

683-0235
NIGER

Solar Energy Development

PP

FY 78

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT PAPER FACESHEET	1. TRANSACTION CODE <div style="border: 1px solid black; display: inline-block; padding: 2px;">A</div> A ADD C CHANGE D DELETE	PP 2. DOCUMENT CODE 3
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3. COUNTRY/ENTITY Niger	4. DOCUMENT REVISION NUMBER <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div>
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5. PROJECT NUMBER (7 digits) <div style="border: 1px solid black; padding: 2px;">683 0235</div>	6. BUREAU/OFFICE A. SYMBOL AFR	B. CODE <div style="border: 1px solid black; padding: 2px;">06</div>	7. PROJECT TITLE (Maximum 40 characters) <div style="border: 1px solid black; padding: 2px;">Niger Solar Energy Development</div>
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8. ESTIMATED FY OF PROJECT COMPLETION FY <div style="border: 1px solid black; padding: 2px;">8</div> <div style="border: 1px solid black; padding: 2px;">0</div>	9. ESTIMATED DATE OF OBLIGATION A. INITIAL FY <div style="border: 1px solid black; padding: 2px;">78</div> B. QUARTER <div style="border: 1px solid black; padding: 2px;">4</div> C. FINAL FY <div style="border: 1px solid black; padding: 2px;">78</div> (Enter 1, 2, J, or 4)
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10. ESTIMATED COSTS (\$000 OR EQUIVALENT \$) -						
A. FUNDING SOURCE	FIRST FY 79			LIFE OF PROJECT		
	B. FX	C. L/C	D. TOTAL	E. FX	F. L/C	G. TOTAL
AID APPROPRIATED TOTAL	412	88	500	412	88	500
(GRANT)	(412)	(88)	(500)	(412)	(88)	(500)
(LOAN)	(-)	(-)	(-)	(-)	(-)	(-)
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY	-0-	533.2	533.2	-0-	1,399.8	1,399.8
OTHER DONOR(S)						
TOTALS	412	621.2	1,033.2	412	1,487.8	1,899.8

11. PROPOSED BUDGET APPROPRIATED FUNDS (\$000)									
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. 1ST FY 78		H. 2ND FY -		K. 3RD FY -	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN	L. GRANT	M. LOAN
(1) SH	741	878		500					
(2)									
(3)									
(4)									
TOTALS				500					

A. APPROPRIATION	N. 4TH FY -0-		O. 5TH FY -0-		LIFE OF PROJECT		12. IN-DEPTH EVALUATION SCHEDULED
	P. GRANT	Q. LOAN	R. GRANT	S. LOAN	T. GRANT	U. LOAN	
(1)					500		<div style="border: 1px solid black; padding: 5px; display: inline-block;"> MM YY 10 79 </div>
(2)							
(3)							
(4)							
TOTALS						500	

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

1 1 = NO
 2 = YES

14. ORIGINATING OFFICE CLEARANCE SIGNATURE 	15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION MM DD YY
TITLE Director, USAID/Niger	DATE SIGNED MM DD YY 09 28 78

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PROJECT PAPER

Niger Solar Energy (Sahel Development Program) 683-0235

Summary:

This project will assist Niger's Office of Solar Energy (ONERSOL) to participate in an expanded program to develop, test and apply solar energy technologies, especially for the benefit of Niger's rural poor. Project elements include: architectural design and construction supervision services for the new ONERSOL facility; provision of laboratory instruments and equipment; laboratory and field testing of solar water pumping systems; consultations by American experts with ONERSOL's staff in Niamey; and training in the United States for two ONERSOL employees. Total project cost is approximately \$2 million, of which AID will fund \$500,000 and the Government of Niger approximately \$1,500,000.

The project should help provide rural Nigeriens and other Sahelian populations with access to such new technologies as solar pumps (for village water supply and irrigation), solar refrigerators (for human or animal vaccines in rural dispensaries), solar crop dryers, or improved stoves using local fuels such as wood or coal. Advances in these technologies will be disseminated throughout West Africa by means of a UNESCO-financed training program which ONERSOL conducts for solar energy researchers and technicians from neighboring countries.

I. PROJECT BACKGROUND DESCRIPTION

A. Background

More than 90% of Niger's population lives in rural areas, typically pursuing subsistence activities with such traditional sources of energy as firewood and human or animal power. In recent years, however, a combination of rapid population growth and drought have surpassed the productive limits of these techniques, leading to widespread human suffering and major ecological damage. Under such circumstances, even to allow rural Nigeriens to maintain their existing standard of living will require the application of new sources of energy to traditional tasks.

