United States General Accounting Office

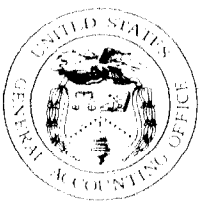
GAO

Report to the Chairman and Ranking Minority Member, Subcommittee on Human Rights and International Organizations, House Committee on Foreign Affairs

July 1991

FOREIGN ASSISTANCE

AID Energy Assistance and Global Warming



GAO/NSIAD-91-221

GAO

United States
General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

B-243966

July 16, 1991

The Honorable Gus Yatron
Chairman, Subcommittee on Human Rights
and International Organizations
Committee On Foreign Affairs
House of Representatives

The Honorable Doug Bereuter
Ranking Minority Member
Subcommittee on Human Rights
and International Organizations
Committee on Foreign Affairs
House of Representatives

In response to your request, we reviewed energy sector assistance provided by the Agency for International Development (AID) to developing countries. Specifically, we examined (1) the priority AID has given to providing energy assistance, (2) the distribution and focus of energy assistance, and (3) the extent to which this assistance addresses global warming issues.

Results in Brief

Providing energy assistance to developing countries remains a relatively low priority for AID. Funds obligated for this sector comprise a small portion of AID's total economic assistance, and the agency employs few specialists in positions dedicated to energy assistance.

AID is helping some developing countries meet their energy needs, but the nature and extent of this assistance varies substantially because of the agency's decentralized structure. Most AID energy funding is concentrated in infrastructure support in a handful of countries—primarily Egypt and Pakistan. With limited funding in most other countries, AID concentrates on providing technical expertise and promoting energy policy reforms that will both encourage energy efficiency and leverage investment by the private sector and other donors.

Although the 1989 congressional directive to pursue a "global warming initiative" has had a marginal impact on the agency's energy programming, many AID energy programs, including those directed at energy conservation, help address global warming concerns.

Background

Over the last half of the 1980s, Congress encouraged AID to address a number of goals in providing energy assistance to developing countries. These goals included addressing power shortages, promoting development of non-nuclear power, expanding energy for rural development, encouraging private sector participation in the energy sector, emphasizing conservation and the development of renewable energy resources, and promoting U.S. energy technology exports.

The fiscal year 1990 AID appropriations act (P.L. 101-167) added abatement of "greenhouse" gas emissions to the list of goals to be addressed through energy assistance. Greenhouse gases trap heat in the atmosphere and so may cause "global warming"—a gradual increase in temperature at the earth's surface that may have serious adverse environmental consequences. Carbon dioxide from fossil fuel combustion comprises the single greatest contribution to accumulation of greenhouse gases.[1] The act directed AID to pursue a global warming initiative through its assistance in energy, tropical forestry, and biodiversity. Assistance was to be targeted at "key" countries where AID activity could have a significant impact on greenhouse gas emissions.

Partially in response to congressional mandates, AID revisited its energy policies on a number of occasions over the last decade. Although AID has not revised its official 1984 energy policy paper, the agency reexamined its energy policies and priorities in several reports and papers issued from 1986 to 1990. Energy assistance is also addressed within AID's "Initiative on the Environment," inaugurated in 1990 to provide a framework for the agency's natural resource and environment interventions, and within AID's July 1990 report to Congress concerning the call for a global warming initiative.

Energy a Low Priority

Despite the recent attention paid to AID energy policies, energy assistance has not been a major focal point since the early 1970s, when the agency began to reorient its programming away from major infrastructure construction projects and toward basic human needs. With adjustments for inflation, energy-related obligations have averaged about $216.2 million per year over the last decade—about 3 percent of AID's total annual economic assistance. Obligations for fiscal year 1990 were about $213.8 million, and adjusted projected obligations for fiscal years 1991 and 1992 average about $176.8 million per year. This decline

[1]The share of world greenhouse gas emissions attributed to developing countries is expected to rise from about one-third in 1985 to about one-half by 2025.

is attributable primarily to the suspension of funding for Pakistan because of that country's nuclear weapons program. Beginning in fiscal year 1991, these totals also include significant assistance for Eastern Europe (about $22.9 million in 1991) and a corresponding decline in assistance for other countries.

According to AID, the agency employed 16 full-time, direct-hire energy experts in 1989—less than one-half of 1 percent of total staff. The global warming initiative legislation encouraged AID to add staff with expertise in relevant fields, including energy, and the agency responded by creating 26 new positions in 1990. However, AID missions expressed almost no interest in hiring energy specialists, and the hiring effort focused on adding staff with broader environmental expertise.

Assistance Concentrated in a Few Countries

Because of the decentralized nature of AID programming, the priority given to energy assistance and the nature of that assistance can vary substantially, even within a small region. For example, the Regional Office for Central American Programs obligated about $44 million from fiscal years 1985 through 1990 to support rural electrification, geothermal energy development, and energy planning. In contrast, the Honduras mission obligated no funds for energy-specific programs in fiscal year 1990, although it provided about $309,000 for fuelwood-related activities within a larger land-use management program.

AID missions under the jurisdiction of the Bureau for Europe and the Near East accounted for about 78 percent of the agency's energy-related obligations in fiscal year 1990. Most of these funds were obligated for Egypt ($121.5 million) and Pakistan ($44.7 million). With the substantial funds earmarked by Congress for these two countries, AID has undertaken major power sector infrastructure projects. AID missions elsewhere generally do not have the funds or expertise to support such projects.

AID's Office of Energy, within the centrally funded Bureau for Science and Technology, serves as an advocate for energy assistance in AID missions and provides missions with technical assistance and project support. The Office's budget doubled to $20 million from fiscal years 1989 to 1991, but it still controls only about 10 percent of AID energy assistance. The Office must have the collaboration of AID missions in recipient countries to be effective.

Appendix I contains a more detailed description of AID energy assistance, and appendix II focuses on AID energy activities in Central America.

AID Plays a Limited Role

AID's overall goal in providing energy assistance is to help developing countries obtain the energy they need for economic development in a cost-effective, environmentally sound manner. Most AID missions do not have the resources to support major power projects directly. Agency energy activities are in most instances concentrated in comparatively low-cost technical assistance and energy policy dialogue activities. As stated in AID's 1984 energy policy paper, the agency's intent in providing this assistance is to "facilitate private sector and other donor investment by identifying opportunities through feasibility studies, analyses, and other forms of technical assistance." For example, AID's Program to Accelerate Commercial Energy Research, a 6-year, $20 million program in India, encourages market-oriented innovation in the energy sector.

In addition to directing a variety of specific energy programs at the private sector, AID officials commonly encourage developing countries to make policy changes that will increase energy efficiency and leverage investment by other donors, particularly the multilateral development banks, and by the private sector. Among the changes that AID officials advocate are the removal of legal and institutional barriers to private sector participation and the adoption of pricing systems that more accurately reflect the cost of providing energy.

Most AID energy support is focused on the generation, distribution, and use of electricity. Although fuelwood remains an important energy source in most developing countries, AID devoted less than 2 percent of its total energy funding in fiscal year 1990 to fuelwood activities. Very little assistance is directed toward the transportation sector, even though energy use in this sector already accounts for a quarter or more of total commercial energy consumption in developing countries and is expanding rapidly.

