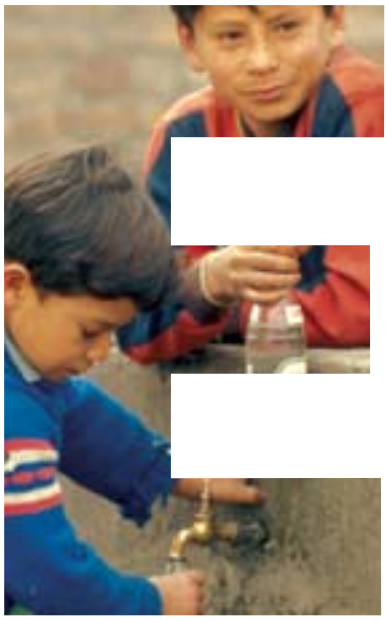
35998

ENERGY

ESMAP

Annual Report 2004



ENERGY SECTOR MANAGEMENT ASSISTANCE PROGRAM

To obtain copies of this report, you may write directly to ESMAP at the address shown on the back of this report or by sending an electronic message to esmap@worldbank.org.

Photo Credits
All photos from World Bank Group Photo Library

Design
Studio Grafik
Editorial Support
Grammarians, Inc.
Production Coordination
Marjorie K. Araya
Printing
District Creative, Inc

ENERGY SECTOR MANAGEMENT ASSISTANCE PROGRAM

CONTENTS

Foreword 1

Energy Challenges: Servicing the Energy Poor Under Increased Vulnerability 3

1. ESMAP at a Glance 5

2. The ESMAP 2004 Portfolio in Brief 7

3. Details of the ESMAP 2004 Portfolio 11
   Summary of ESMAP Achievements 11
   ESMAP Portfolio Review by Strategic Area 13

4. Governance and Management 37

5. Financial Review 41

Annex 1: Proceedings from the Joint Consultative Group of the Energy Trust–Funded Programs 2004 Consultative Group Meeting 45

Annex 2: Map and Table of Completed, Approved, and ongoing activities in 2004 52

Annex 3: Publications and Knowledge Dissemination Activities 64

List of Abbreviations and Acronyms 70

ESMAP strives to expand

the global knowledge base

for addressing energy issues.

FOREWORD

Mr. Jamal Saghir

For the Energy Sector Management Assistance Program (ESMAP), 2004 was a year of accomplishments and a year of transition. The Program concluded its 2002-2004 Business Plan with a strong focus on energy-poverty activities, environmental sustainability, and energy market development. This year ESMAP began the development of a new business strategy covering the next three years. The Program will continue to promote the role of energy in poverty reduction and economic growth in an environmentally responsible manner, but responding to several new challenges emerging in the energy sector – from the increased instability of the energy environment for developing countries, to the need to scale up renewable energy, and the urgent financial requirements for energy investments to serve the poor. Monitoring the impacts of ESMAP activities continues to be a fundamental part of the Program's emphasis.

In partnership with donors and developing countries, in 2004 ESMAP supported several activities focused on energy and poverty reduction, including a major review of best practices of rural electrification programs, an analysis of energy expenditures by the poor in 45 cities, and several activities on gender and energy linkages.

The work supported by ESMAP to address the energy-development-sustainability nexus included the promotion of renewable energy for development as a key element in meeting the challenge of reducing energy poverty and energy vulnerability. Progress was also made in developing methodologies and conducting research on the synergies between energy and development. This work connecting energy and the Millennium Development Goals enhances our understanding of the linkages between productive uses of energy and social development issues. In these areas, ESMAP supported the preparation of a book on *Health Impacts of Traditional Fuel Use in Guatemala*, the development of a toolkit on renewable energy, a conference on women and mining, and a paper on the *Impact of Higher Oil Prices on Poor People Low Income Countries*.

Finally, ESMAP continued its work on sustainable energy markets. An assessment of the impact on the poor of more than ten years of energy sector reforms was completed. There also was progress in the development of public-private partnerships that we hope will lead to private investment in crucial areas such as rural energy, energy efficiency, and energy production. Of particular note was the support for the interaction of business and development through roundtables, workshops, and ESMAP's involvement and support to the Global Village Energy Partnership (GVEP). The high prices of hydrocarbons and their impact on the poor is an area of growing importance for the Program.

ESMAP's effectiveness and its ability to provide support to both clients and partners on energy issues of great importance would not have been possible without the continued and generous support of its Program donors.

Mr. Jamal Saghir
Director
Energy and Water
The World Bank

Energy Challenges:

Servicing the Energy Poor under Increased Vulnerability

The year 2004 was marked by continued increases in energy prices, causing particularly acute sector development challenges. Even without rising prices, bringing modern energy services to the poor is an enormous challenge. Today 1.6 billion people lack access to electricity, and 2.4 billion rely on traditional biomass fuels for cooking and heating.

Contrary to myth, poor people pay a high price—in cash or in labor—for the energy they use. Moreover, they spend a much greater share of their household income on energy than do wealthy people, not only because their incomes are much smaller but also because the fuels they use are much less efficient than modern fuels. Finally, there is recent evidence that biomass energy prices are linked in many urban areas to the price of petroleum fuels. This linkage means that even those poor households using wood for cooking in the urban areas of many developing countries are not exempted from problems of rising petroleum fuel prices.

In modern times no country has managed to substantially reduce poverty without massively increasing the use of energy. Modern energy has the biggest effect on poverty by boosting poor people's productivity and thus their income. Electricity helps improve health care and education for poor people by powering lights and modern equipment and makes it more likely that women will read and children will attend school regardless of their income class. Modern energy also lightens the burden on women and reduces the impacts on the health and livelihoods of poor people that result from the use of traditional fuels.

These strong links with poverty reduction—through income, health, education, gender, and the environment—suggest that the energy sector needs to work with other sectors to ensure that the poor benefit as much as possible from greater access to modern energy.

Public policies ostensibly aimed at helping the poor often end up doing the opposite. Selling fuels at subsidized prices does poor people little good if there are restrictions that they face in obtaining the fuel in the market. Even taxing the fuels used by the well-off hurts the poor by causing the price of fuels they use to rise as well.

Contrary to myth, poor people pay a high price—in cash or in labor—for the energy they use. Moreover, they spend a much greater share of their household income on energy than do wealthy people, not only because their incomes are much smaller but also because the fuels they use are much less efficient than modern fuels.

To be sustainable, programs to increase access to efficient fuels need to harness private entrepreneurship. When improved stove programs simply gave away the cook stoves, the program faltered. But when the programs involved local private manufacturers and dealers, the program became sustainable.

How best to design and implement policies for assisting the poor through expanding access to affordable energy requires learning from experience. Experience shows the importance of removing institutional and regulatory barriers, designing subsidies carefully, ensuring local involvement in the design and delivery of energy services, and protecting the poor during reforms. Policies like these, while not enough to end energy deprivation are certainly necessary for doing so, and they can improve the performance of the energy sector as a whole.

ESMAP recognizes that no one way of applying these policies will work under all the world's widely varying social and economic conditions. Accordingly, ESMAP sponsors innovative research in many areas. ESMAP also forges alliances and partnerships with organizations, governments, private and community stakeholders to help provide modern energy to the poor.

Ending energy deprivation will not be easy. In most developing countries efforts to develop innovative ways to deliver modern energy services to the poor confront formidable institutional and regulatory barriers. This issue affects rural and urban areas alike, but in sharply different ways; these differences must be taken into account in formulating policies.

ESMAP's activity in 2004 occurred against a backdrop of a particularly challenging environment. On the one hand, the environment for the supply and use of energy services in developing countries became increasingly unstable. The instability was driven by a range of factors including increasingly volatile hydrocarbon prices, macroeconomic uncertainties, climate change, and high levels of political instability. On the other hand, there is further consensus among developing countries and their partners that access to energy services is a key input in achieving economic growth, in improving living standards, and in achieving the Millennium Development Goals (MDGs).

ESMAP activities in 2004 were conducted in line with the directions given by the Consultative Group (CG) of donors and the three-year (2002–04) ESMAP business plan and were anchored on achieving the MDGs. Therefore, the activities emphasized the linkages between energy and poverty reduction through three strategic pillars: access to energy services, market development, and environmental sustainability. The operational activities to support these three strategic pillars are described in this report.

Ms. Dominique Lallement
Program Manager
ESMAP, The World Bank Group

1. ESMAP at a Glance

The Energy Sector Management Assistance Program (ESMAP) is a global multidonor technical assistance program aimed at promoting energy solutions for poverty reduction and economic growth in an environmentally responsible manner. ESMAP recognizes that access to affordable and reliable energy services is indispensable in achieving the Millennium Development Goals.

ESMAP provides policy advice and helps build consensus on sustainable energy development in developing countries and economies in transition with governments, development partners, and the private sector.

ESMAP undertakes cutting-edge analytical work on sector issues, contributes to the transfer of knowledge among sector stakeholders, and pioneers implementation and financing mechanisms for the delivery of sustainable energy services.

ESMAP was established in 1983 and is managed by the Energy and Water Department of the World Bank; it is governed by a consultative group of donors.

ESMAP's Mission Statement

ESMAP promotes the role of energy in poverty reduction and economic growth with redistribution in an environmentally responsible manner. Its work applies to low-income, emerging, and transition economies and directly contributes to achieving the Millennium Development Goals.

How ESMAP Pursues Its Mission

ESMAP pursues its mission through four main mechanisms:

- Providing experts to work with governments, research organizations, nongovernmental organizations (NGOs), financial institutions, the private sector, and other development organizations on strategies, policies, and technical, institutional, and financial solutions that will enable the scaling up of sustainable energy services
- Undertaking cutting-edge analytical work on global or local sector energy issues not yet mainstreamed by governments or in the portfolios of bilateral or multilateral development institutions and the private sector
- Identifying and disseminating experience and lessons learned from sector policies and projects through conferences, workshops, publications, and its website
- Implementing pilot projects to test innovative institutional and financial solutions relating to energy and development.

ESMAP's mandate and products have evolved over time to meet the changing needs of its clients. ESMAP has operated in more than 100 countries through more than 600 activities since its inception. The Country Energy Assessments in the 1980's initially branded the program and served to fill the knowledge gap on the energy situation and development options in an environment of rapidly rising energy prices.

Today, **ESMAP** focuses on the development of specific studies that include pre-investment issues, advisory services, conferences, workshops, and training, publications and websites, and pilot activities that have clear potential for improving policy and scaling-up energy investment in developing countries. ESMAP also conducts evaluations, documents emerging best practices, and disseminates information in order to promote knowledge transfer to the developing community.

How to Apply for ESMAP's Support

In 2004, applications for **ESMAP** support came from many sources, but mostly from governments and World Bank staff. Starting in 2005, ESMAP will agree on annual activity programs with World Bank Energy Sector and other managers who will in turn conduct consultations with country governments to establish priorities for project funding. In addition, ESMAP staff will conduct its own workprogram identified as important to the energy practice.

Applications for **ESMAP** support can be downloaded from the ESMAP website (http://www.worldbank.org/esmap) or requested from the management unit. Proposals are assessed against priorities and criteria established within the World Bank and within the donor-approved three-year business plan. Those criteria are based on government commitment, alignment with World Bank Country Assistance Strategies (CASs), alignment with Poverty Reduction Strategy Papers (PRSPs) agreed with the beneficiary governments, and the potential for both mainstreaming and replicability in donor-supported and private sector programs.

How ESMAP Delivers Services

ESMAP-financed activities are led by World Bank Group staff in partnership with international, national, regional, and/or local organizations. International and local consultants are extensively used. Procurement is governed by World Bank guidelines. More information about procurement arrangements and consultancy opportunities is available on the ESMAP website.

2. The ESMAP 2004 Portfolio In Brief

During 2004, the ESMAP portfolio under implementation grew slightly in number of activities (from 89 to 96) but decreased by 4 percent from US$21.2 million to US$20.3 million. This was partly due to the increased number of activities that were completed and the consolidation of the portfolio in order to close the 2002-2004 Business Plan.

