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DJIBOUTI ENERGY INITIATIVES PROJECT

Monthly Report

June - July 1986

1. Professor Ioan Stancescu made his 2nd mission to Djibouti from June 15 until July 8. Professor Stancescu is the leader of the team of international energy experts which will work with ISERST and the Energy Initiatives Project to formulate an Integrated National Energy Plan, and which will draw up a set of priority energy sector development projects for international donor agency support and financing.

After several months of review and evaluation, an international team of experts has finally been selected, and each expert has been contacted and has agreed to participate in the national energy planning project. The team members are listed below:

<u>NAME</u>	<u>POSITION</u>	<u>AFFILIATION</u>
Ioan STANDESCU	Senior energy analyst (team leader)	UN energy consultant based in Germany.
Arturo VILLAVICENCIO	Energy analyst	National Institute of Energy (INE), Quito, Ecuador.
Renato PUGNO	Economist	ElectroConsult, Milan, Italy.
Jose Gomez FLORES	Transportation expert	GRECA associates, and Government of Mexico.
Mihai PETCU	Tariffication expert	Conseiller Technique to Government of Zaire.
Dominique BRIANE	Rural energy expert	Association Bois de Feu, Aix-en-Provence, France.

The mission schedules of each of the team members is as follows:

MISSION SCHEDULES

<----- 1986 -----> <----- 1987 ----->

Consultant	june	july	aug	sept	oct	nov	dec	jan	feb	mar	apr	
Stancescu	XX	X				X	XX				X	X
Villavicencio				XXXX	XXXX							
Pugno (UNDP)				XXXX	XXXX							
Gomez			XX	XX								
Petcu (UNDP)				XX	XX..							
Briane			XXX	X								

The energy planning and policy development work starts in August when the first of the experts arrive. Dominique Briane will spend a month reviewing fuelwood use and charcoal production, and will propose and design a number of projects related to biomass utilization which will be incorporated into the National Energy Plan. He will also assist with the collection of supplementary data on biomass energy supply and demand which will be used for the modelling of the energy sector scheduled to take place in September.

In parallel with the analysis of biomass utilization, Jose Gomez Flores, an expert on transportation in developing countries, will study the transportation sector and propose and design a set of projects intended to improve the energy efficiency of transportation in Djibouti. Part of Mr. Flores' work will also be to develop the data base necessary for the energy modelling work which will follow.

The detailed study of energy supply and demand commences in September with the arrival of Arturo Villavicencio from Ecuador and Renato Pugno from Italy. While en route to Djibouti, both experts will meet in Paris with Professor Stancescu who will travel from Munich to Paris for a day of briefing and orientation.

Mihai Petcu, an expert on tariffication, will arrive from Zaire in mid-September to perform a detailed analysis of electricity tariffs for Electricité de Djibouti (EdD).

By the end of October, the National Energy Plan should be in draft form, and the set of energy sector projects to be proposed to the International Lending Agencies will have been designed to the pre-feasibility level. The project documents will be finished in November; the Conference of Donors takes place in March 1987.

2. The organization of the energy planning work and the Conference of Donors is being funded by USAID (through ISERST) and the UNDP. The project is now estimated to cost approximately \$182,000, about evenly split between the UNDP and ISERST. The disposition of the financial support is shown in more detail below:

DISPOSITION OF PROJECT FINANCING

		<u>ISERST, \$</u>	<u>UNDP, \$</u>
STANCESCU	£ 1	10,515	
	£ 2	14,341	
	£ 3	13,863	
	£ 4 (conference)		9,848
VILLAVICENCIO		29,080	
PUGNO			23,930
FLORES		16,432	
PETCU			14,308
BRIANE		10,217	
		<u>\$ 94,448</u>	<u>\$ 48,086</u>
		=====	=====
TOTAL EXPERTS ON MISSION: \$ 142,534			
		=====	

Other Expenses

Secretary			10,000
Interpreters / translation			19,000
Office equipment			8,000
Miscellaneous			2,000
TOTAL EXPENDITURES		<u>\$ 94,448</u>	<u>\$ 87,086</u>
		=====	=====

TOTAL ENERGY PLANNING PROJECT: \$ 181,534
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The UNDP proposal setting out the program outlined above has been approved by their New York office. We are staying in touch with the Djibouti UNDP office, and we hope that the UNDP can make the necessary arrangement with Renato Pugno and Mihai Petcu so that both experts can participate in the energy planning project according to the proposed schedule.

3. The energy conservation work continues. The team is working in the quarters insulating refrigerators, replacing incandescent lamps with fluorescent units, performing energy audits of buildings, and responding to requests for advice and technical assistance.

