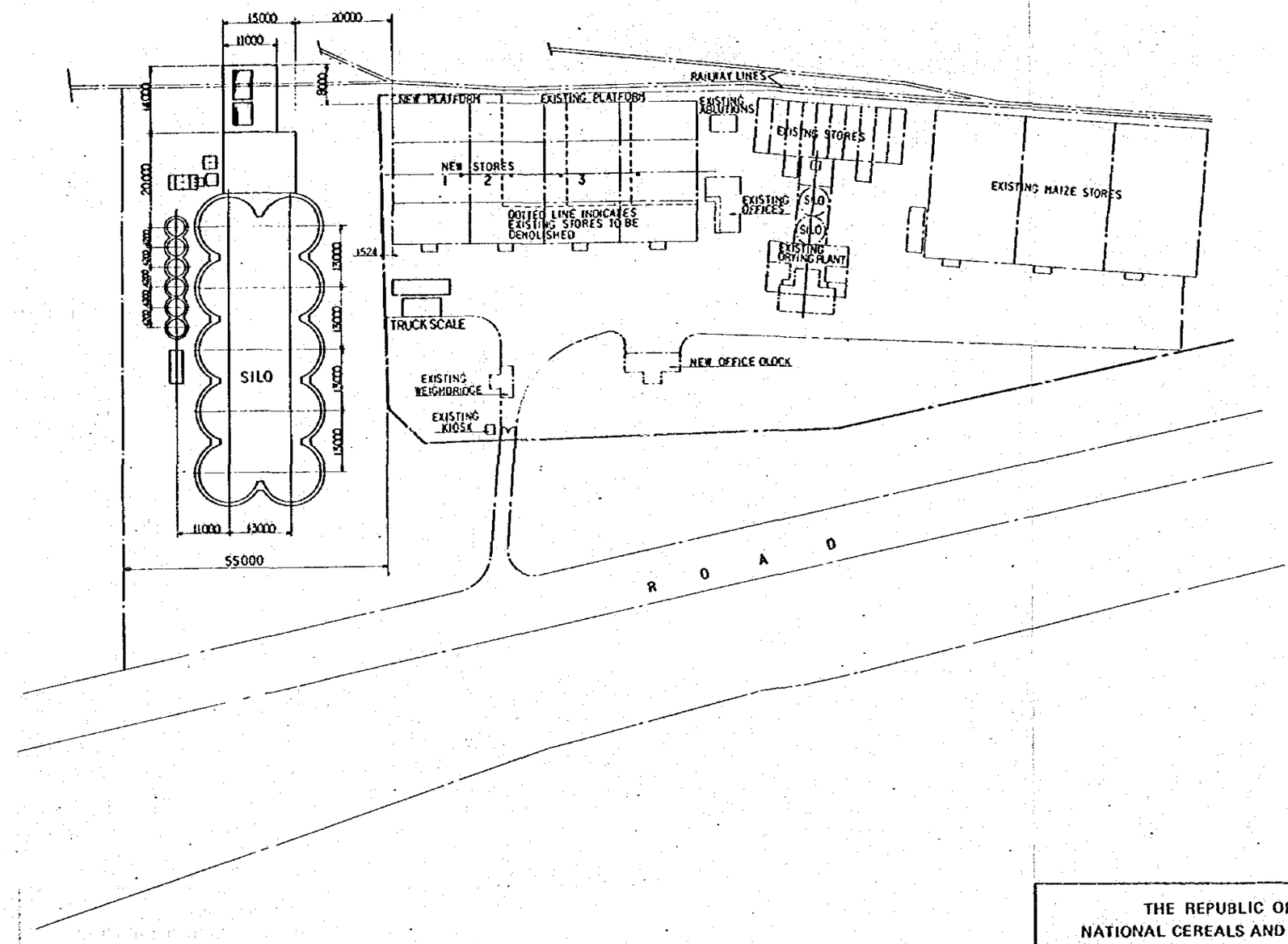
Unit: 1,000 ton, 1,000 K.h

	1974/75		1975/76		1976/77		1977/78		1978/79		1979/80	
	Q'ty	Amount	Q'ty	Amount	Q'ty	Amount	Q'ty	Amount	Q'ty	Amount	Q'ty	Amount
Selling												
Maize	339.5	13,330	377.4	16,604	382.7	17,914	129.8	7,323	373.4	17,602	409.6	17,458
(-) Losses	0.2	-	0.8	-	1.0	-	-	-	1.2	-	-	-
Sub-total	339.7	13,330	378.2	16,604	383.7	17,914	192.8	7,323	574.6	17,602	409.6	17,458
Selling Cost												
Stock at beginning	187.2	4,175	184.0	6,060	251.5	8,517	396.2	18,337	482.1	22,299	206.7	7,803
Maize parchased	458.0	16,068	555.7	22,119	542.9	26,035	244.2	11,654	238.3	10,253	205.1	6,657
(-) Transfer to import account	184.0	6,060	251.5	8,517	396.2	18,337	482.1	22,299	206.7	7,803	1.9	121
(-) Stock at end	114.7	4,497	109.9	4,362	14.6	698	27.6	1,321	139.1	6,666	20.4	819
Selling cost	339.7	9,686	378.2	15,301	383.7	15,516	129.8	6,371	374.6	18,083	389.3	13,520
Gross Income	-	3,644	-	1,303	-	2,398	-	951	-	481	-	3,938
Transportation cost	-	908	-	2,326	-	1,638	-	736	-	2,079	-	1,350
Transportation loss	-	151	-	55	-	2	-	-	-	-	-	-
Administration cost	-	1,314	-	1,375	-	2,558	-	3,203	-	2,845	-	2,735
Net Income	-	1,269	-	2,453	-	1,800	-	2,988	-	5,405	-	147