During 2004, 39 new activities worth more than US$4.8 million were launched, a slight decrease from 2003 (44 activities launched for a value of US$5.8 million), and 49 activities worth US$7.8 million achieved financial closure. Table 2.1 provides an overview of changes to the portfolio in 2004.

Table 2.1: Evolution of the Portfolio

Overview of Changes in Portfolio 2004	Number	Value (US$ million)
Portfolio as of January 1, 2004	**124**	**30.3**
Activities Completed, with publications in process	35	9.1
Portfolio Under Implementation as of 1/1/04	89	21.2
New activities launched during 2004	**39**	**4.8**
Activities closed and published during 2004	**(19)**	**(2.4)**
Financially closed	(14)	(1.5)
To be financially closed	(5)	(0.9)
Activities withdrawn during 2004	**0**	**0**
Activities Completed, with publications in process	**48**	**12.4**
Portfolio Under Implementation as of 12/31/04	**96**	**20.3**

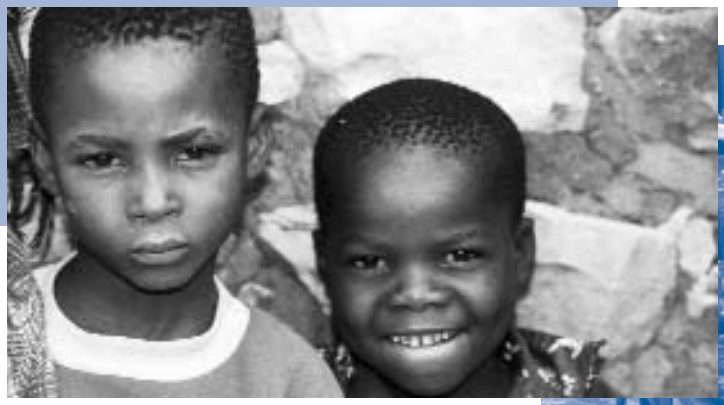
Source: ESMAP project database, 2004.

This evolution in the portfolio is explained by the following factors:

- **Expansion of the Fast-Track Portfolio:** To respond to a demand by the Energy Sector Board for just-in-time support, ESMAP introduced a Fast-Track Window in 2002 to finance activities costing less than US$50,000, usually for studies and knowledge workshops to help policymakers for immediate decisions. Since its launch more than 30 Fast-Track activities entered the ESMAP portfolio, which has led to an increase in the number of activities and a decrease in the average value per project of activities financed. Although the expectation was that these activities would be implemented faster, a recent review of the Fast-Track activities found out that most of them experienced delays, partly owing to country situations.

- **Lengthening of the average implementation period:** One-third of the activities in the portfolio have been under implementation for more than two years. However, 67 activities were completed in 2004, of which 14 activities were financially closed. This compares with 29 completed activities in 2003.

While little can be done to change specific country situations that hamper prompt implementation, ESMAP's management believes that the new programmatic approach that is proposed for the 2005-07 business plan will facilitate the implementation of the projects managed by the World Bank's regional staff.

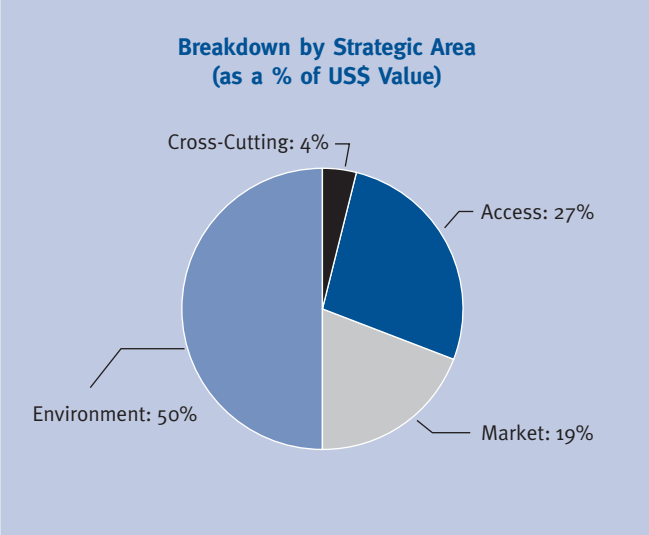


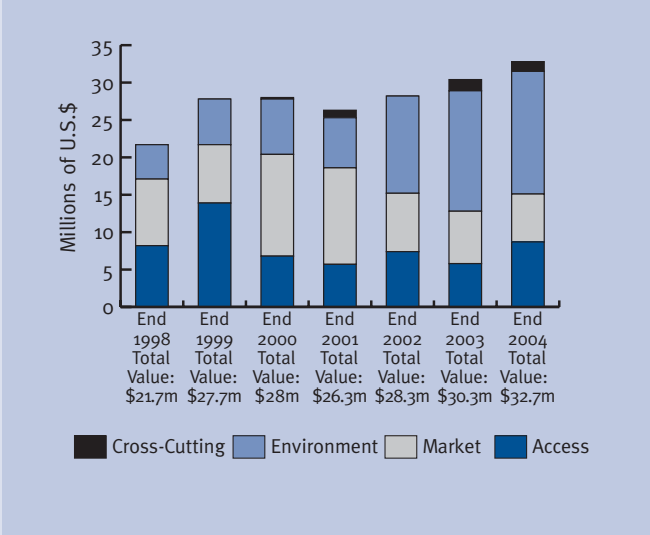
Among the strategic areas, the environmental portfolio remained the largest in 2004, but its share decreased both by number and by value when compared with 2003. It presents half the portfolio by value and 35 percent of the portfolio by number. The two Bolivia biomass activities worth US$3.9 million that are in the process for publication are included in the environmental portfolio. As the two activities close in 2005, the ESMAP portfolio will resume a balance among its three strategic areas.

The share of the access-poverty portfolio increased considerably, both by number (31 percent) and by value (27 percent). The launching of new activities, such as GVEP activities and rural electrification in Peru, has contributed to this increase.

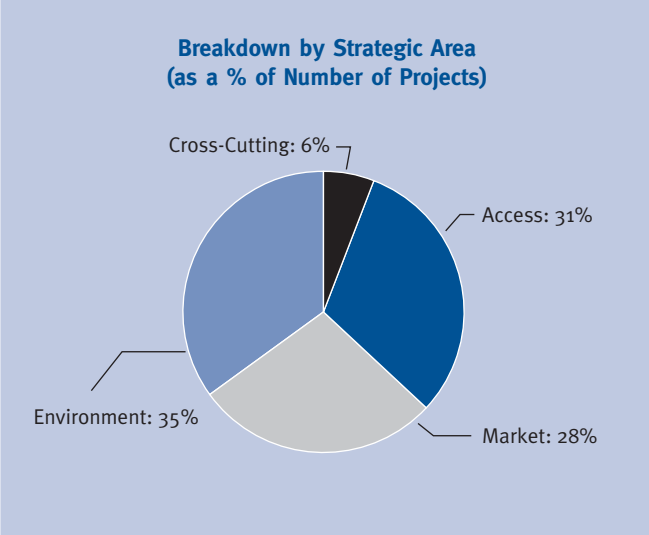
The market portfolio accounted for 28 percent of total activities and 19 percent of total funding, which represents a decline in proportion from the previous year (Figures 2.1-2.4).

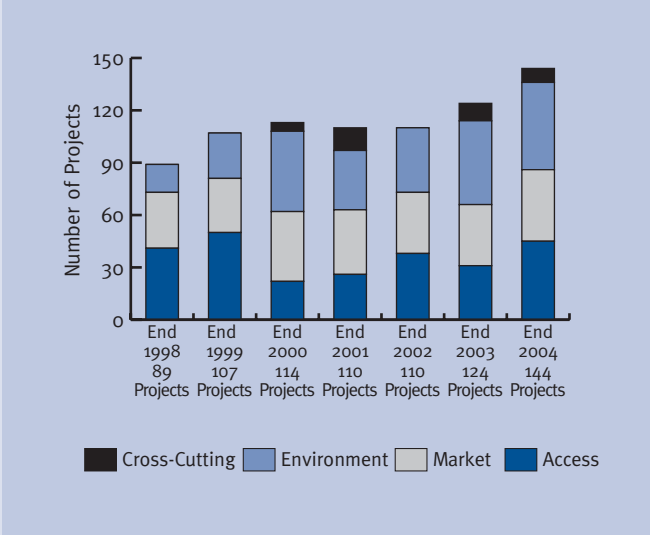
Figures 2.1 and 2.2: Portfolio Structure by Strategic Area in Value



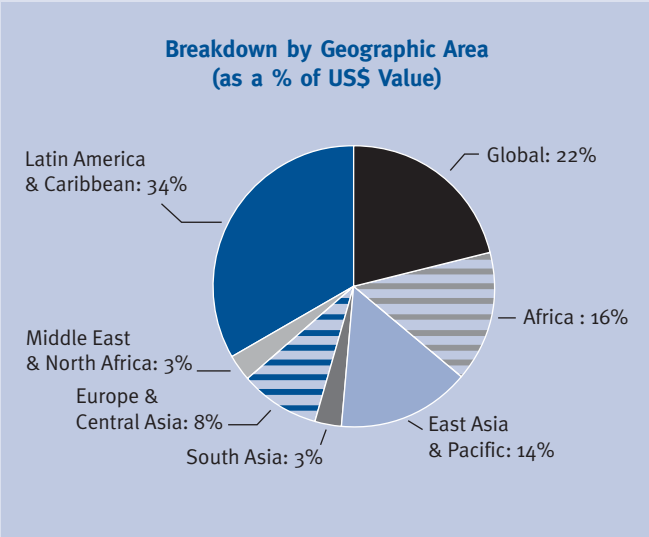


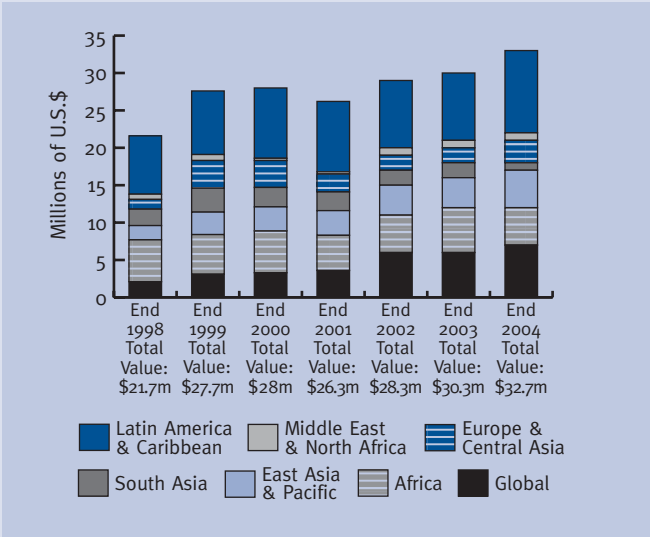
Figures 2.3 and 2.4: Portfolio Structure by Strategic Area in Number



