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1993



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Joint UNDP / World Bank **Energy Sector Management Assistance Programme**

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*Annual Report*  
*1993*



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Energy Sector Management Assistance Programme*

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# 1

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## Overview

The 15 months under review in the present report were essentially a period of consolidation for ESMAP. The Programme is now implementing, with some necessary adaptations, the Strategy and Work Program presented to donors during the Spring of 1992; it has also consolidated its working relations with the World Bank and donors; streamlined its governance; and secured a sustainable level of funding. These accomplishments put ESMAP on fairly solid footing to provide technical assistance to recipient countries during the next few years.

### **The Role of Technical Assistance in the Energy Sector**

A salient feature of ESMAP's recent activity has been its maturing approach to assisting developing countries as they embark on "second generation" energy strategies. During this phase, traditional activities such as assessment and development of energy resources are accompanied by major reforms, including restructuring and regulatory adjustments, price and tariff revisions, and investment programs that increasingly embody environmental concerns.

Many developing countries are now committed to making such reforms, but commitment is only a first step: if the changes are to be effective and durable, governments must have access to timely and objective technical expertise, particularly in the detailed design and coordination of reforms and in the development of the appropriate legislation and institutional structures for carrying them out. A unique opportunity thus presents itself to the international community and to ESMAP: to advise and assist in the transfer of lessons of experience of both developed and developing countries. A reciprocal exchange of detailed technical information can be crucial, considering the still-limited experience with the new approaches to restructuring in the sector. Equally important, timely technical advice can help ensure that bilateral and multilateral capital assistance—and the increasing flows of private capital that should follow reforms—will take place within a coherent overall framework. In a period in which official flows are expected to be modest at best, such joint technical assistance ventures are particularly important.

## Evolution of ESMAP Capabilities, 1992-1993

### *Implications of Reduced Financing*

In financial terms, ESMAP is reasonably well situated to fulfill its mission, but the Programme has had to adapt to some changing circumstances. After the last meeting of the ESMAP Consultative Group in Paris, in November 1992, most ESMAP donors confirmed their renewed confidence in the Programme. In addition, significant progress was achieved in the way donors channeled their contributions to ESMAP, with an increasing number of countries able to provide flexible "core" funding rather than restrictive "project" funding. However, the Programme experienced longer-than-expected delays in receiving contributions pledged by some donors, saw some contributions eroded by exchange-rate fluctuations, and received an overall level of financial support that fell short of expectations. ESMAP now has a funding level of about \$10 to \$12 million a year, and the most recent indications from donors do not give a strong prospect for any significant increases in contributions for the foreseeable future. The Programme is sustainable at present levels of funding, but if support falls, the Programme's long-term sustainability, in its present form, would have to be reassessed.

### *Developments in Governance*

The Programme has instituted some changes in governance during 1993 that will help it adapt to the changing institutional environment within which it functions. As announced at the ESMAP Consultative Group (CG) meeting in Paris, Mr. V. Rajagopalan, who served as chairman of the CG from the end of 1990 to December 1992, was succeeded by Mr. Jean-François Rischard, the World Bank's vice president for Finance and Private Sector Development. An up-to-date ESMAP organizational chart is attached as Annex 1. At the same time, the CG abolished the office of the Secretariat of the ESMAP CG. Functions performed by the Secretariat, including relations with ESMAP donors, organization of meetings of the ESMAP CG, and secretariat functions for the Technical Advisory Group (TAG) of ESMAP are now performed within the front office of the ESMAP manager. The CG's final communiqué is attached as Annex 2, and an additional statement by the delegate from Norway is given as Annex 3.

New terms of reference for the TAG were prepared and endorsed by the CG members by the middle of 1993, and a new TAG was formed. It includes Mr. Gene Godley, as moderator; Mr. Gerald Leach; Dr. Bruno Philippi; and Professor Emil Salim. The new group met for the first time on December 7 and 8, 1993, in Washington, D.C., and soon after circulated a report to donors on their perceptions of the Programme. TAG members are forging a closer working relationship with ESMAP's staff and have agreed to become more directly involved in specific ESMAP activities—for example, by serving as occasional advisers to ESMAP task managers.

### ***ESMAP's Relationship with the World Bank***

The reorganization of the World Bank's Industry and Energy Department (IEN), which took effect as part of a Bank-wide restructuring on January 1, 1993, had important consequences for ESMAP. ESMAP activities are now handled by the energy divisions of IEN. Mr. Richard Stern has retained his position and overall responsibilities as the manager of ESMAP in addition to taking on the directorship of the new department.

The change in organization has positioned the Programme in a considerably strengthened central department that is better connected to the Bank's operation complex. This not only makes it easier for the Programme to coordinate its activities more closely with those of the World Bank but also allows ESMAP to operate at a reduced level of funding. The country focus, now central to ESMAP's approach, is also strengthened by the closer day-to-day cooperation between ESMAP and the World Bank. Major benefits from these new arrangements are already apparent. For example, staff from the Bank's country departments are increasingly assuming responsibility for leading ESMAP's energy country strategy work, thus assuring its consistency with the broader macro economy. Specialized ESMAP staff have also been able to provide prompt, targeted advice responding to requests from policymakers and thus to exploit key windows of opportunity.

### ***Management and External Relations Achievements***

While strengthening its operational linkage with the World Bank, ESMAP has also reaffirmed its identity and refined its management tools. Among the achievements in this regard was the completion of an ESMAP procedural guide in early 1993. The guide was circulated to ESMAP staff to clarify the rules and methodologies by which ESMAP is administered. In addition, a new computerized accounting system specially designed to meet ESMAP's needs became operational in mid-1993. The divisional structure of IEN was adjusted in February 1994 (see Annex 1); one goal of this change was to exploit more effectively the capacity of the Bank's country departments to play a pivotal role in ESMAP's country assessment work and to strengthen subsector expertise in key thematic areas. Finally, the *ESMAP Connection*, the newsletter launched in 1992, completed its first volume of issues in 1993 and significantly increased its circulation. The newsletter is continuing to provide an important window on ESMAP's activities for donors, recipients, and the development community at large.

### **Operations Overview**

ESMAP's operations in 1992-93 reflected substantial movement toward "second generation" energy strategy work, with an emphasis on restructuring, pricing, legal, and regulatory issues.

Among the important activities of the past year, ESMAP has made major efforts in assisting countries including Poland, India, and Morocco in planning and carrying out restructuring of key segments of the power sector. ESMAP household and rural energy activities, one of the Programme's long-term strengths, have continued vigorously in Mali,

Chad, Rwanda, Vietnam, India, Bolivia, Jamaica, and several other countries. Similarly, energy efficiency and conservation efforts, including institution and local capacity building work and training in demand-side management, have been a major feature of ESMAP efforts in China, Pakistan, Zimbabwe, Tanzania, and several other countries. Oil and gas activities remain important not only in African countries such as Mozambique and Morocco but also in several Eastern European and former Soviet countries that have substantially underutilized capabilities and urgent need for reliable and clean energy sources.

### **Financial Status Overview**

On the financial front, ESMAP's resources have stabilized at a level of \$10 to \$12 million, an amount lower than expected but still sufficient to conduct an effective program of technical assistance. The Programme's management has adapted to the decreased levels of funding by taking a conservative financial approach, committing itself to holding long-term staff to numbers consistent with funding in hand for at least one year of services. Financial management of the Programme has also been facilitated by the introduction of a new budget information system, Epsilon, brought on line during 1993.

The increase in the level of flexible core funding from 18 percent in 1992 to 26 percent in 1993 is a welcome indication of donors' confidence in the management and capabilities of the Programme. Core funding is vital if the Programme is to respond quickly and appropriately to the technical assistance needs of developing countries. The maintenance of an adequate level of core funding may be a key factor in allowing the Programme to function efficiently at its reduced level of receipts. For the 1994 work program, the Programme is expected to operate at a funding level of about \$10 million.

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## ESMAP Operations

ESMAP's operations during the 1992–1993 period under review reflected both the consolidation of ESMAP's country-focused mandate and some important evolutions in strategic approaches and scope of work. The country focus was reinforced by the World Bank reorganization, which, as of January 1, 1993, put ESMAP activities under the aegis of a strong central Industry and Energy Department and has allowed significantly closer coordination of ESMAP's technical assistance work with the World Bank's country-based lending operations. ESMAP has been moving vigorously into "second generation" energy strategy work aimed at assisting countries in developing legal and regulatory frameworks appropriate to more competitive structures in the sector.

### Completed, Launched, and Ongoing Activities

ESMAP completed 31 operations between October 1, 1992 and December 31, 1993, as Table 2.1 details. Although the Programme completed 41 activities in the preceding 12-month period, that high rate partly reflected the phasing out of a number of "old style" ESMAP activities. In 1993, one activity, an energy assessment for Nicaragua, was canceled at an early stage after discussions with the government and the World Bank.

Table 2.2 indicates that ESMAP launched 23 operations in the 15-month period under review (about 20 activities were launched in the preceding 12-month period). The operations initiated during the recent period confirm ESMAP's reorientation toward a more strategic and policy-oriented role. Whereas during the previous two years strategic activities had accounted for only about half of new ESMAP projects, the past 15 months saw almost three-quarters of the new activities concentrating mainly on such issues.

Table 2.3 shows that by the end of 1993, more than 70 percent of ESMAP's ongoing activities (24 of 34) involved strategic, policy, or restructuring issues. This contrasts to only 40 percent of ongoing activities along these lines in September 1992.

Discussions of the operational aspects of the Programme's work in 1993 and plans for the coming year's activities are found below.

**Table 2.1 Activities Completed  
October 1, 1992 to December 31, 1993**

<i>Region or country</i>	<i>Sector</i>	<i>Description</i>	<i>Completion date</i>	<i>Cost (US\$)</i>
Africa	Household	Biomass Mapping and Assessment	12/20/93	170,000
Bolivia	Strategy	Tax and Pricing Study	08/23/93	22,683
Bolivia	Strategy/Gas	Natural Gas Strategy	12/31/92	534,961
Chad	Household	Household Energy Strategy	05/30/93	478,478
China	Conser./Power	TVE Energy Conser., Pollution Control	12/30/93	142,098
Colombia	Efficiency	Energy Efficiency Study	11/17/93	340,000
Ecuador	Power	Private Sector Mini-Hydro	01/10/92	187,483
Global	Gas	Unified Approach to Gas Contracts	03/01/93	179,275
Global	Gas	Development of Small Uses of Gas	04/15/93	189,230
Guatemala	Strategy	Energy Assessment II	07/28/93	100,000
Indonesia	Household	Biomass Utilization/Rural Energy	12/30/93	187,135
Indonesia	Strategy	Energy Environment Review Phase I	07/01/93	35,902
Mozambique	Strategy	ESMAP Country Paper	08/20/93	45,000
Mozambique	Strategy/Gas	Gas Development Plan Phase II	08/01/93	270,670
Nepal	Efficiency	Energy Efficiency & Fuel Substitution	03/15/93	316,493
Nigeria	Strategy	Energy Assessment	04/12/93	515,000
Pakistan	Household	Household Energy Strategy	08/30/93	3,269,000
Pakistan	Efficiency	Energy Efficiency Phase I (ENERCON)	01/30/93	400,000
Pakistan	Strategy/Gas	Gas Reserve Assess. & Import Strategy	11/15/93	498,000
Peru	Strategy	Country Paper	09/30/93	65,366
Philippines	Household	Nonconventional Energy Assistance	09/15/93	188,860
Poland	Strategy/Gas	Synthesis of Energy Studies	04/30/93	37,712
Rwanda	Household	Improved Charcoal Kilns Phase II	10/30/93	672,000
SADC	Power	Regional Power Interconnection Phase II	12/30/93	652,000
Senegal	Conser./Power	Industrial Energy Conservation	02/15/93	3,976,329
Tanzania	Power/Effic.	Power Loss Reduction/Power Expansion	11/15/92	775,516
Vietnam	Strat./Househ.	Energy Strategy/Rural Energy	12/31/92	475,800
Yemen	Household	LPG Stoves	03/30/93	76,680
Yemen	Household	Commercialization of PV Systems	12/31/93	45,000
Zambia	Strategy	ESMAP Country Paper	04/02/93	45,000
Zimbabwe	Strategy	ESMAP Country Paper	12/31/92	45,000

