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IMPROVED WATER PUMPING/ WATER LIFTING IN AFRICA

RAPID COUNTRY REVIEW

MALI

Power

REF [illegible]
JUNE 1986
[illegible]

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MALI

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INTRODUCTION

One priority of the Africa Bureau Energy Strategy is to identify the energy constraints recurrent costs and opportunities for using energy more effectively to increase agricultural productivity in USAID projects

The planning meeting of 29 August 1985 on improved Water Pumping/Water Lifting in Africa identified a series of tasks to be accomplished which would assist the Africa Bureau to acheive the goals of this strategy component

This study A Rapid Country Review of WP/WL in Mali responds to one of these tasks by providing an inventory of WP/WL systems used for irrigation an overview of the in-country sales and service capacity, and an assessment of the data base upon which a more detailed assessment could be based

THE SCOPE OF WORK

The scope of work for the review is based upon priority task number 4, defined in the improved water pumping water lifting in Africa planning meeting report (29 August 85)

The above SOW was condensed in order to remain within the budget allocated and modified to incorporate elements specifically of interest of the USAID mission in Bamako

The mutually agreed form provides

-an inventory of operational pumping systems,
-an inventory of sales outlets and sources of supply for systems and parts,
-an assessment of the data base available to assess the reliability and operational history in a future case study phase and
-a list of all information sources, contacts, and reference documents

METHODOLOGY

The study was conducted by I T Power Inc over a 10 day period working with three professionalss from the Solar Energy Laboratory (LESO) in Mali The study team were divided into two groups to conduct two simultaneous field trips each of seven days duration aimed at sampling project and private sector pumped irrigated activities throughout Mali All regions in Mali where pumped irrigation is practiced were sampled except the extreme south west Information on activities in this area were obtained through interviews with project personnel based in Bamako and by telephone to the region

The rapid review was based upon a set of four questionaires developed and tested within the first two days of the study, these questionaires

- field installation log of operational pumped irrigation systems
- data base to assess reliability and operational perfomance
- sales outlets and sources of supply for systems and parts and
- organisational interviews

are attached in annex 'D

During the preparatory period (2 days) for the field mission most government departments donors ONG and private sector organisations involved with irrigation activities were interviewed (refer to annex C for listing) in order to identify pumped irrigated projects and information sources nation-wide

The sales, service and parts suppliers were identified and all interviewed after the field mission A list of system suppliers, stocks and spare parts volume is shown in annex B'

Data was compiled from the questionaires and the preliminary results presented to the USAID mission in Bamako A analysis of the data obtained was beyond the scope of the rapid country review

This report presents the compilation of
- operational pumping systems
- sales outlets and
- the data base for case studies

and general observations of the team

RESULTS

1 Operational Pumping Systems (Ref ANNEX A)

Quantities of pumping systems identified as being used for irrigation in Mali are as follows

Sector	Quantity	Total Power	Total Area Irrigated	
			Main	Second
PROJECT	544	9916 HP	2600Ha	1124Ha
PRIVATE	438	2768 HP	N/A	N/A

These figures include systems which are installed and operational and systems which are ordered but not delivered to site These figures do not include systems which are in a state of disrepair

Private sector quantities are extrapolated from estimates of use rates provided by interviews with GPM officials and users at various points

adjacent to the Niger Bani and major lakes Each interviewee provided an estimate of quantities application and power ranges for defined geographical regions (i e within an arrondissement or cercle or between two definable locations or villages along the banks of the river) In all 45/ of the Malian section of the Niger river was sampled by applying the above method plus Lac Horo various tributaries and certain sections of the Bani

Due to contractual time constraints and the practicality of extending the survey, it is estimated that more than 80/ of official and project related activities were directly monitored but less than 2/ of private sector applications 80/ of identifiable equipment suppliers and service depots were sampled

It is thus estimated that total quantities which will be in operation by late 1986 are,

Project 600 Systems irrigating 11 350 Ha and
Private 510 Systems irrigating 3225 Ha

Some important averages extracted as a preliminary analysis of the operational pumping system data (see table I) show that for a sample of sites where data quality is assessed as being most accurate and reliable then

a) The area irrigated per nominal pump HP increases for main crop when pump size exceeds 25 HP

b) Large pumping systems (greater than 75 HP) are used very innefficiently for second crop agriculture (contra-saison)

c) Small pumping systems (less than 10 HP) typically irrigate 0,3 Ha/HP but when used in a controlled, efficienty managed environment (i e Africare Project Dire) irrigate 0 8 Ha/HP Average Ha/HP ratio of small pumps for Mali is 0,45

d) One project 'Ile de Paix' (550 Ha) using 110 HP Archemeadian screw pumps irrigates 1 66 Ha/HP This demonstrates a 100 % increase in efficiency over an efficiently operated and managed small pump project (lift in both cases is comparable)

Pump Size Range HP	Crop	Area Ha/HP	Main Crop Ha	2nd Crop Ha	HP on sites
<10 HP	MAIN	0 45	302	451	675
	2ND	0,71			
10-25 HP	MAIN	0 44	314	371	710
	2ND	0 58			
26-75 HP	MAIN	0 56	357	417	635
	2ND	0 59			
>75 HP	MAIN	0 95	1700	50	1790
	2ND	0 08			

2 Sales Outlets (Ref ANNEX B)

2 1 Eight Pumping equipment suppliers were interviewed two others, although identified could not be located

2 2 All pumped available are diesel powered e cept Slanzi which offer a gasoline powered range and one supplier of solar pumping equipment

2 3 All suppliers are based at Bamako except Ets Simaiga which has its head office in Segou 30% of the suppliers have regional offices but distribution to these offices is only made to satisfy specific requests

2 4 Hire purchase arrangements when existant or very short term

2 5 135 pumping systems are in stock in Bamako This represents 12% of the total in country volume

2 6 Most suppliers except SIEMI offer nation wide maintenance service but only upon request and all associated costs are borne by the user

[illegible] All suppliers have [illegible] maintenance facility with trained personnel

3 Data base for Case Studies (Ref ANNEX A)

3 1 A selection of the most appropriate sites or projects suited to a case study can only be determine when the terms of reference are defined Many potentially interesting examples and pumping system variants are available ranging from large samples of project and private sector small scale systems to technically unique installations of several hundred Horsepower

3 2 ANNEX A provides the basic data, technical, economic and social available at each of the 74 water pumping/water lifting activities reviewed within this preliminary study

OBSERVATIONS

A Most informed sources from Dire-Timbouctou-Gao consider that individual user-size pumps (5-6 cv) are not well adapted to need because

1 regional policy is to group workers (households) to do collective cooperative work,

2 individual pump ownership imposes too great a burden on user if failures occur

3 a collective group of households has a greater capacity and incentive to arrange finance and organize amenagement of sites, procurement of pump and upkeep and

4 management levels/burdens are higher than for larger units (possibly due to over-use)

B 12 cases of successfully irrigated perimeters of small/medium dimensions (10-50 hectares) are demonstrated mostly in Tombouctou and area, but these are recently prepared perimeters 1984 onwards)

C 500 Cooper pumps were procured in 1979-80 100 are still within direct control of AFRICARE 125 new units were dismantled to scavenge parts for repairs Approximately 100 are still operational in the private sector with maintenance and parts support mostly from AFRICARE This implies that 175 units, or 47% of those placed in service, are damaged beyond repair or not in use (50 - 100 disused motor casings are stocked at the maintenance shop in Bourem) The maintenance facility has a large stock of spare parts, but stocks of certain key components (crank shafts) are exhausted