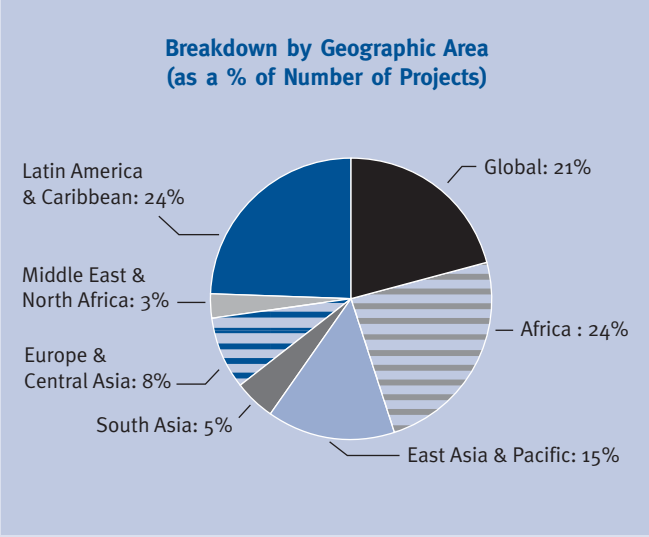


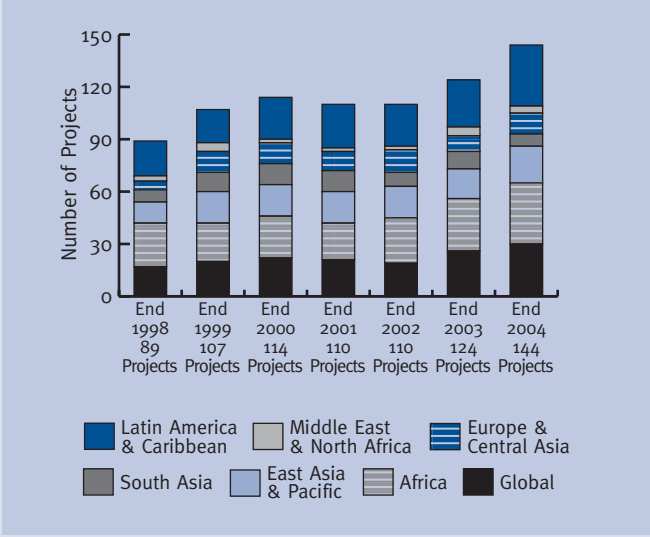
Figures 2.5 and 2.6: Portfolio Structure by Region in Value





Figures 2.7 and 2.8: Portfolio Structure by Region in Number





3. Details Of The ESMAP Portfolio 2004

ESMAP is committed to having a major development impact. In approving the 2002-2004 Business Plan, the CG endorsed a framework for measuring the impact of all its activities. Accordingly, all ESMAP activity proposals include a set of expected outputs and performance- and impact-monitoring indicators. This may, however, capture only the short-term impact of the project during its execution or at completion. The longer-term impact either on the beneficiary client organization or on the country is harder to measure. Nevertheless, the portfolio monitoring and impact evaluation reviews have demonstrated the contribution and impact of ESMAP's portfolio on energy policy and legislative and regulatory changes; on the development of sector management and analytical tools; in generating new knowledge; in the design of innovative transactions; and in facilitating resource mobilization.

Summary of ESMAP Achievements

Energy Strategy and Policy

ESMAP is focused on cutting-edge research and technical assistance with the potential to affect sector-wide policy and strategy formulation. Since its creation, ESMAP has helped governments develop and implement a number of innovative cutting-edge strategies in the areas of both traditional and nontraditional energy use.

For example, the recommendations from the *India Indoor Air Pollution (IAP)* activity in India (ESMAP Activity P075756 and Formal Report 263/03) were included in India's Tenth Five-Year Plan, and the Brazil Rural Electrification (ESMAP Activity P074149, Technical Report 066/05) helped in formulating Brazil's National Rural Electrification Strategy.

In 2004, eight ESMAP activities were completed that led to revised sector strategies in the area of air pollution, including the *Clean Air Initiative for Sub-Saharan Africa* activity (ESMAP Activity P080210, Technical Reports 038-041/03 and 079/05), under which several African countries issued strategies for the elimination of leaded fuels, and the *Thailand Motorcycle Upgrade* (ESMAP Activity P069992, ESMAP Formal Report 275/03), under which a new policy for the phasing out of two-stroke engines was prepared.

ESMAP activities supported the adoption by several countries of policies and strategies for regional systems integration. For example, the *Opportunities for Power Trading: Nile River Basin (NBI)* (ESMAP Activities P064935 and P070940, ESMAP Formal Report 277/04 and Technical Report 067/05) contributed to the formulation of the Nile River Basin NBI power trade strategy, and the *Mekong Regional Energy Market* (ESMAP Activities P048933 and P068663, ESMAP Technical Report 015/01) was important for the formulation of a joint strategy by the member countries.

The role of energy in reducing poverty reduction in line with meeting the MDGs was taken up by the *Africa, Manila, and Latin America and the Caribbean Workshops on Energy for Poverty Reduction* activities held in 2004, which contributed to a multisectoral approach integrating energy services into national poverty reduction strategies (ESMAP Reports 266/03, 268/03, 278/04, 286/04, 294/04, 295/04, 296/04, 298/05, and 043/03). In addition, a flagship study on *Environmental Health and Traditional Fuel Use in Guatemala* was completed in 2004 and now has been jointly published by ESMAP and the World Bank in the Directions in Development Series. This study led to including an Indoor Air Pollution component in a new health project to be financed by the World Bank. Finally, the study on *Power Sector Reform and the Rural Poor in Central America* (ESMAP Report 297/04) has provided the analytical framework for the continued policy dialogue in these countries.

Legislation and Regulation

ESMAP has funded activities to advise on changes in legislation and regulation in areas such as urban air pollution, renewable energy, and decentralized energy service. ESMAP's lead phase-out activities in Latin America, Africa, and Asia have persuaded many countries to pass regulations for switching to unleaded gasoline.

The *Nicaragua Renewable Energy* (ESMAP Activity P078519) project led to the formulation of a renewable energy law. The *Tanzania Technical Assistance* (ESMAP Activity P023711, Technical Report 024/02) led to the revision of the regulation to allow TANESCO to be partly privatized through a highly successful management contract, while the *Zambia Energy Sector Restructuring* (ESMAP Activity P023879, Technical Report 032/03) prepared the issuance of a new law on sector regulation. The conclusions of the *Vietnam Institutional Reform Petroleum* activity (ESMAP Activity P050391, Technical Report 053/04) were partly incorporated in the new sector regulations.

ESMAP's activities in combination with World Bank lending projects have led to significant improvements in the regulatory and in the legislative framework of the energy sector in many developing countries.

Analytical Instruments

ESMAP has funded the development of innovative analytical instruments, continuing its early activities in developing methodologies for preparing Country Energy Assessments. These assessments originally served to fill the knowledge gap on the energy situation in a specific country and now can help provide and analyze options to address the issue of rapidly rising energy prices.

In 2004, ESMAP completed activities that contributed to developing new instruments for the analysis of the environmental impact on alternative power sector plans through the pilot *Rajasthan and Karnataka Power Sector Long-Term Planning* activities (ESMAP Activity P072936, Formal Reports 292/04 and 293/04). In addition, ESMAP supported the innovative introduction of the energy stability concept in sector planning in Mexico through *Mexico: TA for Long-Term Program for Renewable Energy Development* (ESMAP Activity P073535). ESMAP also pursued further the development of much-needed methodologies for project monitoring and evaluation and for measuring the impact on poverty of energy sector policies.

Knowledge Dissemination and Capacity Building

In 2004, ESMAP continued to promote information exchange in the international energy community and capacity building with clients. ESMAP issued 52 publications, of which 3 were joint publications and 3 translations, and made them available on its website (www.worldbank.org/esmap.org). In addition, ESMAP considers the interactive nature of workshops, conferences, and training programs as a critical part of its knowledge dissemination strategy. ESMAP contributed to

the delivery of a number of local and international workshops in 2004. The international roundtable on public-private sector participation in energy services and the Global Village Energy Partnership (GVEP) regional workshop on microfinance brought together practitioners with varied experience to focus on resolving current bottlenecks.

Investment Leverage

ESMAP's upstream pre-investment activities often lead to, or contribute to, the formulation of follow-up investment projects. In 2004, six investment projects were identified and developed on the basis of ESMAP upstream activities, mainly for reduction of air pollution. Another area in which ESMAP activities led to investment projects is access to energy. These ESMAP activities found in Box 3.1 laid the foundation for follow-up energy access projects of the World Bank. In addition, ESMAP's assistance in developing renewable energy policies and strategies in Nicaragua and Mexico has provided key inputs into World Bank–Global Environment Facility (GEF) projects in these two countries.

Box 3.1. Investment Activities in Fiscal Year 2005 Influenced by ESMAP Activities

- Senegal Rural Electricity Service Project (ESMAP Activity P085798)
- China Renewable Energy Scale Up (ESMAP Activity P067828)
- Vietnam GEF Rural Energy II (ESMAP Activity P080074)
- Yemen Rural Electrification and Renewable Energy (ESMAP Activity P066397)
- Philippines Rural Power Project (ESMAP Activity P066397)
- Cambodia Rural Electrification and Transmission (ESMAP Activity P071591)

ESMAP Portfolio Review by Strategic Area

Energy-Poverty

The energy and poverty reduction program goal is to design policies enabling increased investments in projects that will benefit the poor by increasing access to sustainable energy services. This covers a wide range of issues, including supplying rural electrification, providing access to petroleum products by poor and rural households, and improving the sustainability and efficiency of biomass fuels (which represent the largest energy source used by the poorest households). The program activities target the problems facing governments, local communities, and donors in preparing and processing energy access activities, making the project development process easier and less costly.

Lack of access to modern energy services continued to be a priority area in 2004. ESMAP has already done substantial foundation work on access issues, by:

- Documenting best practices in rural electrification.
- Developing methodologies and case studies that demonstrate how targeted energy service investments can benefit the poor.
- Documenting how the poor meet their energy needs, both in the rural and peri-urban areas.
- Launching the Global Village Energy Partnership (GVEP) which provides a concerted framework to accelerate the delivery of energy services for poverty reduction and economic growth.

In the past 25 years, the world has extended access to electricity and modern fuels to more than 1 billion people. However, big gaps in access remain. Four out of five people without access to electricity live in rural areas of the developing world, mainly in South Asia and Sub-Saharan Africa. However, over the next three decades almost 95 percent of

the population growth will occur in urban areas, potentially creating huge gaps in access in the developing world's cities. Substantially reducing the number of people without access to electricity will therefore require targeting efforts to urban areas.

The issues involved in energy access call for a large body of work focused mainly in two areas: distribution of commercial energy sources and the efficient use of traditional fuels. The issues are somewhat different between urban and rural areas.

In rural areas, remote locations and low density of demand raise the costs of modern energy services—both electrification and liquid petroleum fuels—to nearly prohibitive levels. Still too few countries have well-designed rural energy policies that provide for the legal and regulatory framework that enable effective public-private partnership to increase investments in the services. Many policy solutions exist and have been experimented with or implemented in developing countries. Solutions such as subsidizing capital costs for rural grid electrification or developing off-grid solutions require careful design and skillful implementation.

Nevertheless, rural access to electricity in low-income countries may not increase appreciably in the foreseeable future. Therefore, increasing the efficiency of biomass fuel use, as well as promoting modern cooking fuels such as liquefied petroleum gas (LPG), should be priorities.

Rural Areas Are Far Behind in Access to Electricity

According to the International Energy Agency, 1.6 billion people—around a quarter of the world's population—lack access to electricity. Moreover, under today's energy policies and investment trends in energy infrastructure, projections show that as many as 1.4 billion people will still lack access to electricity in 2030. Lack of access is far more prevalent in rural than in urban areas. In Sub-Saharan Africa, only 8 percent of the rural population has access to electricity as compared with 51 percent of the urban population. A similar disparity exists in South Asia, where only 30 percent of the rural population has access as compared with 68 percent of the urban population. Indeed, four out of five people without access to electricity live in rural areas of the developing world, largely in South Asia and Sub-Saharan Africa.

An ESMAP highlight during the past year was the completion of *Meeting the Challenge of Rural Electrification in Developing Nations: The Experience of Successful Programs* (ESMAP Activity P075756, a version for Discussion was made available during the World Bank Group Energy Week). The main goal of this study was to illustrate how a variety of countries have successfully addressed the problems of rural electrification. Examining and documenting the best practices of programs that successfully provided electricity to their rural populations will benefit other countries where rural electrification efforts are underway or just starting.