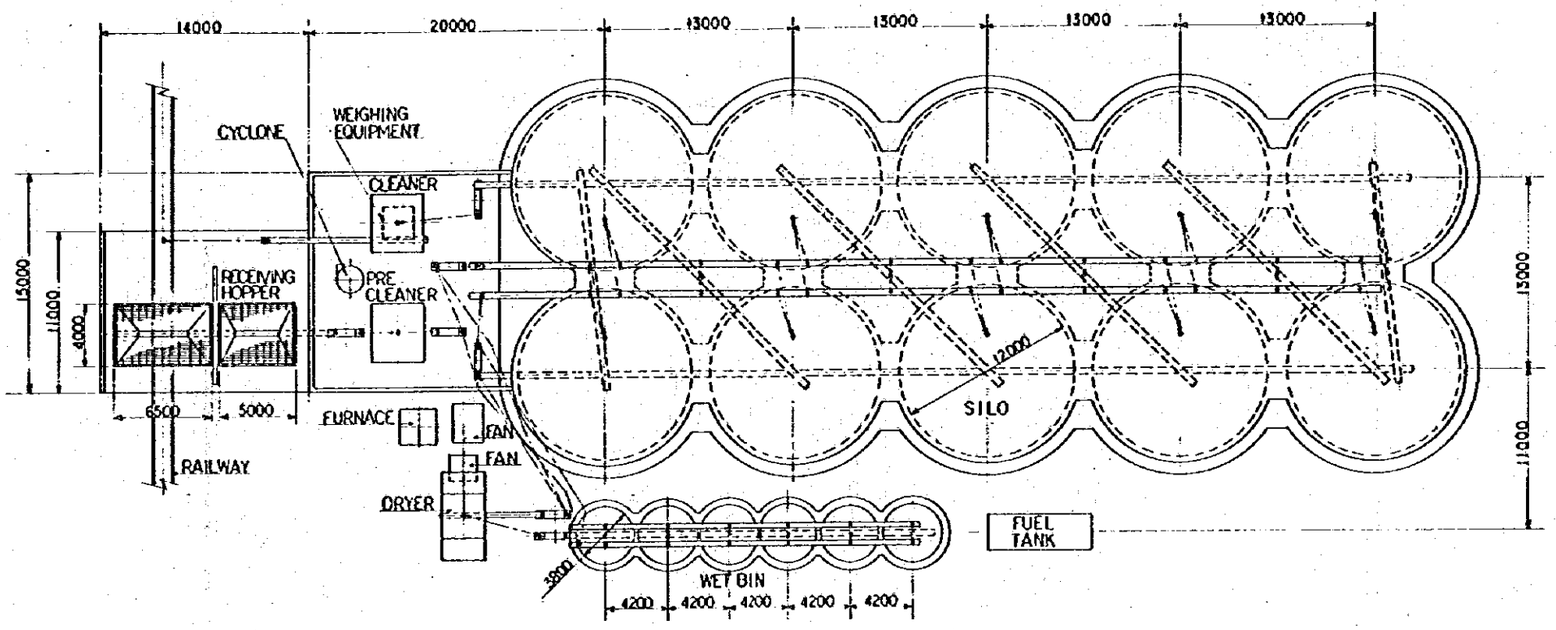
Source: NCPB Anuual Reports

LIST OF DRAWINGS

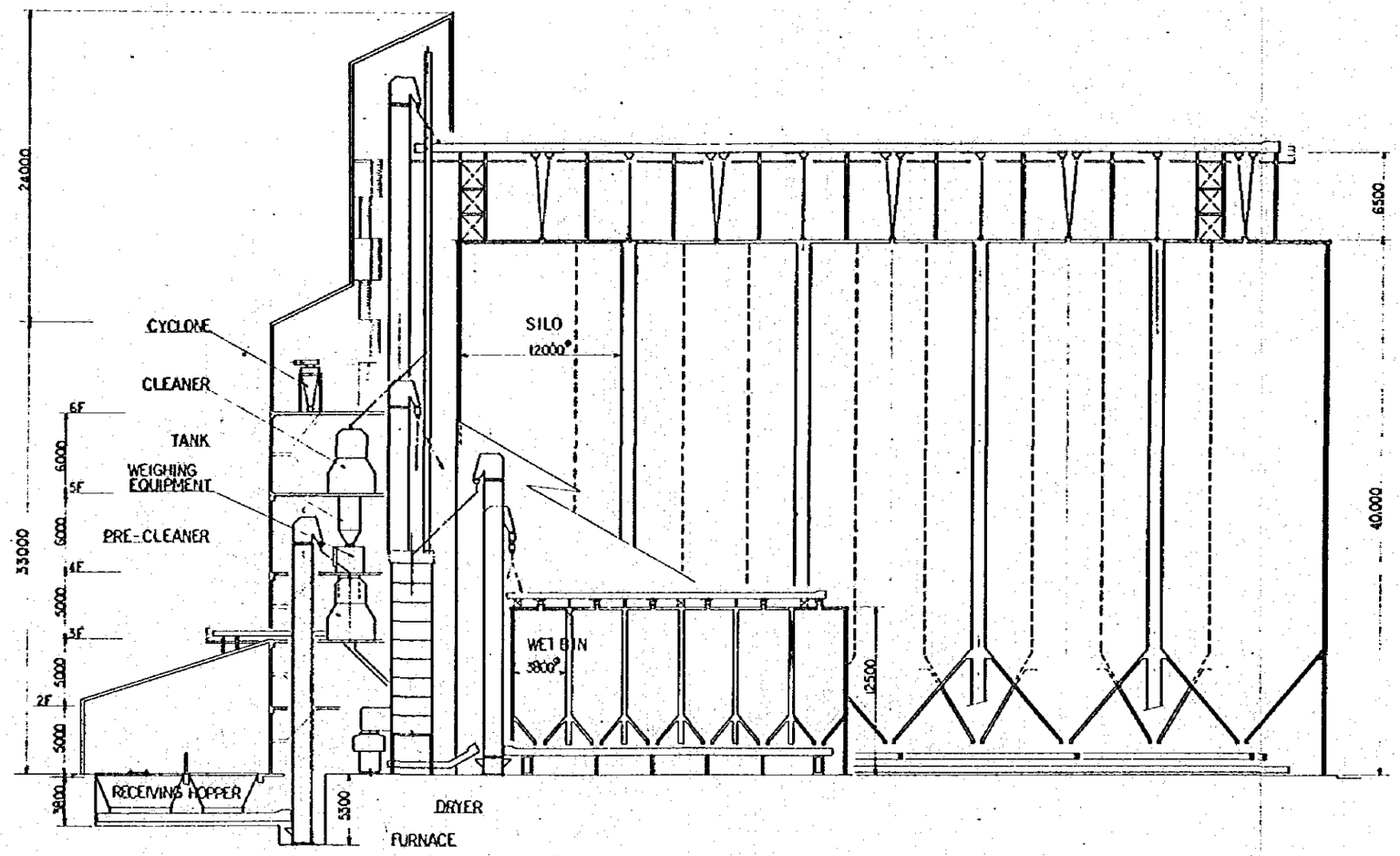
DWG. No.	TITLE
KGSP - B - 1	BUNGOMA SILO : GENERAL LAYOUT
KGSP - B - 2	BUNGOMA SILO : PLAN
KGSP - B - 3	BUNGOMA SILO : ELEVATION (1)
KGSP - B - 4	BUNGOMA SILO : ELEVATION (2)
KGSP - B - 5	BUNGOMA SILO : FLOW CHART
KGSP - N - 1	NAKURU SILO : GENERAL LAYOUT
KGSP - N - 2	NAKURU SILO : PLAN
KGSP - N - 3	NAKURU SILO : ELEVATION (1)
KGSP - N - 4	NAKURU SILO : ELEVATION (2)
KGSP - N - 5	NAKURU SILO : FLOW CHART
KGSP - K - 1	KISUMU SILO : GENERAL LAYOUT
KGSP - K - 2	KISUMU SILO : PLAN
KGSP - K - 3	KISUMU SILO : ELEVATION (1)
KGSP - K - 4	KISUMU SILO : ELEVATION (2)
KGSP - K - 5	KISUMU SILO : FLOW CHART