D Considerable negative feeling exists in Dire/Tombouctou region about previous USAID actions in irrigated perimeters and project approach, concensus being that donor assistance IS REQUIRED, but only if in close collaboration with local authorities from the PLANNING stage onwards USAID project input rates are too high for local authorities and personnel to absorb effectively [illegible] project designs have not provided effective post-project continuation (Information source Governor of Tombouctou)

E Users consider that most pumps manufactured in the industrialized nations offer similar reliability The key to successful operation of pumps is the creation of regional after-sales service capacity (parts, maintenance skills and routine servicing) Villagers have to be taught, trained and encouraged to ,

-prepare perimeters

-plan planting and irrigation to coincide with fluctuation in the level of the river and crop type

-collectively manage water distribution, operation and maintenance of pumping system,

-and utilise a credit structure when at their disposal

Otherwise efforts to ameliorate irrigated perimeters will be ineffective

F Private sector awareness of potential pumped irrigation potential appears high

G The floating raft principle (13 systems 19-32 HP) observed in Dire deserves further investigation

H The use rate of pumps for irrigation is rapidly growing both at project level and within the private sector Pumped irrigation for small perimeters was virtually not practiced in Mali five years ago (Although the first perimeter irrigated by pumping dates back to 1922 with steam power)

I Interest in wind and solar for market gardening is high Examples include [illegible] Gargouna (13 ha) Ile de Paix, 1 Ha maraichage at Ber and karaba, Mali

Aqua Viva (7 Sites pumping 750 cubic meters total per day DNHE (PNUD & FED Projects) 11 Ha and two wind installations at Ebangue (2 Ha) The Governor of Tombouctou also promotes the idea of further intervention in this area

k The Bourem maintenance facility (Africare project) demonstrates how the private sector uses a maintenance service when available but also demonstrates that the facility does not at present satisfy the total regional need

L More than 50% of pumps installed in situations where no effective formal structure for maintenance exists are not operational

M The potential to expand current production capacity by pumped irrigation appears enormous through the use of decentralized parcels (less than 20 ha) adjacent to river and permanent tributaries/backwaters lakes, etc

N All pumped irrigation activities identified draw surface water from river tributaries or lake, or mares, except for cases of market gardening (15 solar 1 wind 3 electric and several diesel, where the area of the perimeter does not exceed 5 Ha and is generally are less than 1 Ha

P The water distribution process is invariably via open canals constructed of earth or concrete for the principle canals of larger perimeters Water stockage was only identified in market gardening applications where installations serve as joint village water supply/irrigation source

Q The objectives of most projects is virtually continuous operation of the pumping system throughout year (except during harvesting and pre-season maintenance) Although most successful ventures begin with single cropping and extend to full season when management, credit structure and training of users is adequate

R Efforts to systematically monitor the performance reliability and operating costs of installed systems are minimal Information regarding the most appropriate brands and models does thus not exist

S Overhead sprinkler systems are few, and only used for market gardening in the Bamako area The single exception to this is the 39 Ha perimeter of wheat at Dire

T Producers in the Bamako area claim that the sale of produce is difficult because the market is poorly developed

U The training course to be conducted in Bamako by Lambardini through its sales representation will be the first example of an effort on the part of a pumping system manufacturer to improve maintenance and operation standards

GENERAL CONCLUSIONS & RECOMMENDATIONS

1 The 10 day period programmed for the Rapid Country Review was

adequate to collect a nation-wide data sample, but did not allow sufficient time to compile the data and analyse the results

This report in consequence presents the tabulated data and principle results but does not include any detailed analysis of data

2 Several examples of pumped irrigated activities offer an adequate data base for a case study When Rapid Country Reviews are complete in other countries the case studies for detailed analyses can be selected from the results available

3 Technical information on systems (specifications, reliability etc) within the central offices of donor organisations is scarce and incomplete The GRM staff responsible for specific regions are however generally well informed No one appears to have a global perspective of where pumped irrigation is leading

4 250 diesel pumps (10-25HP) have been ordered (ADB Funds) The units will be installed in the Tombuctou-Dire region but the installation and maintenance responsibilities and sites have yet to be defined Projects of this magnitude if poorly executed will have a negative impact on the technology Organisations already involved with pumping system maintenance in the region (USAID Ile de Paix) should work with the GRM to establish an effective maintenance structure

5 Substantial growth in the private sector, both users and equipment suppliers have occurred over the last 5 years A serious effort is being made by Lombardini in particular to establish an effective service and maintenance network Other suppliers may follow suit

6 Handpumps for village water supply have been excluded from consideration in this study , in excess of 5000 are installed and village level maintenance structures established in certain zones Much could be learnt by performing a case study of hand pump reliability and maintenance which would be relevant to pumping systems for irrigation

7 Pump users and those responsible for selection and procurement are frequently poorly informed about the choice of technologies commercially available and how to select the best technology for a specific application An advisory service to those responsible for pumping system selection which also provided post installation service and maintenance guidelines would contribute substantially to improved pumping efficiency, pump reliability and the resulting economic considerations

8 Pumping systems are generally not managed and operated in an efficient manner, in consequence not only is pump life and reliability influenced but irrigation costs are increased

9 No credit structure is available to the private sector Niether banks or pump suppliers offer credit terms to the small farmer or individual

RECOMMENDED FOLLOW ON ACTIONS

1 Project interview sheets and results be compiled copied and transmitted to project sites for correction completion and update

2 Mme Hochet (cooperation suisse) be contacted at Niafunke to discuss socio-economic aspects of pumped irrigation She has extensive first-hand experience in Mali, Niger and Senegal

3 The questionnaire format be updated and transferred to IBM/Wang data base II or Lotus 1-2-3 to facilitate future data processing for other studies

4 Firdings from Mali RCR be transmitted to Niger so that SOW can be modified or updated as deemed necessary

5 LESO participation in Niger study is highly desirable, if not indispensible, based upon Mali experience ONAHA participation and approval from all appropriate Niger government agencies must be obtained prior to conducting the RCR in Niger