Rural electrification can be constrained by different institutional ways of providing electricity to rural people. In this study, the case studies were divided up into several categories. The first involved a model of rural electrification exemplified by the rural electric cooperative model derived from the experience of the United States. Examples of developing countries following this model include Bangladesh, Costa Rica, and the Philippines. The second, and probably the most common, path to rural electrification is through public companies. Examples include Thailand, Tunisia, and Mexico. Finally, two case studies involved private or decentralized electrification companies. Chile has had private sector electricity distribution companies for more than 20 years, and they have a unique subsidy program encouraging service to people in rural areas. Although not classified as a private program, China's electricity distribution program developed in a very decentralized manner. The results point toward a set of characteristics of successful programs.

In addition, several new projects are for countries in the last stages of their rural electrification programs. In Mexico, Brazil, and India, the remaining rural households are in very remote areas that are a real challenge to reach through traditional grid expansion. Therefore, in these countries new ESMAP projects are examining innovative ways to reach these remote and very poor people without creating a financial strain on the companies involved in the program.

Continuing Reliance on Traditional Fuels

Large gaps in access to modern fuels such as kerosene and LPG also remain. Nearly 2.4 billion people in developing countries still rely on wood, agricultural residues, and dung for cooking and heating (table 3.1). Projections show that without greater efforts to address this problem that number will grow to 2.6 billion by 2030.

These people must contend with the burdensome disadvantages of using traditional fuels. As noted, cooking with fuels such as biomass is far less efficient than cooking with modern fuels such as kerosene or LPG. Women and children must spend hours gathering biomass fuels. In addition, biofuels if burned in poorly ventilated homes and inefficient stoves cause harmful indoor pollution and lead to serious health damage.

Table 3.1: People Relying on Biomass for Cooking and Heating in Developing Countries, 2000

Countrwy or region	Millions	Percentage of population
China	706	56
Indonesia	155	74
Rest of East Asia	137	37
India	585	58
Rest of South Asia	128	41
Latin America	96	23
Middle East and North Africa	8	0.05
Sub-Saharan Africa	575	89
All developing countries	2,390	52

Source: International Energy Agency, 2002.

Two ESMAP activities completed during the year that added to our understanding of biomass energy issues included a study in Guatemala, *Environmental Health and Traditional Energy Use in Guatemala* (ESMAP Formal Report 284/04) and a worldwide review of biomass energy, *Advancing Bioenergy for Sustainable Developments* (ESMAP Formal Report 300/05).

Projected Strains on Urban Access to Electricity

According to the International Energy Agency, as of 2002 almost 91 percent of the world's urban population had access to electricity. Indeed, in some parts of the world, almost the entire urban population had access. In North Africa, East Asia (including China), the Middle East, and Latin America the share was at least 98 percent (International Energy Agency 2002).

However, tension in the provision of sustainable energy services owing to the fast growth and impoverishment of the urban population is already evident in many parts of the world. In fast-expanding peri-urban areas, smoke from wood and charcoal shrouds densely populated areas where the poor are concentrated, a visual reminder that the poor do not have access to clean fuels to meet their primary energy need: cooking. Most poor households cannot afford a legal connection or the monthly charges for the electric service, and street lighting—a key element for urban safety—is sparse. Frequent outages leave entire neighborhoods in the dark for extended periods, deprive Small and Medium Enterprises (SMEs) of their primary source of energy to sustain their activities, and cause both households and SMEs to invest in backup energy sources (from candles to kerosene or LPG) at a higher cost than what could be provided by the utility.

The provision of sustainable energy services in poor or impoverished areas is complex, both for non-electricity and electricity services, primarily because the consumer base is weak from the perspective of the supplier of energy services. That is, the poor have limited cash incomes, which therefore limit effective demand.

For the poor, energy expenditures already represent a high share of their revenues—20 percent or about US$15 a month—of which more than half is spent on cooking fuels and less than a third on electricity (*ESMAP Household Survey*, sample from 45 cities). Because the primary energy needs for households are heating for cooking (and space heating in cold climates), with such low incomes the poor often resort to nonlegal means to acquire electricity, such as through third-party providers of illegal connections. The resulting service is also expensive (although probably less expensive than legal service), but of poor quality and high risk. Electrocutions and short circuits that cause devastating fires are often the results of faulty connections in slums.

In urban areas, extending electricity access to the poor also requires the right policy and regulatory framework. The main infrastructure is generally already in place, and demand and disposable cash incomes tend to be higher than in rural areas. Nevertheless, poor people still often cannot afford the connection fees or the monthly rates.

Supportive regulatory policies are needed that make service expansion to the urban poor sustainable. Thus, several activities that highlight urban or peri-urban access to energy were initiated in 2004. These studies in different parts of Africa, including Yemen (ESMAP Activity P080572) and Lagos, Nigeria (ESMAP Activity P081048), benefited from the collaboration between ESMAP and those involved in assessing the impact of energy pricing on the poor.

Gender and Energy

During the past year, ESMAP's work on gender and energy has been highlighted in the *ENERGIA News*, a newsletter of the network for gender and sustainable energy (see Box 3.2). The issue highlights recent ESMAP activities such as *The Impact of Energy on Women's Lives in Rural India* (ESMAP Activity P070938, Formal Report 276/04), *The Role of Gender in the Bangladesh Rural Electrification* (ESMAP Activity P081980, Technical Report 054/04), and *Gender and Mining in Papua New Guinea* (ESMAP Activity P085108,

Technical Report 063/04). Completed projects include *Bangladesh Women in Renewable Energy Phase I* (ESMAP Activity P065453, Technical Report 055/04) and *Supporting Gender and Sustainable Gender Initiatives in Central America* (ESMAP Activity P070922, Technical Reports 061/04 and 062/04).

ESMAP complemented the project work with a strong outreach effort. It sponsored a practicum with Columbia University in the United States that enabled students to visit Bangladesh as part of their research activities. A result of this work is the recently published *Integrating Gender in Energy Provision: Case Study of Bangladesh* (ESMAP Activity P081980, ESMAP Technical Report 054/04). ESMAP also

Box 3.2: ENERGIA News, Issue on Gender and Rural Electrification: Viewing Electrification Through a Gendered Lens

In most of the developing world, electricity constitutes a small fraction of total energy consumed. However, when available, electrification has the potential to improve people's lives exponentially. At a minimum, it provides good-quality lighting that enables people to take care of chores or reading and studying in the evening. When exploited to its full potential, it can increase agricultural and industrial productivity; improve the delivery of health care to millions; relieve many drudgery-laden chores like processing food grains, washing, or cleaning; widen horizons with access to the radio and television; provide lighting for adult education and literacy classes; and assist in income-generating activities. Electrification is thus welcomed by all as a harbinger of a better life, and access to it has long been used as an indicator of development. However, this gender-neutral perspective on the dynamics of electrification as a good indicator of development is increasingly difficult to sustain.…

In some countries, the predominant focus of policy on rural electrification has been on economic growth—mainly to increase agricultural and industrial productivity. Men are the main actors involved in these types of activities, and thus such a concentration on policy prescriptions for development unveils a masculine agenda. Thus, the importance of providing electrification for households may remain a secondary goal. So at the policy level, household electrification sometimes is neglected.…

A gendered perspective helps see how the impact of electrification is different for women than it is for men. The end uses of electrification are many and varied, but if we carefully focus our lens, we see that electrification is being used for some activities far more than it is being used for others.… Electricity has yet to be fully exploited for relieving women's hardship. Many still pound grain and walk long distances carrying heavy pots or head loads to procure water and biomass. Entire days are spent doing tiring and heavy subsistence work. While household electrification brings a welcome relief on many fronts, such as access to good-quality lighting and increased leisure and reading time for all, the promise of electricity remains far from being fulfilled for women who work mainly in the subsistence economy.

Contributed by: Sen, Mitali, Douglas Barnes and Dominique Lallement. 2004. Editorial: Viewing Electrification Through a Gendered Lens. Energia News 7 (1): 1–3.

participated in the Gender in Energy workshop at the World Renewable Energy Congress, proposing a new concept (see Box 3.3) to ensure that gender be mainstreamed in energy policies and investment projects.

Box 3.3: Mainstreaming Gender Equity in Energy

Five steps to improve gender equity:

- **Policy Making:** Increase the number of women in government cabinets, parliaments, and city councils, that are informed and in charge of energy matters;
- **Household decision making:** Provide information to households on the range of energy solutions that could improve the way of life for women and men and children.
- **Enterprise development:** Provide a way for more women to become entrepreneurs of energy enterprises, large or small.
- **Information and knowledge dissemination:** Present information in ways so that both, women and men will share knowledge of the benefits to society of gender equity in energy services.
- **Research:** Provide encouragement so that more women and men will be involved in research that will meet the technology and other energy needs of women and men in developing countries.

Contributed by: Dominique Lallement, Manager, ESMAP, The World Bank Group.

Impact of Gender Projects

The lessons generated by past ESMAP activities sometimes are being adopted by others to replicate similar initiatives that benefit peoples' lives (see Box 3.4).

The inspiration for *Women as Solar Power Entrepreneurs: Pilot Project in the Sunderbans*[1] came from the success story of the ESMAP-financed action-research activity, *Opportunity for Women in Renewable Energy Technology in Bangladesh*[2] (Technical Report 055/04), which has been implemented by a women's cooperative, with technical assistance from Prokaushali Sangshad Ltd. since 1999.

The pilot project was based on The Energy and Resources Institute's (TERI)[3] prior collaboration with the Ramakrishna Mission in Sunderbans and a proposal to the National Renewable Energy Laboratory that a pilot project for developing women solar-power entrepreneurs be implemented with the dual purpose of (a) creating sustainable sales and service networks in villages that have large unmet demand for solar systems and (b) empowering women by giving them economic freedom. Subsequently, the project was sanctioned by the National Renewable Energy Laboratory in 2004, and the pilot project is currently being implemented by TERI and Ramakrishna Mission (India), with Jadavpur University, Kolkata, as its technical advisor.

While building upon the Bangladesh project framework of women-based solar enterprises, the Sunderbans project introduced an institutional mechanism—the Market Facilitating and Enterprise Development Organization (MFEDO)—which was created within the institutional set-up of Ramakrishna Mission to provide an anchor to those entrepreneurs and to nurture them. It is also expected to facilitate replication of this experience beyond the pilot phase.

1. Sunderbans, in the state of West Bengal in India, is a part of the vast delta of the river Ganga, an area characterized by mangrove swamps and islands interwoven by a network of small rivers, waterways, creeks, and tracts. The remote villages and hamlets of the delta suffer from chronic shortages of energy owing to non-availability of grid power. Solar and biomass are relevant and chosen options for energy supply in this area.
2. The project focuses on the role of rural women in off-grid electrification service delivery in Bangladesh, giving access to electricity with DC lamps, which are battery-operated and typically used with solar home systems.
3. The project has its origin in an earlier TERI project, Ramakrishna Mission Initiative Impact Study (an NREL-funded project under subcontract AAD-0-30604-01), which assessed the impact of providing solar home systems to the population of selected villages and village-level institutions in Sunderbans, West Bengal, India, through sustainable dissemination models. The study highlighted that women beneficiaries are not only proud users of the systems but also have keen interest in understanding more about new designs, products, and so forth. It also pointed out that village male youths, once trained to service the solar systems, find better opportunities with the photovoltaic industry and migrate to the cities. This not only leaves a gap in providing service facilities within access to the customer but also renders the investment in capacity building ineffective.

Box 3.4: Women as Solar Power Entrepreneurs: Piloting MFEDOs. Market Facilitation and Enterprise Development Organizations (MFEDOs) in the Sunderbans

Objectives

- Set up one MFEDO and ensure that they have necessary knowledge and skills to carry out their mission.
- Use the MFEDO facility to train women solar power entrepreneurs.