Impact of Global Warming Initiative on Energy Programming

Although congressional directives to pursue a global warming initiative have had only a marginal impact on AID energy programming, much of the agency's energy assistance helps address global warming issues. In reaction to recipient countries' financial constraints and environmental problems, AID in recent years has increased the orientation of its energy assistance toward goals that are compatible with concern about carbon

dioxide emissions associated with energy generation and use. These goals include promoting energy efficiency and conservation, thereby reducing the necessity for building new power plants; encouraging adoption of environmentally sound energy technologies; and increasing private sector participation in energy generation and distribution.

In 1990, AID identified seven countries and two regions as "key countries" to be targeted for the global warming initiative, as directed by Congress. AID has been supporting or is planning relevant energy sector activities in many of these countries. However, no substantial shift in energy funding patterns can be attributed to the global warming initiative legislation. In June 1991, AID issued guidance to its missions on taking global warming into consideration when making programming decisions.

AID energy assistance relevant to the global warming initiative is discussed more fully in appendix III. Additional information on U.S. government policies relating to global warming is provided in our January 1990 report, Global Warming: Administration Approach Cautious Pending Validation of Threat (GAO/NSIAD-90-63).

Scope and Methodology

To assess AID energy sector assistance, we obtained documents from and interviewed AID officials and contractors. We also obtained information from the Environmental Protection Agency, the Department of Energy, nonprofit organizations, and International Bank for Reconstruction and Development (World Bank) and Inter-American Development Bank representatives. We interviewed officials from host government ministries and utilities, nonprofit organizations, and private companies. To obtain first-hand experience with AID energy assistance in recipient countries, we visited the agency's Regional Office for Central American Programs in Guatemala City, Guatemala, and AID missions in Guatemala, Costa Rica, El Salvador, and Honduras. Though most AID energy assistance has gone to Egypt and Pakistan, these Central American countries provide a good illustration of agency energy programming in most developing countries.

AID's system of coding and accounting for budget figures results in a small amount of double counting among funds allocated to the following categories: energy efficiency, renewable energy, fuelwood, and fossil fuels. This double counting does not affect overall amounts obligated for energy assistance. The overall totals in this report, however, deviate

slightly from figures prepared by AID because we excluded certain programs providing support for petroleum imports and included certain programs supporting rural electrification. Also, because AID's system allocates funding from single programs among various functional categories, energy support from specific programs may not equal total program obligations. Amounts cited are in current year dollars unless otherwise specified.

As requested, our review concentrated on describing the nature of AID energy assistance, rather than evaluating the effectiveness of particular projects. We conducted our review between May 1990 and February 1991 in accordance with generally accepted government auditing standards. We did not obtain written agency comments; however, we discussed this report with AID officials and have included their comments where appropriate.

We are sending copies of this report to the Administrator of the Agency for International Development and to other interested parties. Copies will also be made available to others on request.

Please call me at (202) 275-5790 if you or your staff have any questions. Major contributors to this report were Ronald Kushner, Assistant Director; Michael McAtee, Evaluator-in-Charge; Rajiv Chawla, Evaluator; and Delores Toth, Evaluator.

Harold J. Johnson
Director, Foreign Economic
Assistance Issues

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Abbreviations

AID	Agency for International Development
CAER	Central America Energy Resources
CARES	Central American Rural Electrification Support
DA	Development Assistance
ESF	Economic Support Fund

AID Energy Assistance

Energy a Low Priority

Support for major infrastructure projects, including electric power plants, was once a major feature of work funded by the Agency for International Development (AID). But in the early 1970s AID's work was reoriented toward addressing "basic human needs," including inadequate income growth, hunger, health deficiencies, illiteracy and lack of education, population pressures, and environmental and natural resources degradation.

Most AID missions are not oriented toward providing significant support for energy projects. Although assisting developing countries in obtaining the energy they need for economic development is an official agency goal, AID missions are more likely to be interested in providing energy assistance when that assistance also serves other basic agency objectives. For example, AID energy assistance has placed great emphasis on opening up the generation and distribution of electricity to the private sector. One reason for this emphasis is that supporting an increased role for the private sector has been a basic tenet of agency programming in recent years. Similarly, AID's orientation toward improving the living conditions of rural dwellers is reflected in the emphasis placed on providing electricity for rural development.[1]

Energy Sector Funding Has Remained Low

AID's orientation toward basic human needs is reflected in the low level of funding allocated to energy over the last decade. Obligations for energy-related work, adjusted for inflation, averaged about $216.2 million annually when tentative figures for fiscal years 1991 and 1992 are included. Fiscal year 1990 energy funding of about $213.8 million accounted for about 3.4 percent of total AID obligations for bilateral economic assistance of about $6.2 billion.[2] For fiscal year 1991, estimated funding declines to an adjusted level of $178.4 million, primarily because of a more than $30 million drop in funding for Pakistan because of that country's nuclear weapons program. Beginning in fiscal year 1991, these totals also include significant assistance for Eastern Europe (about $22.9 million in 1991) and a corresponding decline in assistance for other countries.

[1]For example, four missions and one regional office obligated about $23.4 million in fiscal year 1990 for rural electrification projects.

[2]Included in this total are funds obligated for Development Assistance, the Economic Support Fund, and other economic assistance. Food aid provided under Public Law 480, counter-narcotics assistance, the Peace Corps, and all forms of military assistance are excluded, as are funds designated for multilateral assistance.

These funds were obligated through a relatively small number of programs. Of the hundreds of central, regional, and mission-specific programs supported by AID during fiscal year 1990, 53 reported obligating funds for energy. Excluding 7 programs supported by the Office of Energy, only 12 others were designed specifically and exclusively to provide energy sector assistance. These few programs accounted for most of AID's energy assistance. The 34 remaining programs accounted for about 9 percent of total energy assistance in the course of addressing a series of other issues, including agriculture, forestry and natural resources management, and infrastructure repair and improvement.

Of the agency's geographically oriented bureaus, only the Bureau for Asia, Near East, and Europe (reorganized in 1991 into the Bureau for Europe and the Near East and the Bureau for Asia and Private Enterprise) has devoted significant resources to energy (see table I.1). However, the amount provided by the Bureau for energy has been small in comparison with the amount of assistance it provides overall. For example, the Bureau's obligations for energy comprised only about 5 percent of its total assistance in fiscal year 1990. Similarly, funding for the Bureau for Science and Technology's Office of Energy increased by about 50 percent to $15.5 million from fiscal year 1989 to 1990 but remained less than 5 percent of the Bureau's total obligations.

