

MAY 02 1986

DJIBOUTI ENERGY INITIATIVES PROJECT

Monthly Report

March - April 1986

1. The energy conservation media campaign started up at the beginning of March and will continue through until the end of April. After the pre-campaign, which ran for about 10 days, the television and radio spots addressing specific conservation issues commenced. There have been a series of presentations: first on energy in general, then on particular energy using appliances and systems such as refrigerators; lighting; stoves and cookers; fans, air-conditioning, and natural ventilation; and finally transportation. The energy conservation song is heard regularly on the radio, and the T-shirts are appearing down town being worn by Djiboutians who have won them in the TV competitions. Jean-Yves has done a great job.

2. The six technicians have returned from France. The majority of the technicians said that the GRETA course was well organized and that they learned a great deal. A report on their participation, level of individual effort, and on the organization of the course in general has been written by the GRETA instructors and should be received here soon.

The energy conservation team will now get to work on advising Djiboutians how to go about implementing simple energy conservation measures, doing energy audits, and retrofitting several government buildings. EdD has agreed to let the project set up a booth in the EdD building close to the counter where people pay their electricity bills. We will have on hand all the technical information on energy conservation, and technicians will be available to provide both advice and technical assistance to Djiboutians who ask for help to reduce their electricity bills.

3. Collaboration with the Urban Development Project continues. The design of the house for the Chef du Quartier 3 is completed, and we await approval to start building. The design of the Balbala house is also finished, and the design of the annexe for the dispensary at Ambouli is in progress.

4. Travaux Public has announced that a technical committee will be set up to advise on the revisions of the Djibouti building codes so as to improve the thermal efficiency of new buildings. ISERST has been requested to participate, and Jean-Yves and perhaps other ISERST personnel will take part and advise T.P. how best to improve the current building regulations.

5. PIL #16 has been signed by Anis and Lundgren. This PIL sets aside \$240,000 for ISERST to manage energy sector initiatives outside the VITA contract. I drafted the formal request which ISERST has now submitted to AID for the first 90 days operating expenses, and these funds we hope will be received soon. I also prepared a budget for ISERST which is integrated with our project budget. Copies of the latest budget projections, including those for ISERST, are attached.

6. About a \$100,000 of the \$240,000 is set aside for the energy planning and policy work. I worked on a proposal with the head of the UNDP office (Mohsim Boulares). When the UNDP draft was finally shown to Anis and I, it wasn't quite what we expected. So I rewrote the proposal more in keeping with what ISERST wanted, and this is the version that has gone to New York. UNDP agrees to provide the team leader and an energy economist, and to provide a secretariat, and other logistical support. Boulares is at the present time in New York and we are hoping that the proposed team leader, Ioan Stancescu from Germany, will be brought over to Djibouti soon.

In the meantime, we have put Yacob to work writing up the report of the February seminar, and tracking down the latest statistical data on energy supply and consumption, so that once the team leader arrives he will have all the information he needs. We are also setting up an office in the RE building which the energy experts will use when they are in Djibouti.

We are still waiting to hear from the French and the Italians. We hope that each government will be able to provide an energy expert to assist with this work.

7. The renewable energy team continues to work on the repair of the windmills in Djibouti. The machine at Asa Gueyla has been repaired, and the well at Adailou has been unblocked. The problem now with both of these tube wells in the area north of Tadjourah is that there is very little water in the wells. Even with the recent rains, the recharge rates of these wells at the present time is too low for the wind pumps. This means that the wind machines will probably have to be moved to deeper wells with greater recharge rates.

The wind machine at Ali Sabieh (Aramadoule) is working well, although there have been several mechanical failures of the pump linkage. It is clear that the machine is developing a lot of power. We hope to resolve these problems within the next few days. After that, we hope to begin repairing the wind machines in the district of Obock. This work should begin before the end of April.

8. The AEG solar pump has been repaired by project technicians and is now under test to determine its daily output over a range of pumping heads. Our view is that the AEG pump is a more appropriate pump for Djibouti than the SEI 50M pump since the AEG pump is a lot easier to repair. The performance and reliability of the pumps appear to be about the same.