Tasks

- MFEDO was established at Kalpataru Youth Club of Kakdwip Island in Sunderbans. It is equipped with a workshop for servicing and assembling solar photovoltaic (PV) products. It also has a solar lantern charging and renting station that will be managed by women entrepreneurs on a profit-sharing basis with the MFEDO.
- Through an initial selection process, five women have been identified through an initial selection process. They will be supported in their entrepreneurial venture. These women have undergone extensive training on technical and commercial aspects of the solar PV business.
- Following a market assessment study by Jadavpur University, A few products and services have been identified following a market assessment study by Jadavpur University that can seed the market in this region.

Project Outcome

- *Charter for renaissance and empowerment of women:* The project has launched a platform for women to achieve self-reliance and economic independence.
- The MFEDO acts as a catalyst in strengthening the energy-based livelihood activities in this geographically disadvantaged region.
- *Potential for replication:* The MFEDO also becomes an incubator for such enterprises by extending technical, infrastructural, and (possibly) financial support to entrepreneurs.
- Access to affordable and need-based customized products: Population in this region has an access to customized products and services that are within reach.

Beyond the Pilot Phase

The MFEDO has received encouragement and an expression of intent for support from the local government for expanding its activities. It has also attracted the attention of one of the largest private sector manufacturers and suppliers of PV systems for extending its service network in the region by using women entrepreneurs. While for MFEDO opportunities lie in replicating this model in other neighboring islands in the region, for women entrepreneurs their opportunities in getting access to low-cost finance and a broader market base through MFEDO are expanding.

Contributed by: Akanksha Chaurey, Associate Director, Regulatory Studies and Governance Division, TERI, India.

The Global Village Energy Partnership (GVEP)

GVEP reached a major milestone during the past year with the transfer of the host organization for the Technical Secretariat from ESMAP to the Intermediate Technology Development Group (ITDG)—now named Practical Action—an NGO based in the United Kingdom, and the hiring of an internationally recruited full-time manager. ESMAP has continued to support the functioning of the Technical Secretariat both through the financing and the administration of the host organization and other service contracts and with its own expertise.

In addition, ESMAP has supported more than 10 GVEP country and regional projects. After the regional energy-poverty workshops broached the multisector multistakeholder approach, the GVEP country teams focused on developing energy-poverty action plans at the country level, which will be aligned with programs within each country's poverty reduction strategy. Such a linked action-plan activity has been successfully completed in Senegal, where it culminated in a new concept for output-based rural electrification concessions.

Multisectoral Poverty Reduction and Economic Management (PREM) projects aim to link the service delivery to its application in social or productive uses. Work initiated in other countries include the preparation of programs targeted to service the indigenous populations in Bolivia, in developing the regulatory framework for private sector participation in Honduras, and in developing off-grid energy efficient services in Mexico.

Environmental Sustainability

Energy and environment was one of the three thematic areas in the ESMAP Business Plan for 2002–2004. ESMAP addressed the energy-development-sustainability nexus at the local, regional, and global levels as related to energy production, transportation, and consumption. A key international event during the year in which ESMAP participated was the International Conference on Renewable Energy in Bonn that further pushed progress on the shift to scale up development of low carbon energy technologies and resources. ESMAP activities in the energy and environment area focused on developing renewable energy policies and strategies, testing innovative energy efficiency financing mechanisms, and improving urban air quality.

Renewable Energy: Some Generic Lessons from the Portfolio

Insights gained from the ESMAP portfolio has led to some valuable lessons during the past year. They included the following:

- Developing countries each face distinct challenges as they adapt various models of grid-based renewable power supply to their situation.
- There is a need to evaluate a diverse portfolio of energy options rather than just one type of project or technology.
- It is difficult to raise local financing for renewable energy schemes without international assistance.
- There is a need to encourage development and production of energy appliances compatible with low-cost renewable energy systems.

ESMAP projects on grid-connected and off-grid renewable energy policies have highlighted the importance of clear legal and regulatory frameworks to facilitate a level playing field for all technologies, including those for renewable energy sources.

Increase grid-connected renewable energy investments: The establishment of competitive wholesale power markets can indeed provide good opportunities to increase grid-connected renewable energy investments. However, the private sector may be reluctant to invest in renewable energies because of the capital intensity, as found in the ESMAP Nicaragua study (ESMAP Activity P076709), and private utilities hesitate to purchase intermittent renewable energy

resources unless there is a clear tariff framework to recover costs from the consumers. Various incentive models for power suppliers have been developed to date. The most widely applied include:

- Quantity-based renewable energy portfolio standards, which require that a minimum share of power or a minimum level of installed capacity in a given region be met by renewable energy.
- Price-based feed-in tariffs, which require mandatory purchase of renewable energy at a fixed price.
- Competitive tendering mechanisms, which allow the power suppliers to competitively bid for renewable energy obligations.

The ESMAP work suggests that compatibility with institutional structures will be a key challenge for developing countries seeking to apply these models to their own country conditions.

Another lesson from ESMAP's work is the need to incorporate all renewable energy and conventional thermal options into least-cost energy planning to optimize energy portfolio diversification. The analysis enables ESMAP to weight the various options on a life-cycle basis, which includes fuel price and availability risks. Renewable energy options can indeed also reduce off-taker risks and lead to "green power" sales in some countries.

Off-grid renewable energy investments: ESMAP projects demonstrated the difficulty in attracting private sector investments in poor areas for off-grid renewable energy investments. The difficulty may arise, because of the additional investment costs and the limited effective demand in terms of both load and ability to pay for services.

Given the dilemma between meeting the energy needs of the poor and the cost of providing low carbon energy services, various subsidy schemes were tested. Among the lessons learned:

- Subsidy schemes should be as narrow as possible and be designed to achieve only stated objectives to avoid spoiling the market.
- Subsidies should be applied to up-front capital costs and not to operation and maintenance costs.
- Subsidies should be reduced over time, with a clear exit strategy, and incentives are needed to develop the renewable energy market and reduce costs, including building a local service provider industry and addressing the affordability issues for the poor.
- Subsidy scheme rules should be fair and transparent, allowing competition among all parties, including both large international companies and small local enterprises.

ESMAP plans to conduct a further in-depth study on best practices of subsidy schemes for decentralized energy systems that will deepen the insights from recent more general work being conducted on both water and energy issues.

Other lessons from ESMAP projects relate to the difficulty in raising financing for renewable energy schemes. However, some successful examples exist in Bangladesh, India, Kenya, the Philippines, Sri Lanka, and so forth, which can be used and replicated elsewhere. The availability of consumer financing is another important success factor, as was demonstrated in Kenya, where the local microfinance institutions were trained through an ESMAP technical assistance project to promote solar home systems (SHS). As a consequence, they developed what has become a very successful market for solar home equipment.

One final lesson is the need to diversify the renewable energy–based appliances to include low-cost, small-scale, renewable energy systems that are affordable for the low-income population. In China and Kenya, for example, the most popular SHSs delivered on a cash sale basis without any donor funding are those small-scale solar modules of 10–20 watts systems and not the standard SHSs of 50 watts systems, which are promoted in most international aid projects.

Renewable Energy: Learning from Specific Projects

Providing Technical Assistance to Formulate a Long-Term Program for Renewable Energy Development in Mexico (ESMAP Activity P073535) demonstrated that least-cost energy planning should incorporate energy portfolio diversification values to compare renewable energy and conventional energy options against fuel price and availability risks (see Box 3.5). The activity supported analyses by the national government on policies and strategies for the large-scale promotion of renewable energy in Mexico. It conducted an economic analysis to compare the costs of renewable energy with those of thermal power plants, accounting for adjusted capacity factors, diversification values, and environmen-

Box 3.5: Mexico: Providing Technical Assistance to Formulate a Long-Term Program for Renewable Energy Development

While Mexico has available a broad array of wind (including at least 5 gigawatts of world-class sites), hydro (up to 50 gigawatts of small hydro), biomass, and solar resources, it has thus far focused on development of conventional fossil generation.

The ESMAP project, Providing Technical Assistance to Formulate a Long-Term Program for Renewable Energy Development, was driven by Mexico's desire to reduce environmental emissions and increase diversity in its electric sector, which, because of a constitutionally based mandate to procure generation at least cost, is increasingly becoming heavily concentrated in natural gas and subject to increasing price and supply risk and increased reliance on imports.

The majority of capacity built or contracted by the public sector during the 2001-10 period will be met with combined cycle gas turbines, resulting in gas-based generation accounting for 52 percent of total generation by 2010, up from 9 percent in 2001. Thus, diversification of the Comisión Federal de Electricidad generation mix is seen as a crucial factor to protect against any supply disruptions and ensure sustainable economic growth.

In this context, in 1991 the Secretaría de Energía (SENER) confirmed its strong support for World Bank-ESMAP assistance in formulating a comprehensive long-term program for development of renewable energy sources. SENER indicated that first priority was a broad evaluation of the policy framework for energy, with a specific focus on the degree to which existing pricing, subsidy, and taxation policies impede commercialization of renewables. That was to be followed by a review of specific regulations and industry practices that may work against renewables, principally for serving the grid, thus providing a basis of evaluation of current frameworks and the development of new programs.

Renewable energy market development policies presently adopted in the Organization for Economic Co-operation and Development, and evaluated under the ESMAP Mexico work included:

- **Price-defined targets:** To set a defined price at which renewable electricity must be purchased. In the United States, an early example of this was the 1978 U.S. Public Utility Policies Regulatory Act, under which utilities had an obligation to connect and to pay the avoided cost. In Germany, Spain, and France, feed-in laws were used to set a specific price for favored technologies.

tal benefits, and concluded that renewable energy is a competitive energy choice. It also developed an optimal energy portfolio diversification scenario that recommended to substantially increase the share of wind and geothermal in Mexico. In addition, the activity recommended a policy instrument of the auction-based, least-cost subsidy mechanism to scale up renewable energy. ESMAP support laid the groundwork for a US$70 million World Bank–GEF project, which is under preparation.

In Nicaragua, *Developing a Policy/Strategy for the Promotion of Renewable Energy Resources* (ESMAP Activity P078519, publication in process) aimed to assist the government in developing renewable energy policies and strategies

- **Renewable portfolio standard:** Electricity suppliers are required to show that a certain amount of their electricity was generated from renewable energy sources. Least-cost acquisition to meet required targets is typically left to market mechanisms, with utilities either producing their own power, procuring it directly, or engaging in purchases of "green certificates."
- **Systems benefit charge:** Utilities call for competitive bids from private developers to build capacity up to a predefined level, normally stated in terms of installed capacity. Developers providing the least-cost bid or bids receive funds to make up the difference between their bid cost and the market price of electricity. An early example of the systems benefit charge approach is the U.K. Non-Fossil Fuel Obligation.

A key conclusion of the ESMAP work was that a system benefit charge approach was favored for Mexico, given the aforementioned least-cost requirements that obviate the feed-in law approach, and the difficulties in stimulating the renewable portfolio standard competition among utilities in an environment in which a single, vertically integrated operator dominates the landscape.

Another highlight of the ESMAP analysis involved a specification of optimal shares of renewable energy, based on application of the capital asset pricing methodology. The model results illustrated optimal energy portfolios for Mexico and demonstrated that the current portfolio is suboptimal in terms of risk exposure: Adding more renewable energy would be least cost because the risk-adjusted cost of this resource (up to the limit) is lower than the equivalently calculated cost of conventional fossil energy.

As a direct outgrowth of the ESMAP assistance, the World Bank is now working with the Mexican government in developing a policy and financial stimulus program to accelerate the development of large-scale renewable energy in Mexico. The US$70 million GEF project proposes a two-phase project approach to address key policy and tariff issues currently hindering renewable energy development and to facilitate initial investments with use of GEF support in a competitive financial mechanism to overcome initial investment barriers.

Contributed by: Charles Feinstein, Sector Leader, LCSFP, World Bank Group.