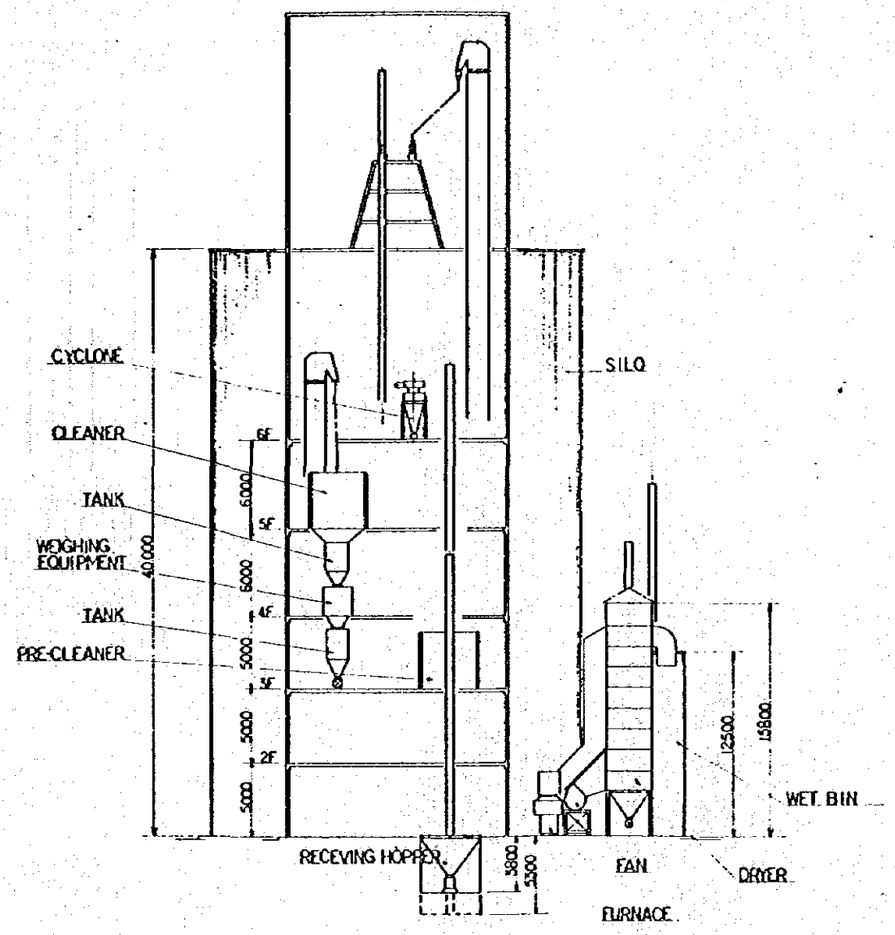
THE REPUBLIC OF KENYA NATIONAL CEREALS AND PRODUCE BOARD
KGSP BUNGOMA SILO: GENERAL LAYOUT
DWG NO. KGSP-B-1
JAPAN INTERNATIONAL COOPERATION AGENCY



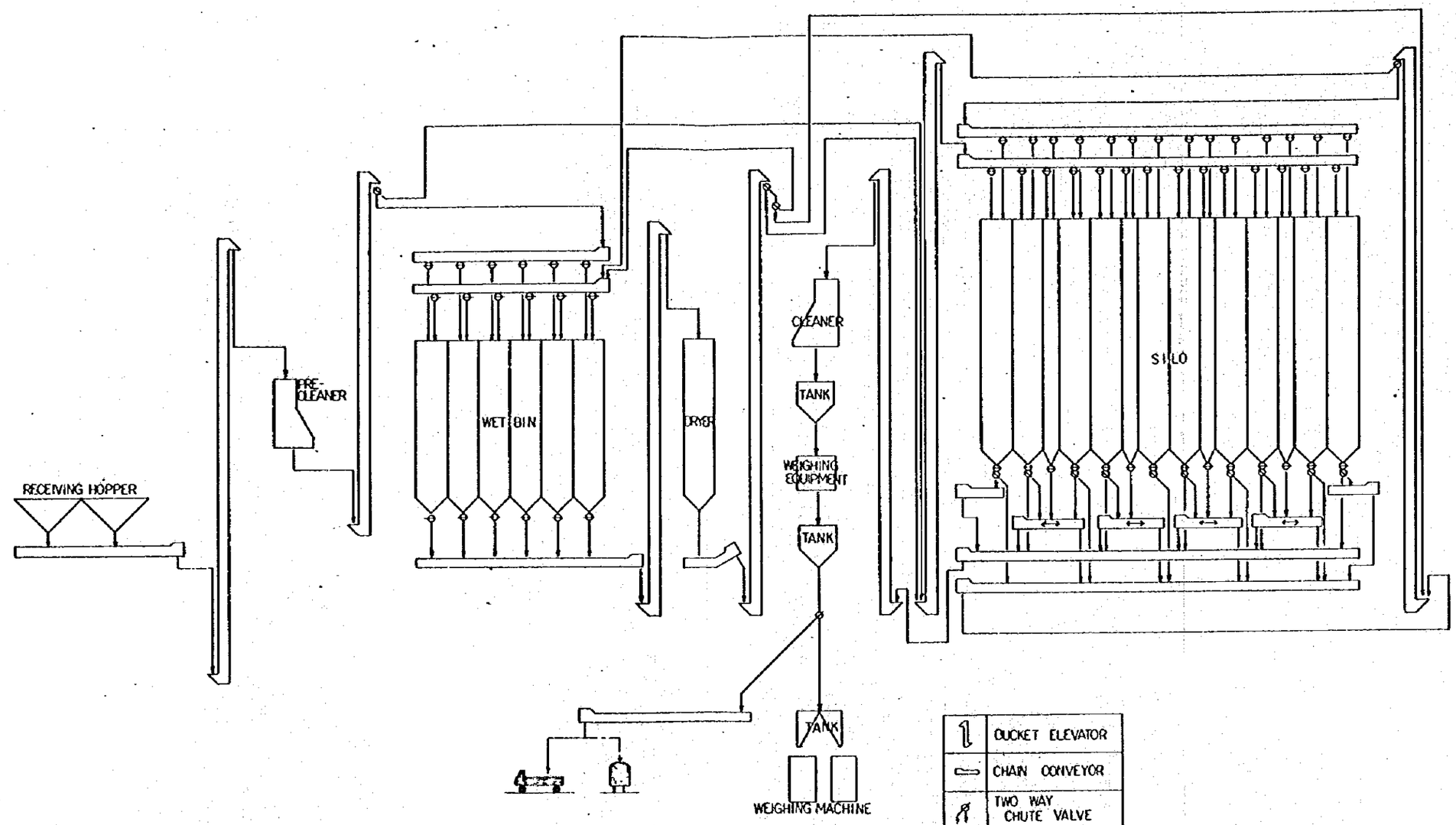
THE REPUBLIC OF KENYA NATIONAL CEREALS AND PRODUCE BOARD
KGSP BUNGOMA SILO: PLAN
DWG NO. KGSP–B–2
JAPAN INTERNATIONAL COOPERATION AGENCY



THE REPUBLIC OF KENYA NATIONAL CEREALS AND PRODUCE BOARD
KGSP BUNGOMA SILO: ELEVATION (1)
DWG NO. KGSP-B-3
JAPAN INTERNATIONAL COOPERATION AGENCY



THE REPUBLIC OF KENYA NATIONAL CEREALS AND PRODUCE BOARD
KGSP BUNGOMA SILO: ELEVATION (2)
DWG NO. KGSP-B-4
JAPAN INTERNATIONAL COOPERATION AGENCY