Beyond very strict limits, Niger will be unable to rely on imported petroleum products to fuel rural development. By 1975, the value of such imports had reached 33% of total export revenues (excluding earnings from Niger's uranium deposits, which are expected to be exhausted in less than 30 years). Given the certainty of rising prices for petroleum products in the future, Niger must look to alternative sources for its energy requirements.

Although Niger expects to pursue exploitation of local coal and hydroelectric resources, these forms of energy are poorly adapted to most requirements of the country's scattered rural population. Clearly, there is urgent need in Niger to concentrate on means of tapping solar energy, which is both plentiful and available wherever people live.

B. Project Implementing Agent

ONERSOL. ONERSOL was created by the Government of Niger in 1965 in order to carry out both theoretical and applied work in the field of solar energy. The present Director, Dr. Abdou Moumouni, was appointed to his position in 1969. Dr. Moumouni has a Ph.D. in physics from the University of Paris. With the director of France's solar energy agency as one of his examiners, Dr. Moumouni wrote his doctoral thesis on the subject of non-negligible losses in parabolic solar reflectors and polarization effects. Dr. Moumouni is a man of considerable creative genius, with a profound concern for the plight of Niger's rural population.

ONERSOL's research laboratory has a professional staff of five, all with advanced training in physics, engineering, and other energy-related disciplines. In addition, 20 workers staff a production facility created two years ago in order to manufacture ONERSOL-designed solar hot water heaters and solar distillation units. Approximately 100 solar water heaters are in operation in Niamey alone, with other systems sold as far away as Upper Volta, Benin and Togo. A 100 liter/day ONERSOL unit provides distilled water for a chemical factory in Niamey, and other solar stills are in use by pharmaceutical and other industrial concerns.

Although this project will draw on ONERSOL's factory's ability and capacity to manufacture solar energy installation components, such

as collectors, this project supports only ONERSOL's laboratory and field research and applications, and not ONERSOL's manufacturing and marketing activities.

Having solved the basic design problems for solar water heating and distillation under Nigerien conditions, ONERSOL is now turning its attention to other activities with more specifically rural applications. ONERSOL has recently installed a 1 kw water pumping system in a small village 10 km north of Niamey, using a French thermal pump and solar collectors designed and manufactured by ONERSOL itself. Work is being carried out on installation of 5 kw and 10 kw pumping systems, also using ONERSOL collectors. In addition, ONERSOL is engaged in preliminary work on other solar applications for rural areas, including solar crop dryers, solar refrigeration, and other devices.

Although much of its collaboration to date has been with French groups, this project will permit ONERSOL to carry out experiments combining its own solar collectors or concentrators with American thermal pumps and photovoltaic cells.

Having moved recently into urgent new areas of investigation, ONERSOL is in need of significant material support. With its impressive background and strong current staffing, this project is designed to enable ONERSOL to translate such assistance into concrete benefits for Niger's rural poor.

Given ONERSOL's central position in solar research in West Africa, advances in knowledge achieved through this project should be rapidly disseminated in other countries as well. This year, ONERSOL assisted in running a two-month, UNESCO-financed training course in advanced heliotechnics for professors and engineers from Senegal, Mali, Upper Volta, the Ivory Coast, Togo, Nigeria, and Algeria. According to ONERSOL, UNESCO proposes to continue support for this program in future years.

C. Detailed Project Elements. The project will consist of five major elements. (Budgetary details are provided in Section IV, Project Cost.) In addition, \$60,100 has been set aside for unexpected contingencies.

a. Construction Design and Supervisory Services. (AID contribution \$70,000). This project will provide for professional architectural services in the planning and design of the ONERSOL multi-purpose facility scheduled for construction in 1979. Engineering services will be engaged to provide requisite technical information and adequately supervise and inspect actual construction.

b. Equipment and Instrumentation. (AID contribution \$185,900). New instruments and equipment will be used in three ways: (1) for scientific research to push back frontiers in renewable energy concepts and the understanding of rural laws with respect to the interaction between solar radiation and various materials; (2) to find new technological solutions for problems in applied solar science and heliotechnology; and

(3) to test actual products (whether designed and produced at ONERSOL or manufactured elsewhere) for reliability, efficiency and durability, first in the laboratory and then in the field.