(see Box 3.6). The study found that while Nicaragua has rich renewable energy resources, the sector reform did not address the specific requirements of renewable energy investment and therefore is biased against renewable energy development. The report recommended four strategies to scale up renewable energy development in Nicaragua:

Box 3.6: Nicaragua: Developing a Policy/Strategy for the Promotion of Renewable Energy Resources

The ESMAP project, Nicaragua: Policy/Strategy for the Promotion of Renewable Energy Resources, was conceptualized with the Nicaragua Comisión Nacional de Energía (CNE) in 2002 to respond to the following stark reality: that Nicaragua, in large part because of policy failure, ranks a clear last place in Central America in terms of fraction of total electricity supply derived from renewable sources and dependence on fossil energy while ranking first (geothermal) or near the top (wind) in terms of volume of commercially exploitable renewable resources.

The ESMAP-CNE project was executed in two stages. The initial effort was directed toward the elaboration of three detailed case studies covering geothermal, hydro, and wind energy. The wind analyses included detailed modeling of the impact of injecting increasing amounts of wind energy into the Nicaraguan grid and resulting impacts on dispatch and system stability. The case studies identified and highlighted common barriers limiting the development of renewable energy in Nicaragua:

- Barriers in the electricity market that limit the entry of renewable sources (market organization, contract forms, tenors, prices, and so forth)
- Inequality in the financial treatment of (capital-intensive) renewable resources compared with the policies that apply to fossil sources (in terms of taxes, subsidies, and so forth)
- Payment and credit risks due to the effective monopsony (monopoly of a single utility buyer) and the perception of its financial condition

The recommendations were presented at an ESMAP-CNE project workshop held on February 1, 2005, and was attended by about 65 representatives of agencies, the private sector, and NGOs. Among the workshop highlights were:

- A presentation by the president of the CNE who talked about the collaborative CNE-El Centro Nacional de Despacho de Carga (the dispatch operator)–Union Fenosa (distributor) analysis of generation expansion options, which showed that over the middle term renewable energy emerges as Nicaragua's least-cost supply option.

- The announcement by the operations manager of Union Fenosa in Nicaragua that Union Fenosa´s next tender for generation capacity will specifically target renewable energy. This decision was taken as a result of the least-cost planning studies and also directly responds to one of the recommendations in the ESMAP synthesis report.

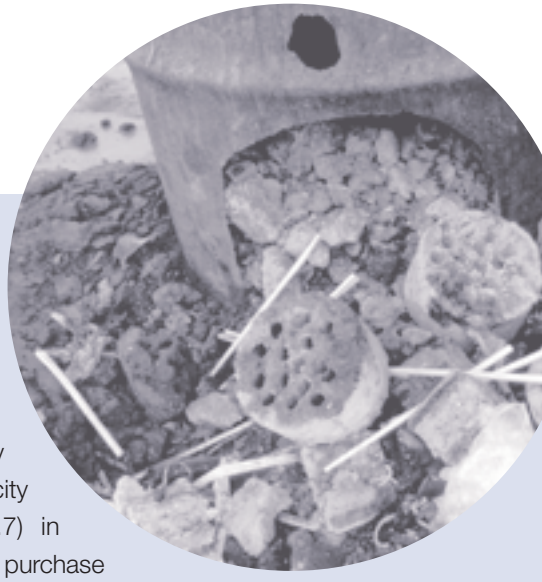
- The ESMAP recommendation that indicative least-cost planning should specifically incorporate energy portfolio diversification values.. Union Fenosa and the CNE are now requesting further technical assistance to begin at least partial implementation of the appropriate methodology in time for integration in the forthcoming generation tender.

The ESMAP project has also led to the formulation of a renewable energy law, which was prepared by the CNE and has been tabled for the consideration of the Asamblea Nacional in the first half of 2005, and to a request for an identification mission for a new GEF Geothermal Energy Development Project based on the ESMAP case study findings.

Source: Contribution from Charles Feinstein, Sector Leader, LCSFP, World Bank Group.

- Improving demand-side conditions (by introducing a mandated market for intermittent power and encouraging large consumers to enter the bulk market).
- Improving supply side conditions (by introducing new legislation for exploitation of renewable energy resources and providing a risk-sharing facility for geothermal).
- Improving access to financing through partial risk guarantee and revenue bonds
- Integrating renewable energy into rural electrification.

The study recommended adoption of a fixed-price or marginal-cost-based buy-back tariff and consumer-financed production-based subsidy schemes for renewable energy. As a result, the ESMAP analysis led to the preparation by the Compañía Nacional de Electricidad of a new renewable energy law, and it requested ESMAP's further assistance in incorporating energy portfolio diversification values into energy planning.



In Shanghai, China, ESMAP and the Asia Alternative Energy Program (ASTAE) co-funded the Jade Electricity activity to pilot a green electricity scheme (see Box 3.7) in which consumers can purchase power from a green supplier, usually at a premium. So far such schemes have been mostly adopted in developed countries, such as the Netherlands and the United States. The Jade Electricity scheme is one of the first efforts to introduce the green power model to developing countries. This activity conducted extensive consultations with consumer groups (mostly joint-venture companies) that expressed willingness to purchase green electricity. It also resulted in a Municipal Government Decree that provides the legal basis for green electricity schemes in Shanghai.

Box 3.7: Shanghai Jade Electricity Project

The Shanghai municipal government (with assistance from ESMAP and ASTAE) developed a green electricity program called Shanghai Jade Electricity that will pass through the incremental cost of electricity generated by renewable energy sources to consumers who are willing to pay and actively participate in protecting the environment and developing more renewable-based electricity capacity in the municipality.

The program will initially support wind and photovoltaic (PV) electricity only. Green electricity will be available to households, industries, and commercial customers, although initially the focus will be on large, nonhousehold, consumers who must buy blocks of 6 megawatt-hours, with a minimum number of blocks depending on the total electricity consumption of the consumer. Households must buy blocks of 12 kilowatt-hours, with a minimum of 10 blocks. At present, the Shanghai municipality has 3.4 megawatts of wind and 10 kilowatts PV capacity with another 21 megawatts wind under construction.

With the support from ESMAP and ASTAE, a Municipal Government Decree and Implementation Plan was prepared. The decree will provide the required legal basis to market green electricity in Shanghai. The decree has passed two approval stages and is awaiting final approval by the municipal government. Shanghai Jade Electricity is expected to be available in 2005. On the basis of a consultation meeting with CEOs of large national and foreign companies located in the Shanghai municipality, it is expected that the available amount of green electricity will be sold very quickly. This would provide a strong signal for developing additional renewable electricity generating capacity in Shanghai.

Contributed by: Noureddine Berrah, Lead Specialist, World Bank Group, and Enno Heijndermans, Consultant, EASEG, World Bank Group.

Energy Efficiency

Energy efficiency activities with sound financial returns exist in many developing countries. However, the potential of energy efficiency is not being realized because of a number of major financing barriers:

- Transaction costs of identifying, developing, and financing energy efficiency activities are high primarily because of the small size of energy efficiency activities (mostly under US$1 million).
- Perceived risk of energy efficiency projects is high. Energy efficiency activities are nontraditional activities for commercial banks in that the returns from this investment are based upon operating cost savings and not on increased revenue.
- Combination of financial and technical skills is necessary to successfully develop energy efficiency activities. However, institutional combination of these skills in commercial banks is rarely available.

To address these specific financing barriers to energy efficiency projects, ESMAP launched a series of activities to develop innovative financing mechanisms for energy efficiency activities in Mexico and Poland and financial intermediation mechanisms in Brazil, China, and India.

Innovative Financing Mechanisms for Energy Efficiency in Mexico (ESMAP Activity P086256) and *Innovative Financing Mechanisms for Energy Efficiency in Poland* (ESMAP Activity P086790) aimed at facilitating transparent and affordable financing mechanisms to bundle small-scale energy efficiency projects (see Box 3.8). The activities focused on developing a financial intermediary to serve as a conduit between qualified activities and capital. The intermediary is responsible for bundling activities and presenting them as a package to sources of finance. In Mexico, the ESMAP activity is working with the North American Development Bank to design innovative products for them to finance energy efficiency. In Poland, the activity identified potential energy efficiency activities in municipal buildings, hospitals, and housing cooperatives and designed innovative financing structures to finance them. This activity is expected to generate deal flows and pilot innovative schemes for the World Bank-GEF energy efficiency guarantee program in Poland

In Brazil, China, and India, an ESMAP activity aimed to achieve major increases in energy efficiency investments by the domestic financial sectors in the three countries by developing energy efficiency investment activity packaging capacity, both in existing financial institutions and through

Box 3.8: Innovative Financing Mechanisms for Energy Efficiency in Mexico and Poland

The objective of these two projects (one in Mexico and one in Poland) was to facilitate transparent and affordable financing for energy efficiency projects through the creation of a financial intermediary to serve as a conduit between qualified projects and capital.

In Mexico, there is a nascent energy service company (ESCO) industry. In Poland, ESCO models have been used for a number of years. However, most financing for energy efficiency to date takes place on the basis of standard balance sheet financing with high levels of asset backing and security requirements in both countries.

The ESMAP project attempted to tackle the issue of the high transaction costs that would normally be faced in trying to arrange financing for the medium-scale energy efficiency opportunities in the US$250,000–US$1,000,000 investment range. These barriers have severely constrained the growth of this market.

In Mexico, during the first phase, a number of specific projects were identified for which specific, appropriate financing models were being developed in parallel. One project was an energy upgrade of a hospital in Monterrey for which private equity funds expressed interest in providing equity and the North American Development Bank is considering providing debt financing. The project team is currently working on ways to provide security for the bank loan. The idea is to use the hospital project as a way to demonstrate the concept of energy efficiency financing to the bank and other potential investors and then, at a later stage, move from this relatively simple concept to more complicated concepts involving clustering or establishment of special purpose entities.

Another project being developed with the Chamber of Commerce of Nuevo Leon involves eight of its members, all of which are industrial companies with large energy costs and good opportunities for savings. The crucial issue is to provide enough collateral for debt financing in the case of such industrial projects, given the unfamiliarity of local finance institutions with energy efficiency project finance. Solutions to the problem can lie in the use of accepted Mexican transaction documents, including lease bond insurance agreements.

In Poland, the project completed its first phase, the purpose of which was to open contacts to Polish financial institutions and to develop a pipeline of projects that can be offered for financing through financial intermediaries. The project is focused on hospitals, municipal buildings, and residential buildings belonging to housing cooperatives. Such projects will be widely replicable in Poland and offer opportunities to demonstrate several different financing models.

So far, the project team recommended two separate financing structures to deal with the housing cooperatives and the hospital. For the housing cooperatives, the local district heating company will finance and implement improvement of in-house installations and agree that the debt can take the status of junior loans that can be paid back over the heat bills, thereby facilitating borrowing for building upgrades by helping the cooperatives to meet equity requirements from local banks. For the hospital, guarantees from the regional administration and the local regional environmental fund will work as credit enhancement options. The options being considered for the public buildings include master lease agreements and outsourcing. The project team hopes at a later stage to be able to execute an umbrella credit agreement when the projects are more fully developed and the lending terms have been more thoroughly explored.

In both countries the transactions hoped to be pioneered with ESMAP assistance and external debt financing should serve as a model that can be replicated by domestic financing institutions, and for this purpose model transaction and structuring documents will be placed in the public domain and reviewed at an end-of-project workshop for developers and financiers.

Contributed by: Peter Johansen, Senior Energy Specialist, ECSIE, World Bank Group, and Charles Feinstein, Sector Leader, LCSFP, World Bank Group.

new entities (see Box 3.9). As a result, several Indian commercial banks launched energy efficiency programs and started energy efficiency investments, and a World Bank energy efficiency investment project in China is under identification. ESMAP held a successful knowledge exchange event to disseminate the results of this activity.