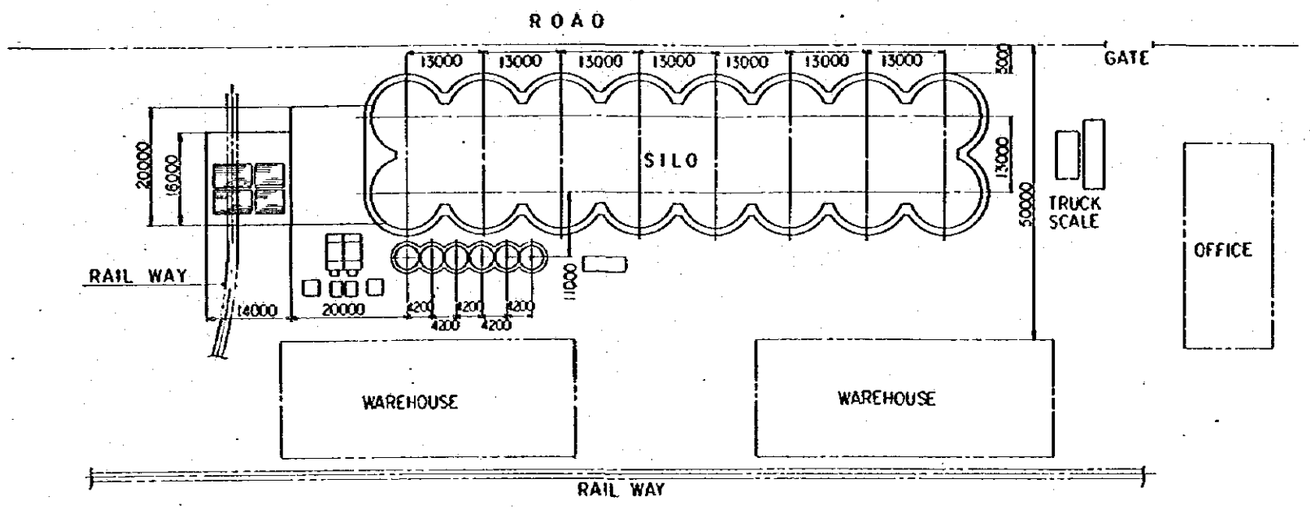


THE REPUBLIC OF KENYA
NATIONAL CEREALS AND PRODUCE BOARD

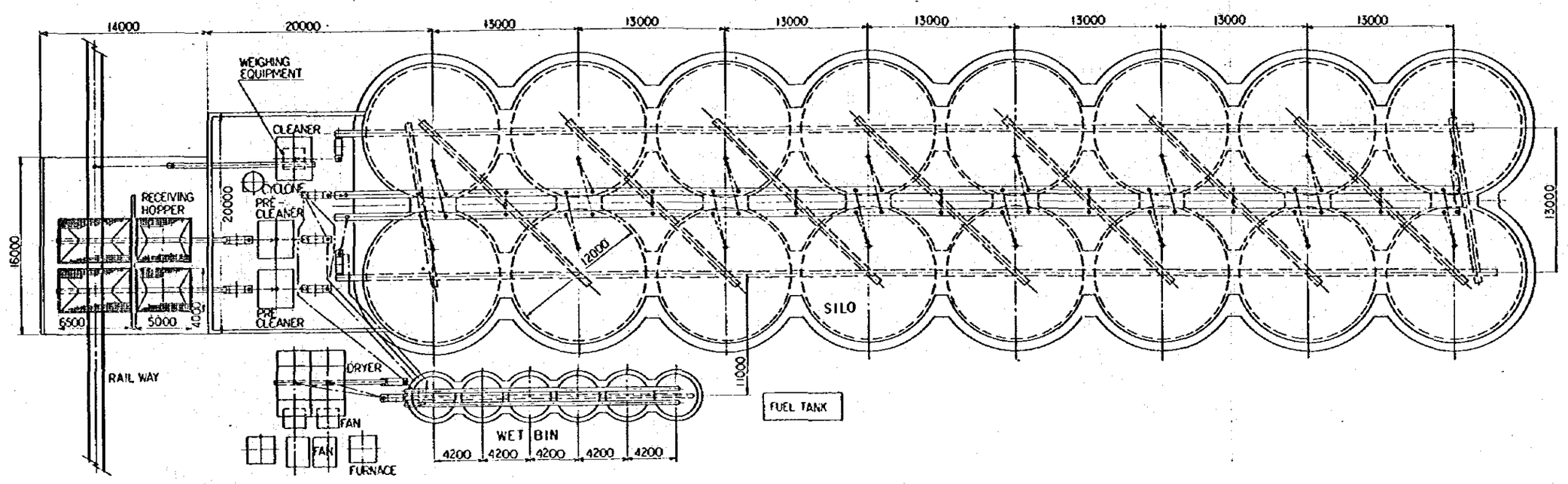
KGSP
BUNGOMA SILO: FLOW CHART

DWG NO. KGSP-B-5

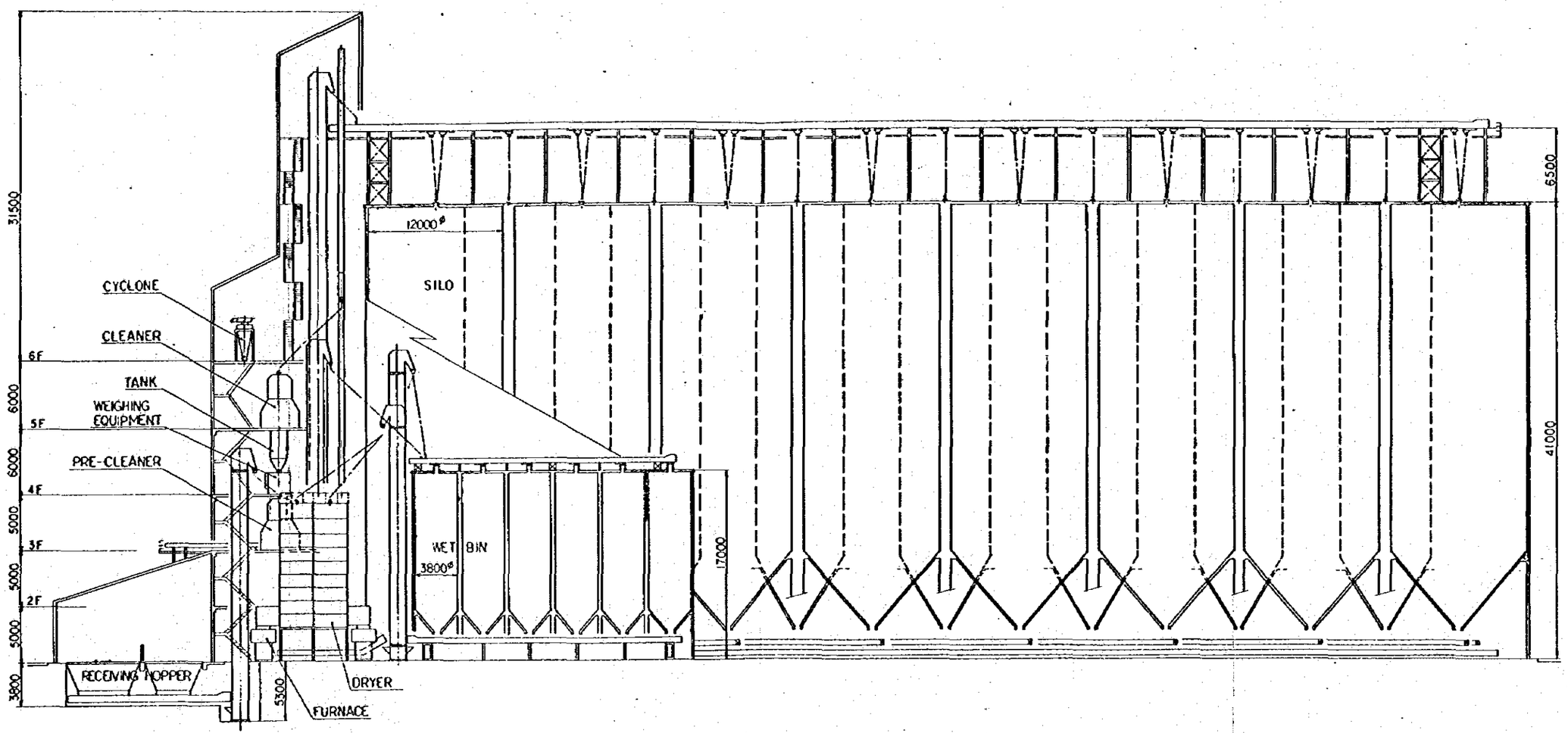
JAPAN INTERNATIONAL COOPERATION AGENCY



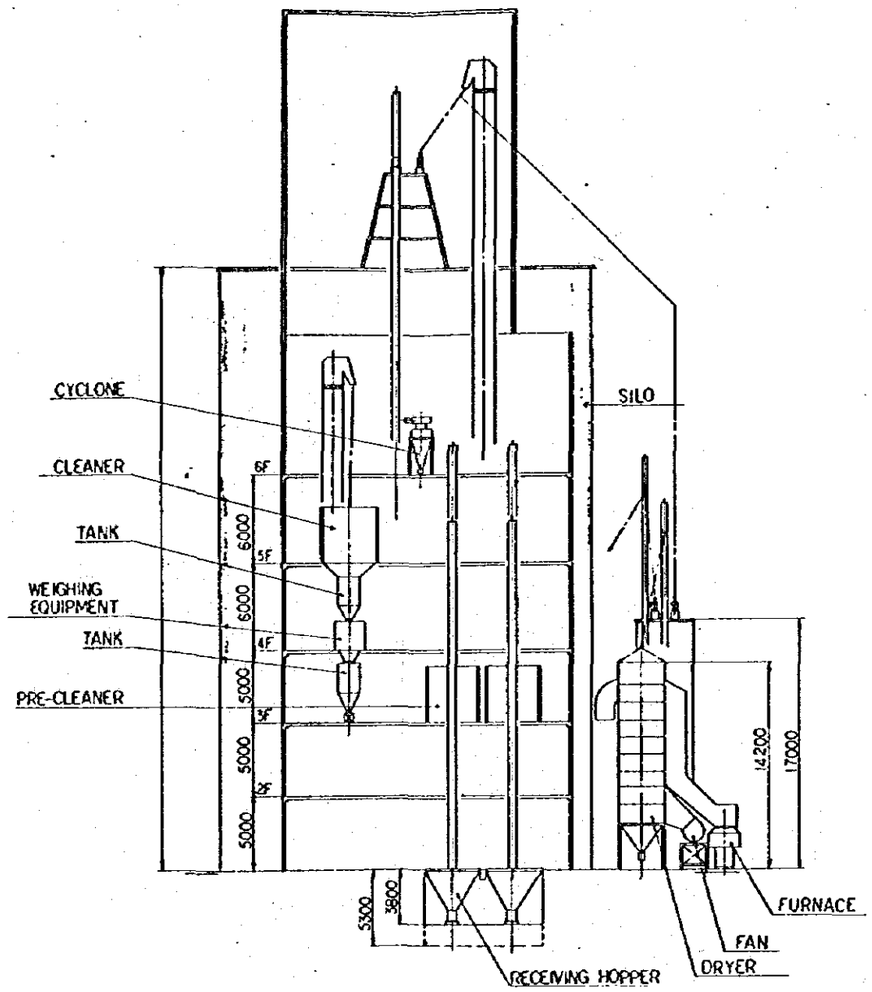