c. Water Pumps. (AID contribution \$65,000). Much useful experimentation and developmental work needs to be done with respect to pumps for rural animal husbandry, horticulture and village water supply. This component will support testing of U.S. equipment as part of ONERSOL systems designed in response to these problems.

d. Expert Consultations. (AID contribution \$56,000). For an institution operating, like ONERSOL, on the frontiers of its discipline, it is desirable to promote scientific and technological cross-fertilization. Such a process is provided for within this project in the form of visits to Niamey by experts from the U.S. in helioscience, heliotechnology, energy economics, and applied anthropology. Both countries should profit from this exchange.

e. Training. (AID contribution \$63,000). ONERSOL has a strong professional foundation on which to build. However, to meet its immediate goals, ONERSOL will benefit from sending one of its most promising members to the U.S. for a doctoral program in physics or engineering, as well as in providing a technician with a year of U.S. training in systems maintenance.

D. Beneficiaries

The most immediate beneficiaries of this project will be the roughly 600 people served by the small thermal and photovoltaic pumps to be installed in two locations along the Niger River. These pumps will be integrated into existing projects specifically designed to provide irrigation water to poor farmers. The technical specifications of these pumps, including water pumping capacity, respond adequately to the applied research requirements of this project.

Even more substantial, if less quantifiable, are the advantages that will extend to rural areas throughout the country as a wide range of ONERSOL systems are perfected, manufactured, and distributed. As noted above, ONERSOL's top priority now is the perfection of solar pumping systems for rural areas. Almost all of ONERSOL's other areas of concern are also applicable to rural needs: solar crop dryers, solar refrigerators, and improved stoves using local fuels.

Since to be rural in Niger is almost by definition to be poor, ONERSOL's activities in general will be of particular benefit to members of Niger's "poor majority." As ONERSOL systems gradually come into more common use, however, it will be useful to examine with greater care the extent to which benefits reach the most needy groups within the rural population as a whole. Investigation and evaluation of this issue should be an integral part of project design of possible future AID activities designed to support widespread use of ONERSOL systems in rural Niger.

II. RELATIONSHIP OF THE PROJECT TO AID AND NIGER GOVERNMENT PRIORITIES

A. Relationship of AID Priorities

With vigorous support from the U.S. Congress, AID has recently begun a global program to investigate the potential for alternative energy applications in developing areas. In Africa alone, AID-supported energy projects are pending or already underway in Senegal, Mali, Ghana, Tanzania, Botswana, Lesotho, and Swaziland. Increasingly, there is recognition that prospects for economic growth in such countries are closely linked to the development of technologies using the sun and other renewable energy resources.

In Niger, solar energy has obvious relevance to several problems of concern to AID, notably rural water supply, animal health, and ecology. As applied to these problems, systems of the sort being perfected by ONERSOL could:

- perform work now beyond local abilities (such as moving large quantities of water from underground or across significant distances);
- substitute for diesel pumping or cooling systems, which are difficult to maintain under Sahelian conditions and which require increasingly scarce and expensive fuel; or,
- substitute for such local fuels as firewood, thereby relieving pressure on sparse woodlands.

In sum, this project is fully consistent both with overall AID priorities and with concerns of USAID/Niger's country program.

B. Relationship to Niger Government Priorities

Financial support by the Government of Niger for ONERSOL has risen steadily since the organization was established in 1966. Between 1966 and 1970, budgetary allotments to ONERSOL averaged about 9 million CFA per year. By 1978, ONERSOL's annual budget had reached 60 million CFA.

If at a somewhat low key, the Government has long indicated its concern for solar energy in other ways as well. Le Sahel, Niger's official daily newspaper, has made a point of publishing articles on energy topics ranging from solar cells in the United States to solar pumps in Niger. With interest in the subject perceptibly growing, Niger served as host in March 1978 to the first meeting of the Ad Hoc Committee on Solar Energy of the Communauté Economique des Etats de l'Afrique de l'Ouest.

In July of 1978, the Government of Niger underscored the priority now attached to work on solar energy by announcing a dramatic increase in ONERSOL's budget. During the fiscal year 1979, the

National Investment Fund will provide 100 million CFA (about \$440,000) in support of ONERSOL's program as part of a capital improvements program that will reach 300 million CFA (about \$1.3 million) by 1980. In addition, the Government has asked ONERSOL to prepare a detailed Five-Year Plan for 1980-1984 which could lead to even more substantial allocations.