Urban Air Quality

With rapid urbanization, air quality, particularly in fast-developing urban and peri-urban areas, will be a mounting concern. The health impact has been strongly documented in the past, and mitigation measures are now known and well tested. Progress has been made in the past five years with the elimination of leaded gasoline in all regions from Asia and Latin America to Africa.

The phasing out of two-stroke engines has also produced prominent results in South and Southeast Asia. The *Thailand Motorcycle Upgrade* (ESMAP Activity P069992) is aimed at reducing emissions from motorcycles in Bangkok, Thailand. The project organized motorcycle clinics and developed

Box 3.9: UNF/ESMAP-Supported Three-Country Energy Efficiency Project Catalyzes Indian Banking Sector Support for Energy Efficiency Lending

The objective of this multiyear project is to achieve major increases in energy efficiency investments by domestic financial institutions in Brazil, China, and India. The project provides for the establishment of an informal country working group in each country, consisting of representatives from the local financial and energy efficiency communities, and provision of support for these groups to complete applied research and analysis on the most pressing operational topics in energy efficiency financing, including commercial bank financing of energy efficiency, energy service company (ESCO) development, guarantee facilities, and equity financing of energy efficiency. The project also provides a series of focused international cross-exchange activities involving practitioners from the three countries to share experiences and potential solutions to similar problems.

The benefits of this project were enthusiastically received by the participating members of the Indian banking community, and the completed in-country activities developing appraisal methodologies and financial structures for energy efficiency projects increased local bank capacity to expand their lending for energy efficiency. The project directly supported the launching of specific energy efficiency lending schemes for small and medium enterprises at two of the largest banks in India, the State Bank of India and Canara Bank. Together, these two banks represent more than 25 percent of the total assets of all Indian banks, and their 10,000-plus branches ensure that the new schemes can have wide coverage. A third participating bank, Union Bank, has recently announced that it will launch a similar scheme as well.

The three-country project also supported numerous activities in China and Brazil, including capacity building and training activities for ESCOs and ESCO associations, implementation and assessment support for partial risk guarantee facilities and other risk-mitigating instruments, an analysis of regulatory measures that can increase energy efficiency investment (such as the wires charge program in Brazil), and analysis of equity financing for energy efficiency projects and companies, both internationally and within each of the three countries.

Additional information on the Indian banking schemes, the proceedings from two international cross exchanges, and other activities is available at the project website www.3countryee.org.

Contributed by: Chandrasekar Govindarajalu, Senior Environment Specialist, World Bank Group, and Jeremy Levin, Consultant, SASES, World Bank Group.

analytical framework to access cost and emissions reduction benefits. The study design and concept were well appreciated by the Motorcycle Manufacturers Association. As a result, one of the private sector companies started a new clean motorcycle manufacturing facility in Thailand and has recently partnered with key governmental agencies and the Bangkok Metropolitan Administration to implement the project on their own.

ESMAP continues to contribute to the Clean Air Initiative, which has facilitated the transfer of knowledge across countries and regions, as well as between different stakeholders, and has built capacity and increased awareness for stakeholders in client countries on urban air quality management.

The Clean Air Initiative has been successful in large cities in Asia and Latin America. Numerous countries have adopted relevant legislation, and municipalities have built up their regulatory and air quality monitoring capacity.

ESMAP's work has also generated several projects that received World Bank loans in the urban and transport sectors to improve urban air quality. Building on the successful experience with phasing out lead in gasoline and three-wheeler, two-stroke-engine vehicles, ESMAP is now shifting to newly emerging urban air quality issues. For example, realizing that diesel pollution in many cities has become one of the key urban environment issues, ESMAP recently launched an activity, *Developing Diesel Pollution Reduction Strategies in Cities* (ESMAP Activity P086036).

Developing Sustainable Energy Markets

Inefficiencies in energy markets were identified in the 1990s as causes for the slow increase in access to affordable and sustainable energy services to users in rural and peri-urban areas, particularly in Africa, Latin America, and Asia. They were also seen as one of the causes for the higher-than-optimum price of energy, which in turn harms the poor, because of their limited capacity to pay, and national economies, by lowering their competitiveness on international markets. More recently, the high prices of hydrocarbons driven by political instability, high oil demand, and refinery bottlenecks have raised new issues for oil-producing developing countries regarding the transparent management of their mineral resources and of their increased oil revenues.

Energy Market Reforms and Access to Energy

Modern energy rarely reaches the poorest households in developing countries. In many cases, the reasons for the problems lie in the discrepancy between the business objectives and obligations of the institutions involved in delivering energy services and the economic profile of the poor or their geographical dispersion in areas difficult to access or with a limited natural endowment.

Although the inability to provide access to all users, and particularly the poorer ones, was identified as one of the shortcomings of traditional state-controlled sector organizations, the wave of sector reforms of the 1990s focused largely on grid-based power supply and petroleum products. Reforms by-passed rural and peri-urban energy and did not seek to specifically address access to energy in isolated areas, rural or peri-urban. It was assumed that market forces, stimulated by sector reforms, would ensure that access would be accelerated, possibly with some targeted state support for the more vulnerable segments of the population. International private investments in the 1990s were essentially limited to large energy projects and often overlooked access projects in isolated rural and peri-urban areas, although demand for services is increasing rapidly, not only to meet the needs of growing economies and urbanization but also to catch up with the lag in rural and peri-urban services.

Designing Energy Reforms to Reach the Poor

In 2004 ESMAP supported an assessment of the impact on the poor of 10 years or more of energy sector reforms, with a view to help governments design measures that would ensure that the reforms actually benefit this segment of the population. The issue is controversial and is too often discussed without sufficient grounding in the facts or in data.

Several ESMAP projects seek to identify and document objectively the impact, positive or negative, of energy sector reforms on the poor including activities in Pakistan, Lesotho and in Central America. The collection of statistically valid evidence was the first task covered in order to provide a firm factual basis to assess the impact of reforms. Several ESMAP activities have been involved in assessing the impact of reforms on the poor.

One project addressing this issue is *The Pakistan Household Impact Analysis of the Energy Sector Reforms* (ESMAP Activity P085637). On the basis of direct field surveys, the activity examines the impact of the current sequence of reform in the energy sector in Pakistan on the poor in terms of access and price changes; identifies where there could be serious adverse effects on the poor; and helps the government design and implement mitigation measures, pricing policies, or alternative reform sequencing to ensure that the poor benefit from sector reforms.

Another project is *The Lesotho: Impact on the Poor of Electricity Sector Reforms* (ESMAP Activity P085304). It approaches the evaluation of the impact of reforms from the users' behavior standpoint through household data collection and surveys covering all types of users but particularly the poorer segments of the population. It establishes how targeted government action and reforms can address behavioral barriers to access by the poor and quantifies the impact of power sector reforms on the entire energy consumption pattern.

Beyond the country field studies that provide the basic factual material, ESMAP supported in 2004 the preparation of regional syntheses on the impact of sector reforms, with a view to draw lessons for the benefit of the governments that are implementing the reforms.

The ESMAP study, *Power Sector Reform in Central America* (ESMAP Activity P053523), reviews the impact of reforms in four countries (see Box 3.10). It shows that power sector reform programs have dramatically changed the way that the electricity generation, transmission, and distribution utilities in most Central American countries finance their investments and operate the electric power system. The reforms have improved the efficiency of service and improved the quality of the power produced.

The greatest challenge, however, has been to reach the populations that do not have access to electricity services. In many countries, reform programs have not focused as they should have on the problems involved in rural electrification. The private sector proved unable to extend electricity to isolated areas, so in most cases some form of incentive or subsidy was required. Although the reforms were similar, the treatment of how to deal with extending access to mainly rural people without electricity were addressed in a variety of ways, and most of them have involved some problems. As indicated in box 3.9, governments must retain an involvement in programs for improving electricity access for poor, rural households.

Box 3.10: Power Sector Reform and the Rural Poor in Central America

Over the past 10 years, significant effort and investment have been employed to restructure power sector institutions in Central America. These efforts have resulted in dramatic changes in ownership patterns, operating practices, and the relationship between public and private sector institutions participating in power sector investment and provision of services.

Has the reform process improved access to rural electric services? A false perception is that the private sector will solve the rural electrification problem. Privatization in Central America has brought certain benefits. The public recognizes that private companies have been improving the reliability of electric power services and in general have been improving the efficiency of distribution. The transfer of responsibilities that came with privatization to a certain degree also has taken some of the politics out of the industry, but it turns out that the private sector cannot be expected to serve poor populations in remote areas without some form of public policy support. The hope that privatization would lift the burden of rural electrification from the government has not proved to be true.

The main conclusion of this study is that power sector reform does not solve the problems of providing electricity in rural areas. The private sector will not, on its own, extend electricity to rural areas, so in most cases some form of incentive or subsidy is required. Although the reforms were similar, the issue of how to deal with extending access to mainly rural people without electricity was addressed in a variety of ways, and most of them have involved some problems. The conclusion is that governments must retain an involvement in electrification programs for improving access to the poor, rural households.

But how can it be made effective and sustainable?

- Correct operational weaknesses of capital subsidy funds: Most of the governments of Central America set up a subsidy fund for rural electrification as part of the reform process. With the exception of Guatemala, these subsidy funds have languished. Either expected government contributions have not been made or the funds themselves have not disbursed grant money as required. Some subsidy funds for rural electrification have stagnated because of insufficient administrative capacity on the part of the agency responsible for program management. There is a clear need in all of the countries in Central America for stronger and more independent rural electrification management capacity.

- Include both grid expansion and off-grid electricity services: Most rural electrification programs historically have been based on the expansion of electrification coverage via the expansion of an electric grid distribution system. The result of this approach has been to restrict access to service to those communities that lie within the economic reach of the grid. Communities beyond this limit have been left without access to grid service and without access to the subsidy funds that might be used to finance a non-grid solution.

- The way forward. It is critical that governments create proper incentives to encourage the provision of rural electricity services to the poor. The service delivery models should provide strong incentives to ensure that service is continued and maintained long after the equipment is installed. It is not too late to develop approaches and programs that can serve the poor. The study identified ways to solve the problems of management of the electrification funds and to target support to rural areas based on 10 years of experience with reforms without burdening the national government and power utilities with unsustainable subsidies

Contributed by: Douglas F. Barnes, Senior Energy Specialist, World Bank Group

A parallel activity, *Power Sector Reforms in Africa: Assessing the Impact on the Poor and Influencing Policy Decisions* (ESMAP Activity P080820), is under preparation for eight African countries to assess the impact of power sector reforms on the poor, mainly in terms of access to modern energy and energy prices (see Box 3.11). It suggests that in most of the surveyed countries, energy sector reforms have not clearly benefited the poor, and that in the design itself of the reforms the poverty dimension was not specifically taken into account. It proposes principles and approaches to design reforms that integrate pro-poor measures.

With the increased emphasis on private-public partnership for extending access to energy services following the ebb of private sector investment in energy, the driving principles for energy sector reform are being revised toward more flexibility and better risk allocation. The dissemination of ESMAP work and its integration in sector dialogue will help ensure that suitable measures are included in the reform package for the poor to gain from the reform process.

Private Public Partnership for Energy Access in Isolated Areas

Access to energy for the poor and in isolated areas pose specific problems that state-owned enterprises and large private companies have not addressed effectively:

- Technical standards need to be adjusted to meet cost effectively the demand of small consumers.
- Type of service needs to be closely aligned with the needs of poor and isolated users where the balance between cost and quality of service differs from the preference of richer urban users.
- Close client relationship for billing and collection is essential.

From the corporate standpoint, the cost of developing and maintaining branches in remote and dispersed areas where the demand and revenues are low is difficult to justify and is rarely profitable. The management of financial support to large utilities for rural access has proven to be a challenge for the government, as large utilities, as monopolists, have no incentive to lower government-subsidized access cost in the absence of competition for entry in the market. The delivery of energy services through small and medium enterprises (SMEs) and decentralized enterprises is likely to be the response to the challenge of managing small dispersed points of demand that cannot be served effectively by large and centralized organizations and to the lack of appetite of international investors for financing and managing decentralized access to energy.