**Table 2.2 Activities Launched  
October 1, 1992 to December 31, 1993**

<i>Region or country</i>	<i>Sector</i>	<i>Description</i>	<i>Initiation date</i>	<i>Estimated cost (US\$)</i>
Bolivia	Strategy	Tax and Pricing Study	10/92	23,000
Bolivia	Restruct./Power	Power Sector Reform	02/93	387,000
Bolivia	Strategy/Restruct.	Energy Sector Institutional Restructuring	10/92	420,000
Bulgaria	Strategy/Gas	Gas Development Plan	10/93	572,000
Cameroon	Strategy	Energy Strategy	04/93	405,000
China	Restruct./Power	Institutional Reform in Decentralized Power Systems	11/93	150,000
Egypt	Strategy	Energy Assessment	10/93	723,000
Ethiopia	Strategy	Energy Assessment	12/93	483,000
India	Power/Restruct.	Seminar on Power Sector Reform	07/93	144,000
India	Strategy/Gas	Gas Import Study	09/93	435,000
India	Strategy/Househ.	Urban Energy Strategy	03/93	250,000
Madagascar	Strategy	Energy Sector Review	03/93	300,000
Mauritius	Strategy	Energy Sector Review	11/93	311,000
Morocco	Strategy/Restruct.	Energy Sector Restructuring	12/93	502,000
Mozambique	Strategy/Gas	Gas Development Phase II	10/92	270,000
Mozambique	Strategy	ESMAP Country Paper	03/93	40,000
Pakistan	Strategy/Gas	Natural Gas Reserve Assessment & Import Strategy	12/92	498,000
Peru	Strategy	ESMAP Country Paper	12/92	65,000
Poland	Restructuring	Implementation of Restructuring Program	02/93	958,000
Romania	Strategy/Gas	Gas Development Strategy & Pricing	10/93	695,000
Tanzania	Efficiency	TA to DoE and TANESCO	01/93	751,000
Uganda	Strategy	Energy Assessment	07/93	327,000
Zambia	Restructuring	Sector Restructuring	06/93	450,000

**Table 2.3 Activities Ongoing  
as of December 31, 1993**

<i>Region or country</i>	<i>Sector</i>	<i>Description</i>	<i>Initiation date</i>	<i>Estimated cost (US\$)</i>
Angola	Strategy	ESMAP Country Paper	07/92	45,000
Angola	Restr./Power	Power Sector Restructuring	09/92	395,000
Bolivia	Restr./Power	Power Sector Reform	02/93	387,000
Bolivia	Strategy/Restr.	Energy Sector Institutional Restructuring	10/92	420,000
Bulgaria	Gas/Strategy	Natural Gas Development Plan	10/93	572,000
Cameroon	Strategy	Energy Sector Strategy	04/93	404,000
China	Effic./Power	Power Efficiency Pilot Study (Rural Power )	03/92	670,000
China	Restr./Power	Institutional Reform in Decentralized Power	11/93	150,000
Colombia	Restr./Power	Power Subsector Restructuring	07/91	89,000
Côte d'Ivoire	Efficiency	Study for Energy Efficiency in Buildings	05/90	852,000
Ecuador	Strategy	Pricing, Interfuel Substitution & Social Mitigation	05/92	280,000
Egypt	Strategy	Energy Assessment	11/92	723,000
Egypt	Gas/Strategy	Gas Pricing Study	09/92	230,000
Ethiopia	Strategy	Energy Assessment	12/92	492,000
Global	Gas	Environmental Cost & Benefits of Gas Phase II	10/90	166,000
Global	Household	Monitoring of Biomass Gasifiers	05/86	963,000
India	Gas/Strategy	Gas Import Study	09/93	435,000
India	Househ./Strat.	Rural Energy Study	07/89	370,000
India	Restr./Power	Seminar on Power Sector Reform	07/93	144,000
India	Househ./Strat.	Urban Energy Strategy	03/93	250,000
Jamaica	Household	Improved Charcoal Stoves	08/89	434,000
Kenya	Power/Effic.	Power Loss Reduction	03/91	408,000
Madagascar	Strategy	Energy Sector Review	03/93	300,000
Mauritius	Strategy	Energy Sector Review	11/93	311,000
Morocco	Strat./Restr.	Energy Sector Restructuring	12/92	503,000
Morocco	Gas/Strategy	Gas Development Phase II	03/92	505,000
Morocco	Effic./Power	Power Efficiency Improvement	06/90	328,000
Philippines	Efficiency	Energy Conservation	01/92	297,000
Poland	Restructuring	Implementation of Energy Sector Restructuring	02/93	958,000
Romania	Gas/Strategy	Gas Program/Development Strategy & Pricing	10/93	695,000
Tanzania	Efficiency	TA to TANESCO and Department of Energy	01/93	751,000
Uganda	Strategy	Energy Assessment	07/93	327,000
Zambia	Restructuring	Energy Sector Restructuring	06/93	451,000
Zimbabwe	Efficiency	Energy Efficiency	10/91	400,000

## **ESMAP's Country Focus and the World Bank**

Over the past year, ESMAP activities have become more closely coordinated with World Bank operations as the Programme rejoined a reconstituted and newly strengthened Industry and Energy Department.

### ***Background***

Since late 1991, the Programme has made a major effort to coordinate its activities with the World Bank's Country Operations and Regional Technical departments. ESMAP staff have ensured that preparation of every new activity has been conducted in consultation with the concerned World Bank Region and that ESMAP tasks, as carried out, remain synergetic with World Bank operations. The Regions, in turn, have affirmed the importance of ESMAP input by systematically incorporating ESMAP staff in their own discussions of country energy issues. The Bank's confidence in ESMAP has also been reflected in the fact that the World Bank's operational complex has offered positions to some 12 ESMAP staff since January 1992; the longer-term employment prospects thus evidenced have in turn made it easier for ESMAP to attract highly qualified and experienced personnel.

In addition to cooperative work with the Regions, the Programme's closer rapport with the World Bank has been reflected in an increasing number of requests for ESMAP's technical assistance that have been channeled through the Bank's operational staff, particularly for work outside the Bank's direct purview but nonetheless largely complementary to its lending agenda. In this context, ESMAP has handled requests from the governments of Bolivia, Ecuador, Egypt, Madagascar, Nepal, Tanzania, Uganda, and Zambia. In some cases, however, ESMAP has not been able to respond favorably or quickly, because of a lack of interest from donors. Perhaps most problematic have been requests from the newly independent countries of the former Soviet Union, for which ESMAP had no clear mandate until the CG meeting of November 1992 and for which most ESMAP donors still have limited or no resources.

### ***Organizational Developments in 1993***

Over the past year in particular, ESMAP's country- and sectorwide focus has evolved in tandem with ongoing changes at the World Bank. For one thing, the Programme's links with World Bank operations were enhanced by the January 1993 reorganization of the World Bank, which merged ESMAP staff with other energy specialists from the previous Industry and Energy Department and the Regional Technical Departments to form a considerably strengthened central Industry and Energy Department (IEN). Now, in addition to conducting ESMAP activities with a cadre of 21 staff funded by external donors, IEN is providing cross-support to World Bank Country Operations Departments, assisted by some 41 staff funded by the World Bank administrative budget, and conducting a self-managed work program that advances the state of knowledge and capabilities in the energy sector.

The new arrangements help the energy specialists of IEN, now working both for the Bank Regions and for ESMAP, to ensure that ESMAP's work is consistent with the Bank's and that the Programme's influence is felt in many regions and countries. Consistent with this trend, task management of ESMAP Energy Assessments is being increasingly delegated to the Bank's Regional staff. Similarly, the cooperative character of the work has helped ESMAP to take a major role in shaping the Bank's broad positions on ESMAP specializations such as household energy, renewables, energy efficiency, energy regulation, and institutional development. At the same time, as it has sought to promote the substantial synergies between the Programme and the Bank, ESMAP's management has made a concerted effort to ensure the coherence and integrity of the Programme. Key steps included clarifying ESMAP's budget rules and procedures and issuing an ESMAP Procedural Guide (May 1993) so that Bank and ESMAP tasks were clearly distinguished, funded from identified sources, and subject to separate accounting.

### ***Current Strategy and Work Plan***

ESMAP continues to follow the six-step process from initiation through review, as outlined in the 1992–93 Strategy and Work Plan. As always, ESMAP's work is driven by the needs of the recipient countries, but the Programme in turn insists on concentrating on strategic work that can have a major impact in reshaping key energy policies or institutions. Hence, before ESMAP proceeds with an assistance activity, the Programme requires the country to give a tangible indication of interest and commitment. Initiation of an activity also requires the country to have emplaced a macroeconomic framework and institutional environment that are hospitable to efficient energy development and that give due regard to energy-related reduction of poverty and development of human resources.

Once an activity is under way, ESMAP does not seek to perpetuate its own presence in the recipient country indefinitely but rather to foster a country's "ownership" of an activity and to enhance local capacity by joining with local institutions for in-depth analysis of key strategic issues and formulation of related recommendations. Most recently, ESMAP has sought to build local capacities by launching a series of low-cost seminars with policymakers to discuss options, notably with regard to energy sector restructuring and regulatory frameworks, and to review the relevant lessons of experience in other countries. Such seminars were jointly and successfully organized by ESMAP and the World Bank in 1992 and 1993 for the power and oil and gas sectors in China. Others are recently concluded or pending for India, Mexico, Colombia, Brazil, and Egypt.

ESMAP's focus on national, strategic energy issues, which coincides with the Bank's country-based approach, is resulting in a clearer intellectual ownership of ESMAP work on the part of recipient countries. Meanwhile, the Programme, building on its long record of energy assessments, is moving more vigorously into "second generation" energy strategy work—that is, providing detailed technical assistance to countries seeking to create appropriate regulatory, legal, and institutional structures for reform in the energy sector. Work on projects in other key areas, such as energy efficiency, household and rural

energy, and oil and gas development, which have major implications for the development of environmentally sensitive energy programs, continues to have high priority.

Evidence of the fruitful integration of expertise and influence can be found in ESMAP/Bank operations in countries such as Bolivia, Chad, Cameroon, Egypt, Morocco, Mali, Nigeria, Pakistan, Poland, Rwanda, Tanzania, Vietnam, Zambia, and Zimbabwe.

### Cultivating an Environment for Reform

Foremost among ESMAP's traditional activities in cultivating an environment for effective energy development have been the energy assessments. These sectorwide surveys are performed primarily in countries where the World Bank's involvement and knowledge of the energy sector have been relatively limited, but where important structural changes in the economy are starting to take place. A vehicle for launching ESMAP activities has been the preparation of ESMAP Country Papers (ECPs), which outline a program for change in key areas and propose targeted assistance activities over a multi-year period to motivate and guide such change. Aimed at both recipient governments and potential Programme donors, ECPs are prepared only when detailed sectoral knowledge is available through an energy assessment or similar data-gathering exercise and when the recipient country is clearly moving toward definition and implementation of an appropriate reform program. Table 2.4 shows a breakdown of ongoing and completed energy assessments and ESMAP country programs for 1993.

**Table 2.4 Completed and Ongoing Energy Assessments and ESMAP Country Programs, 1993**

<i>Country</i>	<i>Completed</i>	<i>Started/ Ongoing</i>	<i>Funding</i>
<b>Energy assessments</b>			
Guatemala	Yes		Core
Nigeria	Yes		Core
Namibia	Yes		—
Mongolia		Yes	Funding sought
Mauritius		Yes	Core
The Gambia		Yes	Core
Uganda		Yes	Sweden
Cameroon		Yes	France, Netherlands
<b>ESMAP country programs</b>			
Guatemala		Yes	Funding sought
Mozambique		Yes	Funding sought
Peru		Yes	Core for start-up activities; additional funding sought
Zambia		Yes	Core; Sweden; additional funding sought

Where energy sector reviews or assessments, followed by ECPs, have taken place and funding has been obtained, the agreed strategies are implemented along "thematic" lines. In Bolivia, for example (Box 1), five thematic activities are being implemented in parallel with World Bank operations to move the economy onto a path of more sustained growth. Indeed, it was the ECP that focused the World Bank's attention on the reforms. In Mozambique and Morocco, as well, ESMAP's work has helped provide key elements of the framework for the restructuring and reorganization of the energy sector.