Ease of repair is an important criteria if one is trying to set up an indigenous technical capability. We can't keep on sending everything back to Europe or the US every time something goes wrong. The ISERST project technicians are capable of doing this work, although they lack experience. We have asked AEG to send us all their technical information on their pumps, and we will consider purchasing a unit.

9. While on the subject of pumps, I have started to look a little more closely at the economics of the renewable energy technologies for the pumping of water. If renewable energy pumping technologies are ever going to catch on in Djibouti it is essential that they can compete fairly with motor pumps without benefit of either economic subsidy or moral persuasion. Previous economic analyses have only been partly completed as far as I can judge. The SWD wind people, back in 1981, compared wind with motor pumps but did not include photovoltaics.

Preliminary results are interesting. First of all, it seems clear that for shallow wells of less than 7 metres suction you can forget both wind and solar. A tiny 2 hp Bernard pump sells for only \$600--a fraction of the price of either a wind system or a PV pump. Factoring in the cost of gasoline doesn't change the argument; renewables just can't compete.

But for deeper wells where suction from the surface is not possible, the situation becomes more interesting. In this case small motor pumps cannot be used. The conventional technology is a generator set of 10-20 KVA linked to an electric submersible pump. But this arrangement, in contrast to the tiny surface motor pumps, is quite expensive. Under these circumstances both wind and photovoltaic are competitive.

However, what this implies is that the PV and wind program in Djibouti has been misdirected. The small farmer pumping from shallow wells is simply financially better off with a small motor pump. It's a waste of time trying to sell a PV pump or a wind pump to this fellow. On the other hand, communities, agricultural cooperatives, and GROD services interested in pumping from deeper wells should be seriously looking at the renewable energy technologies. It appears that anyone currently using an electric submersible pump powered by a generator might well be better off investing in either a wind pump or a PV system driving a direct current submersible pump.

I am going to work on this analysis, talk with the UNICEF people who I assume have done a similar analysis, and if the figures prove persuasive, tackle Yvon Berch at SOTRACO. I am determined to see if I can convince him to stock at least one PV submersible pump.

These economic analyses are important because ISERST is increasingly receiving requests from agricultural cooperatives, individual farmers, and village chiefs about what kind of pumping system is 'best'. This is not always an easy question to answer because we cannot be certain of the average monthly output of either a PV pump or a windpump.

10. The village of Medeho, between Tadjourah and Obock, has been offered a PV water pumping system by the US Ambassador. Mr Ferriter evidently made this offer during a recent tour of the country north of Tadjourah. The local technician contacted us and has asked us to recommend a system. We will design an appropriate system and pass on our recommendation to the Ambassador.

11. Collaboration continues with the LEP. The Director of the LEP, Mr. Aidid, has agreed that several of the LEP instructors can help the project organize evening classes in electromechanical technology, electronics, and renewable energy. I will teach the renewable energy part towards the end of the year. At the same time we are setting up an electrical laboratory for the repair of equipment such as the PV systems. Abdourahman Nour, one of our new technicians, is quite well trained in electronics and the theory of electrical machines, and I hope that ISERST will soon have the capability to repair electric motors, electronic control devices, and other electrical and electronic equipment.

12. The new ISERST building is under construction. This prototype building is of interest to our project technicians since they can watch step by step the installation of the thermal insulation in the walls and floors of the new structure.

Martin Bush, Djibouti 16 March 1986.

CUMULATIVE PROJECT EXPENDITURES UP TO 31 MARCH 1986

CATEGORY	Project inception to end of Dec 1985	Expended last period 1/1/86 to 31/3/86	Project inception to end of March 86
Salaries	535,845	35,496	571,341
Fringe benefits	110,115	9,890	120,005
Occupancy	26,379	1,757	28,136
Consultants	155,601	16,099	171,700
Post diff. + COLA	57,189	4,000	61,189
Housing+ Utilities	131,918	7,150	139,068
Travel+transport	120,276	14	120,290
Local travel	19,122	717	19,839
Insurance	3,611		3,611
Communications	31,328	2,340	33,668
Report reproduction	23,001	1,000	24,001
O/M vehicles	4,702	2,753	7,455
O/M prototypes	11,796	4,371	16,167
Office supplies	34,425	2,244	36,669
Document. centre	12,600	446	13,046
Miscellaneous	18,956	223	19,179
Construction	827,215	8,142	835,357
Prototype development	64,966	1,400	66,366
Workshop equipment	28,858	2,941	31,799
Lab equipment	2,613		2,613
Office furnishings	43,936	28	43,964
Training	44,536	38,831	83,367
VITA fee	30,000	2,500	32,500
Overhead	413,332	22,457	435,789
TOTAL EXPENSES	2,752,320	164,799	2,917,119
FLNDS REMAINING AT 31/3/86 (See Table 1 for disposition)			582,881