Clearly this project will associate AID with an area of considerable, and growing, concern to the Government of Niger.

III. PROJECT ANALYSES

The project presents no discernible problems in terms of AID policies. Brief comments follow with respect to the project's feasibility, evaluation procedures, environmental impact, Section 611 requirements, procurement waivers, and impact on women.

A. Feasibility

Within the limits of analysis appropriate to a project of these dimensions, the project is feasible in technical, economic and social terms.

1. Technical. As indicated in Section I.B.1, above, there is absolutely no doubt concerning ONERSOL's technical capacity to undertake the work outlined in this project. If all the institutions with which AID has dealt functioned at ONERSOL's level of sophistication, the major problems of international development could be solved in a matter of years.

2. Economic. Most of the project involves activities to which formal economic analysis is in any case inapplicable: construction, purchase of laboratory equipment, visits to Niamey by U.S. experts, training of ONERSOL personnel. The thermal and photovoltaic irrigation pumps to be purchased for local testing should be considered experimental until ONERSOL has made any modifications necessary to ensure their reliability under Nigerien conditions. Only when this work has been completed will it be possible to make accurate estimates of costs and benefits of these systems. At least in a preliminary way, such estimates will be carried out later by economists visiting Niamey in the context of this project. (See IV. Evaluation Procedures.)

3. Social. As indicated in Section I.C., above, ultimate beneficiaries of the project will be members of Niger's poor, rural population. Direct social impacts during the life of the project, however, will be limited to the provision of water to a limited number of people through installation of two solar pumps within a Niger Government irrigation scheme. Although there should be little differential impact from using these pumps instead of diesel systems, ONERSOL will solicit social evaluations from Niger's Institute for Research in the Human Sciences (IRSH).

B. Environmental Impact

Construction related to the project will take place on vacant land adjoining the existing ONERSOL headquarters building. Should they prove technically reliable, two solar pumps may later be installed along the Niger River in place of diesel pumps of equivalent capacity as a minor part of an existing, much larger irrigation scheme. Additional project activities (training, laboratory equipment, expert consultations) do not raise environmental issues.

This project should have no negative environmental consequences. To ensure that this is the case, USAID/Niger will review the expected environmental impact of the two pumping systems when testing is completed at ONERSOL's laboratory and decisions are made as to specific field locations in which these systems will be placed.

Over the longer term, the project may have significant positive effects on the environment. Through new systems designed to cook food and make bricks, for example, ONERSOL could help cut demand for firewood and relieve pressure on Niger's remaining woodlands.

C. Section 611 Requirements

Based on a thorough review of the project by a consulting scientist, USAID/Niger certifies that adequate planning has been carried out concerning project costs and the technical appropriateness of instruments and equipment to be financed with U.S. funds. ONERSOL's proven record of accomplishment in its field and the Government of Niger's past fulfillment of its obligations under the bilateral assistance program give adequate assurance that the GON will meet its technical and financial commitments to the project.

D. Impact on Women

As is customary in African countries, women in Niger transport most firewood for cooking and most water for use in homes and gardens. ONERSOL's activities in rural water supply and improved stoves will therefore serve the interests of women in important ways. In addition, ONERSOL is planning to adapt its thermal pumping systems to provide power for grain milling as well, an advance that would help relieve women of one of their most arduous tasks.

IV. PROJECT IMPLEMENTATION PLAN

The five subactivities of this project will take place over a two-year period in accordance with the schedule of events detailed below:

Implementation Schedule

<u>Date</u>	<u>Action</u>
September 1978	Grant Agreement signed
October	Review and approval of equipment specifications
October-January 1979	Condition Precedent: Preliminary rendering of architect's design of ONERSOL facility, summary estimate of building costs and approximate anticipated construction schedule
November	Order equipment
December	Delivery of vehicle
January 1979	Long-term participant leaves for U.S. academic training
January-March	Condition Precedent: Executed contract, or letter of agreement for provision of architectural design services Condition Precedent: Executed contract, or letter of agreement, for provision of construction supervision services (Construction of ONERSOL facility begins)
February-April	Arrival of equipment
March	First visit and consultations of American experts (periodic visits hereafter at request of ONERSOL with agreement of AID)
April	Beginning of laboratory trials of pumps
September	Short-term participant leaves for U.S. technical training
October	Evaluation of first-year program implementation (completion of first-phase construction)
January 1980	Beginning of field testing of pumps
October	Evaluation of project to date (Implementation begins for possible follow-on project.)