### **Box 1. Bolivia's ESMAP Program**

The ESMAP work program in Bolivia, designed in discussions with the government, assists the country in an effort to design and implement energy efficiency policies compatible with an economic stabilization program. Each of the five activities (listed below in order of priority) is designed to ensure a high level of institution building and local participation.

- *Implementation of the Natural Gas Study.* This activity follows up on an earlier ESMAP study and aims at outlining a comprehensive framework for natural gas planning and policies, including priorities for investments.
- *Institutional Evaluation of the Energy Sector.* Among the most critical issues for Bolivia's energy sector are the lack of well-trained staff at the Ministry of Energy and Hydrocarbons (MEH) and the lack of a legal-regulatory framework that would allow more competition and separate the state's normative and operational roles. This activity supports the MEH in restructuring; drafting new regulations for the hydrocarbon subsector; training personnel; and assessing the impact of energy pricing, tax policies, and regulation on revenues, energy enterprises, and demand under current and more competitive market conditions.
- *Reform of Institutional and Legal Framework in the Power Subsector.* The increased requirement for investment in power challenges the government's ability to improve resource mobilization through greater participation by the private sector. Fostering such participation entails reforms in the current electricity code, regulation of electricity enterprises, formulation and enforcement of policies, and setting of tariff levels and structure. ESMAP is helping the government address all these issues.
- *Development of Energy Efficiency Program and Environmental Assessment of Energy-Related Operations.* ESMAP is helping to evaluate price and nonprice energy efficiency incentives and potentials for end-use energy efficiency and energy demand management to be integrated in the investment program.
- *Energy Supply Strategy for the Rural Sector.* ESMAP assists the National Energy Directorate and its regional counterparts in training, preparing of investment plans or energy policy changes, and streamlining the distribution of commercial fuels.

These five activities are being carried out over a two-year period and are being coordinated closely with two World Bank operations in preparation: a Hydrocarbon Deregulation Restructuring and Engineering project, and a Natural Gas Export project, with possible financing of about US\$70 million expected from the World Bank.

Zambia illustrates ESMAP's emerging "second generation" energy sector work, emphasizing implementation of energy strategies linked to or driven by reforms in other sectors. In Zambia, the copper industry is experiencing a financial crisis that in turn exerts a drag on other sectors in the economy, particularly the energy sector. A brief mission in July–August, 1993, under ESMAP assistance, produced a field evaluation and a strategy to link then-isolated institutions in the petroleum and power sectors. The mission also redesigned the programs to make them consistent with restructuring policies in the mining and financial sectors.

Logistically, the development of this second generation of energy strategies requires the constitution of country teams along thematic lines but anchored by a country focus. The Interfuel Substitution and Social Mitigation Study in Ecuador (Box 2) shows how energy sector reforms are linked to the social mitigation policies within the context of that country's poverty alleviation programs.

### **Box 2. Energy Pricing in Ecuador**

Ecuador's energy pricing policy had long been an issue because of the large subsidies low pricing gave to the consumers of modern energy products. The ESMAP study is evaluating the impact of changes in pricing on various classes of consumers and on public finances, and the information thus gained is helping Ecuador significantly to reduce its across-the-board subsidies. At the same time, ESMAP is providing advice on policies for mitigating the effects of energy price increases on the country's most vulnerable consumers. The study includes research on kerosene distribution, a survey of household energy consumption, and a series of "participant-observer" monographs that more fully and graphically document the predicament of low-income households as they attempt to get food and cook it within very tight budget constraints.

The main preliminary conclusions of the study are that energy consumption correlates strongly with income and that the bulk of consumer subsidies under the old system accrue primarily to classes of consumers that can afford to use LPG and electricity liberally rather than to the poorer consumers who really need assistance in meeting energy needs. The study will recommend a series of social expenditures and a direct subsidy (in the form of a tradable coupon), related to LPG consumption, to assist the most severely affected low-income households.

The coming year will see the completion of ongoing activities and those where commitments have been made—for example, Cameroon, Mauritius, Mongolia, and Uganda. Countries in which assessments are currently planned include Egypt and Ethiopia. As far as ECPs are concerned, it is expected that in the course of 1994-95 these would be prepared for Uganda, Cameroon, and Mongolia on completion of the assessment phases currently being implemented.

### Power Sector Restructuring and Reform

The current interest in power sector restructuring and privatization has stemmed principally from the recognition of two key points by policymakers and energy specialists. First, in many developing countries, excessive interference by governments in the state power enterprises has led to a lack of accountability, inefficient management, deterioration of services, tariffs that failed to respond to market signals, and provided inadequate incentives for efficient energy use. Second, it has become increasingly apparent that the investment requirements for the power sector cannot be met from public resources, especially when the governments themselves face growing macroeconomic difficulties.

Some broadly applicable lessons about the likely and feasible paths for reform in the power sector are emerging and appear to require the following sequential actions:

- A political decision for action.
- A careful study of the possible and most appropriate structural reforms.
- The preparation and implementation of an unambiguous legal framework.
- A clear definition of impartial and competitive regulatory options and structures.

Since 1990, ESMAP has been involved in detailed restructuring work in Poland (Box 3). The Programme completed a first comprehensive set of studies in 1992. In addition to electric power, the studies identify specific measures for hard coal, hydrocarbons, lignite, and district heating.

#### Box 3. Restructuring Poland's Energy Sector

ESMAP has made detailed proposals for restructuring key enterprises in an enhanced framework relying largely on the private sector and aiming at creating an environment more conducive to joint ventures. The proposed new structures should also allow enterprises to take proper account of environmental and other external costs. Although the overall aim is promoting competitive and efficient commercial behavior, the transition will have to be carefully managed to avoid unnecessary hardship.

The recommendations of ESMAP's studies were discussed during seminars with Polish policymakers in April 1991 and eventually were largely accepted by the government. The government then asked ESMAP's help in establishing an advisory Energy Restructuring Group (ERG) during the implementation phase. Formed and managed with ESMAP's assistance through the Implementation of Energy Sector Restructuring I activity, the ERG includes foreign experts in electricity, coal, natural gas, district heating, regulation, energy law, privatization, and corporate planning. It cooperates closely with counterpart staff in the government to ensure continuity and national ownership of the process. Coordinating groups have been established for electricity, district heating, natural gas, and coal, in liaison with the Ministry of Industry and Trade, the Ministry of Privatization, the Ministry of Planning and Physical Construction, and the Anti-Monopoly Office. The ERG also maintains close contacts with key enterprises in the energy sector. As of December 31, 1993, five World Bank operations involving the ERG were in preparation, for a possible total of \$695 million.

As a complement to its restructuring work in Poland, ESMAP has also supervised studies for the Polish natural gas subsector and provided extensive technical assistance to the government on the legal and contractual framework for petroleum exploration and production, notably in preparing a model contract for negotiations with foreign companies.

To assist its clients in identifying sector- or subsector-appropriate reform agendas, ESMAP, in cooperation with national counterparts, has provided technical assistance and has helped organize local seminars to bringing together national decisionmakers and international experts to discuss restructuring and reform. ESMAP in this way is seeking to maximize the value of its position at the center of a unique global network of information by disseminating the best practices available. The seminars also allow decisionmakers to debate sensitive issues in a productive and less politicized environment.

The initial seminars have served as kick-offs for specific restructuring work, including drafting of legislation and formulation of regulatory reform in Poland; facilitation of the entry of private investors into the sector in India (Box 4); commercialization of public utilities and formulation of optimal sector structures in Morocco (Box 5), Bolivia, and China; and preparation of a draft electricity law in Colombia.

ESMAP's detailed follow-up assistance thus has catalyzed appropriate legislation, formulation of key regulations and contracts, and disentangling of intertwined governmental and corporate functions within the institutions involved in power supply.

#### **Box 4. Conference on Power Sector Reforms in India**

The conference was organized to provide Indian decisionmakers with a forum for examining the main barriers to improving efficiency in the sector. Set in Jaipur, India, on October 29, 1993, the conference provided an open forum for policymakers to discuss problems in the sector, consider alternative models, evaluate international experiences with restructuring, and identify potential avenues for reform. More than a hundred people attended. Among the Indian participants were the energy minister and other senior national officials, representatives of the State Electricity Boards (SEBs), utility managers, academics, and staff of energy research institutes. International participants included power sector and management experts from consulting firms, the World Bank, and ESMAP. ESMAP reviewed international experience in the sector and evaluated the comparative performance of the SEBs. Four of the SEBs have now approached the World Bank and ESMAP for support in planning corporate restructuring of their utilities.

### **Box 5. Morocco Seminar on Energy Sector Restructuring**

In collaboration with Morocco's Ministry of Energy and Mines (MEM), ESMAP conducted a major seminar on energy restructuring in Rabat from 13 to 15 December 1993. The gathering was attended by some 80 high-level government personnel and by representatives of public and private firms involved in Morocco's energy subsectors.

The seminar reviewed the options for restructuring the energy institutions of the country—in particular those of the power sector. The program included plenary sessions and subsector workshops, at which issues papers prepared by national participants were presented, along with supporting documents by ESMAP staff and consultants under a preparatory technical assistance program. External experts also spoke on restructuring in other countries. During working sessions, specific restructuring issues were discussed in more detail within smaller groups of participants.

The main objective of the Moroccan government in planning for restructuring is to facilitate the entry of private, independent power producers into the sector to ease the public burden of investments in the sector. One of the most promising approaches discussed was the possible transformation of the state-owned power utility, the Office National de l'Electricite (ONE) from a vertical monopoly into three independent entities specializing, respectively, in production, transmission, and distribution. The pivotal entity would be the transmission company, which would retain a monopoly in power dispatch. In power production, a new independent national company would be created from the present production department of the national utility. It would compete for segments of the production market with newly established independent producers. Similarly, the independent distribution company, created from the distribution department of ONE, would compete on purely commercial basis with distribution "régies" owned by the municipalities. The working rules of such a system would be elaborated in an Electricity Law, and control of the process would be provided by an independent executive committee acting as a regulatory body.

The seminar seemed to spur a distinct shift in the thinking and planning of sector participants, and a detailed technical assistance program for restructuring the Moroccan power sector is now under discussion with ESMAP.

### **Rural and Household Energy**

The subsector continues to be an important area of attention for the ESMAP program. Some of the ESMAP activities were launched to complement broader energy sector studies and to provide, often for the first time in many countries, a clear picture of supply and demand of traditional fuels that tended to be overlooked in conventional energy planning. Other ESMAP studies are follow-ons to previous strategy work, providing assistance to client countries in implementing key recommendations. This work has not only benefited particular client countries but has also provided the basis to transfer knowledge and lessons learned to other developing countries. The experience of Mali (Box 6) illustrates the process.

### **Box 6. Mali Household Energy Strategy**

In recent years, ESMAP has helped the government of Mali design an integrated, operational, and economically viable strategy to address the problem of forest degradation. The degradation is caused in part by wood and charcoal production for urban household and small commercial use, as well as by agricultural activities. ESMAP assistance sought to improve consumers' access to modern and more efficient energy sources and equipment. The work was conducted with significant inputs from national consultants and in close collaboration with both the National Directorate of Hydraulics and Energy and the National Directorate of Hydrology and Forestry.

Several issues had to be addressed to design a coherent household energy strategy, including the rapid growth of charcoal production using inefficient and environment-damaging techniques; distortions in woodfuel, kerosene, and LPG pricing that encourage inefficient production and use of woodfuels; the economic impact of encouraging use of imported household petroleum fuels; the generally unsuccessful efforts to improve supply in wood-deficit areas; an institutional, legal, and regulatory framework ill-adapted to managing wood resources; and poor coordination of efforts in the sector.