Table I.1: Distribution of AID Energy Funding

Dollars in millions

	Bureau				
Fiscal year	Asia, Near East, and Europe[a]	Latin America and the Caribbean	Africa	Centrally funded	Total
1982	$113.1	$39.5	$11.4	$21.8	**$185.8**
1983	269.7	21.9	5.7	18.5	**315.8**
1984	145.7	24.5	31.9	15.9	**218.0**
1985	163.3	10.6	2.7	18.9	**195.5**
1986	237.1	8.9	1.2	11.6	**258.8**
1987[b]	181.4	18.7	1.3	12.1	**213.5**
1988	98.7	20.9	4.9	10.0	**134.5**
1989	246.3	32.1	2.4	8.3	**289.1**
1990	175.8	18.4	1.1	18.4	**213.8**
1991[c]	142.9	12.4	1.2	21.9	**178.4**
1992[d]	146.3	10.3	1.2	17.3	**175.1**
Total	**$1,920.3**	**$218.2**	**$65.0**	**$174.7**	**$2,378.3**
Annual average	$174.6	$19.8	$5.9	$15.9	**$216.2**

Notes: The AID data base from which these figures were derived divided individual program funding among many categories. The figures therefore do not represent funding totals for a finite set of "energy" projects. They include some programs devoted entirely to the energy sector, as well as portions of projects only partially concerned with energy.

All figures are obligated funds, except as noted, expressed in constant 1990 dollars.

[a]Figures for fiscal years 1991 and 1992 reflect the totals for the Bureau for Europe and the Near East and the Bureau for Asia and Private Enterprise.

[b]Figures for fiscal year 1987 are proposed, not obligated, funds. According to the AID Bureau for Program and Policy Coordination, these figures are the best available for that year.

[c]Estimated.

[d]Requested.

Source: Developed by GAO from AID data.

According to AID figures, the agency obligated funds in 80 countries in fiscal year 1990, but only 19 bilateral missions reported obligating funds for projects providing energy sector assistance. These projects were supplemented by regional energy-related activities in the Bureaus for Africa and Latin America and the Caribbean and by programs supported by five offices within the Bureau for Science and Technology, including the Office of Energy, and two other centrally funded organizations within AID.

Low Staffing Levels

The relatively low priority assigned to energy is also reflected in the agency's staffing patterns. Each AID mission has an individual who is assigned responsibility for energy affairs. However, most missions conduct so little work in the area that they do not require full-time energy experts. The agency consequently employs few energy specialists.

AID's personnel tracking system makes it difficult to determine how many energy specialists are employed by the agency. However, AID reported employing 27 U.S. national direct-hire energy experts in 1989; 16 of these worked full time on energy issues—10 in missions abroad. AID also employs a few foreign nationals as full-time energy professionals in missions abroad. By comparison, AID employed 4,616 staff worldwide in April 1990.

The low profile of energy-related work in AID discourages the pursuit of a career in this field within the agency. With no specific personnel designation for energy specialists and too few slots to permit normal rotation and advancement while staying in their field, energy professionals hired by AID must usually become generalists in order to advance. Further, because the agency has a small pool of staff with energy backgrounds, specialists in other fields, such as agriculture, often fill positions with energy responsibilities.

As part of the global warming initiative in the fiscal year 1990 AID appropriations act (P.L. 101-167), Congress encouraged the agency to add staff with expertise in relevant fields, including energy. The legislation specifically permitted the use of program funds for this purpose. AID responded by creating 26 new positions through December 1990, almost all to be filled through contract hires.[3] However, AID missions expressed almost no interest in hiring energy specialists, and the hiring effort was directed primarily at obtaining staff with more broadly based expertise related to natural resources management, the environment, and global warming. One of the new positions (located in the Washington offices of the Bureau for Africa) has the word "energy" in its title, and two others, located in the Office of Energy, are devoted entirely to energy.

[3]AID places certain restrictions on the activities of contract hires. For example, they cannot supervise direct-hire employees and they cannot represent the agency in official negotiations with foreign governments.

Some Energy Assistance Provided

With limited financial resources and multiple requirements to carry out programming in diverse areas, AID has devoted comparatively little assistance to the energy sector. The high cost of financing power plants is one reason for the low level of support for energy projects. In many countries, AID mission budgets are too small to provide substantial funds for major power system construction. In others, large power projects could be supported only at the expense of assistance in other areas which AID officials believe have equivalent or greater priority. Given the agency's overall orientation toward other priorities, less costly activities in such areas as technology transfer and institutional development also find relatively little support among AID missions. Table I.2 shows fiscal year 1990 Development Assistance (DA) and Economic Support Fund (ESF) obligations for energy assistance by AID missions, regional offices, bureaus, and centrally funded organizations.

Table I.2: AID Energy Funding (Fiscal Year 1990)

Dollars in thousands

	Overall funding			Energy funding		
Obligating authority	**ESF**	**DA**	**Total**	**ESF**	**DA**	**Total**
Egypt mission	$898,389	0	**$898,389**	$121,500	0	**$121,500**
Pakistan mission	229,011	$46,000	**275,011**	44,715	0	**44,715**
Bureau for Science and Technology/ Office of Energy	0	15,533	**15,533**	0	$13,964	**13,964**[a]
El Salvador mission	136,355	61,804	**198,159**	5,843	3,016	**8,859**
Regional Office for Central American Programs	0	26,656	**26,656**	0	5,116	**5,116**
Bangladesh mission	0	54,760	**54,760**	0	5,066	**5,066**
India mission	0	21,458	**21,458**	0	3,693	**3,693**
Bureau for Science and Technology/ Other	240	359,353	**359,593**	0	3,253	**3,253**
Guatemala mission	56,483	29,478	**85,961**	0	2,131	**2,131**
Caribbean Regional	2,032	24,949	**26,981**	192	1,100	**1,292**
Office of Private and Voluntary Cooperation	0	59,408	**59,408**	0	1,056	**1,056**
Haiti mission	2,500	40,220	**42,720**	0	611	**611**
Nepal mission	0	15,994	**15,994**	0	673	**673**
Africa Regional	2,000	115,930	**117,930**	0	354	**354**
Honduras mission	130,017	34,650	**164,667**	0	309	**309**
Zaire mission	0	24,800	**24,800**	0	253	**253**
Cameroon mission	0	20,629	**20,629**	0	240	**240**
Bureau for Program and Policy Coordination (Evaluation)	0	4,157	**4,157**	0	153	**153**
Philippines mission	130,403	62,193	**312,080**[b]	150	0	**150**
Mali mission	0	16,831	**16,831**	0	114	**114**
Latin America and the Caribbean Regional	10,381	65,144	**75,525**	0	112	**112**
Kenya mission	0	34,206	**34,206**	0	92	**92**
Malawi mission	0	22,229	**22,229**	0	50	**50**
Togo mission	0	3,348	**3,348**	0	10	**10**
Benin mission	0	915	**915**	0	10	**10**
Niger mission	0	16,755	**16,755**	0	8	**8**
Senegal mission	0	36,000	**36,000**	0	5	**5**
Total	**$1,597,811**	**$1,213,400**	**$2,930,695**	**$172,400**	**$41,389**	**$213,789**

[a]Energy obligations by the Office of Energy do not equal total Office obligations because portions of some programs were encoded in AID's accounting system as devoted to non-energy purposes.

[b]The Philippines mission total is greater than the sum of ESF and DA because of the inclusion of $119,484,000 in other economic assistance.

Source: Developed by GAO from AID data.