V. PROJECT EVALUATION PROCEDURES

In addition to the Social Impact studies to be carried out by IRSH during each of the two years of the project's lifetime, AID will finance visits to Niamey by approximately five American experts, who will lecture at ONERSOL seminars and consult with officials of ONERSOL, IRSH, and other interested organizations. ONERSOL has agreed that economists and anthropologists, as well as physical scientists, should be included in this program. In addition to their primary obligations, these experts will plan to report immediately to USAID/Niger and AID/W concerning their evaluation of the project. The first in-depth evaluation of the project is scheduled to take place in October 1979. A second and final evaluation will be held near the end of the two year life of the project, in mid-1980.

VI. PROJECT CONDITIONS

Prior to the first disbursement under the Grant, or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made, the Government will furnish to A.I.D. in form and substance satisfactory to A.I.D.:

A preliminary architect's rendering of the facility to be constructed, a summary estimate of building costs, and an approximate schedule of anticipated construction.

Prior to disbursements for architectural design or construction supervisory services, the Government will furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(a) An executed contract, or letter of agreement, for the provision of architectural design services for the project, acceptable to A.I.D., with a firm acceptable to A.I.D.

(b) An executed contract, or letter of agreement, for the provision of construction inspection and supervisory services acceptable to A.I.D., with a firm acceptable to A.I.D.

VII. FINANCIAL PLAN

A. Project Costs

Total cost of this project is approximately \$2 million, of which A.I.D. will fund up to \$500,000 and the Government of Niger the balance, estimated at approximately \$1,500,000. Not included in these figures is the substantial contribution which the Government of Niger will make in the form of researchers' salaries and general budgetary support for ONERSOL's program.

A detailed line-item budget, including all instruments and equipment to be purchased under this project, will be part of the Financial Plan of Annex I, the Grant Agreement.

B. Financial Return

Inasmuch as this project is a pre-development service activity, the benefit/cost equation does not directly apply. The potential value of this project lies in the probability of increasing the outputs from subsequent project development activities in the area of solar energy as a result of an updated and refined body of data and better staff skills.

C. Cost Scheduling

Four major actions are required for the execution of this development project: (1) the equipment of a laboratory for research of solar pumps and of a mobile unit for field applications; (2) academic and technical training of selected ONERSOL scientists and technicians; (3) consultations and scientific exchange with American experts in relevant disciplines; (4) assistance to the design and construction of a new ONERSOL facility. These four streams of action are able to run concurrently, though the interruption or even delay of any one component should not carry adverse effects upon the other elements.

It is recommended that the project be full-funded, \$500,000, at the outset in that most disbursements should be accomplished over the course of FY 79. It is expected that all disbursements can be effectuated within two fiscal years, FY 79 and 80. The terminal disbursement date, subject to modification if the case arises, is recommended to be set at September 30, 1980.

D. Niger Solar Energy Development 683-0235

Projection of Expenditures
by Fiscal Years

(US \$000 or equivalent)

	AID	GON	Total
FY 78	-0-	-0-	-0-
FY 79	366.9	533.2	900.1
FY 80	133.1	433.3	566.4
FY 81	-0-	433.3	433.3
Total	500.0	1399.8	1899.8

E. Niger Solar Energy Development 683-0235

Summary Cost Estimate and Financial Plan
(US \$000)

<u>Source</u>	AID		Total <u>AID</u>	Government of Niger		Total <u>All Sources</u>
	<u>FX</u>	<u>LC</u>		<u>FX</u>	<u>LC</u>	
<u>Inputs</u>						
Architectural and Construc- tion Super- visory Services	10	60	70			
Construction					1,300	1,370
Equipment/ Instruments	164.4	21.5	185.9		31.8	217.7
Water Pumps	58.5	6.5	65		50	115
Technical Assistance	56		56			56
Participant Training	63				18	81
Inflation and Contingency	60.1		60.1			60.1
TOTAL	412	88	500	-0-	1,399.8	1,899.8

F. Niger Solar Energy Development 003-0257

Costing of Project Outputs/Inputs
(US \$000 or equivalent)

Project Inputs	Project Outputs			Total
	ONERSOL facility constructed	Operational applied re-search in solar pumps	Advanced degrees and technical training	
<u>AID Appropriated</u>				
Architectural and Construction Supervisory Services	70			70
Equipment/ Instruments		185.9		185.9
Water Pumps		65		65
Technical Assistance		56		56
Participant Training			63	63
<u>Government of Niger</u>				
Construction	1,300			1,300
Equipment/ Instruments		31.8		31.8
Water Pumps		50		50
Participant Training			18	18
<u>Inflation and Contingency</u>				
				60.1
Total	1,370	388.7	81	1,899.8