ESMAP recommended a strategy that supported the government's National Desertification Control Program. The strategy's demand component includes promotion of modern, efficient energy equipment and the implementation of financing mechanisms. Its supply component deals with the preparation and implementation of woodfuel supply master plans for major cities, assistance to woodfuel producers, recovery of deadwood, and wood resource management in selected areas. The cost of investments and related services to implement this strategy was estimated at US\$9 million over five years. Recurrent costs would be largely offset by additional fiscal revenues from woodfuels.

The Malian government is implementing this strategy by creating a Strategy Monitoring Unit, which operates as an element of the Second Power Project, under financing from the International Development Association (IDA). The Unit is preparing a detailed action plan and will mobilize the necessary funding. Implementation is being coordinated with other relevant development projects, such as the Private Sector Development Project (for which a US\$12 million IDA credit has been approved), the Natural Resource Management Project, and the LPG Promotion Program. Several donors have indicated interest in cofinancing, and a GEF grant for some US\$2.5 million is being considered.

In Chad, the Household Energy Strategy study was carried out to obtain much-needed survey data on energy supply and consumption; review energy pricing policies; and develop a coherent strategy that would improve efficiency in the use of dwindling wood resources, promote interfuel substitution, and provide affordable fuel supplies to households. The Rwanda Improved Charcoal Kilns Phase II project is a follow-on to a previous study of broader coverage. Phase II implemented recommendations that have been made to train charcoalers, establish charcoalers' associations, and conduct research on more efficient charcoal production techniques appropriate to conditions in Rwanda.

In Asia, completed activities in Vietnam and India were strategy-oriented, designed to identify key issues in the supply and demand for energy in rural areas and to suggest appropriate policies and programs to address these issues. The Vietnam study was designed to complement a World Bank policy and investment review of the overall energy sector. The results of this study will be the centerpiece of a regional meeting on rural energy development, planned to be held in Vietnam in June 1994. The India Rural Energy Phase I study was intended to lead up to more extensive activities in the Phase II project that is just now being started. Indonesia and Philippines completed activities focused on determining the commercial potential for energy production from the major agricultural residues that are normally wasted in these countries. Several specific investment opportunities were identified that yield profits and also improve energy efficiency in the operation of key rural industries.

In Latin America and the Caribbean, the two completed activities were Bolivia: Household Energy Strategy; and Jamaica: Improved Charcoal Stoves. The Bolivia study established household energy demand data and conducted a series of substudies on interfuel substitution. The Jamaica activity provided assistance in designing a commercial program for dissemination of high-efficiency charcoal stoves for households.

Several new tasks dealing with the subsector will be carried on or initiated in 1994, among them the Bolivia Rural Energy Supply Strategy Study; the Vietnam Household Energy Technical Assistance Activity; and the India Rural Energy Study (Phase II). The Bolivia study will build on the findings of the previous household energy study to develop a broader strategy for providing affordable and environmentally sustainable energy supplies in rural areas. It will complement ongoing ESMAP activities dealing with institutional restructuring, energy efficiency, and the development of natural gas. The Vietnam activity will implement two key recommendations of the previous study—the design of a commercial program for dissemination of improved woodstoves in the South and the improvement of coal briquette production and utilization in the domestic sector. The new India study continues the activities of Phase I. The rural energy profile of four states will be defined through surveys and analysis of data; several substudies will be conducted on interfuel substitution, rural electrification, and energy conservation in agricultural pumping. The main environmental problems associated with current rural energy use will be examined as well.

## **Energy Efficiency and Conservation**

### ***Ongoing and Completed Activities***

Over the past year ESMAP completed activities in Nepal, Colombia, China, Philippines, Senegal, Tanzania, and Pakistan (see Box 7). The Programme also initiated new or follow-up activities in Côte d'Ivoire, China, Morocco, Philippines, Tanzania, and Zimbabwe.

### **Box 7. Pakistan Energy Efficiency Technical Assistance**

The primary objective of this ESMAP activity was to assist the management of the National Energy Conservation organization of Pakistan (ENERCON) to prepare a long-term strategy to meet the challenges of energy efficiency and environmental protection. The first phase of the ESMAP activity has assisted in formulating an action plan for 1993-98 that includes the following objectives:

- Strengthening ENERCON's ability to catalyze and promote nationwide dissemination of energy efficiency improvement measures in all sectors. This aspect of the activity will involve restructuring ENERCON's operations and providing for a dependable long-term funding mechanism to meet the costs of its energy efficiency and conservation work and its operations in key end-user sectors.
- Promoting private sector participation in delivering energy management services to local enterprises and organizations based on cost-recovery principles.
- Encouraging local financial intermediaries to apply innovative arrangements to provide local industrial and commercial enterprises in key sectors with the necessary financing for commercially viable and environmentally sound investment to improve energy efficiency.
- Upgrading the capacity of ENERCON and other local agencies to establish minimum performance standards for energy use in industrial and commercial enterprises and to monitor their compliance with those standards.

A proposed ENERCON Multi-Sectoral Energy Efficiency Investment Program would require the expenditure of about US\$95 million during Pakistan's Eighth Plan (1993-98). About US\$10 million of this amount would be used to establish a trust fund to meet the recurrent costs and some capital expenditures of ENERCON's core activities in energy efficiency and conservation. The balance would finance pilot schemes designed to catalyze the commercialization of services in conjunction with energy end-use efficiency improvement measures in key sectors such as industries (boiler and steam systems), commercial building, municipalities (water pumping systems), road transport vehicles (engine tune-ups), and agriculture (tube-well pumps for irrigation).

ESMAP assistance to ENERCON coincides with World Bank energy sector work and is closely coordinated with Bank operations in the country.

Most activities aimed primarily at assisting counterpart agencies to formulate, justify, and prepare implementation plans for national strategies for energy efficiency and conservation. In Nepal, for example, the strategy work addressed issues and options for energy efficiency improvements and fuel substitution in the industrial sector. In the Philippines, the target for energy efficiency improvements also was industry, although significant efforts were made to identify and address a range of specific impediments and constraints to the operation of private sector energy service firms and consultants. Identification and evaluation of energy efficiency options for the commercial and residential sectors were the primary focus for the activities in Colombia and Côte d'Ivoire.

In China, by contrast, the objective of an ongoing activity (whose first phase was substantially completed during the year) is to assist counterparts in the government to conduct preinvestment work to identify appropriate investments and supporting policy measures that would promote energy conservation and improve the economic efficiency of township and village enterprise (TVE) industries. This would be done mainly by analyzing the costs and impacts of widely replicable investment options in industries that are heavy coal users; the activity has focused on three TVE industries—brickmaking, coking, and metal casting—which collectively account for about half of all energy consumption in the TVE industrial sector.

The ongoing activity in Zimbabwe has two principal thrusts. The first, completed in the first half of 1993, aimed to assist the national power utility to formulate, implement, and evaluate the results of power curtailment/load shedding measures that had to be put into effect to mitigate the effects of the severe drought and loss of generating capacity at the Kariba Hydropower complex. The second, which is drawing to a conclusion, was to assist the government and other stakeholders in the country to develop a strategic agenda for a proposed National Energy Efficiency Improvement Program. The fieldwork culminated in an Action Planning Workshop held in Zimbabwe in December 1993.

ESMAP's ongoing activity in Tanzania aims to assist the national power utility, TANESCO, and the Department of Energy, to formulate a strategy and implementation plan to be applied by TANESCO to induce its consumers to use energy and capacity more efficiently. The activity is the first major ESMAP activity on utility-based demand-side management (DSM).

### ***ESMAP Special Research Activity***

During the November 1992 Annual Meeting of the ESMAP Consultative Group in Paris, a consensus was reached to increase the level of ESMAP support for national efforts to build institutional capacity and address demand-side energy efficiency issues and opportunities. Subsequently, in early 1993, with support from the United Kingdom, ESMAP launched the first phase of a special research activity, "Critical Success Factors for Energy Efficiency Strategy Development." Its overall objectives were to investigate the lessons of experience gained by EC member countries implementing nationwide programs on energy efficiency and conservation and to develop "best practice" guidelines for application to ESMAP core countries. The results of the activity are being disseminated through ongoing ESMAP activities (e.g., Workshop on Energy Efficiency and Conservation to take place in Brazil), and through workshops for World Bank staff.

### ***The Proposed ESMAP Demand-Side Energy Efficiency Programs***

To increase its responsiveness to its clients, ESMAP is moving toward a more pragmatic approach with respect to its demand-side efficiency efforts. To this end, a multi-year "Demand-Side Energy Efficiency Project" has been developed for energy efficiency and conservation. Germany has already agreed to fund one such framework program, and financing is being sought for another from the Netherlands.

The overall objectives of the proposed project would be to assist developing countries to diagnose problems, identify options, and formulate strategies to improve the efficiency of energy production, distribution, and end-use. Specifically, the proposed project would design and execute country-specific, as well as cross-country, activities focusing on the following:

- Examining and evaluating policy alternatives to encourage greater efficiency of energy end-use in all sectors.
- Developing restructuring strategies for the energy sector to put in place long-term policies that improve the performance of energy enterprises and create the right conditions for such energy enterprises to play much more active roles in increasing the efficiency of energy use by consumers in all key markets.
- Developing demand-side energy efficiency and conservation programs that fully exploit synergies with energy sector restructuring efforts by emphasizing the application of market-based instruments in contrast to command and control measures.

As with previous ESMAP activity in Pakistan, for example, each of the proposed ESMAP activities under the proposed Demand-Side Energy Efficiency Project would aim to assist designated counterpart agencies in ESMAP core countries to upgrade and strengthen demand-side energy efficiency efforts at the national level by introducing improved policies, updating investment plans and priorities, expediting project preparation and training events, and supporting arrangements for institutional development. Specifically, ESMAP activities could be structured as follows:

- Studies and empirical surveys in core countries to evaluate the relative efficacy of “command-and-control” measures, public expenditures, and market-based instruments, respectively, in addressing the main constraints and impediments to demand-side energy efficiency improvements. Surveys of macroeconomic impediments to demand-side energy efficiency improvements may also be undertaken as the basis for country-specific technical assistance.
- Preinvestment studies, including justification and terms of reference for feasibility studies; recommendations for further preparation of strategies, programs, or projects; specific incentive mechanisms, and other market-based instruments.
- Technical and management assistance activities to provide on-the-job support to counterparts, including evaluation and recommendations concerning information dissemination programs, institutional reforms, human resources development and training programs, regulatory mechanisms, and other nonmarket actions to supplement the application of market-based policy instruments for demand-side energy efficiency improvements.

Tentatively, the target countries for the next phase of ESMAP assistance are Brazil, Colombia, Ghana, and Zimbabwe. Other initiatives would target Bolivia, Peru, Indonesia, and possibly Uganda.

## **Oil and Gas Activities**

During the last year, ESMAP staff worked on a wide variety of oil and gas projects, the majority of them involving natural gas. Although the scope and content of these projects varied, many of them fell into several general areas: gas sector reviews; restructuring/regulatory reform; gas trade; and environmental issues.

### ***Gas Sector Reviews***

Several projects were undertaken to assist host governments in developing comprehensive sector strategies. One such study continues in Morocco, where an extensive energy sector review is under way (see Box 8 for the overall framework for the study). An important aspect of this project will be the assessment of the economic viability of developing a gas industry in that country based on gas deliveries from the proposed Gazoduc Maghreb Europe (GME) pipeline system.

### ***Restructuring and Regulatory Reform***

ESMAP staff are currently executing several projects involving restructuring and regulatory reform of the gas business. Typically, these projects have advised the host countries on regulatory frameworks, on restructuring of their gas industry, and in several cases on the introduction of cost-based pipeline tariffs. In Bolivia, for example, assistance is being provided on both restructuring and regulatory reforms in order to attract private sector investment and increase the efficiency of the sector. As with ESMAP's other work, seminars and workshops have proved effective vehicles for transferring knowledge.