With a few exceptions, such as Egypt and Pakistan, AID energy-related work is oriented toward comparatively low-cost activities—technical

assistance and policy dialogue—that leverage more expensive undertakings by other donors, especially multilateral development banks, and by the private sector. Most of AID's energy-related assistance has supported projects involving the generation, distribution, and use of electricity. AID also has supported a handful of small-scale projects devoted to increasing efficiency in the transportation sector. These efforts have concentrated on demonstrating that effective maintenance of public transportation systems can result in significant savings. Nine projects provided a total of about $3.9 million in assistance related to fuelwood issues during fiscal year 1990.[4]

Bureau for Asia, Near East, and Europe

Of $213.8 million in energy-related assistance obligated by AID in fiscal year 1990, $175.8 million was provided by missions under the authority of the Bureau for Asia, Near East, and Europe. Although six countries in this region obligated funds for energy-related work, the primary reason for this concentration of energy funding was the earmarking of large ESF allocations to Egypt and Pakistan.

Because major power projects are relatively expensive, AID missions with large amounts of support available are in the best position to undertake them. Other than Israel, where nearly all U.S. assistance is provided in the form of a cash grant, the two largest recipients of U.S. economic assistance in fiscal year 1990 were Egypt and Pakistan; total obligations by the missions in these two countries amounted to almost $1.2 billion. These missions accounted for about $166 million, or almost 78 percent, of AID energy assistance that year.

With sufficient funds available to play an important role in the power sectors of some recipient countries, the Bureau for Asia, Near East, and Europe developed a level of staff support for energy not found in other geographic bureaus. The Bureau employed two staff persons (now in the Bureau for Europe and the Near East) who actively encouraged missions to develop energy-related projects. The Bureau for Asia, Near East, and Europe was also the only one of the three geographic bureaus at AID to designate energy use and efficiency as a focal point for assistance under AID's environmental initiative.[5]

[4]Fuelwood-related assistance includes encouraging the adoption of sustainable forestry practices and the use of more efficient wood-burning stoves.

[5]Other areas of assistance emphasized by the Bureau were urban and industrial pollution, water and soil resource management, tropical forestry, and biological diversity.

Egypt

The AID mission in Egypt is unique in the amount of funding it has available to purchase and install new electric generation and distribution equipment and to refurbish old equipment to make it more efficient. In Egypt, about $119.5 million was obligated on two projects for these purposes in fiscal year 1990.[6] Most of this funding was designated for building a combined cycle generating plant, modernizing an existing thermal power station, refurbishing existing gas turbines, and improving the city of Alexandria's electricity distribution system. To encourage the government to make policy changes that would increase efficiency in the power sector, AID made the award of ESF funds for major energy infrastructure work contingent upon continued progress in decontrolling energy prices.

The AID mission in Egypt also obligated about $2 million for a project aimed at improving industrial energy efficiency through a range of measures, including demonstration projects to encourage technology transfer, reduction of regulatory barriers to investment, and improvement in the technical capabilities of the petroleum and electricity sectors. In addition, the mission spent about $5.2 million obligated in prior years for a project aimed at strengthening the Egyptian government's energy planning and policy-making capabilities.

Pakistan

In addition to supporting a substantial rural electrification program (more than $11 million obligated during fiscal year 1990), the AID mission in Pakistan obligated about $25.6 million for its Private Sector Power project. This project, which is being conducted in collaboration with the International Bank for Reconstruction and Development (World Bank), is designed to (1) improve the Pakistan government's ability to review and approve proposals for private sector power projects and (2) contribute to the establishment of an Energy Development Fund that will finance construction projects, with a focus on hydroelectric and clean coal technologies.

The mission's Energy Planning and Development project, with fiscal year 1990 obligations of about $6.3 million, supports a wide variety of activities, including the National Energy Conservation Center, which conducts energy audits, training, and demonstrations to increase energy efficiency in industry. In addition, the mission obligated just over $1 million to support fuelwood-related activities within the context of a forestry planning and development project. The mission also continued

[6]The mission also continued to expend funds (about $9.8 million in fiscal year 1990) obligated in prior years for rehabilitation of the Aswan High Dam.

to expend funds (about $12.3 million) obligated in prior years for procurement of energy commodities and equipment.

India

Most fiscal year 1990 energy-related assistance by the AID mission in India (obligations of $3 million) was provided through the Program to Accelerate Commercial Energy Research, a 6-year project aimed at encouraging market-oriented innovation in the energy sector. The mission also expended $1 million that was obligated in prior years for development of alternative energy resources and worked to make arrangements for the 1991 inauguration of the Energy Management Consultation and Training project, a multiyear effort aimed at introducing a variety of technological and management innovations to Indian energy production and use, including least-cost investment planning.[7] AID officials hope that the $20 million project, which is coordinated with the World Bank and the Asian Development Bank, will leverage $1 billion in loans from these two organizations.

Philippines

The AID mission in the Philippines did not obligate funds for any dedicated energy programs during fiscal year 1990. However, the mission continued to spend funds obligated in prior years for rural electrification ($750,000) and for the Technology Transfer for Energy Management program (about $1.5 million). This program was designed to promote incorporation of energy conservation technologies and practices in the Philippines economy, especially the private sector.

Other Countries

The AID missions in Bangladesh and Nepal obligated a total of about $5.4 million to support rural electrification in fiscal year 1990. The AID mission in Morocco obligated no funds but continued to make expenditures (about $2 million) of funds obligated in prior years for projects in renewable energy development, energy planning, and energy demand management.

Bureau for Africa

Energy is not a high priority in AID's Bureau for Africa. AID officials stated that they have given priority to areas where the Bureau has substantial expertise and can make an impact, such as agriculture. The Bureau's strategy under the agency's 1990 environmental initiative is to concentrate on sustainable agriculture, tropical forestry, and biological diversity.

[7]Traditional energy planning assumes certain rates of growth in demand and focuses only on supply expansion. Least-cost investment planning includes consideration of economical ways to increase efficiency throughout the energy system, including production, distribution, and use.

The Bureau for Africa provides a small amount of energy sector assistance. Excluding about $3 million devoted to providing petroleum to the Seychelles, the Bureau obligated about $1.1 million for energy-related assistance in fiscal year 1990—less than 1 percent of AID's total economic assistance for these countries.

Nine missions obligated funds for energy-related work. However, no programs were devoted specifically to energy; rather, all funding was derived from programs aimed at more broadly defined goals. A regional natural resources management program provided almost a third of the total, though the $354,000 devoted to energy amounted to only about 8 percent of this program's overall obligations of about $4.4 million.

Bureau officials said that energy assistance in Africa has in past years focused primarily on fuelwood-related projects but that the Bureau has increased the emphasis placed on energy policy analysis and planning. Reflecting this, AID statistics show that about 41 percent of the Bureau's energy obligations in fiscal year 1990 supported energy management, planning, and production, whereas about 24 percent was allocated to fuelwood-related projects.

A significant effort in energy-related work had been under way in Sudan. In fiscal year 1988 AID obligated about $1.9 million for three projects that provided assistance in the areas of fuelwood, energy planning and management, and other sources of renewable energy. However, most assistance to that country was suspended in 1989 because of deteriorating relations with the Sudanese government.