ANNEX I: AID Project Statutory Checklist

A. Country Checklist

Per AID Handbook 3, Appendix 6C, AID Project Statutory Checklist, page 6C-:,

"The Country Checklist, of items affecting the eligibility of the country as a whole, etc., is to be prepared annually, at the time of the first project paper (PP) for the country in a fiscal year. This checklist is then referenced in subsequent PP's, where, in addition, items which have changed are brought up to date."

For the purpose of fulfilling this requirement, please refer to Project Paper Niamey Department Development Project 683-0205, authorized in May 1977. There have been no substantive changes since that checklist was prepared.

5C(2) - PROJECT CHECKLIST

Listed below are, first, statutory criteria applicable generally to projects with FAA funds, and then project criteria applicable to individual fund sources: Development Assistance (with a sub-category for criteria applicable only to loans); and Security Supporting Assistance funds.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? IDENTIFY. HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT.1. App. Unnumbered; FAA Sec. 653(b); Sec. 671

(a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project;
(b) Is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than \$1 million over that figure)?

FAA Sec. 611(a)(1). Prior to obligation in excess of \$100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?

FAA Sec. 611(b); App. Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per *the Principles and Standards for Planning Water and Related Land Resources* dated October 25, 1973?

FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?

FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multi-lateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multi-lateral organizations or plans to the maximum extent appropriate?

1. (a) Congressional notification made on August 31, 1978.

(b) The total project cost of \$500,000 is within the 1978 Operational Year Budget allocation reported to Congress.

2. (a) Per memorandum of REDSO/WA engineer, dated August 24, 1978, "no engineering recommendation for a 611(a) certification will be needed as USAID will not be funding any construction."

(b) Per State 224085, dated September 5, 1978, "AFR/DR/ENGR has reviewed the proposed equipment, instruments and pump costs for the subject project and find that they are reasonable."

3. No legislative action is required within Niger.

4. Not applicable (NA)

5. NA

6. USAID project assistance will encourage subsequent regional development programs in the field of solar energy. The ONERSOL facility to be built by the Government of Niger is designed to be a training center (as well as a research center) for scientists and technicians from all of West Africa. UNESCO and the Communauté Economique des Etats de l'Afrique de l'Ouest (CEAO) both either already or plan to channel regional assistance in solar energy through the ONERSOL facility.

7. FAA Sec. 601(a); (and Sec. 201(f) for development loans). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.
8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).
9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.
10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?
11. ISA 14. *Are any FAA funds for FY 78 being used in this Project to construct, operate, maintain, or supply fuel for, any nuclear powerplant under an agreement for cooperation between the United States and any other country?*

FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(c); Sec. 111; Sec. 281a. Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production, spreading investment out from cities to small towns and rural areas; and (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions?

7.(a) Project supply applications will ONERSOL's existing capacity to manufacture solar energy devices for export to neighboring West African countries. An increased manufacturing capacity will require the importation of machine tools, various finished metal products and instruments and mechanical equipment. A sizeable proportion of these imports are expected to originate in the U. S. (b) ONERSOL is a government monopoly in the solar energy industry in Niger. Lack of available private capital and the low level of industrialization of a very rural, agricultural economy, mitigate against any prospect for an early participation of private enterprise in this sector. (c) No impact on cooperatives or credit and savings institutions. (d) Due to the sophistication and costliness of this sort of operation, a government monopoly will continue to be exercised in this sector for many years to come. However, exclusive government ownership in this instance also implies subsidies of finished products to make solar energy devices more widely available to Niger's population. (e) Improved technology in the energy field will have immediate, positive and longlasting effects on the more efficient use of resources in agriculture, industry and commerce. (f) No impact on free labor unions

8. More than half of project costs will be spent on acquisition of American-manufactured goods. Technical hard and software of this nature will be new to the African market and opens future private trade channels.

9. The GON is contributing local currencies for the construction of a major facility, as well supplementing AID contributions by supplying locally obtainable commodities. U.S. dollar currency is used to procure American manufactured goods and purchase a small amount of local currency for specialized items obtainable in Niger and through European sources.