### ***Gas Trade***

Among several gas import option studies was a review of supply options for Poland that compared the costs and benefits (including diversification of supply) of purchasing gas from either western Europe or Russia. The Polish government accepted the study's recommendations and has adjusted its gas import strategy. In addition, as a result of an earlier study, Hungary is now diversifying its supply to obtain gas through Austria. ESMAP also has initiated natural gas policy projects in Bulgaria and Romania.

Natural gas has already become one of the world's most popular fuels. Among its attractions, it is efficient and easily adaptable to use in various sectors of the economy; it is abundant, and it is cleaner-burning and hence more environmentally benign than other fossil fuels. Despite the location of a large proportion of gas reserves in areas remote from the major centers of consumption, and despite the high cost of long-haul gas transport, natural gas trade has increased dramatically over the last two decades.

### **Box 8. Morocco's Natural Gas Development Plan**

The technical assistance for Morocco is the successful result of a global approach initiated by the Moroccan government and ESMAP at the beginning of the 1990s. The rationale for ESMAP's involvement was to consider energy issues and options from a global standpoint while using new energy projects as a catalyst.

In late 1990, at the request of Morocco's Ministry of Energy and Mines (MEM), ESMAP initiated the first step of a Natural Gas Development Plan. The study aimed at evaluating the prospects for developing a national gas industry, based on the availability of gas to be transmitted from Algeria to Spain through Morocco using the to-be-built Gazoduc Maghreb Europe (GME) international trunkline. The study concluded that a gas industry could be developed, provided that a major gas consumer was found to ensure, up front, a reasonable return on the transmission investment. Following this encouraging result, the MEM asked ESMAP to analyze more specifically the technical and economic conditions for developing the use of gas for power generation. This led, in 1993, to the second phase of the Natural Gas Development Plan, which includes, besides the power aspects, an updating of the potential industrial market and of the cost estimate of the domestic gas transmission system. In addition, an analysis would be made of the consequences of introducing natural gas on the market of the oil products and the operation of the Moroccan refineries.

ESMAP is also working closely with the MEM on the Restructuring of the Energy Sector, including organizational, institutional, regulatory, and pricing and fiscal issues. A workshop organized in Rabat in December 1993 enabled all the Moroccan parties involved in the process to exchange views and comment on the current system and to make recommendations toward a new policy. One aspect of prime importance is the deep involvement of the MEM in the process of ESMAP activity in Morocco. The MEM has established a dedicated Natural Gas Task Force that has proved instrumental in establishing proposals and conveying them to the Moroccan parties. ESMAP will be conducting a gas pricing policy study.

Nonetheless, potential natural gas trade projects face some significant challenges. Problems vary by project but generally include the need for (a) adequate gas prices; (b) creative contracts between producers and buyers; (c) acceptable institutional arrangements in the producing and consuming countries; (d) reasonable arrangements with transit countries in the case of pipeline projects; and (e) arrangement of viable financing schemes. Such challenges were encountered in two recently completed ESMAP studies. In Pakistan, ESMAP examined the natural gas resource base and reviewed potential gas imports via pipeline or LNG from the Middle East or the former Soviet Union. In Bolivia, ESMAP helped assess the feasibility and the institutional requirements of exporting gas to Brazil. As a multinational joint venture, ESMAP is well placed to tackle the complex ramifications of gas trade projects. This is vital in Africa, where many potentially cost-effective and environmentally attractive investments cannot take place without international cooperation.

ESMAP prefeasibility work, followed by projects financed by the World Bank and other sources, can play a major catalytic role, as in Mozambique (Box 9). ESMAP would like to devote increasing attention to this area in its future work.

**Box 9. Commercializing Mozambique's Pande Gas Discovery**

Between 1985 and 1990, the government of Mozambique explored several options for commercializing the Pande gas discovery, including the possibility of constructing an ammonia plant and options for transporting gas to Maputo as CNG. None of these options made commercial sense, and it became clear that Mozambique lacked a major market that could justify development of the field.

In 1991, however, ESMAP undertook two studies to assist in the commercialization process. The first reviewed ways of satisfying the local needs for energy in a cost-effective manner and supported a pilot program of low-cost technology to make gas available for local power generation. This highly popular program is to be further developed to supply other towns from Pande or from an export pipeline, once it is built

The second study examined options, costs, markets, reserves, and legal frameworks for supplying Maputo and providing gas exports to South Africa. As a result of the study, the national oil company now has two "joint cooperation" partners actively seeking to develop the project. IDA is planning an engineering credit during fiscal 1994 to finance preparatory work so that the oil companies will commit themselves to development. The export scheme could be on stream by the end of the decade.

***Environmental Issues***

ESMAP is supporting a substantial project studying the environmental costs and benefits of consuming gas in preference to other fuels in developing countries where major environmental problems exist. An environmental assessment model is being applied to Ankara, Turkey, where data on air pollution before and after natural gas was introduced have been collected. The analysis will test the validity of policy decisions to introduce gas to reduce air pollution rather than using alternative approaches.

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## **ESMAP Finances**

Since the October 1992 annual meeting, ESMAP's finances have stabilized at a somewhat lower overall level than anticipated at that time. Combined contributions to the Programme now permit annual expenditures on the order of \$10 million and long-term professional staffing of about 20. Although higher contributions and expenditures would be desirable, a productive and meaningful Programme can be carried out at current levels provided a significant proportion continues to be received in the form of core or quasi-core funding (see under heading Core Funding below).

Since the reorganization of the Bank's technical services in the energy sector a year ago, ESMAP funding is being increasingly leveraged by World Bank regional resources. The financial participation of the Regions in ESMAP activities has grown substantially and is now about \$2 million per year. This regional support is in addition to the direct support to ESMAP provided by the Industry and Energy Department within the Vice Presidency for Finance and Private Sector Development.

ESMAP has adopted a conservative approach to financial management. For example, the number of long-term staff is held at a level consistent with the actual availability of funding for staff salaries and benefits. A staff member is not recruited unless the Programme has cash on hand for one year of services. This policy is intended to avoid the cash-flow problems that hampered the Programme in 1991-92.

Management has developed a new accounting and budget information system, Epsilon, to provide more accurate monitoring of the Programme's finances and more timely reporting to donors. This system has streamlined the Programme's financial management considerably.

### **ESMAP's Principal Funding Mechanisms**

Donors have chosen to channel their funds to ESMAP in a number of ways. Core funding is the preferred approach from the standpoint of ESMAP management, because of the flexibility core funds give to the Programme, but other approaches have also proved effective in meeting Programme objectives. The principal funding mechanisms are as follows.

### ***Core Funding***

Core funds, which accounted for about 26 percent of contributions in 1993, are made available to ESMAP over a specified period, generally one year, and are replenished by a simple exchange of letters. Core funding can be used in support of any activity that is consistent with the broad policies approved by the Consultative Group. General conditions may be attached to the use of core funds, however—for example, the exclusion of certain types of activities or geographical areas. Donors to the core fund can receive regular reports detailing the use of the funds they have provided.

Allocation of core resources allows ESMAP to respond quickly to the needs of client countries and to take advantage of windows of opportunity. Core funding also helps ESMAP to adapt to changing circumstances and to launch inexpensive but critically important activities—such as policy seminars aimed at key decisionmakers—without having to go through a lengthy and cumbersome project approval process with one or several bilateral donors. Thus, activities funded through core funding tend to be more highly targeted and more economical than projects funded individually.

### ***Country Program Funding***

Country program funding represented about 20 percent of contributions in 1993. When country conditions are favorable, ESMAP may develop a plan for a comprehensive program of sustainable energy sector development, spelling out a strategy and a program. The plan articulates the technical assistance projects ESMAP plans to undertake and provides a detailed budget and a timetable for each project. These then serve as a basis for discussions with potential ESMAP donors, who may then make a medium-term commitment to support the country work program. Donor funds are generally transferred in advance, in one-year tranches.

Ideally, a single donor will agree to fund a country program in its entirety; this greatly facilitates accounting and reporting operations. This procedure was followed for recent country programs in Bolivia, Poland, and Tanzania. When a single donor cannot provide full funding, several donors may contribute up to a given percentage of the country program costs. If complete funding for the country program from all the interested donors is not available, ESMAP's management must then decide whether the program remains valid and coherent in the absence of full funding of planned projects.

### ***Subsector Funding***

This type of funding, to begin in 1994, is closely related to core funding; however, here funds are earmarked for activities in a particular subsector, according to criteria agreed in advance under a subsectoral "umbrella agreement." An agreement of this kind was recently finalized with Germany for energy efficiency, and three other subsector funding arrangements are currently in preparation with the Netherlands for the preparation of country strategies, energy efficiency work, and household and renewable energy activities.

### ***Project Funding***

Under this approach, which accounted for about 54 percent of contributions in 1993, an individual donor or group of donors agrees to finance a particular project. Experience has shown that this approach is relatively time-consuming and involves substantial overheads, both for ESMAP and the donors, in preparing and processing project requests. It has taken, on average, an entire year for individual projects to be funded (between the time a project proposal was submitted to donors and the time a formal funding agreement was approved). This lengthy process has often meant that conditions in the recipient country had changed, requiring further delays in implementation. Nonetheless, ESMAP continues to do very useful work under project-specific funding. The Programme's management recognizes that some donors must provide their funding this way, and greatly appreciates this support.

### **Financial Retrospective**

This annual report covers calendar years 1992 and 1993 and provides full-year actual data on receipts, a breakdown of total and core contributions in those years, and data on expenditures for 1992, 1993, and 1994 (estimated).

#### ***Receipts***

After a relatively low level of total contributions of \$8.9 million in 1992, ESMAP's receipts increased by 11 percent in 1993 to \$9.8 million. By 1993, the share of bilateral contributions stood at about 70 percent, the World Bank's at 26 percent, and the UNDP's at less than 5 percent. The World Bank's contribution included the direct costs of technical support to projects, Programme management, and various administrative overheads. Costs in these areas have come down as the ESMAP secretariat was terminated and as Programme overheads were reduced through streamlining of procedural and information systems. The Bank's direct contribution does not include substantial regional financing related to ESMAP projects, indicated earlier.

Norway's core contributions of roughly \$1 million each year represented an important boost to the Programme in 1992 and 1993. Also noteworthy were the continued substantial funding from the Netherlands, the initiation of partial core funding by Germany and Sweden, an exceptional core contribution from Finland, and an increase in support from the United Kingdom and Denmark in 1993 as compared with 1992. A new agreement with Belgium was finalized at the turn of the year and will result in a significant contribution, including some core funding in 1994. Other potential donors in 1994 include Austria and Canada. Full-year data on receipts are summarized in Table 3.1.

**Table 3.1 Statement of Actual ESMAP Receipts, CY 1992 and 1993**

<i>Direct support of ESMAP</i>	<i>CY92 (US\$)</i>	<i>CY93 (US\$)</i>
UNDP DGIP	0	412,500
UNDP IPF	-80,000	0
World Bank	4,823,300	2,607,500
Belgium	379,276	146,800
Canada	603,270	-31,428
Denmark	332,768	520,535
France	0	0
Finland	0	288,000
Germany	230,031	0
Italy	0	326,000 <sup>a</sup>
Japan	0	0
The Netherlands	473,792	1,923,101
Norway	1,320,922	928,770
Sweden	0	1,343,284
Switzerland	8,500	0
United Kingdom	622,744	1,322,708
United States	160,000	0
<b>TOTAL</b>	<b>8,874,603</b>	<b>9,787,770</b>
<i>Memo Item: Consultant trust funds in support of ESMAP<sup>b</sup></i>	<i>177,333</i>	<i>454,545</i>

<sup>a</sup> Investment income.

<sup>b</sup> Support from France.

The percentage of total contributions provided in the form of unrestricted "core" funding has grown. Total contributions and core contributions as a percent of total are shown in Table 3.2 for the five-year period 1990–1994.

**Table 3.2 Total and Core Contributions to ESMAP, 1990-94**

<i>Year</i>	<i>Total (\$m)</i>	<i>Core</i>	
		<i>(\$m)</i>	<i>%</i>
1990	19.8	3.0	15
1991	18.5	0	0
1992	8.9	1.6	18
1993	9.9	2.7	26

### **Expenditures**

Table 3.3 summarizes Programme operational and overhead expenditures, and Table 3.4 presents a breakdown of the Consultative Group and TAG expenses that are noted in the last data row of the expense summary table.