Low overall funding is one reason for the relative absence of energy sector projects from AID's African portfolio. In fiscal year 1990 approximately $614 million in AID assistance was distributed among 41 countries and various regional projects. With an average funding level of less than $15 million (including funds allocated regionally), no single mission had the resources to mount a major effort in the power sector along the lines of those undertaken by missions in Egypt and Pakistan. In addition, no full-time permanent staff are devoted to energy in AID's missions in Africa. Pursuant to the 1990 appropriations act, however, the Bureau has staffed a natural resources and energy policy advisor position.

Bureau for Latin America and the Caribbean

The Bureau for Latin America and the Caribbean does not rank energy among its priority areas of concern. About 1 percent of the economic assistance obligated through this Bureau in fiscal year 1990 (about

$18.4 million) went for energy-related purposes.[8] Four bilateral missions, the Regional Office for Central American Programs, and other regional programs made obligations for energy-related purposes. A responsible Bureau official commented that because the Bureau had many different development priorities to address with limited resources, energy projects were approved only if they made "exceptional sense."

The Bureau employs no U.S. nationals in full-time energy positions, and its strategy under the 1990 environmental initiative focuses on sustainable agriculture, forestry, biodiversity, and watershed and coastal zone management. In recent years, most of the funds devoted to the energy sector by missions within the Bureau have either been part of the relatively large allocations of assistance for El Salvador or have been earmarked by Congress.

Bureau staff members said that because the Bureau does not possess a great deal of expertise in energy, they rely heavily on the Office of Energy to provide technical assistance when needed. The Office has been particularly prominent in providing a variety of services to the Costa Rica mission.

In accord with general Bureau funding patterns, most energy assistance goes to countries in Central America. Energy assistance to Central America is described in appendix II. Energy assistance for other countries within the Bureau's area of responsibility in fiscal year 1990 consisted primarily of about $1.3 million in infrastructure assistance in the Caribbean region and about $600,000 for fuelwood-related activity in Haiti.

Office of Energy

As congressional interest in energy issues has risen, so have obligations by the Bureau for Science and Technology's Office of Energy, from approximately $10.1 million in fiscal year 1989 to $15.5 million in fiscal year 1990 and an expected $20 million in fiscal year 1991. The Office was the third largest source of energy assistance within the agency in 1990.

The Office conducts projects aimed at developing new approaches to energy problems, assists in the development of AID energy policies, and functions as an advocate for energy work throughout the agency. The

[8]This amount excludes about $20 million allocated to purchasing petroleum for Guatemala.

Office has its most immediate impact on the energy sectors of developing countries when it collaborates with missions to provide energy-related assistance.

The Office provides resources and expertise to AID missions that cannot provide energy assistance themselves or that wish to supplement their own activities, and it was active in more than 20 countries in fiscal year 1990. However, the Office controls only a small portion of AID's overall energy assistance and must have the cooperation of AID mission officials to play a significant role in a given country. Basic programming decisions in specific countries remain the responsibility of the missions in those countries. The Office is most active in countries such as India, Egypt, and Pakistan, where it supports the mission's substantial energy work, or Costa Rica, where the local mission itself has not had the resources to respond to the host country's interest in energy-related work.

The Office supports a broad variety of activities grouped under eight major project headings: Energy Policy Planning, Energy Conservation Services, Biomass Energy Systems and Technology, Renewable Energy Applications and Training, Conventional Energy Technical Assistance, Private Sector Energy Development, and Energy Technology Innovation. The last was new in 1990.

Some Office activities are conducted in collaboration with the World Bank and other multilateral development banks, often through the Multi-Agency Working Group on Power Sector Innovation—an informal consulting group made up of representatives from the Office of Energy, World Bank, Inter-American Development Bank, Asian Development Bank, African Development Bank, and United Nations.

The overall focus of the Office is to stress improved energy planning, increased efficiency, private sector participation, and increased use of indigenous energy, including renewable energy resources. With the additional funding made available in fiscal year 1990, the Office chose to obligate most funds for projects in energy policy planning and conservation ($4.9 million); renewable energy, including biomass ($3.5 million); training ($3.1 million); and the private sector ($2.9 million). These totals do not indicate the precise allocations of resources, however, because Office projects often address several goals at once—for example, promoting private sector investment in generating power from renewable energy sources.

Energy Policy Planning and Conservation

Office of Energy officials heavily emphasize improving energy efficiency as a means of addressing both rising demand for power in developing countries and global warming concerns. A large proportion of the funds allocated to energy policy planning and conservation for fiscal year 1990 addressed energy efficiency, including nearly all of the $2.5 million obligated specifically for energy conservation. In response to congressional interest in a global warming initiative, the Office budgeted about $675,000 in fiscal year 1990 funds allocated to energy policy planning and conservation to support the development of a Global Energy Efficiency Initiative designed to focus U.S. and developing countries' development resources on energy efficiency; however, the initiative has yet to produce substantial results.

The Office supported a range of other projects aimed at increasing efficiency, with the greatest focus placed on overall power systems (from generation through use), electric utilities, and industry. For example,

- $700,000 was designated to initiate a joint fund with the World Bank to support preliminary studies of energy-efficient power projects involving the private sector;
- $400,000 was designated to design efficiency programs in Brazil, Poland, and Indonesia that focus on reducing effective demand;
- $270,000 was allocated to a project coordinated through the Multi-Agency Working Group on Power Sector Innovation to develop policy guidance concerning efficiency improvements at electric utilities;
- $200,000 was allocated for developing pricing systems that will encourage energy efficiency in Indonesia, Poland, and Thailand; and
- $140,000 was designated to develop a training package for AID personnel on linkages between energy efficiency and the environment.

Renewable Energy

The Office budgeted about $1 million to support biomass energy projects in specific countries and about $424,000 to support relevant research. The most prominent technology being explored was combustion of sugarcane waste ("bagasse"), with relevant work proceeding in Costa Rica, Guatemala, Indonesia, Pakistan, and Thailand, among others. With regard to other renewable technologies, the greatest allocations of resources supported pre-feasibility studies and other preliminary work on commercially viable projects ($375,000) and activities aimed at educating developing country nationals and AID and other donor officials in renewable technologies and promoting U.S. exports in this area ($455,000).

Training

The energy training program provides courses and programs in energy policy and planning, fossil fuel development, power industry development, conservation and efficiency, and alternative energy systems. The greatest portion of this program—$696,000 in fiscal year 1990—was budgeted for courses associated with power industry development, such as electric utility management. Mission participation in programs concerned with the power industry brought total AID training support in this area to about $1.2 million. However, the largest amounts budgeted for training in fiscal year 1990 were designated for programs organized by the Office of Energy but funded and used almost exclusively by the Egypt and Pakistan missions. These two missions budgeted $1.4 million in fiscal year 1990 funds for these programs.

Private Sector

In addition to the $700,000 collaboration with the World Bank, the Office budgeted about $1.15 million to share costs with the private sector on feasibility studies and other preliminary activities associated with private sector energy projects. The Office also budgeted $760,000 in fiscal year 1990 funds to support workshops and study tours for host country private and public sector officials on the participation of private firms in the power sector. In addition, the Office provided technical assistance to encourage private sector participation in the power industry in several countries.