THE REPUBLIC OF KENYA NATIONAL CEREALS AND PRODUCE BOARD	
KGSP NAKURU SILO: GENERAL LAYOUT	
DWG NO. KGSP-N-1	
JAPAN INTERNATIONAL COOPERATION AGENCY	



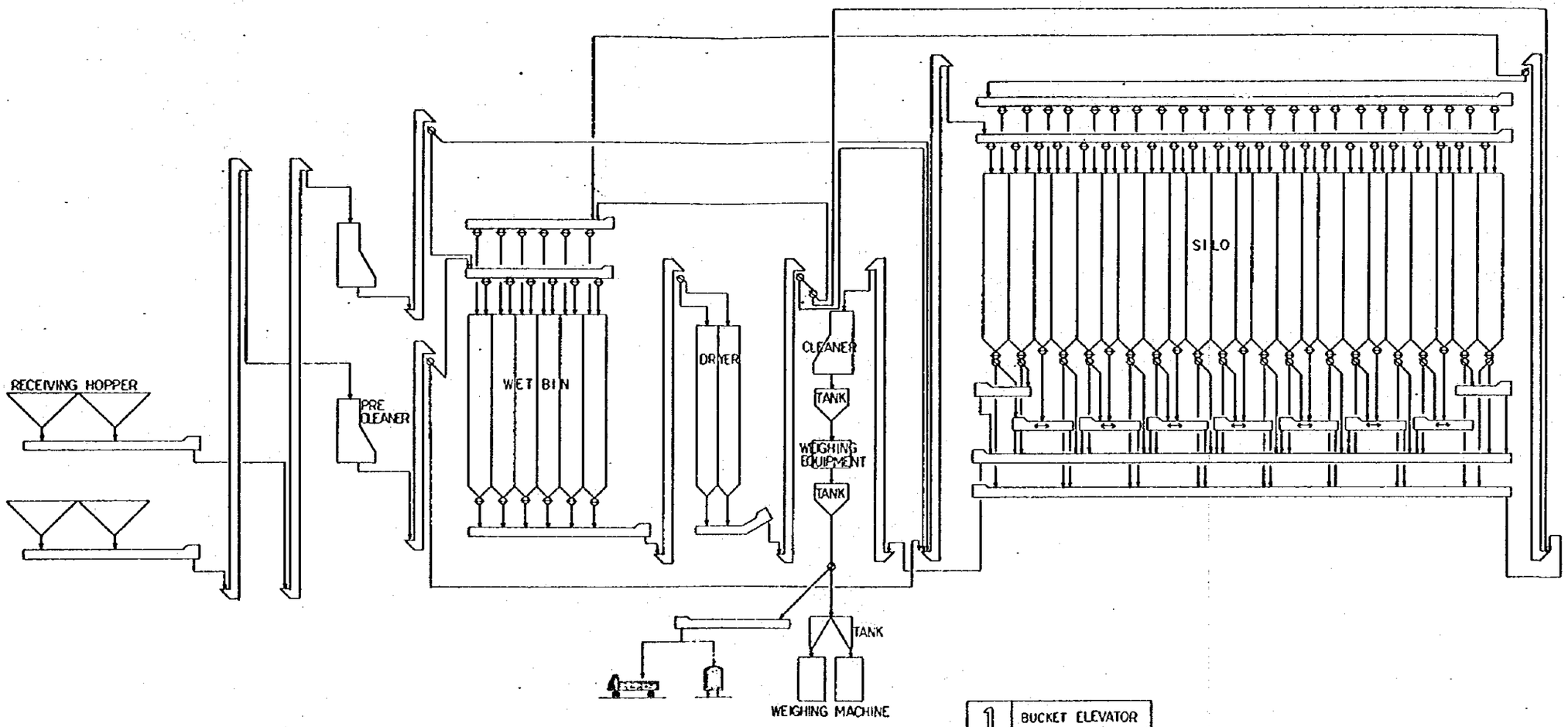
THE REPUBLIC OF KENYA NATIONAL CEREALS AND PRODUCE BOARD
KGSP NAKURU SILO: PLAN
DWG NO. KGSP-N-2
JAPAN INTERNATIONAL COOPERATION AGENCY