Calendar year 1992 expenditures were at the level of \$11.5 million, reflecting expenditures against the pipeline of projects funded in prior years, the existence of the ESMAP Secretariat, and the relatively large complement of long-term staff (close to 30). The Bank was obliged to meet about 60 percent of the salary bill for long-term staff in 1992 because of the drying up of core funding in that year as well as a cash flow problem that had been left unattended.

Calendar year 1993 expenditures declined to \$9.6 million reflecting the lagged effects of lower donor contributions in 1992. To accommodate these reductions, explicit actions were taken to build a leaner Programme. Management trimmed long-term staff to about 20; ESMAP's long-term salary bill fell to \$2.4 million—much reduced from prior years and more manageable given available funding. Donor-funded short-term consultants and travel continued to make up about 43 percent of the program. The Bank's contribution declined in dollar terms (following the large, one-time contribution of 1992, which was cited in the last annual report), but still made up 27 percent of expenditures, somewhat higher than the 20 percent to which the Bank committed at the inception of ESMAP in the early 1980s.

Programme expenditures in 1994 are expected to remain at a level of about \$10 million. No increases in long-term staffing are presently contemplated. The Programme can carry out its recently planned work program at this level of funding provided that core contributions remain at least as high as they were in 1993. Management is hopeful that the core will increase modestly in 1994 and beyond. If the core does not remain relatively robust, then the viability of the Programme would be in question.

**Table 3.3 ESMAP Operational and Overhead Expenses**

<i>Expense item</i>	<i>CY92 US\$'000</i>	<i>CY93 US\$'000</i>	<i>CY94<sup>a</sup> US\$'000</i>
<b>Staff salaries</b>			
Donor-funded salaries	1,387.40 <sup>b</sup>	2,444.60	2543.60
World Bank funded salaries	2,532.20	1,017.70	994.20
<i>Subtotal staff salaries</i>	3,919.60	3,462.30	3,537.80
<b>Consultant fees</b>			
Donor funded	4,031.00	3,383.80	4,059.00
World Bank funded	286.30	387.90	171.60
<i>Subtotal consultant fees</i>	4,317.30	3,771.70	4,230.60
<b>Travel</b>			
Donor funded	675.60	802.80	846.00
World Bank funded	212.70	114.90	104.30
<i>Subtotal travel</i>	888.30	917.70	950.30
<b>Other</b>			
Donor funded			
Training	116.20	57.20	50.00
Equipment	177.40	187.30	65.00
Communications, reporting, translations	34.50	81.80	50.00
Miscellaneous	36.00	56.90	50.00
<i>Subtotal other donor funded</i>	364.10	383.20	215.00
World Bank funded			
Equipment	47.10	81.30	81.30
Internal computing	93.90	101.00	19.30
Communications	95.40	70.70	19.60
Office occupancy	1,437.60	816.00	846.10
Miscellaneous	18.10	18.00	5.50
<i>Subtotal other World Bank funded</i>	1,692.10	1,087.00	971.80
<i>Subtotal other</i>	2,056.20	1,470.20	1,186.80
<b>TOTAL operational &amp; overhead exps.</b>	<b>11,181.40</b>	<b>9,621.90</b>	<b>9,905.50</b>
Of which contribution from World Bank (IEN) <sup>c</sup>	4,723.30	2,607.50	2,241.90
CG & TAG expenses <sup>d</sup>	278.80	13.00	74.00
<b>Total ESMAP expenses</b>	<b>11,460.20</b>	<b>9,634.90</b>	<b>9,979.50</b>
World Bank special support (1992 only)	2,260.00	0.00	0.00

Note: Approximately \$2 million in addition was committed by the World Bank's Operational Regions in each of CY 1992 and CY 1993, as parallel expenditures related to ESMAP tasks.

<sup>a</sup>Estimated. <sup>b</sup>An additional \$2.26 million was covered by a one-time contribution from the World Bank to help meet salary shortfalls. <sup>c</sup>IEN = Industry and Energy Department. <sup>d</sup>See Table 3.4 for breakdown.

**Table 3.4 Consultative Group and Technical Advisory Group Expenses**

<i>Expense item</i>	<i>CY92 US\$'000</i>	<i>CY93 US\$'000</i>	<i>CY94<sup>a</sup> US\$'000</i>
<b>Consultative Group (CG)</b>			
Donor-funded CG meeting	82.0	0.0	0.0
World Bank funded CG meeting	0.0	0.0	35.0
<i>Subtotal CG expenses</i>	82.0	0.0	35.0
<b>Technical Advisory Group (TAG)</b>			
Donor funded			
Honoraria	72.4	4.0	12.0
Travel	84.0	8.0	24.0
Staff travel	15.2	0.0	0.0
Facilities for TAG Meetings	25.2	0.0	0.0
Subtotal	196.8	12.0	36.0
World Bank funded			
Facilities for TAG meetings	0.0	1.0	3.0
Subtotal	0.0	1.0	3.0
<i>Subtotal TAG expenses</i>	196.8	13.0	39.0
<b>TOTAL CG &amp; TAG expenses</b>	<b>278.8</b>	<b>13.0</b>	<b>74.0</b>

<sup>a</sup>Estimated.

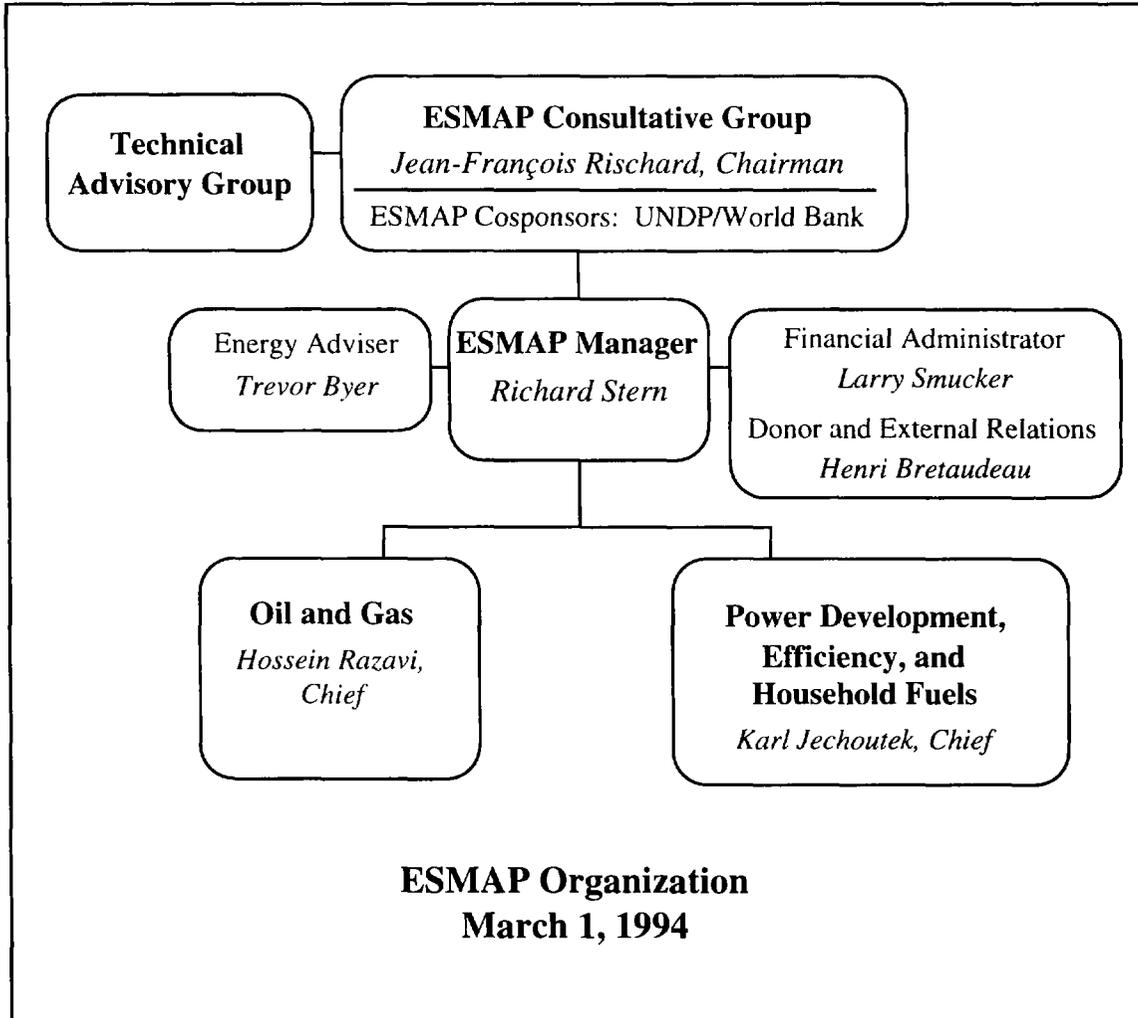
### **Cash Position**

At the end of calendar 1993, ESMAP's cash balances in externally funded accounts totaled \$8.1 million. Of the total, about 25 percent was available as fully flexible core funding, and 25 percent was earmarked for specific projects with budgets agreed to between ESMAP, individual donors, and recipient countries. About \$360,000 (9 percent) of the uncommitted balance was associated with completed projects. ESMAP management is in the process of advising donors about any portion of their contribution that remains unused when projects are completed. These funds will be returned to the donors or reallocated depending on donors' policies and preferences.



# Annex 1. ESMAP Organizational Structure

as of March 1, 1994





## **Annex 2. Final Communiqué Adopted at the Meeting of the ESMAP Consultative Group**

**Paris, 4-6 November 1992**

The second meeting of the Consultative Group of ESMAP (CG) was held in Paris on November 4-6, 1992. The meeting focused on three main issues: the adequacy of the present level of funding, the need for the continuation of the existing governance structure of ESMAP, and the consequences of placing ESMAP within the new Industry and Energy Department of the World Bank.

The CG endorsed the views of its Technical Advisory Group (TAG) that “ESMAP is in a unique position to help the entire international community better respond to needs of the developing countries and to better conserve and effectively utilize scarce resources.” ESMAP should gain confidence of donors and recipients through their early involvement in the project and country proposal preparation process, high professional standards and improved delivery of work products, transparent work procedures and timely commitment of funding. Proposals should emphasize policy reform and investment, local institution strengthening and capacity building, and energy-environment links.

### **Progress Since the Last CG Meeting**

The Group reviewed the progress of ESMAP since the last CG meeting in Geneva in November 1991 and noted that the conditions called for in the last Communiqué have been satisfied. These include an acceptable Work Program, timely and adequate strengthening of the management of the Programme, development of an ESMAP strategy for household energy, and an audit of ESMAP.

### **Status of Funding**

The CG discussed at length the level of funding required for a full-fledged ESMAP in line with the Strategy and Work Plan 1992-1993. The CG concluded that the present level of funding (10 to 15 million U.S. dollars) is insufficient and jeopardizes the effectiveness of ESMAP. In particular, the management of ESMAP emphasized that the level of core funding should be significantly increased in the immediate future if the Programme is to be viable. All donors were strongly urged to timely provide significantly increased levels of flexible funding to enable ESMAP to carry out the mandate of the CG.

### **Governance Issues**

Despite the present low level of funding it was agreed that the Consultative Group of ESMAP should reconvene in about one year's time. The participation of representatives of the recipient countries was considered to have been valuable and that this should be a feature of any future CG meetings. The UNDP was encouraged to provide the necessary funding for the participation of recipient countries' representatives.

Representatives of recipient countries underscored the importance of ESMAP to their energy development strategies and the need for the Programme to retain its distinct character. While expressing their appreciation to the donor community for their commitments to

funding the Programme, they made an impassioned plea to donors to provide adequate and timely funding for ESMAP.