6 The results of the Mali RCR be sent to IT Power for review publication and inclusion in the Global analysis

7 A more effective assessment of private sector pumping system status could be made from a river-based mission

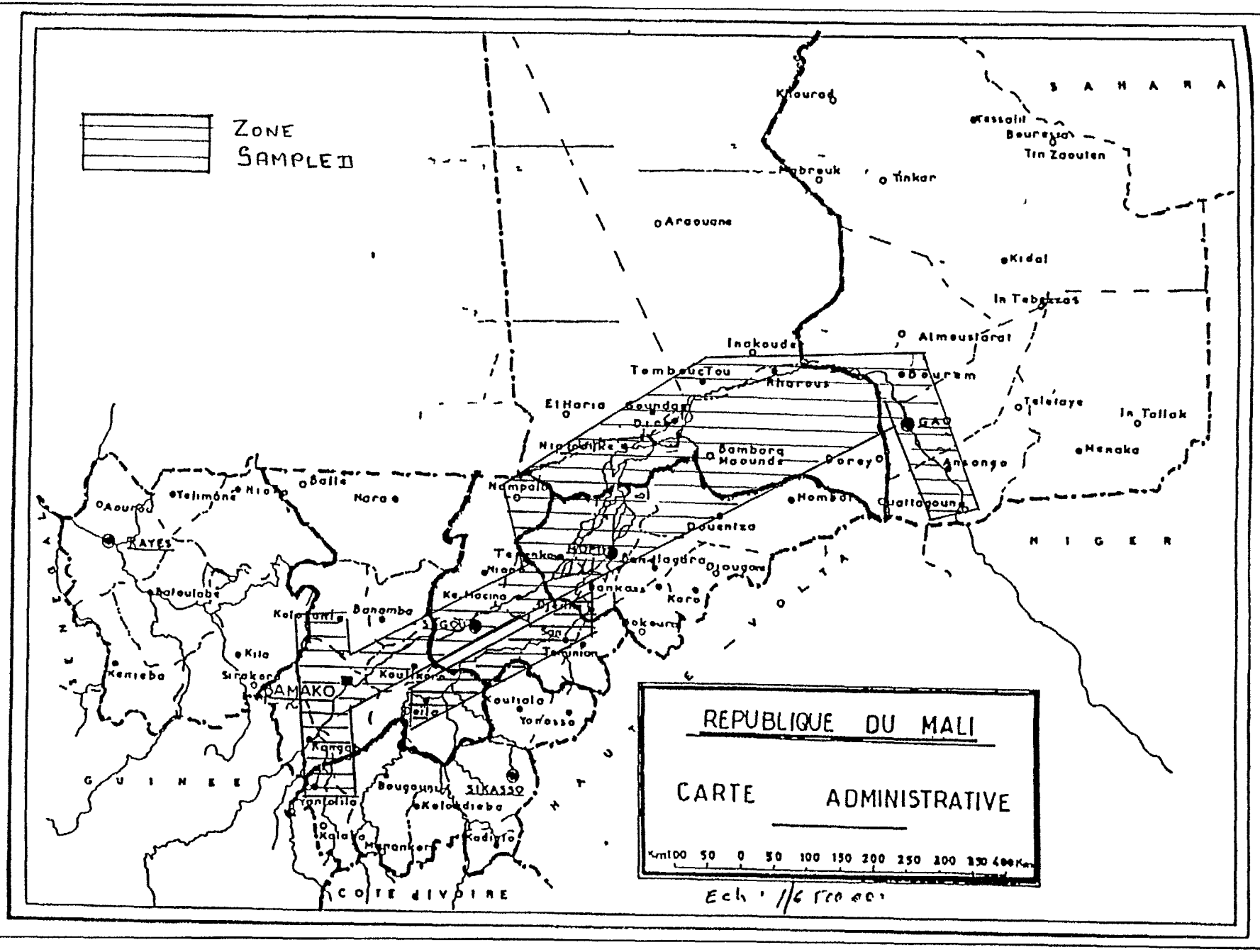
ANNEXES

'A Inventory of operational pumped irrigation systems identified and the operational and reliability data base available

B' Inventory of sales outlets for pumping systems and parts

C Lists of information sources, contacts and reference ducuments

D Questionaires used in interviews with suppliers and users


ZONE SAMPLED
REPUBLIQUE DU MALI
CARTE ADMINISTRATIVE
Km 100 50 0 50 100 150 200 250 300 350 400 Km
SAHARA
NIGER
GUINEE
COTE d'IVOIRE
HAUTE VOLTA
SENEGAL
Kidal
Tinkar
Araouane
Almoustarat
Bourem
Teletaye
In Tallak
Menaka
Ansongo
Dorey
Bambara Maounde
Rharous
Tombouctou
Inakoude
El Haria
Goundam
Dire
Niafoulke
Nampala
Douentza
Hombori
Djougou
Bankass
Koro
Bokoura
Ke Macina
Banamba
Kolokani
Kita
Sirakoro
Kenieba
Bafoulabe
Aourou
Telimane
Nioro
Balle
Nara
Kayes
Bamako
Koutikoro
Koutiala
Yanfolila
Kalaba
Manankoro
Bougouni
Kolokdieba
Kadiolo
Sikasso
Kangaba
Deila
Yanfolila
Tenenkou
Niono
Djenne
San
Tominian
Gao
Tessalit
Bourezza
Tin Zaouten
Kilourad
Mabrouk
Ech : 1/6 500 000

OPERATIONAL PUMPED IRRIGATION SYSTEMS

FIELD INSTALLATION LOG

SITE FILE NUMBER SITE____
DATE FILE ORIGINATED,
FILE UPDATED

NAME OF SITE or PROJECT
PROJECT NUMBER
DONOR and/ or OWNER NAME
REGION/CIRCLE
NUMBER OF SYSTEMS

PRIME MOVER
MANUFACTURER
MODEL
POWER
ENERGY SOURCE

PUMP
MANUFACTURER
MODEL
TYPE
VOLUME/HR

WATER SOURCE
TYPE

IRRIGATION PROCESS
TYPE

STORAGE
TYPE
CAPACITY

APPLICATION

CROP TYPES			
IRRIG PERIODS			
AREA/SYSTEM			
VOLUME/SYSTEM			

AREA OF PERIMETER CULTIVATED

REFERENCE DOCUMENTS

OBSERVATIONS

DATA BASE TO ASSESS RELIABILITY AND OPERATIONAL PERFORMANCE

SOURCE OF INFORMATION

DATE SYSTEM(S) INSTALLED

PERIOD RECORDS AVAILABLE (DATES / SOURCE)

Operating Time

Failures

Maintenance

Parts Consumed

Performance

COSTS AVAILABLE (YES/NO /SOURCE)

Initial Purchase

Transportation

Importation Duty

Installation

Operational

Maintenance

USER (YES/NO /SOURCE)

Financial Contribution to System Cost

Financial Contribution to Operating Cost

Labour Contribution

Revenue from Water

Crop Yields

Communication Network for Maintenance

TRAINING

Done at time of Installation (YES/NO)

Ongoing (YES NO /FREQUENCY)

Participants

Training Group (NAME)

SALES OUTLETS AND SOURCES OF SUPPLY FOR SYSTEMS AND PARTS

PRODUCT FILE NUMBER PROD____

DATE FILE ORIGINATED

FILE UPDATED.

NAME OF ORGANISATION

LOCATION

STATUS

Societe anonyme (S A)

Societe en nom collectif

Societe de caution mutuelle

Societe a responsabilite limitee

PRODUCTS MARKETED

Prime Movers	SYSTEM# 1	SYSTEM# 2	SYSTEM # 3
Manufacturer			
Country of origin			
Models			
Size range			
Energy Source			
Pumps			
Manufacturer			
Country of origin			
Models			
Types			
Power range			
Irrigation Systems			
Manufacturer			
Type			
Size range			

SOURCE OF SUPPLY

Pumping Systems

Irrigation Systems

Spare Parts

SALES OUTLETS CONTINUED

CAPACITY

To Offer Service Contracts

To Provide Credit/Installment Plan

To Respond to Tenders

To Provide Training

To Special Order

Time Delay for Special Orders

Length of Time in Business of Irrig System Supply

SERVICE CAPACITY

Types of System

Region

Trained Personnel

Where Trained.

SPARE PARTS

Stock

Prime Movers

Pumps.