10. The U.S. owns no excess foreign currency in Niger.

11. No.

B.1.a.(a) Development of solar energy technology, specifically water pumps for irrigation and domestic purposes brings improved middle-level machinery to rural economy and promotes labor-saving techniques; (b) no direct link to rural cooperatives and creation of democratic institutions.

b. FAA Sec. 103, 103A, 104, 105, 106, 107. Is assistance being made available: [include only applicable paragraph -- e.g., a, b, etc. -- which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.]

(1) [103] for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, is full account taken of needs of small farmers;

NA

(2) [104] for population planning or health; if so, extent to which activity extends low-cost, integrated delivery systems to provide health and family planning services, especially to rural areas and poor;

NA

(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;

NA

(4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:

(a) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;

(b) to help alleviate energy problem;

(c) research into, and evaluation of, economic development processes and techniques;

(d) reconstruction after natural or manmade disaster;

(e) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;

(f) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

b.(4)(106)(a). This activity outlines and funds a program of short-term visits by American experts in related scientific, engineering and social science fields. American scientific and educational institutions will be involved in research and training assistance. UNESCO sponsors a training program in conjunction with project goals.

(b) New sources of energy to perform traditional tasks are required to allow Nigeriens to maintain even existing standards of living. Over the long-term, a solar energy development project may have significant effects on the environment, i.e. field applications of solar energy technology could cut demand for firewood and relieve pressure on Niger's remaining woodlands.

(c) NA

(d) NA

(e) NA

(f) NA

(5) [107] by grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries.

c. FAA Sec. 110(a); Sec. 208(e). Is the recipient country willing to contribute funds to the project, and in what manner has or will it provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?

d. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"?

e. FAA Sec. 207; Sec. 113. Extent to which assistance reflects appropriate emphasis on; (1) encouraging development of democratic, economic, political, and social institutions; (2) self-help in meeting the country's food needs; (3) improving availability of trained worker-power in the country; (4) programs designed to meet the country's health needs; (5) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and Voluntary Agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (6) integrating women into the recipient country's national economy.

f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government.

(5)(107). ONERSOL is a public organization. It concentrates Nigerien scientific know-how and government capital underwriting to develop intermediate technologies which are appropriate to the energy needs of the rural population of Niger.

c. The Government of Niger is contributing approximately 300% of AID funded project costs. These are direct, newly incurred costs, not recurrent expenditures or fictive values of goods, land and services.

d. Life of project currently fixed at two years.

e.(1). Solar energy development in Niger aims at the eventual application of new technologies at the service of rural, disadvantaged populations, permitting them greater economic freedom and a more significant role in determining the future of Nigerien traditional and newly emerging modern institutions.

(2) Indirect support of food production is funded by the development of solar irrigation pumps. (3) NA. (4) Indirect support of clean water supply systems.

(5) ONERSOL's industrial manufacturing capacity will be increased indirectly through the improvements in technology which are part of this activity. (6) Women, as the principal drawers and bearers of water, will be relieved of exhausting and prolonged responsibilities with the development and installation of solar driven water pumps.

f. This project focuses on a particular object of priority interest and special, timely concern to the GON--the conservation and development of natural resources. GON budgetary and human resources capacities have been directed towards utilization of solar generated devices as a partial solution to energy deficiencies. The mobilization of national natural resource conservation campaigns, including the thrust towards solar energy, serves to develop a national consciousness and directs public participation.

g. FAA Sec. 201(b)(2)-(4) and -(8); Sec. 201(e); Sec. 211(a)(1)-(3) and -(8). Does the activity give reasonable promise of contributing to the development: of economic resources, or to the increase of productive capacities and self-sustaining economic growth; or of educational or other institutions directed toward social progress? Is it related to and consistent with other development activities, and will it contribute to realizable long-range objectives? And does project paper provide information and conclusion on an activity's economic and technical soundness?

h. FAA Sec. 201(b)(6); Sec. 211(a)(5), (6). Information and conclusion on possible effects of the assistance on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving or safeguarding the U.S. balance-of-payments position.