Other Centrally Funded Programs

According to AID, other centrally funded offices in AID obligated nearly $4.5 million to energy-related activities in fiscal year 1990. About $1.7 million of this amount was obligated for fuelwood-related assistance by several different offices within the Bureau for Science and Technology. Of the remaining assistance, the largest portion (about $1.1 million) represents about 24 percent of a more broadly focused grant program for private voluntary organizations.

Energy Sector Support in Central America

AID missions in Central America varied widely in the level of attention given to energy-related activities. Under the agency's decentralized structure, individual missions determine how funding should best be directed to respond to the circumstances within specific countries. Energy programming patterns also illustrate the impact that large ESF allocations and congressional earmarking can have on energy assistance.

AID's Central American assistance also illustrates several other aspects of the agency's energy programming, including the priorities placed on encouraging the private sector, increasing efficiency, and extending rural electrification. Most support is directed toward electricity; a low level of effort is directed toward transportation; and some portions of natural resources management and forestry programs address fuelwood issues.

Overall, however, Central American assistance illustrates the low profile usually associated with energy in AID programming. Although AID officials acknowledge the importance of energy as a factor in economic development, the need to address other priorities with limited program funds restricts the level of assistance provided to the energy sector. Aside from earmarked programs and ESF assistance to El Salvador, AID missions in the region generally concentrate on policy dialogue and technical assistance that will encourage improved efficiency, institutional reform, and investment by the private sector and multilateral development banks, including investment in renewable energy projects. AID officials commented that if earmarked funds had not been designated specifically for energy, they would likely have been spent on projects in other areas.

Background

Like many other parts of the developing world, Central America is faced with an impending power crisis which, if unresolved, will adversely affect economic development in the region. Since existing distribution systems, particularly in rural areas, are inadequate, repressed demand amounting to 10 to 15 percent of capacity already exists.[1] As population and economic activity continue to grow, so will demand for energy.

The difficulties facing the region's energy sector are common to many countries in the developing world. Nearly all electric power generation and most distribution are controlled by relatively inefficient state-

[1] AID estimates that only 10 to 20 percent of the population in AID-assisted countries around the world actually has access to electricity.

owned utility companies. Because they include substantial consumer subsidies, tariff structures typically do not reflect the real cost of providing power. These pricing regimes, therefore, exacerbate the economic difficulties of the utility companies, which have run up large amounts of foreign and domestic debt over the years through construction of major power plants. (The electricity sector accounts for more than a third of the region's total external debt.) Because of their financial problems, these utilities have great difficulty generating capital to address expanding demand. According to officials of the Regional Office for Central American Programs, all of the countries in the region will be faced with some form of generating deficiency within the next few years.

The Central American power sector is less of a concern with regard to global warming than in other parts of the world. Most electric power is generated by hydroelectric plants (ranging from about 56 percent in Guatemala to 90 percent in Costa Rica), which produce no greenhouse gas emissions. There is also substantial potential for geothermal generation in the region, though only El Salvador currently obtains significant power from this source—about 15 percent of total generation.

Regional Office for Central American Programs

The Regional Office for Central American Programs has been involved in providing a significant amount of energy-related assistance during recent years. During the mid-1980s the Regional Office supported two energy sector projects that were directly relevant to global warming concerns: Fuelwood and Alternative Energy Sources and Regional Industrial Energy Efficiency.

The Office currently employs a full-time foreign national energy expert, and about 19 percent of the Regional Office's fiscal year 1990 obligations went for energy-related purposes. The Regional Environmental and Natural Resources Management project addresses energy issues through forestry and watershed management activities. This project continues, on a broader scale, the support provided by the Regional Office during the 1980s for improved fuelwood and watershed management practices.[2] However, most of the Regional Office's recent funding for energy has been derived from two congressionally earmarked programs—Central America Energy Resources (CAER) and Central American Rural Electrification Support (CARES).

[2]Watershed management in Central America addresses energy concerns not only by encouraging better management of wood that is used at least partially for fuel, but also by decreasing siltation in reservoirs behind hydroelectric dams. Siltation behind such dams is a major problem for the Central American energy sector.

CAER Program

Under the CAER program, which will conclude during 1991, AID has obligated about $24.2 million since 1985 for a variety of energy-related activities, primarily in Guatemala, Costa Rica, El Salvador, and Honduras. About half of CAER project funds have been devoted to activities related to development of geothermal energy resources, ranging from assessing the potential of unexplored geothermal fields to testing specific wells for production potential. These efforts include several activities promoting U.S. exports of relevant technology. About 14 percent of project funds were directed toward enhancing energy planning capabilities in the region, including training individuals from relevant institutions and transferring useful computer software.

CARES Program

With total funding of $25 million from fiscal years 1987 to 1993, the CARES program is designed to strengthen the institutional and technical base in the region's national utility companies for improved electrification programs, primarily in rural areas. Of particular interest among the variety of institutional support measures in this program are several efforts aimed at supporting an increased role in energy distribution for rural electric cooperatives, which AID believes are more efficient in their operations than state utilities. In one case (in Costa Rica) this support has extended to subsidizing preparatory studies for a small hydroelectric dam being constructed by a consortium of four rural electric coops. The program also stresses increasing efficiency in the rural distribution system.

Guatemala

The AID mission in Guatemala supports only one major energy project, and energy work is supervised by one local national employee as part of his responsibilities. AID officials in the mission said that they were aware of the importance of energy as a development issue but that it was difficult to find resources to devote to energy, given the numerous other objectives that the mission was attempting to address. Mission officials believed that AID could, however, make a contribution by supporting multilateral development bank initiatives in inexpensive ways. Despite these limitations, AID has made some contributions to progress in the Guatemalan energy sector.

The mission's energy support, including forestry activities which devote some attention to fuelwood and siltation issues, is coordinated with the Regional Office for Central American Programs. For example, through the CAER program, the Regional Office has assisted Guatemala in producing its first national energy plan and has provided assistance to the

national utility in developing Guatemala's considerable geothermal resources.

Rural Electrification

The mission obligated about $2 million in fiscal year 1990 for its only major project in the energy sector—known as "PER III"—the third in a series of rural electrification projects that the mission has been supporting since 1971. The Regional Office's CARES program provides technical assistance in support of PER III.

The PER III program's focus is assisting the national utility in improving and extending transmission and distribution facilities in rural areas. Included in the program have been activities aimed at promoting development of more decentralized, independent utilities as a means of increasing efficiency, including support for the revitalization of Guatemala's municipal distribution networks.

Policy Dialogue

With some success, the mission has pursued policy dialogue aimed at persuading the government of Guatemala and the national electric utility to permit private sector participation in the energy sector and rationalize energy prices. Encouraged by this policy dialogue and by worsening economic conditions that put stress on the energy sector, the Guatemalan government has decided, for example, that it wishes to encourage private sector participation in the energy sector through cogeneration of industrial heat and electric power at industrial sites.

Cooperation With Office of Energy

Through the Office of Energy, the mission provided technical assistance to develop a pricing regime that would make private sales to the national utility practicable. The mission and the Office combined to provide about $182,000 to support this study and associated efforts to encourage participation in cogeneration among sugar cane processors. Future projects may involve more biomass combustion and small hydroelectric power plants, as well as thermal energy generation plants.