THE REPUBLIC OF KENYA NATIONAL CEREALS AND PRODUCE BOARD
KGSP NAKURU SILO: ELEVATION (1)
DWG NO. KGSP-N-3
JAPAN INTERNATIONAL COOPERATION AGENCY



THE REPUBLIC OF KENYA NATIONAL CEREALS AND PRODUCE BOARD
KGSP NAKURU SILO: ELEVATION (2)
DWG NO. KGSP-N-4
JAPAN INTERNATIONAL COOPERATION AGENCY



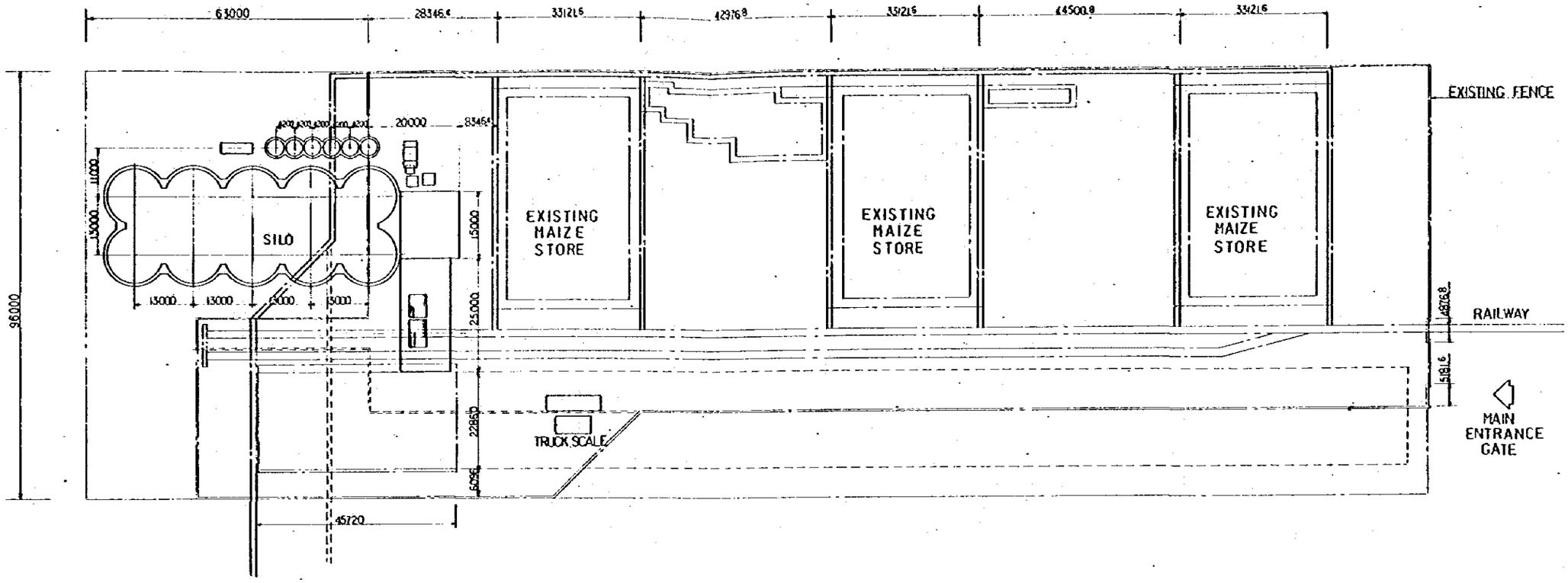
	BUCKET ELEVATOR
	CHAIN CONVEYOR
	TWO WAY CHUTE VALVE
	SLIDE GATE

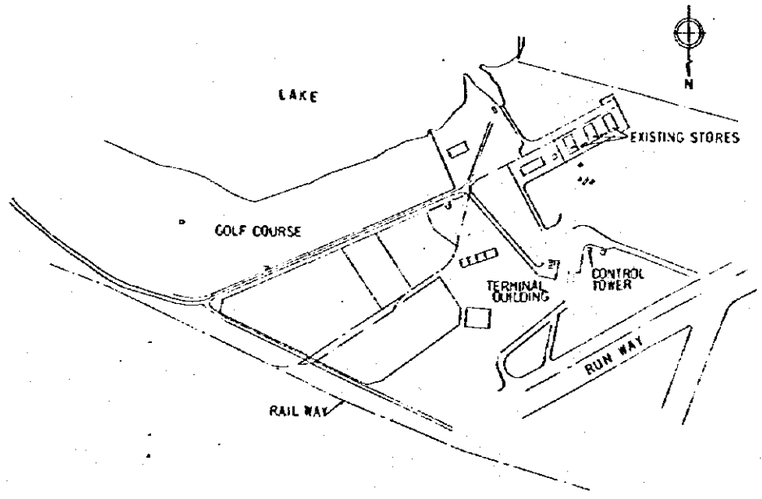
THE REPUBLIC OF KENYA
NATIONAL CEREALS AND PRODUCE BOARD