Irrigation Systems

Parts, Expressed as % of Total Stock

On Order

Systems and Parts, Expressed as % of Total Stock

RAPID COUNTRY REVIEW ---MALI

Summary--- Pumping System Suppliers

Supplier	Representative For	Quantity in stock	Quantity in order	Parts in Stock Expressed as % of Systems: Type	Parts in Stock Expressed as % of Systems: Quantity	Maintenance Capacity: Trained Personnel	Maintenance Capacity: Equipment	Training for Users	Credit for Users	Service Region	Years In Service	Service Volume systems Maintained per month
Siemi	*Lister Lombardini Venus (Peters)	5 1 5	4 8 10		Important Important Important	3	Workshop	Yes	Yes	Bamako	30	N/A
Socoatex	*Deutz	10	307	Deutz	10	8	Workshop (not verified)	Yes	Yes	Nationwide	5	N/A
Sruecom	Slanzi Cotierme	27	7	Slanzi Cotierme	15 10	3	Workshop (not verified)	Yes	Yes	Nationwide	7	0 67
Dupe et Fils	Natz Flygt Guinard	30		Natz Flygt	Important Important	3	Workshop	Yes	Yes	Nationwide	5	N A
Saminad	*Solarforce	3	4 kw	Solarforce	Unknown	2	Workshop	Yes	Yes	Nationwide	5	N A
Ets Sinaga	Perkins Special Game Deutz	- 24 -		Perkins Special Game Deutz	10 10 10	3	Workshop (not verified)	Yes	Yes	Bamako Segou Mopti	10	N/A
Somafrec	Lombardini	30	20	Lombardini	50	5	Workshop	Yes	Yes	Nationwide	6	N A
Str Kagnassy et Fils	Perrot	-	-	Perrot		1	Workshop (Not Verified)	Yes	Yes	Nationwide	1	N A

PUBLIC SECTOR - PART I

PUMPING SYSTEM STATISTICS

Site	System Manufacturer	Project/ Owner	Location	Less than 10 Num	Less than 10 HP	10 - 25 HP Num	10 - 25 HP	26 - 75 HP Num	26 - 75 HP	More than 75 HP Num	More than 75 HP	Energy Source	Total Area-Ha	Area Irrigated (HA) Main crop	Area Irrigated (HA) Second	Site Nominal Power HP	Site Volume In M3/Hr Main Crop	Site Volume In M3/Hr Second	Hrs Op/Day Main Crop	Hrs Op/Day Second
SITE	MFGR	OWNER	LOCATION	NUML10L10HP		NUM10-25	10-25HP	NUM26 75	26-75HP	NUM>75	>75HP	ESOURCE	TOTALHA	MAIN	2ND	NOMHP	SUMAIN	SU2ND	HRSMAIN	HRS2ND
D001	Leema	DORDA	Samanko	3	2							River	1	1	1	6	12	12	24	24
D002	Made in Korea	Farabana Perimter	Farabana							4	200	Diesel	500	200	0	800	2520	0	16	0
D003	Guinard	FED	Karadie	1	4							Solar	2	0	2	4	0	18	0	7
D004	Guinard	FED	Nossombougou	1	4							Solar	2	0	2	4	18	19	7	7
D005	Photowatt	FED	Koumi	1	2							Solar	2	0	2	2	0	7	0	7
D006	Grundfos	FENU	Sirakorobo	1	2							Solar	1	0	1	2	0	4	0	7
D007	Grundfos	FENU	Tioribougou	1	2							Solar	1	1	1	2	6	6	7	7
D008	Guinard	ILRISAT	Cinzana	1	2							Solar	8	4	0	2	n/a	25	24	0
D009	USSR	Office du Niger	Sonikuora					2	27			Electric	80	42	2	54	360	360	0	0
D010	Deutz/Guinard	Oper production Semence	Dalabani			2	15					Diesel	80	15	0	30	0	0	0	0
H007	Cooper	Africare	Dire	100	5							Diesel	470	235	400	500	5000	4000	n/a	8-12
H008	Lombardini/KSB	Africare	Dire	6	6							Diesel	n/a	Back-up for H007		36				
H009	Hatz	Africare	Dire	2	9	2	10					Diesel	n/a	n/a	n/a	38	Not installed			
H010	Lombardini/Cooper	Africare	Dire	12	6							Diesel	n/a	30	30	72	105	105	4-6	4-6
H012	Hatz	GTZ	Douvekire			2	10					Diesel	22	22	22	20	n/a	n/a	n/a	n/a
H013	Hatz	Coop Suisse/CAC	Batouma			2	10					Diesel	n/a	10	0	20	n/a	n/a	n/a	n/a
H014	Lombardini	Coop Suisse/LAC	Damba	4	9							Diesel	n/a	12	0	76	n/a	n/a	n/a	n/a
H015	Deutz/Guinard	GRM	Dire			5	19	13	33			Diesel	n/a	n/a	n/a	524		n/a	n/a	
H016	John Deere	Action Ble	Dire					1	71			Diesel	39	39	39	71	195	195	n/a	n/a
H017	Bernard	Action Ble	Dire	3	7							Diesel	n/a	n/a	n/a	21	n/a	n/a	n/a	n/a
H018	Alsthom	Action Ble	Dire					3	70			Diesel	261	145	145	210	2160	2160	9	9
H019	Hatz	UNICEF/Terre des Hommes	Tiankour					1	60			Diesel	100	20	20	60	300	300	n/a	n/a
H020	Hatz	Action Ble	Dire			250	18					Diesel	n/a	n/a	n/a	4500	Not installed			
H023	Lombardini/Cooper	Quaker/Goundam	Wana	1	6							Diesel				6				
H023	Hatz	Quaker/UNICEF	Wana	1	9							Diesel	13	5	0	9	0	n/a	n/a	n/a
H024	Lister	Ile de Paix	Kourione							3	110	Diesel	1500	550	0	330	21600	0	12	0
H025	France Photon/SI	Ile de Paix/CFC/FAC	Kabara	1	2							Solar	2	0	0	2	13	0	7 8	0
H026	Belgosolar/G Bret	Ile de Paix	Bei	1	5							Solar	1	1	1	5	10	10	7 8	7-8
H027	Lister/Vogel	FENU	Timbuctou			9	25					Diesel	50	50	50	225	2250	2250	10	10
H027	Lister/Vogel	FENU (on order)	Timbuctou			9	25					Diesel				225				
H030	Elvias	Atlit	Ebangue	2	4							Wind	2	2	2	8	5	5	5	5