ref: Tableau/cumulatif

TABLE 1 PROJECT BUDGET HOME OFFICE AND FIELD OFFICE

CATEGORY	Work Plan	HOME OFFICE AND FIELD OFFICE				1986	1986
		1985/2	1985/3	1985/4	1986/1	BUDGET	LEFT
Salaries		30,226	32,265	41,164	35,496	153,209	117,713
Fringe benefits		8,015	8,657	10,809	9,890	36,600	26,710
Occupancy		2,148	1,103	5,209	1,757	8,450	6,693
Consultants	yes	0	0	452	16,099		
Post diff + COLA		3,876	3,720	8,342	4,000	24,522	20,522
Housing+Utilities		17,627	31,896	25,635	7,150	25,000	17,850
Travel+transport		6,513	20,746	17,229	14	48,166	48,152
Local travel		305	143	1,188	717	3,000	2,283
Insurance		0	0	1,918		1,700	1,700
Communications		3,133	2,594	2,591	2,340	15,000	12,660
Report reproduction		160	1,066	3,326	1,000	1,700	700
O/M vehicles		81	211	1,608	2,753	10,000	7,247
O/M prototypes		137	0	419	4,371	12,000	7,629
Office supplies		1,221	9,503	1,038	2,244	7,600	5,356
Document centre	yes	1,255	642	990	446		
Miscellaneous		2,472	4,100	174	223	1,000	777
Construction		143,757	4,426	1,589	8,142	76,000	67,858
Prototype equipment	yes	2,662	(844)	3,091	1,400		
Workshop equipment	yes	5,779	3,644	506	2,941		
Lab equipment	yes	0	0				
Office furnishings		0	8	3,330	28	2,000	1,972
Training	yes	23,394	6,703	(27)	38,831		
VITA fee		5,000	0	5,000	2,500	10,000	7,500
Total ex. workplan		224,671	120,438	130,569	82,625	435,947	353,322
Overhead		30,747	31,790	36,114	22,457	121,163	98,706
Workplan expenses		33,090	10,145	5,012	59,717	190,570	130,853
TOTAL EXPENSES		288,508	162,373	171,695	164,799	747,680	582,881
FUNDS REMAINING		1,370,256	1,081,748	919,375	747,680	582,881	0

See Table 2 for disposition of workplan budget of \$ 130,853

TABLEUR/VITA

TABLE 2

BUDGET POUR LE PLAN DU TRAVAIL--ISERST / VITA

Date: fin Mars 1986

ACTIVITE	V I T A		I S E R S T	
	deja depense	futur depense	deja depense	futur depense
=====				
mille dollars				
Conservation d'Énergie				
Cellule des techniciens		2		
Serv. de l'Énergie techs	1.5	18.5		
Revison des norms avec T.P.	0.1	14.9		
Demonstration des batiments		30		
Campagne des medias	4.1	0.9		
Exposition sur l'energie		3		
Guide energetique		3		
Collaboration avec PDUD		13		87
Énergie Renouvelable				
Equipements et systemes	1.4	14.6		
Developpement Institutionnel				
Bibliotheque	0.5	2.5		
Atelier / Labo equipements	0.5	9.5		
Formation de Nader Abdulkarim				47
Formation des techs par GRETA	36.4	10.6		6
Formation par les profs du LEP	2.3	3.7		
Formation d'autres techniciens	0.4	4.6		
Planification energetique				100
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Subtotals:	47.2	130.8	0	240
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TOTALS:	\$178,000		\$240,000	
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