KGSP
NAKURU SILO: FLOW CHART

DWG NO. KGSP-N-5

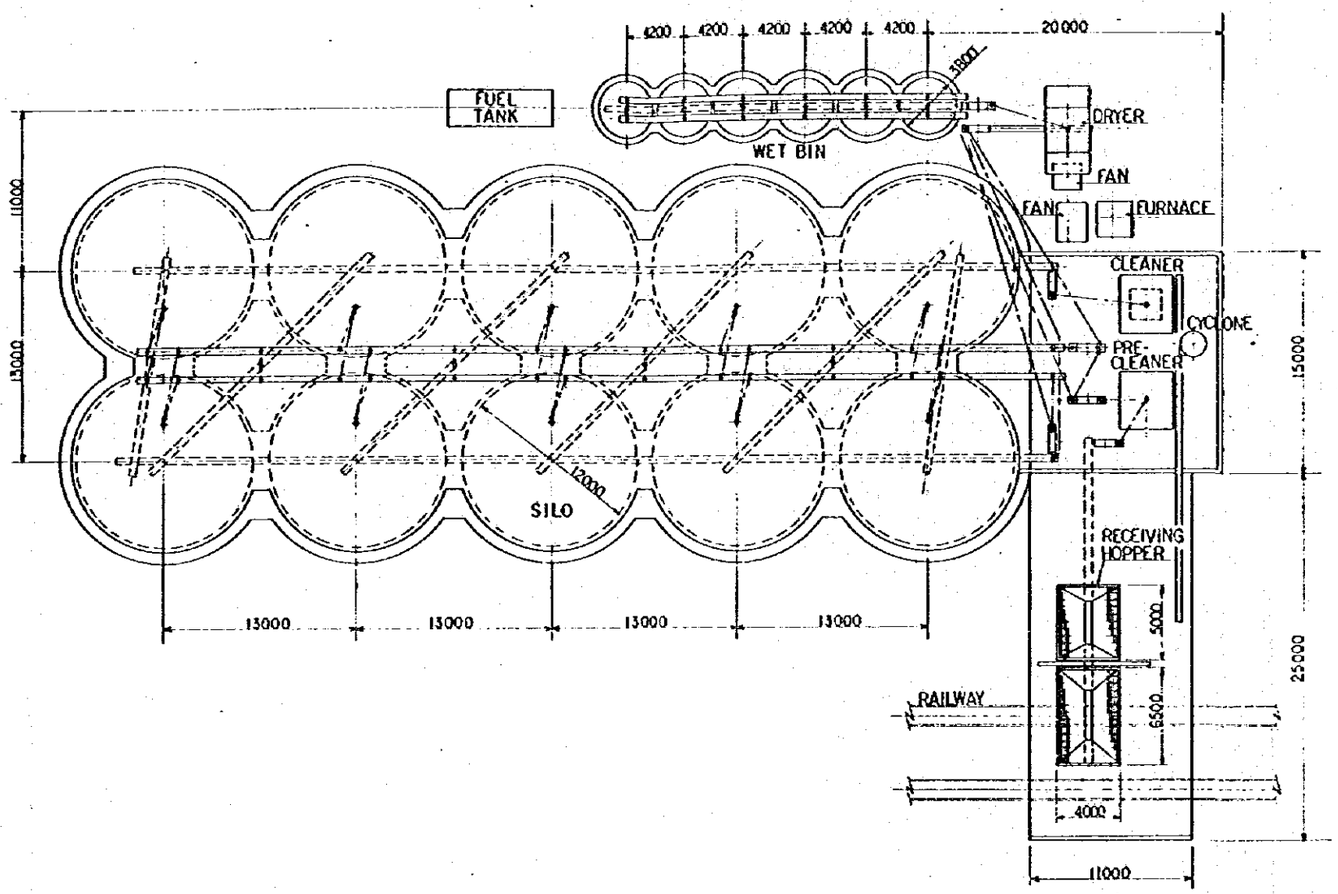
JAPAN INTERNATIONAL COOPERATION AGENCY



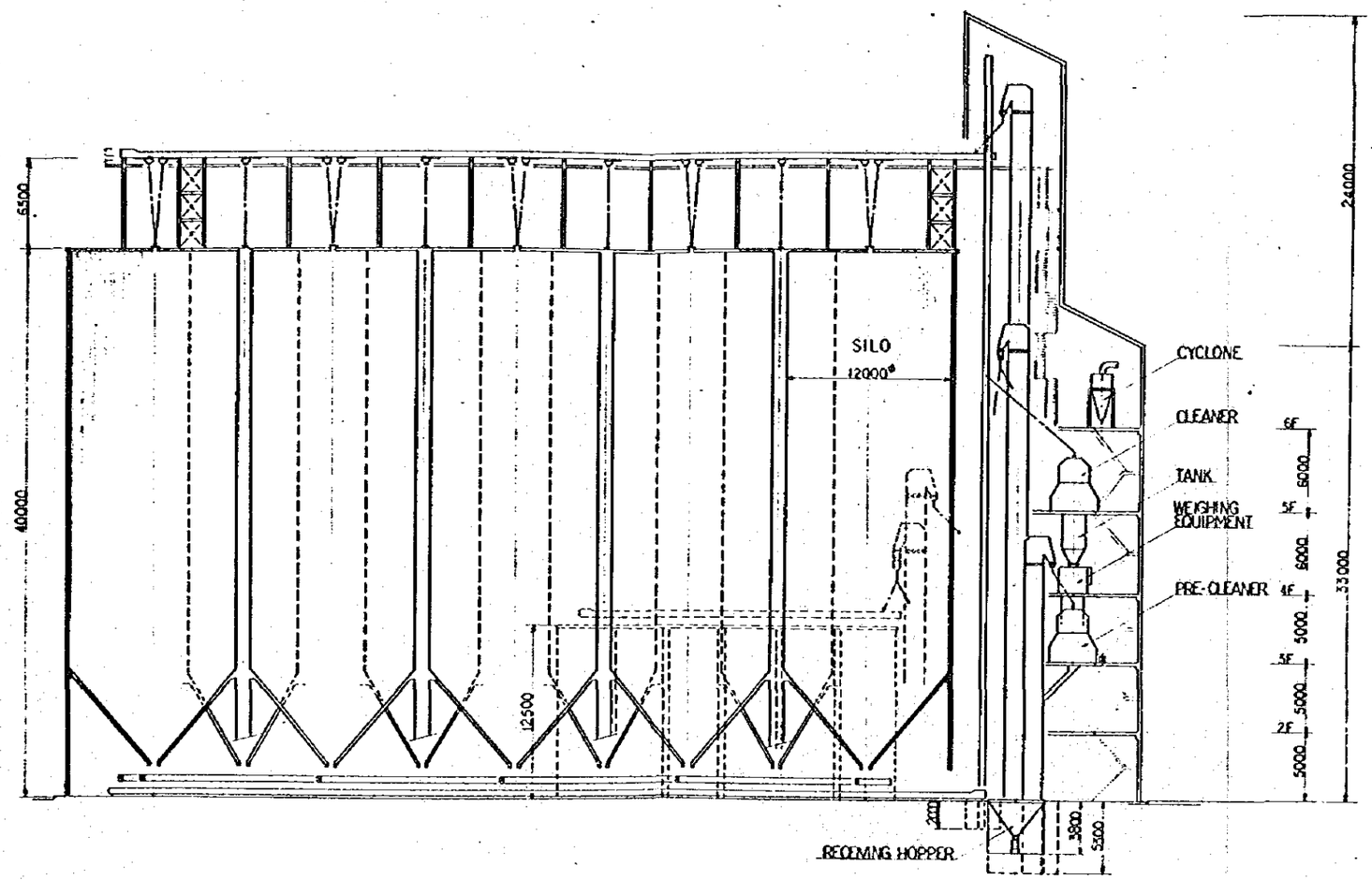


LOCATION PLAN

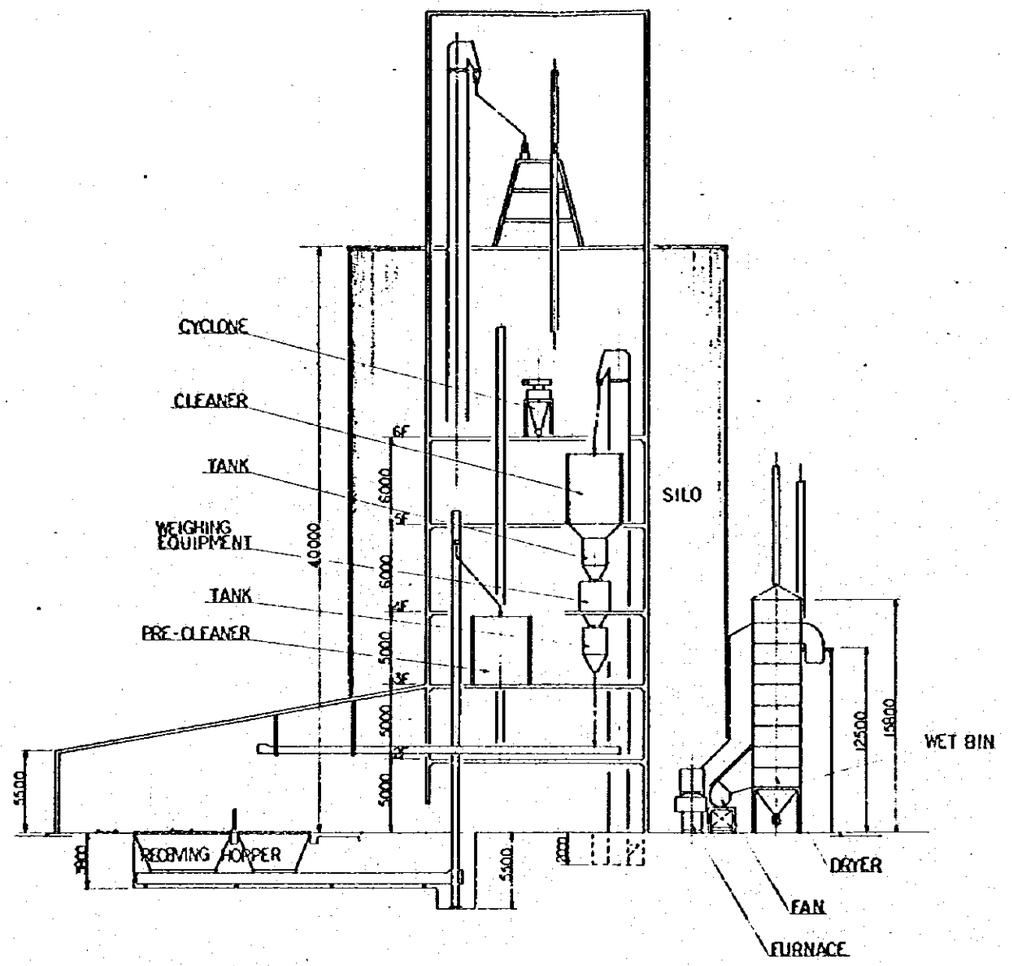
THE REPUBLIC OF KENYA NATIONAL CEREALS AND PRODUCE BOARD
KGSP KISUMU SILO: GENERAL LAYOUT
DWG NO KGSP-K-1
JAPAN INTERNATIONAL COOPERATION AGENCY



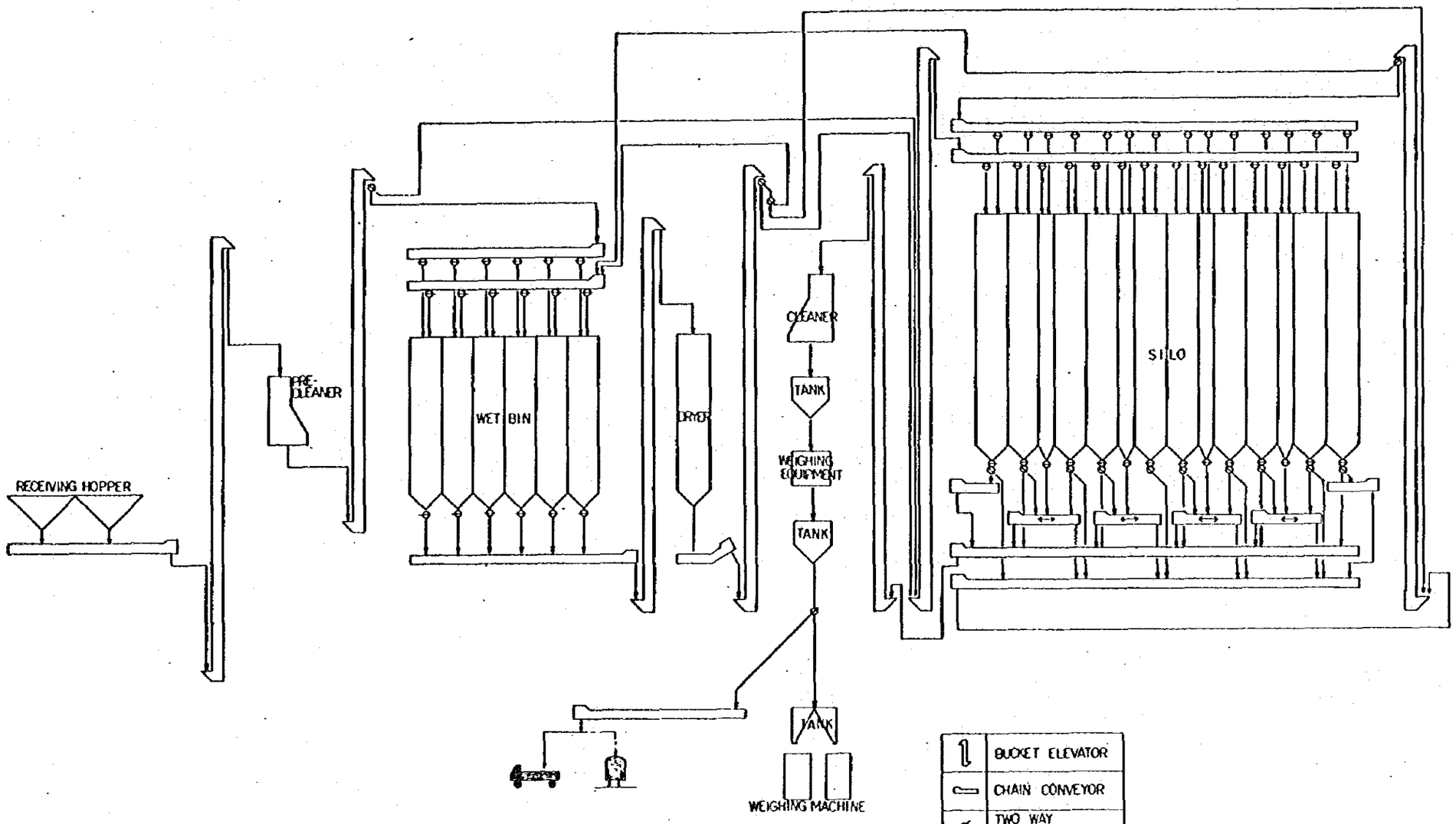
THE REPUBLIC OF KENYA NATIONAL CEREALS AND PRODUCE BOARD
KGSP KISUMU SILO: PLAN
DWG NO. KGSP--K--2
JAPAN INTERNATIONAL COOPERATION AGENCY



THE REPUBLIC OF KENYA NATIONAL CEREALS AND PRODUCE BOARD
KGSP KISUMU SILO: ELEVATION (1)
DWG NO. KGSP-K-3
JAPAN INTERNATIONAL COOPERATION AGENCY



THE REPUBLIC OF KENYA NATIONAL CEREALS AND PRODUCE BOARD
KGSP KISUMU SILO: ELEVATION (2)
DWG NO. KGSP-K-4
JAPAN INTERNATIONAL COOPERATION AGENCY



THE REPUBLIC OF KENYA
NATIONAL CEREALS AND PRODUCE BOARD

KGSP
KISUMU SILO: FLOW CHART

DWG NO. KGSP-K-5

JAPAN INTERNATIONAL COOPERATION AGENCY

JICA