PUBLIC SECTOR PART II

PUMPING SYSTEM STATISTICS

Site	System Manufacturer	Project/ Owner	Location	Less than 10 Num	Less than 10 HP	10 - 25 HP Num	10 - 25 HP HP	25 - 75 HP Num	25 - 75 HP HP	More than 75 HP Num	More than 75 HP HP	Energy Source	Total Area Ha	Area Irrigated (HA) Main crop	Area Irrigated (HA) Second	Site Nominal Power HP	Site Volume I (M3/Hr Main Crop	Site Volume I (M3/Hr Second	Hrs Op/Day Main Crop	Hrs Op/Day Second
H031	Lombardini	Coopaction Accord	Tondibi					1	40			Diesel	n/a	n/a	n/a	40	n/a	n/a	n/a	n/a
H033	Slanzi	GPM	Bourem(Gao)			4	12					Diesel				48				
H061	Slanzi	CMI	Gamba			2	12					Diesel	20	20	20	24	n/a	n/a	n/a	n/a
H049	Slanzi	Caisse Centrale	Forcho II			5	12					Diesel		"	"	60	n/a	n/a	n/a	10-12
H024	Lombardini	Caisse Centrale	Forcho II			1	25					Diesel	130	33	43	25	n/a	n/a	n/a	10 12
H051	Boutz/Guinard	Caisse Centrale	Forcho II	3	8							Diesel	"	"	"	24	n/a	n/a	n/a	10-12
H045	Slanzi	GPM	Gaoounje			4	12					Diesel	40	10	10	48	n/a	n/a	7	3
H046	Lister	GPM(Bogoundie	Gaoounje					2	33			Diesel	"	"	"	66	n/a	n/a	5	3
H036	Slanzi	GPM(Tacharane)	Tacharam			4	12					Diesel	13	13	13	48	n/a	n/a	12	12
H037	Slanzi	GPM(Dongome)	Dongome			3	12					Diesel	10	10	0	36	n/a	n/a	n/a	n/a
H038	Kubota	GPM(Goutchin)	Goutchin			1	12					Diesel				12	n/a	n/a	n/a	n/a
H039	Lombardini	GPM(Goutchin)	Goutchin			1	21					Diesel		"		21	n/a	n/a	n/a	n/a
H040	Slanzi	GPM(Goutchin)	Goutchin			3	12					Diesel	15	10	10	36	n/a	n/a	n/a	n/a
H059	Lombardini	Entraide Canada	Garaouna	3	9							Diesel	15	10	10	27	200	200	n/a	n/a
H011	Slanzi	GPM(Watagouna)	Watagouna			4	12	1	40			Diesel	25	23	23	88	390	390	n/a	n/a
H042	Slanzi	GPM (Bara)	Bara			3	12	1	40			Diesel	20	20	20	76	390	390	n/a	n/a
H044	Slanzi	GPM (Ansongo)	Ansongo			3	12					Diesel	10	10	10	36	n/a	n/a	n/a	n/a
H043	Kubota	GPM (Ansongo)	Ansongo			1	12					Diesel				12	n/a	n/a	n/a	n/a
H014	Lombardini	/	Bafoulabe			1	14					Diesel	8	8	n/a	14	250	0	n/a	n/a
H035	Lombardini	CMCAOUS (Koumio)	Koumio					2	40			Diesel	40	28	28	80	900	900	n/a	n/a
H016	Lombardini	GPM CMAOU	Kamio			1	20					Diesel	20	10	10	20	280	280	n/a	n/a
H047	Lombardini	GPM (Djenne)	Djenne			1	20	2	40			Diesel	45	40	40	100	1460		n/a	n/a
H048	Lombardini	GPM (Youvarou)	Youvarou			1	20	1	40			Diesel	30	n/a	n/a	60	Not installed			
H019	Lombardini	GPM (Tenenkou)	Tenenkou			1	20	2	40			Diesel	30	n/a	n/a	100	Not installed			
H050	Thomas	CCPU/OMC(on order)	Arrond Mooti	9	2							Diesel				18				
H050	Thomas	CCPU/OMC	Arrond Mooti	2	2							Diesel	5	n/a	5 6	4	n/a	n/a	n/a	n/a
H052	Baudouin/Flender	FED/CMDT (San Ouest)	San Ouest							2	330	Diesel	5000	950	50	660	5400	4400	20	3
H052	Baudouin/Flender	FED/CMDT (San Ouest)	San Ouest							1	135	Diesel		"		135	1800	1800	20	3
H053	France Photon/Guinard	USAID/LESO (Mooti)	Mopti	1	2							Solar	1	1	1	2	n/a	10	n/a	7-8
H055	Hatz	UNICEF/Africare	Bourem					1	60			Diesel				60				
H060	Deutz	GPM UNICEF	Trankour			1	33	1	74			Diesel	100	0	100	107		000	0	n/a
H056	Guinard/Grundfos	MAU	Circle San	7	2							Solar	18	n/a	n/a	14	55	55	7	7
H057	Slanzi	CFAU	Gamba			2	12					Diesel	10	10	10	24	n/a	n/a	n/a	n/a
H059	Electrogamma	SFEAMA	Gao	5	N/A							Electric	20	n/a	n/a		n/a	n/a	n/a	n/a
			SUB TOTAL	170		320		34		10			8759	2590	1106	9949	45678	20699	173	114

PUBLIC SECTOR - PART 1 APPLICATION & USER STATISTICS

Site	Principal Crop Main Crop	Second	Irrigation Process	System op performance reliability	Procurement and oper costs	User contributions?	Revenue from water	Info on Production Yields	Training at time of installation	Number of participants	Post installation training	Number of participants	Training organization	Communication network
SITE	MAINCROP	2NDCROP	IPROC	OPPER	PROC$	USER?	REVENUE	INFO	TRNG	TNES	PTRNG	TNES2	TRNGORG	COMMNET
D001	Banana/citru	Ban citr reg	canal/sprinkler	N/A	Yes	Labor	No	Unknown	yes	1	no	-	CEEMA	acceptable
D002	rice	tobacco	canal	N/A	Only op costs	Op cost+labor	Yes	Yes	yes	4	no	-	KOREA	good
D003		vegetabl	aspersion	Yes	Ye no oper	Labor	Yes	Unknown	yes	2	no	-	DNHE	acceptable
D004	sorg/maize	vegetable	aspersion	Yes	Yes no oper	Labor	Yes	Unknown	yes	1	no	-	DNHE	acceptable
D005		vegetable	aspersion	Yes	Yes, no oper	Labor	Yes	Unknown	yes	1	no	-	DNHE	acceptable
D006		veg tobac pot	aspersion	Yes	Yes no oper	Labor	Ye	Unknown	yes	1	no		DNHE	acceptable
D007	ban/papaye	vegetable	aspersion	Yes	Yes no oper	Labor	Ye	Unknown	yes	1	no	-	DNHE	acceptable
D008	cereals		sprinkler/canal	Yes	Yes	Op cost+labor	No	N/A	yes	3	no	-	CIBA GEIGY	good
D009	citrus/flowe	vegetable	canal	Yes	Yes	Yes	No	Unknown	yes	2	no		OFFICE DU NIGER	good
D010	rice		canal	Yes	Yes	Op cost+labor	No	Yes (O P IT)	yes	1	no	-	GARAGE/UPS	good
H007	mil/rice/sorto	wht/an or	Canal	Recent 85 on	Init cost/oper only	Labor	None	Yes	yes	N/A	yes	N/A	AFRICARE	good
H008				Yes	Yes	Systems used as backup to H007								
H009				Not installed	Proc/shipping only	N/A	N/A	N/A	not installed-intended to replace Cooper systems or establish cooperatives					
H010	mil ric sorg	maraichage	canal	No	Proc/shipping only	Syst renew/labo	None	No	ten systems rented to private sector two systems used as back up for broken Cooper system					
H012	wheat	wheat	canal	N A	GTZ/Init proc only	N/A	N A	N/A	yes	1	yes	1	GTZ	good
H013	rice			Yes	Coop Suisse	Op costs, yr ?	None	N/A	yes	2	yes	2	DMA (SAMANKO) 3 months	N/A
H014	rice	-		No	Coop Suis/Init proc	N/A	N A	N/A	yes	2	yes	2	DMA (SAMANKO) 3 months	N/A
H015	rice	wheat		on 3 systems	SOCOGIEX	Op cost+labor	Non	None	yes, 3 4 days	2	no		SOCOGIEX, 6 months	good
H016	sorg/rice	wheat		N/A	N/A	Labor	None	Yes	yes	N/A	no	-	PERROT-BELIN (FRANCE)	N/A
H017	n/a	n/a		N/A	Init Proc only	Labour	None	No	not available (private)					
H018	sorg rice	wht/maraich		Yes, report/mo	Yes	Op cost+labor	Yes	N/A	yes 2 months	N/A	no		PERROT-BELIN (FRANCE)	good
H019	rice	wht brans		Yes M Sidibe	UNICEF+Terre des Hom	Labor	N	Yes	partial	1	yes	1	TERRE DES HOMMES	good
H020				Not installed					not installed					
H023				Yes Quaker ser	Yes rented	rental labor	No	Yes	yes	5	no		AFRICARE	N/A
H0[illegible]	Not install	wheat	canal											
H024	Rice		canal	Yes ann report	Yes Ile de Paix	rent, labor	Yr 35000/hayes		yes 1 month	2	no	-	LISTER	good
H025	Pepinere		n/a	Yes ann report	Yes Ile de Paix	N/A	N A	N/A	yes	1	no	-	ILE DE PAIX	good
H026	Maraich	Maraich	bucket	No	Yes Ile de Paix	Labor	No	New install	yes	1	no	-	ILE DE PAIX	good
H027	Rice	Rice	canal	Yes FENU Rpt	Yes FENU Rpt	Op cost+labor	No	Yes	yes	24	yes	24	FENU MEF NANIF	good
H027														
H030	New installation		bucket	No	Yes Atlit France	None/labor	N/A	New install	yes	4	new system	-	LUIAS (THIES)	doubtful