Development Assistance Project Criteria
(Loans only)

a. FAA Sec. 201(b)(1). Information and conclusion on availability of financing from other free-world sources, including private sources within U.S.

b. FAA Sec. 201(b)(2); 201(d). Information and conclusion on (1) capacity of the country to repay the loan, including reasonableness of repayment prospects, and (2) reasonableness and legality (under laws of country and U.S.) of lending and relending terms of the loan.

c. FAA Sec. 201(e). If loan is not made pursuant to a multilateral plan, and the amount of the loan exceeds \$100,000, has country submitted to AID an application for such funds together with assurances to indicate that funds will be used in an economically and technically sound manner?

d. FAA Sec. 201(f). Does project paper describe how project will promote the country's economic development taking into account the country's human and material resources requirements and relationship between ultimate objectives of the project and overall economic development?

g. Solar energy development in Niger is aimed directly at eventual long-term economic and social gains by maximizing the usefulness of an abundant resource to the advantage of an increasingly greater percentage of Niger's rural population.

h. Fully seventy percent of the AID contribution to the project is to be disbursed in U.S. currency for either American manufactured goods or American technical assistance and participant costs. Given the predominant position in the field of solar energy which the U.S. enjoys, a long-term relationship as envisioned under this project is certain to benefit the U.S. economy.

e. FAA Sec. 202(a). Total amount of money under loan which is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources?

f. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?

3. Project Criteria Solely for Security Supporting Assistance

a. FAA Sec. 531. How will this assistance support promote economic or political stability?

b. FAA Sec. 533(c)(1). *Will assistance under the Southern African Special Requirements Fund be used for military, guerrilla, or paramilitary activities?*

4. Additional Criteria for Alliance for Progress

[Note: Alliance for Progress projects should add the following two items to a project checklist.]

a. FAA Sec. 251(b)(1), -(8). Does assistance take into account principles of the Act of Bogota and the Charter of Punta del Este; and to what extent will the activity contribute to the economic or political integration of Latin America?

b. FAA Sec. 251(b)(8); 251(h). For loans, has there been taken into account the effort made by recipient nation to repatriate capital invested in other countries by their own citizens? Is loan consistent with the findings and recommendations of the Inter-American Committee for the Alliance for Progress (now "CEPCIES," the Permanent Executive Committee of the OAS) in its annual review of national development activities?

5C(3) - STANDARD ITEM CHECKLIST

Listed below are statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by exclusion (as where certain uses of funds are permitted, but other uses not).

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

- | | |
|---|--|
| 1. <u>FAA Sec. 602.</u> Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed? | No restrictions or prohibitions. |
| 2. <u>FAA Sec. 604(a).</u> Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him? | Two waivers for (a) vehicle and (b) photovoltaic pump. |
| 3. <u>FAA Sec. 604(d).</u> If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S. on commodities financed? | Not applicable (NA) |
| 4. <u>FAA Sec. 604(e).</u> If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity? | NA |
| 5. <u>FAA Sec. 608(a).</u> Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items? | Yes |
| 6. <u>MMA Sec. 901(b).</u> (a) Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates. | NA (All goods to be airfreighted.) |
| 7. <u>FAA Sec. 621.</u> If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the facilities of other Federal agencies will be utilized, | Yes |

are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?

International Air Transport. Fair Competitive Practices Act, 1974

Yes

If air transportation of persons or property is financed on grant basis, will provision be made that U.S.-flag carriers will be utilized to the extent such service is available?

Construction

FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest?

NA

FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?

NA

FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed \$100 million?

NA

Other Restrictions

FAA Sec. 201(d). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?

NA

FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?

NA

FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foreign aid projects or activities of Communist-Bloc countries, contrary to the best interests of the U.S.?

No specific provision in this regard but, in fact, project respects this restriction.

FAA Sec. 636(i). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the U.S. or guaranty of such transaction?

Yes

Will arrangements preclude use of financing?

- a. FAA Sec. 114. to pay for performance of abortions or to motivate or coerce persons to practice abortions, to pay for performance of involuntary sterilization, or to coerce or provide financial incentive to any person to practice sterilization? NA
- b. FAA Sec. 620(g). to compensate owners for expropriated nationalized property? NA
- c. FAA Sec. 660. to finance police training or other law-enforcement assistance, except for narcotics programs? NA
- d. BAA Sec. 662. for CIA activities? NA
- e. App. Sec. 103. to pay pensions, etc., for military personnel? NA
- f. App. Sec. 105. to pay U.N. assessments? NA
- g. App. Sec. 106. to carry out provisions of FAA Sections 209(d) and 251(h)? (transfer to multilateral organization for lending). NA
- h. App. Sec. 112. to finance the export of nuclear equipment, fuel, or technology or to train foreign nationals in nuclear fields? NA
- i. App. Sec. 501. to be used for publicity or propaganda purposes within U.S. not authorized by Congress? NA