The Technical Advisory Group has fulfilled its original mandate to assist with the redirection of the Programme. The CG recommended that the TAG be maintained at a level commensurate with the size of the Programme. However, its mandate should be revised to address and review the effectiveness of ESMAP in meeting its objectives, especially in areas of environmental linkage and institutional and regulatory reform. The TAG noted that for this mandate to be carried out effectively would require resources commensurate with the mandate, the cooperation of ESMAP's management and staff and the support of the UNDP.

ESMAP management stated their appreciation of the assistance of the TAG and of the willingness of individual TAG members to be available for consultation on specific subjects.

The CG recommended that the World Bank continue to chair its meetings at an appropriate level in accordance with the recommendation of the International Commission which reviewed the role of ESMAP in the 1990s.

The CG encouraged the UNDP to continue as an active cosponsor of ESMAP, and to continue to fund the TAG in cooperation with interested donors. The CG also encouraged ESMAP's management to collaborate closely with UNDP, particularly in performing in-country tasks.

The CG did not see any reason to continue with an independent secretariat in view of the restructuring in the World Bank but stressed the need for an ESMAP coordination function in the Industry and Energy Department.

### **Impact on ESMAP of the Restructuring within the World Bank**

The recent restructuring presents major opportunities to strengthen ESMAP significantly without sacrificing the character and identity of the Programme. The restructured Industry and Energy Department is expected to include additional highly qualified sector specialists and to have improved access to country expertise in regional departments. However, there is a risk that the unique identity of ESMAP will be submerged within the new Industry and Energy Department. The CG urged the Management of the Programme to ensure that this identity be preserved and that separate accounting and reporting systems be continued.

Donors noted that the Industry and Energy Department and the Environment Department will be placed in different vice presidencies. ESMAP management was therefore encouraged to forge strong links with the Environment Department and the GEF, and to integrate environmental considerations into its sector and project work.

### **Environmental Linkage**

ESMAP's increasing involvement in environmental activities over the recent past was welcomed and the CG endorsed the recommendations in the report entitled "Energy and Environment, ESMAP Beyond UNCED." The CG is of the opinion that there is a great potential for environmental improvements through structural reforms of the energy sector. In line with Agenda 21, ESMAP should therefore emphasize, wherever possible, institutional and regulatory reforms, the efficient use of energy, the employment of renewables and the development of gas.

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### **Eastern Europe and Former Soviet Union**

The CG recommended that ESMAP continue to concentrate on developing countries. Activities in other regions should only be undertaken provided that additional funding is mobilized and that resources are not diverted from developing country activities.

The CG expressed its full appreciation for the effective and stimulating leadership provided by Mr. V. Rajagopalan during the first two meetings of the CG and noted with regret that he will not continue as Chairman because of his reassignment. The CG congratulated Mr. Richard Stern on his appointment as the new Director of the Industry and Energy Department of the World Bank and looked forward to continuing working with him. The CG was saddened to learn of the recent death of Mr. Toby Harrison and wished to record their appreciation of his valuable contribution to ESMAP since its inception.



## **Annex 3. Final Statement by the Delegate from Norway**

Regarding the Final Communiqué, we have participated in its drafting and, of course, we endorse it. But like all communiqués written by a group it represents a compromise and may give a too rosy picture of the situation. My impression is that there are few concrete results in terms of commitments from donors at the end of this meeting. At this point we would therefore like to reiterate some of our frustrations and disappointments.

All participants made positive statements on ESMAP, its relevance to energy, environmental and development issues, and its good management. All the four conditions stated last year for further support have been met. Then, what more is expected by donors from ESMAP? What are the donors waiting for, miracles?

There are some fundamental questions to be raised:

1. Do recipient countries need and ask for the kind of technical assistance ESMAP can provide?
2. Is it crucial for the Programme to maintain a critical mass of experts to be able to play the catalytic role that we want ESMAP to play?
3. Do we or do we not agree that a country program approach is better than a case by case project approach?
4. And finally, do we trust the Management of ESMAP and the World Bank, of which we are all members?

If the answers to these questions are yes, we suggest that donors should support the Programme with more than nice words and resources tied to their special interests. How can we expect ESMAP to fulfill its mandate and implement its work program without sufficient and flexible funding?

Norway has now been providing program funding to ESMAP for several years. During the coming year we will be very attentive at the evolution of the funding situation in ESMAP. If other donors do not join in and provide additional and more flexible funding, then we feel that the multilateral character and set up of the Programme will no longer exist. If, after all the efforts made by ESMAP and the TAG to satisfy donors' concerns and requests, donors continue with "business as usual," Norway will seriously consider pulling out of the Programme. Then we will have to consider this whole exercise as a lost opportunity.

Thank you, Mr. Chairman.



## Annex 4. List of Reports on Completed Activities

<i>Region/ Country</i>	<i>Activity/Report Title</i>	<i>Date</i>	<i>Number</i>
<b>Sub-Saharan Africa (AFR)</b>			
Africa Regional	Anglophone Africa Household Energy Workshop (English)	07/88	085/88
	Regional Power Seminar on Reducing Electric Power System Losses in Africa (English)	08/88	087/88
	Institutional Evaluation of EGL (English)	02/89	098/89
	Biomass Mapping Regional Workshops (English - Out of Print)	05/89	–
	Francophone Household Energy Workshop (French)	08/89	103/89
	Inter African Electrical Engineering College: Proposals for Short- and Long-Term Development (English)	03/90	112/90
	Biomass Assessment and Mapping (English - Out of Print)	03/90	–
Angola	Energy Assessment (English and Portuguese)	05/89	4708-ANG
	Power Rehabilitation and Technical Assistance (English)	10/91	142/91
Benin	Energy Assessment (English and French)	06/85	5222-BEN
Botswana	Energy Assessment (English)	09/84	4998-BT
	Pump Electrification Prefeasibility Study (English)	01/86	047/86
	Review of Electricity Service Connection Policy (English)	07/87	071/87
	Tuli Block Farms Electrification Study (English)	07/87	072/87
	Household Energy Issues Study (English - Out of Print)	02/88	–
	Urban Household Energy Strategy Study (English)	05/91	132/91
Burkina Faso	Energy Assessment (English and French)	01/86	5730-BUR
	Technical Assistance Program (English)	03/86	052/86
	Urban Household Energy Strategy Study (English and French)	06/91	134/91
Burundi	Energy Assessment (English)	06/82	3778-BU
	Petroleum Supply Management (English)	01/84	012/84
	Status Report (English and French)	02/84	011/84
	Presentation of Energy Projects for the Fourth Five-Year Plan (1983-1987) (English and French)	05/85	036/85
	Improved Charcoal Cookstove Strategy (English and French)	09/85	042/85
	Peat Utilization Project (English)	11/85	046/85
	Energy Assessment (English and French)	01/92	9215-BU
Cape Verde	Energy Assessment (English and Portuguese)	08/84	5073-CV

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<i>Region/ Country</i>	<i>Activity/Report Title</i>	<i>Date</i>	<i>Number</i>
	Household Energy Strategy Study (English)	02/90	110/90
Central African Republic	Energy Assessment (French)	08/92	9898-CAR
Chad	Elements of Strategy for Urban Household Energy: The Case of N'djamena (French)	12/93	160/94
Comoros	Energy Assessment (English and French)	01/88	7104-COM
Congo	Energy Assessment (English)	01/88	6420-COB
	Power Development Plan (English and French)	03/90	106/90
Côte d'Ivoire	Energy Assessment (English and French)	04/85	5250-IVC
	Improved Biomass Utilization (English and French)	04/87	069/87
	Power System Efficiency Study (French - Out of Print)	12/87	–
	Power Sector Efficiency Study (French)	02/92	140/91
Ethiopia	Energy Assessment (English)	07/84	4741-ET
	Power System Efficiency Study (English)	10/85	045/85
	Agricultural Residue Briquetting Pilot Project (English)	12/86	062/86
	Bagasse Study (English)	12/86	063/86
	Cooking Efficiency Project (English)	12/87	–
Gabon	Energy Assessment (English)	07/88	6915-GA
The Gambia	Energy Assessment (English)	11/83	4743-GM
	Solar Water Heating Retrofit Project (English)	02/85	030/85
	Solar Photovoltaic Applications (English)	03/85	032/85
	Petroleum Supply Management Assistance (English)	04/85	035/85
Ghana	Energy Assessment (English)	11/86	6234-GH
	Energy Rationalization in the Industrial Sector (English)	06/88	084/88
	Sawmill Residues Utilization Study (English)	11/88	074/87
Guinea	Energy Assessment (English)	11/86	6137-GUI
	Household Energy Strategy (English and French)	01/94	163/94
Guinea- Bissau	Energy Assessment (English and Portuguese)	08/84	5083-GUB
	Recommended Technical Assistance Projects (Eng. & Portuguese)	04/85	033/85
	Management Options for the Electric Power and Water Supply Subsectors (English)	02/90	100/90
	Power and Water Institutional Restructuring (French)	04/91	118/91
Kenya	Energy Assessment (English)	05/82	3800-KE
	Power System Efficiency Study (English)	03/84	014/84

<i>Region/ Country</i>	<i>Activity/Report Title</i>	<i>Date</i>	<i>Number</i>
	Status Report (English)	05/84	016/84
	Coal Conversion Action Plan (English - Out of Print)	02/87	–
	Solar Water Heating Study (English)	02/87	066/87
	Peri-Urban Woodfuel Development (English)	10/87	076/87
	Power Master Plan (English - Out of Print)	11/87	–
Lesotho	Energy Assessment (English)	01/84	4676-LSO
Liberia	Energy Assessment (English)	12/84	5279-LBR
	Recommended Technical Assistance Projects (English)	06/85	038/85
	Power System Efficiency Study (English)	12/87	081/87
Madagascar	Energy Assessment (English)	01/87	5700-MAG
	Power System Efficiency Study (English and French)	12/87	075/87
Malawi	Energy Assessment (English)	08/82	3903-MAL
	Technical Assistance to Improve the Efficiency of Fuelwood Use in the Tobacco Industry (English)	11/83	009/83
	Status Report (English)	01/84	013/84
Mali	Energy Assessment (English and French)	11/91	8423-MLI
	Household Energy Strategy (English and French)	03/92	147/92
Islamic Rep. of Mauritania	Energy Assessment (English and French)	04/85	5224-MAU
	Household Energy Strategy Study (English and French)	07/90	123/90
Mauritius	Energy Assessment (English)	12/81	3510-MAS
	Status Report (English)	10/83	008/83
	Power System Efficiency Audit (English)	05/87	070/87
	Bagasse Power Potential (English)	10/87	077/87
Mozambique	Energy Assessment (English)	01/87	6128-MOZ
	Household Electricity Utilization Study (English)	03/90	113/90
Namibia	Energy Assessment (English)	03/93	11320-NAM
Niger	Energy Assessment (French)	05/84	4642-NIR
	Status Report (English and French)	02/86	051/86
	Improved Stoves Project (English and French)	12/87	080/87
	Household Energy Conservation and Substitution (Eng. & French)	01/88	082/88
Nigeria	Energy Assessment (English)	08/83	4440-UNI
	Energy Assessment (English)	07/93	11672-UNI
Rwanda	Energy Assessment (English)	06/82	3779-RW
	Energy Assessment (English and French)	07/91	8017-RW