PUBLIC SECTOR PART 2

Site	Principal Crop Main Crop	Second	Irrigation Process	System op performance reliability	Procurement and oper costs	User contributions?	Revenue from water?	Info on Production Yields	Training at time of installation	Number of participants	APPLICATION & USER STATISTICS: Post installation training	Number of participants	Training organization	Communication network
H031	n/a	n/a	n/a	N/A	N/A	N/A	N/A	N/A	not available					
H033				Dec 84-85 only	Yes ARS-Gao	Labor	No	Yes	yes, but mechanic quit		no		- TRAVAUX PUBLICS	inexistent
H061	rice	rice	canal											
H034	rice	rice/maraich	canal	Yes Diarra For	Initial cost only	Rental, labor	No	Yes	yes (NIONO)	1	no		- N/A	N/A
H034	rice	rice/maraich	canal											
H034	rice	rice/maraich	canal											
H035	rice	rice	canal						yes	N/A	no but 3 planned		ARS (GAO)	bad
H035	rice	rice	canal	Yes chef perim	N/A	Rent at 2+yrs	No	Yes ARS						
H036	rice	rice	canal	Yes chef perim	N/A	Rent at 2+yrs	No	Yes, ARS	yes	N/A	no but 3 plan		ARS (GAO)	doubtful
H037	n/a	n/a	canal	Yes chef perim	N/A	Rent at 2+yrs	No	Yes, ARS	ve	N/A	no but 3 planned		ARS (GAO)	doubtful
H038	rice	rice	canal	Yes, chef perim	N/A	Rent at 2+yrs	No	Yes ARS	yes	N/A	no but 3 planned		ARS (GAO)	doubtful
H038	rice	rice	canal	Yes chef perim	N/A	Rent at 2+yrs	No	Yes ARS						
H038	rice	rice	canal	Yes chef perim	N/A	Rent at 2+yrs	No	Yes, ARS						
H039	rice	rice	canal	Yes, Entr Cana	Yes (Entr Can)	Op cost à 49%	No	Yes, Entraid	yes	2	yes	N/A	SOMAFREC	probably good
H041	rice	rice	canal	Yes Entr Cana	Yes (Entr Can)	Op cost à 49%	No	Yes Entraid	yes	N/A	no but 3 planned		ARS (GAO)	doubtful
H042	rice	rice	canal	Yes, Entr Cana	Yes (Entr Can)	Op cost à 49%	No	Yes Entraid	yes	N/A	no, but 3 planned		ARS (GAO)	doubtful
H043	rice	rice	canal						yes	N/A	no, but 3 planned		ARS (GAO)	doubtful
H043	rice	rice	canal	Yes Entr Cana	Yes (Entr Can)	Op cost a 49%	No	Yes, Entraid	e					
H044	maraich	-	n/a	N/A	N/A	N/A	N/A	N/A	not available					
H045	rice	rice	canal	Yes chef peri	Proc only, CD	Op cost+labor	No	N/A	yes, 2 days	3	no		- SOMAFREC	doubtful
H046	rice	rice	canal	Yes chef peri	Proc only CD	Op cost+labor	No	N/A	yes, 2 days	3	no		- SOMAFREC	doubtful
H047	rice	rice	canal	Yes, chef peri	Proc only, CD	Op cost+labor	No	N/A	yes 2 days	3	no		- SOMAFREC	doubtful
H048				Not installed					not installed					
H049				Not installed					not installed					
H050									not available					
H050				New installation (February 1986)										
H052	rice	peanut	n/a	Yes A Cisse	Yes, FED/CMDT	Rent, labor	No	Yes, CMDT Sa	yes 9 months	6	no		- CCM SULZER	good
H052	rice	peanut	canal											
H053	Maraich	maraich	canal	1981 Ap85 only	Yes, LESO	Labor	No	No	yes	1	yes	2	LESO	bad
H055				N/A	N/A	N/A	N/A	N/A	yes	1	no		- DUPE et FILS	N/A
H060	-	wheat	canal	Yes 1986 on	Yes install	Op cost+labor	Np	New	yes	1	no		- DUPE et FILS	N/A
H056			aspersion	Yes MAV	Yes MAV	Maint Contract	Certain	n/a	yes	to be completed				
H057	rice	rice	canal	Dec84 85 only	Yes, ARS GAo	Labor	No	Yes	yes but mechanic quit		no		- TRAVAUX PUBLICS	inexistent
H059	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	not available					
									TOTAL	83				