Coordination With Inter-American Development Bank

AID officials in Guatemala have coordinated their energy sector activity with the Inter-American Development Bank. An important part of the bank's program in Guatemala has been opening up opportunities for private sector participation in electricity generation—a primary AID objective. The bank has committed $50 million for a loan program to finance private cogeneration programs. The majority of these funds are likely to

be spent on cogeneration from bagasse—an area in which AID has been active in several countries. The pricing project undertaken with the Office of Energy removed a major roadblock standing in the way of private sector sales to the national utility. The bank has also committed substantial funds for power plant construction and further research in geothermal energy, an area in which AID's CAER program has conducted a good deal of preliminary work.

El Salvador

AID's mission to El Salvador ranked third among AID bilateral missions in providing energy-related assistance in fiscal year 1990. Energy support in El Salvador is by far the highest in Central America. AID officials in El Salvador said that the central factor controlling the agency's energy-related agenda in this country has been the ongoing civil strife, during which rebel forces from the Faribundo Marti Liberacion Nacional have carried out a campaign of sabotage against the national power grid. From fiscal years 1988 through 1990 AID obligated about $24 million to repair this damage so that the country's economy could continue to function.

Regional Projects

The other major focus for energy-related assistance in El Salvador has been rural electrification. Congressional earmarks for the Regional Office's CARES program, totalling $10 million in fiscal years 1988 and 1989, were programmed specifically to support this work in El Salvador. CAER program activities in El Salvador have included studies aimed at increasing the productivity of geothermal fields currently in use and an examination of transportation fuel subsidies.

Policy Dialogue

Energy prices in El Salvador have been heavily subsidized, which encourages consumption while also depriving the national utility of funds that it could use to make capital improvements. The AID mission has undertaken policy dialogue with El Salvador officials, including linking ESF obligations to energy pricing liberalization and other economic reforms. Some success has been achieved in this area, including abandonment of differential exchange rates for calculating the price of imported petroleum. AID has also encouraged El Salvador in moving toward greater private sector participation in the economy generally, including electricity generation and distribution. AID efforts along these lines support Inter-American Development Bank objectives in discussions with the El Salvador government.

Costa Rica

U.S. economic assistance to Costa Rica has declined substantially over the last few years, and with this decline has come a need to make choices about where to invest mission funds. The AID mission in Costa Rica did not obligate any funds for energy-specific projects in fiscal year 1990. Mission staff had proposed three different energy projects with total funding of $7.5 million. These projects were to focus on managing energy demand and promoting private sector participation in energy generation. However, funds were not allocated to these projects. Mission officials said that they had neither the funds nor the personnel to devote to energy and that they had no plans to pursue any energy projects in the future.

Office of Energy

In cooperation with the mission, the Office of Energy has in recent years supported a load management demonstration project and a study of proposed private sector participation in electricity generation. On its own, the Office has also sponsored studies of the feasibility of energy production from bagasse. The Office also supported a comprehensive study of opportunities for efficiency improvements in all phases of the energy system, from generation through use. The Office and the mission have cooperated to begin providing funding to implement efficiency improvement measures. Funding for these efficiency-related measures amounted to about $225,000 in fiscal year 1990, with about $75,000 contributed by the mission.

Regional Office for Central American Programs

The Regional Office's CAER program has, among other things, assisted Costa Rica in developing its geothermal resources through data collection and analysis and has provided technical assistance in energy planning, including identifying policy options to achieve savings in the transportation sector. The CARES program has provided technical assistance to rural electric cooperatives in Costa Rica, including assistance in preparing preliminary analyses for the construction of a small hydroelectric plant by a consortium of rural co-ops.

Policy Dialogue

Permitting private sector participation in electricity generation has been one topic of discussion surrounding ESF obligations to Costa Rica. Recently, national laws were changed to encourage private sector activity. Two of the first such projects to go on line will be the hydroelectric dam mentioned above and a sugar mill cogeneration facility that was included in Office of Energy studies.

The Inter-American Development Bank has joined AID in encouraging Costa Rica to open up electricity generation to the private sector and has established a fund to support private sector development of cogeneration projects.

Honduras

The Honduras mission maintains a low profile in the energy sector, sponsoring no energy-specific programs during fiscal year 1990. However, it did obligate about $309,000 for fuelwood-related purposes within a larger Land Use Productivity Enhancement project.

The mission views energy sector assistance as primarily the province of the multilateral development banks. The Honduran national utility is impaired by a variety of problems, including a heavy debt burden, inadequate pricing, overstaffing and inefficient administration, and substantial line losses. The AID mission in Honduras is supportive of initiatives by the World Bank and Inter-American Development Bank to encourage reform in the utility's operations as part of a general effort to foster restructuring of the economy. However, direct mission involvement in bank negotiations and energy sector technical assistance has been minimal. Faced with competing priorities, mission officials have stressed assistance in other areas.

The Regional Office and the Office of Energy have supported some energy activities in Honduras. For example, the CAER program supported an assessment of Honduran geothermal resources, and the CARES program supported a study of the feasibility of creating electric cooperatives in Honduras. The Office of Energy has supported exploration of the possibility of cogeneration using the byproducts of sawmill operations.

AID's Global Warming Initiative

Developing countries need energy for economic growth, but with their heavy debt loads and insufficient ability to generate foreign exchange, they cannot obtain the more than $100 billion per year that is projected as required to meet the growing demand for energy by building new power plants.[1] In recognition of these fiscal constraints and the adverse environmental consequences of continued growth in the energy sector using current technology and management practices, AID programming in recent years has placed increasing emphasis on promoting energy efficiency, facilitating private sector involvement in generation and distribution, and taking environmental factors into consideration.

Assistance oriented toward these programming objectives helps address global warming concerns. As directed by Congress, AID also has designated nine "key" countries or regions for its global warming initiative. However, there have been no substantial shifts in funding as a consequence of this initiative.

Assistance Addresses Global Warming

With reference to its 1990 environmental initiative, AID stated that its primary goal regarding energy is to "promote development of cost-effective, efficient, reliable, and environmentally sound energy systems ... in order to provide the energy necessary for broad-based economic growth." AID policy papers and statements from officials throughout the agency make it clear that, in addressing the energy needs of developing countries, the agency focuses on improving energy efficiency and paving the way for investment by the private sector and multilateral development banks in major power construction projects. Both efforts have been included in AID policy papers since the mid-1980s but have received added emphasis in the context of rising concern about the environmental implications of energy assistance.

Increasing energy efficiency and encouraging the use of renewable energy resources were singled out by AID officials as focal points for the agency's energy activities in response to congressional interest in a global warming initiative. Since AID has concluded that the private sector is generally more efficient than the state-owned electric utilities that typically dominate the power sector in developing countries, AID activities supporting private sector participation in generation and distribution are seen as helping to advance efficiency. Encouraging adoption of market-oriented pricing systems, a key point of emphasis in AID

[1]See Power Shortages in Developing Countries: Magnitude, Impact, Solutions, and the Role of the Private Sector, AID (March 1988).

energy assistance, facilitates private sector participation and also encourages greater end-use efficiency.