An energy analysis of the guest rooms at the Sheraton Hotel was performed at the request of the Ministry of Tourism. The Ministry was proposing to reduce the hotel's high electricity bills (mainly for air-conditioning) by double-glazing the windows in the rooms. An analysis revealed that it would be far more cost-effective to insulate the outside walls of the rooms. A technical report was written and submitted to the Minister.

3. The Project continues through ISERST, to push for the creation of a national energy conservation fund to be used for the financing of energy conservation projects in Djibouti.

The idea is to use the profits accrued by EdD, as a result of the fall in the price of petroleum, to finance a national level energy conservation program which will lead to a significant and long-term reduction in energy demand, particularly of electricity.

Jean-Yves prepared a report, setting out the economic justification for the conservation program, which showed that far greater individual household savings would result from the energy conservation program than would follow from a simple reduction in the price of electricity--which is what the Government was proposing.

The Government was sufficiently persuaded by Jean-Yves' report to officially approve the setting up of a National Energy Conservation Fund on June 17. The next step, however, is to get the Government to put some money into the fund. EdD has just over a half a million dollars available--enough money to insulate just about every refrigerator and to replace almost every incandescent lamp with a fluorescent one in Djibouti. The necessary documentation and submissions have been made, and a decision by the Government is expected shortly.

4. The renewable energy team has also been busy. Several initiatives are underway. Perhaps the most interesting project concerns the Project's technical assistance to a private farmer, Mr. Hassema, who owns several hectares of land out at Hanlé.

This farmer pumps as much as 250 m³ of water per day from a shallow well to irrigate his land. An economic analysis of the pumping options: Diesel, photovoltaic or wind, showed that a wind pump was clearly the most economic alternative. Abdourahman Nour set out the analysis and presented our conclusions to the farmer, who has decided to purchase the windmill pump that we recommended: a large Kijito windpump from Kenya, with a rotor diameter of 24 feet.

If the project goes ahead this will be by far the biggest windmill pump in Djibouti, and the first windpump to be privately owned and financed. The farmer has applied to the Caisse de Developpement for a loan to purchase the machine which, with freight from Kenya, will cost about \$15,000.

The selection of this machine was based on the estimated windspeed data for the site which was actually measured at Yobocki, about 15 kilometres away from Hanlé but on the same plain. A small anemometre installed for several weeks at the site confirmed that average windspeeds are greater than 4 m/s. The Climatronics unit at Yobocki has now been moved onto the farmer's land at Hanlé to check again that mean windspeeds are sufficient to pump the required amount of water, and to record long-term windspeeds at the site.

The renewable energy team has also been checking up on some of the photovoltaic pumps in operation in Djibouti. Trips have been made to As Eyla and Obock to confirm that the pumps are working properly, to make any necessary repairs, and to collect data on pump performance and solar insolation. The AY MacDonald pump at Obock has been returned to ISERST for examination because the water flow from the pump was found to be very low.

An additional AY MacDonald pump has been purchased by the project and is now being tested at ISERST by the renewable energy team. The SEI floating pump, which was sent to Germany for repair in May, has been returned; this pump will be tested and then installed in the field.

Other renewable energy work in progress includes:

- Technical assistance to the Commissaire of Obock for the photovoltaic pumping project for the village of Medeho. This project is financed by the US Embassy, with technical supervision provided by the Project, including the civil engineering work which will start shortly.
- Technical assistance to the Commissaire of Tadjourah with respect to the installation of 2 photovoltaic pumps again financed by the US Embassy.

In addition, the AFME/TED contract (under which ISERST will receive 4 photovoltaic pumps) has apparently finally been signed (after a delay of close to a year); the FAC/Genie Rural contract (under which the G.R. will receive another 10 solar pumps which will be tested by the Project) has also been signed; and the photovoltaic medical refrigerator and lighting system for the Hol-Hol dispensary should be finally ordered this month.

5. Collaboration with the Urban Development Project (PDUD) continues. The bids for the house for the Chef du Quartier 3 have been reviewed, and a builder has been selected. Fred Guymont, REDSO engineer from Nairobi, was in Djibouti on TDY recently and recommended a number of revisions to the building contract. The contract has now been revised, and construction should begin in August.

6. The electrical laboratory in the Renewable Energy Building is being set up. Equipment and instruments have been purchased and installed, and the lab is gradually taking shape. When finished, the lab should permit ISERST technicians to test and repair electrical and electronic equipment such as pump motors, photovoltaic system controllers, and inverters.

7. Training courses have started at ISERST in collaboration with the instructors at the LEP. Classes in electrical and electromechanical principles and technology are given 3 evenings a week in the new electrical laboratory. Eight technicians (including Soulieman, Nabil, and Abdourahman Nour) attend the classes which will run for 2 months.

8. Sabira has been put to work on the Apple computer. She has quickly demonstrated that she has an aptitude for this work, and has already learned how to use the database and spreadsheet programs of Appleworks.



Martin Bush
Djibouti, 15 July 1986.