PRIVATE SECTOR

PUMPING SYSTEM STATISTICS

Site No	System Manufacturer	Owner	Location	Less than 10 No	Less than 10 HP	10-25 HP No	10-25 HP HP	25-75 HP No	25-75 HP HP	More than 75 HP No	More than 75 HP HP	Energy Source	Total Area Ha	Area irrigated Main Crop	Area irrigated Second	Site Volume in M3/Hr Main Crop	Site Volume in M3/Hr Second	Hrs Op/Day Main Crop	Hrs Op/Day Second
D011	McCormick Intnatl	Assoc Maraich	Bougouni	1	9							Diesel	2	0	2	9	0	20	0	5
D011	Citroen	Assoc Maraich	Bougouni	1	5							Diesel				5				
D011	Bernard	Assoc Maraich	Bougouni	2	7							Diesel				14				
D012	Lister	Modibo Diawara	Bankoumana	7	6							Diesel	2	0	2	42	0	105	0	n/a
D012	Lombardini	Modibo Diawara	Bankoumana	75	6							Diesel				450				
D012	Bernard	Modibo Diawara	Bankoumana	1	6							Gasoline				6				
D013	Hatz	Yaro Sidibe	Segou	1	9							Diesel	6	5	1	9	n/a	n/a	12	2
D013	Bernard	Yaro Sidibe	Segou	1	8							Gasoline				8				
D014	Bern/Lister/Deut	Private OUSTM	Kaves					19	32			Diesel	330	0	300	608	n/a	n/a	n/a	n/a
H001	Hermobelnice	Aboubakar Deme	Badalabougou/			1	10					Electrici	1	1	1	10		28	0	1
H003	Lombardini	Mousa Caba	Niafunke					1	40			Diesel	2500	Flow insufficient		40				
H004	Cooper		Niafunke	2	6							Diesel		Not available		12				
H005	Cooper	?	Tarafere	1	6							Diesel	3	2	2	6	n/a	n/a	n/a	n/a
H006	Hatz		Dofana			2	10					Diesel	n/a	n/a	n/a	20	n/a	n/a	n/a	n/a
H011	N A	?	Tonka	10	5							Diesel	n/a	n/a	n/a	50	n/a	n/a	n/a	n/a
H017	Cooper		Dir	180	5							Diesel				900				
H021	Cooper	Aboubakar Dicko	Goundam	1	5							Diesel	5	0	5	5	n/a	n/a	0	12
H022	Cooper	Abdulrhaman Haman	Goundam	1	5							Diesel	1	1	1	5	n/a	n/a	0	2 3
H028	Lister/Vogel	Governor Timbuctou	Amadia			1	25					Diesel	50	50	0	25	440	0	12	0
H028	Lombardini	Governor Timbuctou	Amadia					2	40			Diesel			0	80	900	0	12	0
H029	Lombardini	Governor Timbuctou	Tombouctou			1	25					Diesel	10	10	10	25	250	250	n/a	n/a
H032	Lomb/Coco/Bern/Ho	Misc	Cercle de Bou	50	1							Diesel	n/a	n/a	0	200	n/a	0	n/a	0
H040	??	?	Tacharane (Ca	5	5							Diesel	n/a	n/a	n/a	75		n/a	n/a	n/a
H051	?	Misc	Cercle de Mop	30	5							Diesel	n/a	n/a	n/a	150	n/a	n/a	n/a	n/a
H054	??	Misc	Ebanoye-Rhero	5	5							Diesel	n/a	n/a	n/a	25		n/a	n/a	n/a
H058	Bernard	Misc	Garoguna	16	5							Diesel	n/a	n/a	n/a	80	n/a	n/a	n/a	n/a
			SUB-TOTAL	330		5		2		0			2909	68	323	2809	1590	403	36	20
			TOTAL	560		533		56		10			11668	2658	1429	12758	47268	71102	15	134

PRIVATE SECTOR

APPLICATION & USER STATISTICS

Site No	Principal Crop Main Crop	Principal Crop Second	Irrigation Process	System op performance reliability	Procurement and oper costs	User contributions?	Revenue from water?	Info on Production yields	Training at time of installation	Number of participants	Post installation training	Number of participants	Training organization	Communication network
D011		vegetabl	aspersion	N A	N/A	N/A	No	N/A	yes		1 no		TOTH CITY	good
D011														
D011														
D012	—	tchac/ [illegible]	canal	N A	N/A	N/A	N	N/A	yes		1 no		- OHU	good
D012														
D012														
D013	citrus	vegetabl	aspersion	N A	N/A	N/A	No	N/A	yes		2 no		DI°E et FO S	good
D013														
D014	cereals	vegetable	canal	N/A	N/A	N/A	No	N/A	yes		14 no		- GUSTM	good
H001	Maraichage	Maraichage	Sprinkler	NO	Supplier-Intersigma	Labor	None	New ins non	Yes		1 Yes		1 Intersigma	Prob Good
H003				Feb 86 only	Maint/ope only	labor	No	No productio	yes		2 no		n/a	Prob Good
H004				N/A	N/A	100%	N A	N/A	No data availab					
H005	Maraichage	Maraichage	n/a	N/A	N/A	100%	N A	N/A	No data available (private)					
H006	Rice/fonio	Sorgho	n/a	N A	N/A	100%	N A	N/A	No data availab					
H011	n/a	n/a		N A	GTZ Init Proc	N/A	N A	N/A	No data available (private)					
H012									No data available (private)					
H021	millet	maraich	canal	Ye owner	Yes owner	100%	No	N/A	yes		6 no		local mechani	
H022	mill/maize	maraich	canal	Yes owner	Yes owner	100%	No	N/A	yes		3 no		GTZ Lac horo	
H028	rice		canal	N/A	Yes, Gov Tomb	Op cost/labor	No	Yes	Yes		n/a no		-	
H029	rice	rice	canal											
H032	rice/mariach	-	canal	N/A	Yes Gov Tomb	Op cost/labor	No	Yes	not available					
H040	n/a	n/a	n/a	Yes, Entr Can	Yes Entr Can	N/A	N A	N/A	no data avilable (private)					
H051	n/a	maraich	n/a	N/A	N/A	Op cost a49%	No	Yes, Entraid	no data avilable (private)					
H054	n/a	n/a	n/a						no data available (private)					
H058	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	no data available (private)					
									TOTAL	35				

RAPID COUNTRY REVIEWS --MALI ANNEX C

INTEPVIEWS WITH ORGANISATIONS

NAME	ORGANISATION	INTERVIEWER
M Goudiard	Caisse Centrale	MD/BT
Mr M Furst	Banque Mordiale	TJH/OS
	Genie Rurale	
-Hamadi N Djim (GAO)		TJH/OS
-Raou Kieta (Tombuctou)		TJH/OS
_Douda Toure (Mopti)		TJH/OS
-Abduli Traore (Koulikoro)		MD/BT
-Binoufou Sanogo (Segou)		MD/BT
-Mamoutou Diarra (Kayes)		MD/BT
-Binafou Sanogo	(Sikasso)	MD/BT
M Heurtle	G T Z.	TJH/OS
Boulecane	F A O	TJH/OS
L Gaudreauet	PNUD	TJH/OS
Galois	F A C	NOT AVAILABLE
Schugart	F E N U	TJH/OS
Samba Sylla	D N H E	MD/BT
Maimouma Drame		
Van Canfort	Ile de Paix	TJH/OS
	Coop Hollandais (Mopti Project)	NOT INTERVIEWED
M Toure Dir	O D I K	MD/BT
Soumial Cisse	CMDT (Sikkasso)	MD/BT
Goussou Keita	ODIPAC (Kita)	MD/BT
	ITALIAN COOP	NOT INTERVIEWED
Bo.lv	CECI(Canadian)	NOT INTEPVIEWED
	OXFAM	NOT INTERVIEWED
	Euro-Action Acc	NOT INTEPVIEWED
Yacouba Coulibaly	I E P	MD/BT

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NAME	ORGANISATION	INTERVIEWER
Boubakar Kante	O H V	MD/BT
Jeff Gray	Afri-care	TJH/OS/MD/BT
Emmy Simmons	A I D	TJH/OS/MD/BT
Drave (Min Ag)	O V S T M	MD/BT
Omar Dia	USAID	
Bouri Cisse	(Min Ag)	
Guicneteau	F E D	MD/BT
M Weber	M A V	TJH/OS
Alpha Balde	HELVETAS	MD/BT
	CILCA MALI	NOT LOCATED
Abacar Sidibe	OFFICE DE NIGER	MD/BT
Mahmoud Bah	Coop National	MD/BT
	O M V S	MD/BT(TELECON)
J Scheuring	IC R I S A T	MD/BT
Boubaca Diarra	D M A	MD/BT
Konate Dir Admin/Fin	INST.SAHEL	MD/BT

CODES FOR INTERVIEWERS.