According to AID, about $105.8 million, or about 50 percent, of its energy assistance obligations in fiscal year 1990 helped to improve energy efficiency and otherwise promote conservation in developing countries. Reflecting the overall geographical orientation of AID energy assistance, most of these funds (about $84.6 million) were obligated through the Bureau for Asia, Near East, and Europe, primarily for upgrading the energy infrastructure in Egypt. However, a wide variety of activities in other countries have addressed energy efficiency. For example, the AID mission in Pakistan has supported a National Energy Conservation Center, and the Office of Energy has supported a comprehensive analysis of the potential for efficiency improvements in the Costa Rican energy system. On the other hand, AID reported that obligations dedicated to encouraging the increased use of renewable energy amounted to only about $4.6 million in fiscal year 1990. Nearly all of this ($4.3 million) was obligated by the Office of Energy.[2]

AID Has Designated "Key" Countries and Regions for a Global Warming Initiative

In response to congressional directives concerning a global warming initiative, AID has designated seven countries and two regions as "key" points of focus for relevant assistance: Pakistan, the Philippines, India, Central America, Indonesia, Brazil, Mexico, Poland, and Central Africa. In some of these areas—India, Pakistan, the Philippines, and Central America—AID was supporting global warming-relevant energy activities before passage of the global warming initiative legislation. Additional energy projects are planned in most key countries.

Pakistan

In fiscal year 1990, the AID mission in Pakistan obligated funds for three energy programs, focusing on private sector power, energy planning and development, and rural electrification. All began operations before the global warming initiative. AID estimated that about 27 percent of the funds obligated under these programs helped to improve efficiency or otherwise foster energy conservation. Among other things, these projects support a National Energy Conservation Center, work to decrease losses in the rural electric distribution system, and promote an

[2]Renewable energy resources include agricultural residues, solar thermal and solar electric, geothermal, wind and hydro power.

increased role for the private sector in electricity generation. Commitment of new funds to Pakistan has been suspended because of the government's ongoing nuclear weapons program.

Philippines

The AID mission in the Philippines obligated only about $150,000 to energy sector support in fiscal year 1990. From fiscal years 1985 through 1989, however, the mission obligated about $25.3 million to support projects in rural electrification and technology transfer for energy management. With reference to global warming, these projects supported reduction of losses in rural distribution systems and adoption of more efficient energy technologies. The mission plans to continue support for rural electrification through fiscal year 1993 and to begin obligating $15 million in fiscal year 1992 to support an energy conservation loan program, in cooperation with other donors.

India

Much of the $3.7 million in energy sector assistance obligations made by the AID mission in India in fiscal year 1990 was relevant to global warming concerns. Of this total, $3 million was obligated through the Program to Accelerate Commercial Energy Research, which supports projects aimed at developing a variety of technologies, including improved efficiency and energy management and renewable energy. The mission also expended about $1 million obligated in prior years to support an Alternative Energy Resources Development program. In fiscal year 1991, the mission is inaugurating a 6-year, $20 million Energy Management Consultation and Training program that will support a range of activities relevant to global warming, including development of least-cost investment planning capabilities.

Central America

AID missions in Central America obligated about $16.4 million in energy-related assistance in fiscal year 1990. Most of this (about 84 percent) was devoted to rural electrification or repairing damage inflicted on the El Salvador electrical system by anti-government forces. Plans by the Bureau for Latin America and the Caribbean for assistance related to the environment and global warming focus almost completely on non-energy concerns, such as tropical forestry. The Regional Office for Central American Programs' CAER project terminates in fiscal year 1991.

Indonesia

The AID mission in Indonesia did not obligate funds for any dedicated energy programs during fiscal year 1990. However, the mission continued to expend $12.3 million obligated in prior years to support a national Energy Research Laboratory. This facility conducts work in renewable energy, among other areas.

The mission's planning with regard to the global warming initiative concentrates on natural resources management. However, the mission has collaborated with the Office of Energy to hire a full-time energy consultant on a contract basis and is awaiting Indonesian government approval for a series of small-scale activities relating to energy conservation, demand management, and energy planning. Funding from the Office of Energy would amount to about $475,000.

Brazil and Mexico

AID has had only modest "advanced developing country" programs in Brazil and Mexico in past years. As in Indonesia, AID's newly inaugurated global warming-related activities in Brazil and Mexico concentrate primarily on forestry and natural resources management activities. However, the Office of Energy and the Bureau for Latin America and the Caribbean committed about $400,000 in fiscal year 1990 to initiate support for an Energy Efficiency Institute in Brazil. Provision of relevant energy sector assistance to Mexico is still under discussion, with substantial Office of Energy involvement. In cooperation with the Environmental Protection Agency, World Bank, and Inter-American Development Bank, AID plans to emphasize renewable energy, end-use efficiency, and private sector cogeneration.

Poland

In response to democratic reforms in Eastern Europe, the United States has inaugurated a substantial regional assistance program, involving 36 U.S. government departments and agencies. Energy and the environment have been significant focal points within the overall effort.

AID developed an environment and energy strategy for Eastern Europe in 1990 and began implementation during September 1990. In fiscal year 1991, AID plans to obligate almost $23 million for energy sector activity in Eastern Europe, although most of this total will actually be spent in support of Department of Energy and Environmental Protection Agency programs. Poland will be the beneficiary of a large portion of this funding, although the exact percentage is indeterminate because of the regional orientation of some of the programming.

AID's strategy concerning energy focuses on promoting efficiency and otherwise contributing to the abatement of adverse energy-related environmental effects in the region, as well as strengthening private sector initiatives. According to AID, about 86 percent of Eastern Europe energy obligations in fiscal year 1991 will serve to improve efficiency or otherwise promote conservation.

Central Africa

AID initially designated Zaire as a global warming key country. However, according to AID officials, political considerations prompted broadening this designation to include five other countries in Central Africa—Cameroon, the Central African Republic, Congo, Equatorial Guinea, and Gabon. This redesignation delayed the Bureau for Africa's planning for global warming-related efforts. AID did not support dedicated energy programs in any of these countries in fiscal year 1990. The Bureau is surveying forest resources and conducting other preliminary work for a program that will focus on tropical forest conservation.

Office of Energy

Most of the Office of Energy's total obligations of about $15.5 million in fiscal year 1990, which supported activities in more than 20 countries, had some relevance to global warming concerns. Over $7 million of this total supported efforts addressing energy efficiency, according to AID, while over $4 million supported projects involving renewable energy sources.

For fiscal year 1992, the Office plans to inaugurate two new 9-year projects, with total obligations of $40 million, that will be relevant to global warming concerns. The Energy Efficiency project will focus on demand-side measures, including energy audits and load management. The Energy and Environmental Policy project will focus on improved energy planning and management and leveraging multilateral development bank funds. These new projects represent a shift in resources within the existing Office budget and not an increase in funding.

Guidance to Missions

According to AID officials, agency guidance to missions on addressing global warming through mission programming was delayed primarily by concerns that arise from the agency's financial limitations. AID officials contemplated pursuing a shift of resources to the nine designated countries and regions to address global warming, but they decided against this in view of the funding cuts that this reallocation would require for activities in other countries and regions. AID issued guidance to missions

in June 1991 that provides information on taking global warming considerations into account in making programming decisions within the parameters of the existing geographical distribution of funds.

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