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<i>Region/ Country</i>	<i>Activity/Report Title</i>	<i>Date</i>	<i>Number</i>
	Status Report (English and French)	05/84	017/84
	Improved Charcoal Cookstove Strategy (English & French)	08/86	059/86
	Improved Charcoal Production Techniques (English & French)	02/87	065/87
	Commercialization of Improved Charcoal Stoves and Carbonization Techniques Mid-Term Progress Report (English and French)	12/91	141/91
SADCC	SADCC Regional Sector: Regional Capacity-Building Program for Energy Surveys and Policy Analysis (English)	11/91	–
Sao Tome & Principe	Energy Assessment (English)	10/85	5803-STP
Senegal	Energy Assessment (English)	07/83	4182-SE
	Status Report (English and French)	10/84	025/84
	Industrial Energy Conservation Study (English)	05/85	037/85
	Preparatory Assistance for Donor Meeting (English and French)	04/86	056/86
	Urban Household Energy Strategy (English)	02/89	096/89
Seychelles	Energy Assessment (English)	01/84	4693-SEY
	Electric Power System Efficiency Study (English)	08/84	021/84
Sierra Leone	Energy Assessment (English)	10/87	6597-SL
Somalia	Energy Assessment (English)	12/85	5796-SO
Sudan	Management Assistance to Ministry of Energy & Mining (English)	05/83	003/83
	Energy Assessment (English)	07/83	4511-SU
	Power System Efficiency Study (English)	06/84	018/84
	Status Report (English)	11/84	026/84
	Wood Energy/Forestry Feasibility (English - Out of Print)	07/87	073/87
Swaziland	Energy Assessment (English)	02/87	6262-SW
Tanzania	Energy Assessment (English)	11/84	4969-TA
	Peri-Urban Woodfuels Feasibility Study (English)	08/88	086/88
	Tobacco Curing Efficiency Study (English)	05/89	102/89
	Remote Sensing and Mapping of Woodlands (English)	06/90	–
	Industrial Energy Efficiency TA (English - Out of Print)	08/90	122/90
Togo	Energy Assessment (English)	06/85	5221-TO
	Wood Recovery in the Nangbeto Lake (English and French)	04/86	055/86
	Power Efficiency Improvement (English and French)	12/87	078/87
Uganda	Energy Assessment (English)	07/83	4453-UG
	Status Report (English)	08/84	020/84
	Institutional Review of the Energy Sector (English)	01/85	029/85

<i>Region/ Country</i>	<i>Activity/Report Title</i>	<i>Date</i>	<i>Number</i>
	Energy Efficiency in Tobacco Curing Industry (English)	02/86	049/86
	Fuelwood/Forestry Feasibility Study (English)	03/86	053/86
	Power System Efficiency Study (English)	12/88	092/88
	Energy Efficiency Improvement in Brick and Tile Industry (Eng.)	02/89	097/89
	Tobacco Curing Pilot Project (English - Out of Print)	03/89	UNDP Term. Rept.
Zaire	Energy Assessment (English)	05/86	5837-ZR
Zambia	Energy Assessment (English)	01/83	4110-ZA
	Status Report (English)	08/85	039/85
	Energy Sector Institutional Review (English)	11/86	060/86
	Power Subsector Efficiency Study (English)	02/89	093/88
	Energy Strategy Study (English)	02/89	094/88
	Urban Household Energy Strategy Study (English)	08/90	121/90
Zimbabwe	Energy Assessment (English)	06/82	3765-ZIM
	Power System Efficiency Study (English)	06/83	005/83
	Status Report (English)	08/84	019/84
	Power Sector Management Assistance Project (English)	04/85	034/85
	Petroleum Management Assistance (English)	12/89	109/89
	Power Sector Mgmt. Institution Building (English - Out of Print)	09/89	-
	Charcoal Utilization Prefeasibility Study (English)	06/90	119/90
	Integrated Energy Strategy Evaluation (English)	01/92	8768-ZIM
<b>East Asia and Pacific (EAP)</b>			
Asia Regional	Pacific Household and Rural Energy Seminar (English)	11/90	-
China	County-Level Rural Energy Assessments (English)	05/89	101/89
	Fuelwood Forestry Preinvestment Study (English)	12/89	105/89
Fiji	Energy Assessment (English)	06/83	4462-FIJ
Indonesia	Energy Assessment (English)	11/81	3543-IND
	Status Report (English)	09/84	022/84
	Power Generation Efficiency Study (English)	02/86	050/86
	Energy Efficiency in the Brick, Tile and Lime Industries (English)	04/87	067/87
	Diesel Generating Plant Efficiency Study (English)	12/88	095/88
	Urban Household Energy Strategy Study (English)	02/90	107/90
	Biomass Gasifier Preinvestment Study Vols. I and II (English)	12/90	124/90
Lao PDR	Urban Electricity Demand Assessment Study (English)	03/93	154/93

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<i>Region/ Country</i>	<i>Activity/Report Title</i>	<i>Date</i>	<i>Number</i>
Malaysia	Sabah Power System Efficiency Study (English)	03/87	068/87
	Gas Utilization Study (English)	09/91	9645-MA
Myanmar	Energy Assessment (English)	06/85	5416-BA
Papua New Guinea	Energy Assessment (English)	06/82	3882-PNG
	Status Report (English)	07/83	006/83
	Energy Strategy Paper (English - Out of Print)	–	–
	Institutional Review in the Energy Sector (English)	10/84	023/84
	Power Tariff Study (English)	10/84	024/84
Philippines	Commercial Potential for Power Production from Agricultural Residues (English)	12/93	157/93
Solomon Is.	Energy Assessment (English)	06/83	4404-SOL
	Energy Assessment (English)	01/92	979/SOL
South Pacific	Petroleum Transport in the South Pacific (English - Out of Print)	05/86	–
Thailand	Energy Assessment (English)	09/85	5793-TH
	Rural Energy Issues and Options (English - Out of Print)	09/85	044/85
	Accelerated Dissemination of Improved Stoves and Charcoal Kilns (English - Out of Print)	09/87	079/87
	Northeast Region Village Forestry and Woodfuels Preinvestment Study (English)	02/88	083/88
	Impact of Lower Oil Prices (English)	08/88	–
	Coal Development and Utilization Study (English)	10/89	–
Tonga	Energy Assessment (English)	06/85	5498-TON
Vanuatu	Energy Assessment (English)	06/85	5577-VA
Vietnam	Rural and Household Energy - Issues and Options (English)	01/94	161/94
Western Samoa	Energy Assessment (English)	06/85	5497-WSO
<b>South Asia (SAS)</b>			
Bangladesh	Energy Assessment (English)	10/82	3873-BD
	Priority Investment Program (English)	05/83	002/83
	Status Report (English)	04/84	015/84
	Power System Efficiency Study (English)	02/85	031/85
	Small Scale Uses of Gas Prefeasibility Study (Eng. - Out of Print)	12/88	–
India	Opportunities for Commercialization of Nonconventional Energy Systems (English)	11/88	091/88
	Maharashtra Bagasse Energy Efficiency Project (English)	05/91	120/91

<i>Region/ Country</i>	<i>Activity/Report Title</i>	<i>Date</i>	<i>Number</i>
	Mini-Hydro Development on Irrigation Dams and Canal Drops Vols. I, II, and III (English)	07/91	139/91
	Windfarm Pre-Investment Study (English)	12/92	150/92
Nepal	Energy Assessment (English)	08/83	4474-NEP
	Status Report (English)	01/85	028/84
	Energy Efficiency & Fuel Substitution in Industries (English)	06/93	158/93
Pakistan	Household Energy Assessment (English - Out of Print)	05/88	–
	Assessment of Photovoltaic Programs, Applications, and Markets (English)	10/89	103/89
Sri Lanka	Energy Assessment (English)	05/82	3792-CE
	Power System Loss Reduction Study (English)	07/83	007/83
	Status Report (English)	01/84	010/84
	Industrial Energy Conservation Study (English)	03/86	054/86
<b>Europe and Central Asia (ECA)</b>			
Eastern Europe	The Future of Natural Gas in Eastern Europe (English)	08/92	149/92
Poland	Energy Sector Restructuring Program Vols. I-V (English)	01/93	153/93
Portugal	Energy Assessment (English)	04/84	4824-PO
Turkey	Energy Assessment (English)	03/83	3877-TU
<b>Middle East and North Africa (MNA)</b>			
Morocco	Energy Assessment (English and French)	03/84	4157-MOR
	Status Report (English and French)	01/86	048/86
Syria	Energy Assessment (English)	05/86	5822-SYR
	Electric Power Efficiency Study (English)	09/88	089/88
	Energy Efficiency Improvement in the Cement Sector (English)	04/89	099/89
	Energy Efficiency Improvement in the Fertilizer Sector (English)	06/90	115/90
Tunisia	Fuel Substitution (English and French)	03/90	–
	Power Efficiency Study (English and French)	02/92	136/91
	Energy Management Strategy in the Residential and Tertiary Sectors (English)	04/92	146/92
Yemen	Energy Assessment (English)	12/84	4892-YAR
	Energy Investment Priorities (English - Out of Print)	02/87	6376-YAR
	Household Energy Strategy Study Phase I (English)	03/91	126/91

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<b>Latin America and the Caribbean (LAC)</b>			
LAC Regional	Regional Seminar on Electric Power System Loss Reduction in the Caribbean (English)	07/89	–
Bolivia	Energy Assessment (English)	04/83	4213-BO
	National Energy Plan (English)	12/87	–
	National Energy Plan (Spanish)	08/91	131/91
	La Paz Private Power Technical Assistance (English)	11/90	111/90
	Natural Gas Distribution: Economics and Regulation (English)	03/92	125/92
	Prefeasibility Evaluation Rural Electrification and Demand Assessment (English and Spanish)	04/91	129/91
	Private Power Generation and Transmission (English)	01/92	137/91
	Household Rural Energy Strategy (English and Spanish)	01/94	162/94
Chile	Energy Sector Review (English - Out of Print)	08/88	7129-CH
Colombia	Energy Strategy Paper (English)	12/86	–
Costa Rica	Energy Assessment (English and Spanish)	01/84	4655-CR
	Recommended Technical Assistance Projects (English)	11/84	027/84
	Forest Residues Utilization Study (English and Spanish)	02/90	108/90
Dominican Republic	Energy Assessment (English)	05/91	8234-DO
Ecuador	Energy Assessment (Spanish)	12/85	5865-EC
	Energy Strategy Phase I (Spanish)	07/88	–
	Energy Strategy (English)	04/91	–
	Private Mini hydropower Development Study (English)	11/92	–
Guatemala	Issues and Options in the Energy Sector (English)	09/93	12160-GU
Haiti	Energy Assessment (English and French)	06/82	3672-HA
	Status Report (English and French)	08/85	041/85
	Household Energy Strategy (English and French)	12/91	143/91
Honduras	Energy Assessment (English)	08/87	6476-HO
	Petroleum Supply Management (English)	03/91	128/91
Jamaica	Energy Assessment (English)	04/85	5466-JM
	Petroleum Procurement, Refining, and Distribution Study (Eng.)	11/86	061/86
	Energy Efficiency Building Code Phase I (English - Out of Print)	03/88	–
	Energy Efficiency Standards & Labels Phase I (Eng. - Out of Print)	03/88	–
	Management Information System Phase I (English - Out of Print)	03/88	–
	Charcoal Production Project (English)	09/88	090/88

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	FIDCO Sawmill Residues Utilization Study (English)	09/88	088/88
	Energy Sector Strategy and Investment Planning Study (English)	07/92	135/92
Mexico	Improved Charcoal Production Within Forest Management for the State of Veracruz (English and Spanish)	08/91	138/91
Panama	Power System Efficiency Study (English - Out of Print)	06/83	004/83
Paraguay	Energy Assessment (English)	10/84	5145-PA
	Recommended Technical Assistance Projects (Eng. - Out of Print)	09/85	–
	Status Report (English and Spanish)	09/85	043/85
Peru	Energy Assessment (English)	01/84	4677-PE
	Status Report (English - Out of Print)	08/85	040/85
	Proposal for a Stove Dissemination Program in the Sierra (English and Spanish)	02/87	064/87
	Energy Strategy (English and Spanish)	12/90	–
Saint Lucia	Energy Assessment (English)	09/84	5111-SLU
St. Vincent & Grenadines	Energy Assessment (English)	09/84	5103-STV
Trinidad and Tobago	Energy Assessment (English - Out of Print)	12/85	5930-TR
<b>Global</b>			
	Energy End Use Efficiency: Research and Strategy (English - Out of Print)	11/89	–
	Guidelines for Utility Customer Management and Metering (English and Spanish)	07/91	–
	Women and Energy--A Resource Guide	04/90	–
	The International Network: Policies and Experience (English)		
	Assessment of Personal Computer Models for Energy Planning in Developing Countries (English)	10/91	–
	Long-Term Gas Contracts: Principles and Applications (English)	02/93	152/93
	Comparative Behavior of Firms Under Public and Private Ownership (English)	05/93	155/93

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