MD--- M MOHAMET DEMBELE (LESO)
BT--- M BILALLE TOURE (LESO)
OS--- M OUSMANE SOUMOARO (LESO)
TJH-- M TERENCE HART (I T POWER)

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REFERENCE DOCUMENTS ANNEX C

PROJECT REFERENCE	PREPARED BY	TITLE OR DESCRIPTION	LOCATION AVAILABLE
Africare		quarterly reports through third trimester 85	Africare BKO
		Mid-project Evaluation March 1985	
Action Ble Dire		project reports	Genie Rurale/Bamako
UNICEF		Opportunity Transfer (northern Senegal/Mali)	UNICEF/Bamako
		UNICEF Report January 86 Mme Sy	
Gundam Quaker Service		1985 Annual Report	Quaker Office/Bamako
Ile de Paix Timbuktoo		annual reports through 1985	Timbuktoo
FENU Timbuktoo		1985 annual report	FENU/Bamako
ENTRAIDE CANADIAN		1985 annual report	ENTRAIDE BKO/GAO
FORGHO 2 (FAC)		project reports	Caisse Centrale/Bamako
Action Riz-Sorgho		project reports	Direction Genie Rurale/ Bamako
CCAU/OHG		project reports	Conseil au Developpement/ Mopti UNOPO (Min of Interior)
Renewable Energy Project		technical and economic reports and Phase IV Evaluation Report	LESO/Bamako
Mali Aqua Viva		annual project reports	Mali Aqua/San
Borda		projet fluviale pomme Issaber	

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MLI 77/0090 -Karadie -Nonsombougou -kouni -Sirakoroby -Tioriobougou	Seidou Keita	rapport d activite Association Solaire Elf Mali 1985	DNHE
	Seidou Keita	rapport d evaluation des pompes solaires December 1985	DNHE
	Sinaïou Diawara	rapport technique réception provisoire des 6 stations de pompage solaire de la DNHE Region de Kolokani - Nara 26 janvier 1983	DNHE
	Mamadou Diarra	rapport technique concernant reception des 10 stations de pompage solaire de la DNHE Region de Bougouni Kolokani Financement PNUD 28 june 1983	LCSO
C nzana	J P Burri and Assoc	Etude hydrogeologique Ciba-Geigy avril 1982	-station de recherche agronomique de Cinzana
Dalaban	Issa Abdoulaye Diarra	rapport de campagne	-fondation Ciba-Ge gy
Kayes	ENDA Kassim Sidibe	partenaire pour developement rapport mensuel	-ICRISAT -DPS/Segou -ENDA -Genie-Rurale -OUSTM -OUSTM/Kayes
OUSTM Operation de la Vallee Senegal - Terakole et Magui			

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FIELD INTERVIEWS - ANNEX C

Interview Date	Location	Contact Name	Organisation
26/2/86	Nampala		
27/2/86	Leare		
27/2/86	Niafunke	M Diabate	Commandant
		Mme Hochet	Cooperation Suisse CAC
27/2/86	Tonka	Kostalin	GTZ
27/2/86	Dire	Michael Short	Africare
28/2/86	Dire	Diawara	Commandant
28/2/86	Dire	Deputy Director	Action Ble
		Director	Action Ble
28/2/86	Dire		UNICEF
28/2/86	Dire	Sidibe	Terre des Hommes
28/2/86	Doubta		
28/2/86	Boureme	Benafel/Short	Africare
01/3/86	Goundam	Abou Bakar	Private
01/3/86	Goundam	Abdul Rahman Haman	Private
01/3/86	Goundam-Wana	Craig Comer	Qualer group
01/3/86	Timbuktoo	Governor	GRM
01/3/86	Koriome	Van Canfor	Ile de Paix
01/3/86	Timbuktoo	Wydeveld	FENU
02/3/86	Ber	Ag Mohammed Ali	Ile de Paix
02/3/86	Ebangue	Abdul Salama	ELVIAS (Italy)
02/3/86	Bourem	Commandant	GRM
	Bamba	Chef Secteur Elevage	GRM
03/3/86	Forgho 2	Issica Maiga	Caisse Centrale
		Alidou Maiga	
		Boubacar Maiga	
03/3/86	Gao		Admin du Cercle
03/3/86	Bagoundje	Cisse (Director)	
	Tasharam	Omar Dembele	Action Riz-Sorgho
	Dongome		
	Soutchin		
	Watagouna		
	Bara		
	Ansongo		
03/3/86	Gargouna	Emmanuel Robidas	ENTRAIDE U Canada
		Recent Taillon	
03/3/86	Mopti	Directeur du Cabinet	GRM
	Koumio	Yaya Diallo, 1er Adjnt	SNAVS
	Kamio	Sekou Kariba Keita	
	Djenre		
	Youvarou		
	Tenankou		
04/3/86	San Ouest	Amadou Cisse	CMDT
04/3/86	San	Weber	MRV
27/2/86	Samanko	Daoudou Ouedraogo	CEEMA
27/2/86	Farabana	Gaoussou Tangara	Perimetre Faraban
		Namoury Keita	
27/02/86	Bancoumana	Baila Damba	UHV Secteur
		Fodi Keita	Bancoumana

01/3/86	Nonsombougou	Aodurahammane Diarra	DNHE
01/3/86	Tioribougou	Tiessara Diarra	DNHE
01/3/86	Koumi	Bandjangan Traore	DNHE
01/3/86	Sirakorola	Mamairou Diarra	DNHE
01/3/86	Karade	Mariba Diarra	DNHE
03/3/86	Bougouni	Alpha O Baldi	nELVETAS
03/3/86	Bougouni	Tiemokoba dit Mousa Dial Sanidia Diakite	Asstn, Coop Maraich
03/3/86	Dalabani	Issa Abdoulaye Diarra Paul Koumare	OPS
04/3/86	Segou	Mahamane	Office du Niger
		Maiga	Office du Niger
		Aboucar Sidibe	Office du Niger
04/3/86	Segou	Ibrahim Traore	Operation Riz Segou
04/03/86	Sonikoura	Founeka Keita	Office du Niger
04/03/86	Cinzana	Oumar Niangado	ICRISAT

QUESTIONAIRE ANNEX D

RAPID COUNTRY REVIEW--MALI

INTERVIEW SCHEDULE

NAME	ORGANISATION	TIME/DATE SCHEDULED	COMPLETED	INTERVIEWER

ORGANISATIONAL INTERVIEWS

INTERVIEW FILE # INTE*___

NAME OF ORGANISATION

NAME OF SITE OR PROJECT

PROJECT NUMBER;

NAME OF CONTACT

REFERENCE DOCS

DESCRIPTION OF PUMPED IRRIGATION ACTIVITIES

NAME OF SITE OR PROJECT

PROJECT NUMBER,

NAME OF CONTACT

REFERENCE DOCS

DESCRIPTION OF PUMPED IRRIGATION ACTIVITIES

MISSION LOG

NAME OF INTERVIEWER,

DATE	TIME	LOCATION	CONTACT NAME	ORGANISATION	FILE NUMBER	REFERENCE DOCS

FILE NUMBER CODES

FIELD INSTALLATION--- SITE*___

EQUIPMENT SUPPLIER--- PROD*___

* Denotes Interviewer Personal Code

___ Denotes Sequential Three number series for Sites/Suppliers visited by Interviewer