SMEs and decentralized enterprises bring more flexibility in technical design of small isolated systems, lower overheads and structural cost, and closer commercial proximity to clients and personalized service, and can be submitted to competitive challenge, at least at market entry level to minimize subsidies. In this context, reliance on small local investors, local cooperatives, or community-based groups for the provision of energy services in isolated rural or peri-urban areas is an attractive option.

This approach, however, has its own problems, including transparency, stability and minimum technical standards for licensing of SMEs, regulation of quality of service and tariffs in the longer run, and access to financing from the local banking system.

Technical and managerial capacity building are also needed for the sustainability of SME energy businesses as a new domain of activity for local entrepreneurs. Setting up the right business environment and attracting local entrepreneurship in this new line of business are emerging challenges that have been reflected in ESMAP's 2004 activities, which included the regulation of small decentralized systems in Cambodia (ESMAP Activity P083199).

Box 3.11: Power Sector Reform in Africa: Assessing the Impact on Poor People

A number of African countries have adopted policies and plans to unbundle and privatize their power sectors and to introduce competition. How effective have these reforms been? Has the performance of electricity utilities in Africa improved? Are they better able to provide reliable and affordable electricity services for households and support economic activity and employment growth?

Study methodology: Analyses, conclusions, and recommendations appearing in this report are based on case studies and based on field surveys undertaken in Ghana, Mali, Namibia, South Africa, Tanzania, and Uganda. The report assesses the primary impacts of these reforms on programs to expand access to electricity and on electricity prices, costs, and subsidies. It also looks briefly at secondary impacts of power sector reform, such as the quality and reliability of electricity services and the degree to which expanded electricity services have supported the provision of social services (for example, schools and clinics) and economic activity in the form of small business development. It also provides some brief comments on the impacts on public finances.

Significant reform steps: Power sector reform in African countries has often commenced with grand visions of unbundling, competition, and privatization. There has been a substantial retreat from these policy pronouncements. Many governments have been reluctant to fully privatize the main utility, believing national utilities continue to play a vital developmental role. Nevertheless, significant steps in power sector reform have occurred. Tariff reforms have been instituted in all survey countries. Private participation has been encouraged in the form of management contracts (for example, SOGEM in Mali and TANESCO in Tanzania, currently) and also to prepare them for privatization. Private sector participation has been explored in distribution (for example, in Namibia and Ghana). Private players are also being attracted into rural concessions in Mali, Ghana, Uganda, and South Africa. Privatization has occurred in the form of long-term concessions and takeovers in Mali and Uganda. Investment has been attracted through new independent power producer projects in Ghana, Tanzania, Ghana, and Uganda. Further, in all the countries, either an independent regulator exists or legislation has been passed for its establishment.

In several countries there has been a significant increase in access, although this cannot always be linked to the reform process. Governments have tended to design special access programs in parallel to the reform program, and efforts to promote electrification have taken precedence over other parts of the reform program.

continued on next page

Box 3.11: Power Sector Reform in Africa: Assessing the Impact on Poor People **continued**

Nevertheless, governments are increasingly aware that there is a need to design reform programs that explicitly include access programs. In most countries access to electricity for social services (health, education) has improved the quality of services. However, access was generally not the result of sector reforms but of specific and targeted social and electrification programs developed by the governments.

Some countries have found it politically difficult to sustain tariff increases that resulted from alignment of tariffs with costs as part of the reform process and have either rescinded tariff reforms or allowed inflation to erode tariffs to levels below full costs. The tension around tariff reforms has tested the independence of newly established regulators, with some bowing to political pressures to reduce tariffs. Nevertheless, there are cases where regulatory institutions have managed to establish a track record for independence. Most tariff reform programs have incorporated measures to minimize the impact on low-income households. In general, no clear linkage between tariff increases and acceleration of access through investment from the power utility was observed. Tariff increases sometimes have led to switching back to traditional fuels. In general, however, it seems that improvement in quality of service is considered just as important, if not more so, than price.

One of the expected benefits of sector reforms was to reduce sector dependence on government budgetary support. Experience suggests that reforms did not reduce budgetary transfers significantly because governments often had to compensate for the adjustment of tariffs to actual costs or continued to provide guarantees for the sector to raise financing. Nevertheless, a clear benefit was that reforms introduce more transparency in the management of government transfers.

Contributed by: Contribution from Robert Bacon, Consultant, COCPO, World Bank Group.

An ESMAP project, *Philippines Rural Electricity Private Participation and Regulatory Reforms* (ESMAP Activity P08803), provides a diagnostic of the sector, including identification of current investment, regulatory, and subsidy policies and obstacles to entry and development, and assesses the potential of the cooperative and SME business model. It identifies issues and options for development of the regulatory framework, private participation, and contractual approaches for minigrids and proposes targeted subsidy schemes. The revised regulatory framework is under implementation, and a follow-up investment project based on output-based aid for local private investors to accelerate access is under preparation. A revised regulatory framework, however, is unlikely to be sufficient to ensure that small local investors enter the new energy access business: There is a need for training and transfer of management know-how to local entrepreneurs.

Another project, T*he Design and Pilot Testing of Capacity-Building Product Line for SME Utility Services Providers in West Africa* ((ESMAP Activity P083015), designs and pilot tests a new approach for capacity building jointly with the Africa Project Development Facility. It provides just-in-time technical, financial, and skill development support to SMEs involved in the delivery of utility services to peri-urban communities and rural towns in the target West African countries. The understanding of the potential role of local entrepreneurship for the provision of energy services, the design of a supportive business environment, and the implementation of measures to develop a supportive business climate need much more work to adapt to the local context and to get beyond the pilot project stage. Building on the initial 2004 work, ESMAP will step up its activity in support of the development of local entrepreneurship for the provision of energy services.

Lowering the Cost of Electricity and Improving Energy Security

One of the expected benefits of sector reforms is to lower the cost of energy through widening competition and rationalizing sector investment based on market signals. In many small- and medium-sized countries, competition in a national framework is unlikely to be effective because of the limited number of players of economical size. Moreover, isolated small domestic markets do not allow the optimization of the energy production potential, at an additional cost to the economy and, ultimately, energy users. Also, the security of energy supply is more difficult and costly to achieve in isolated systems.

There are, however, political obstacles to energy systems integration that need to be lifted through dialogue and international cooperation. Energy systems integration can contribute to develop more competitive and effective energy markets and can contribute to lower prices through increased competition, optimized system operation, and more economically efficient investments, thereby benefiting the poor by making energy more affordable.

In 2004, ESMAP developed activities in support of the regional integration of power markets at different stages of development. *Technical Assistance for Establishing a Water-Energy Consortium in Central Asia* (ESMAP Activity P091937) helps in building an initial political consensus for regional cooperation between four Central Asian countries in recognition of the importance of the political process as a driver for energy systems integration.

Greater Mekong Sub-Region Power Trade Strategy (ESMAP Activity P085314) takes the process one step farther and supports the development of regional institutions and of a regional mechanism for energy exchanges, building upon the initial political consensus for the integration of the power systems. *Power Trade in Nile River Basin* (ESMAP Activity P064935, ESMAP Formal Report 277/04) provides support to address the same issue for 18 African countries help developing regional international institutions, based on an initial political consensus expressed in the National Business Initiative Common Vision, which will support the integration process, coordinate investments, and facilitate energy trading. *Development of a Regional Power Market in West Africa* activity (ESMAP Activity P068875) goes farther downstream and provides support for the harmonization of regulations and sharing of information to allow effective competition and more reliable trading of energy.

In addition to facilitating the integration of regional energy markets, countries can lower the cost of energy and increase its reliability through the development of a national energy infrastructure to provide alternative sources of energy and access to economical forms of energy. To achieve this objective, each government needs to determine the economically optimum mix of energy in the perspective of its long-term strategy and compare alternative scenarios.

ESMAP has supported projects for the analysis of the economic aspects of interfuel substitution and optimization of domestic resources to lower the cost of energy in Peru. *Extending the Use of Natural Gas to Inland Regions in Peru* (ESMAP Activity P087433) developed a methodology to assess the economic, social, and environmental benefits of alternative long-term strategies for providing lower-cost energy to certain provinces based on the utilization of domestic national gas and as part of a national long-term strategy.

Impact of High Hydrocarbon Prices

Without anticipating or speculating on future hydrocarbon prices and possible future price volatility, which would affect the poor both in net exporting and net importing countries, the issue faced by hydrocarbon-exporting developing countries in the recent past was the impact of high prices and how to manage it transparently. An ESMAP study (ESMAP Activity P092878, ESMAP Formal Report 299/05) provided a framework to assess the impact of oil price volatility for low income net importing countries and for low income households. The study reviewed empirical evidence that highlighted the fact that the lowest income groups are twice as vulnerable to oil price increases as upper income groups. It also discussed policy options to mitigate that impact, such as targeted subsidies.

High prices have caused a resurgence of exploration in a number of countries, which need to manage effectively and transparently the licensing process for the exploitation of their underground resources and their relationships with international oil companies. Most traditional oil exporters already have more or less effective regulations and revenue management mechanisms and procedures in place. New producers or new independent suppliers on the world market need access to independent advice to develop regulatory frameworks that will protect their national interests while providing fair business opportunities for international partners. *Vietnam Policy Dialogue Seminar and Mining Code* (ESMAP Activity P072947) supported the development of regulation for oil exploration and exploitation in partnership with international companies.

With high oil prices, the issue of the management of oil revenues by exporting countries and of the channeling of the additional revenues for social programs and poverty reduction has become more acute, and so have the governance issues often associated with the management of oil revenues. ESMAP has provided access to best international practice on oil revenue management and governance (for example, through the *Nigeria Petroleum Revenue Transparency Audit project* [ESMAP Activity P087579], through which terms of reference are being prepared for the design and implementation of an audit system in Nigeria that will ensure enhanced transparency and reliability of petroleum payment and revenue data and encourage greater efficiency and accountability in the management of petroleum revenues).

With net importing countries, the increase in prices has stimulated the interest in the development of indigenous energy sources as possible substitutes or mitigating factors to exposure to fluctuating oil prices, provided that such sources are proven to be competitive in today's markets. ESMAP supported initial work to identify domestic forms of alternatives, in addition to renewable energy. The landfill gas project in Latin America (ESMAP Activity P077801, ESMAP Technical Report 065/05) and the survey in Sub-Saharan Africa of the potential for using landfill gas as a source of fuel for power generation (ESMAP Activity P083164, ESMAP Technical Report 074/05) was an initial step that may lead to the identification of future investment projects.

4. Governance And Management

ESMAP is managed in the Energy and Water Department (EWD) of the World Bank Group Infrastructure Vice Presidency. It reports to the Director of EWD and is overseen by the Energy and Mining Sector Board. ESMAP is governed by a Consultative Group (CG) made up of representatives of contributing donors, which is chaired by the World Bank Vice President, Infrastructure. The CG is common to all energy trust–funded programs (ETFPs) managed by the World Bank. A Technical Advisory Group (TAG) of three international experts selected by the CG provides independent advice to the CG. A program unit manages day-to-day ESMAP in accordance with the strategy and principles laid out in the ESMAP business plan approved by the CG.

Consultative Group

As provided by the ESMAP charter, the membership in the CG is open to all contributing organizations without restrictions (Table 4.1). Contributions can be either for core funding of ESMAP or for non-core thematic funding, whose use is restricted to specific themes, activities, or regions. ESMAP remains open to receive contributions from official donors, international financial institutions, official agencies, or private enterprises. The CG meets annually to review the strategic directions of the ESMAP program, its achievements, and its utilization of resources and funding requirements. The CG is responsible for:

- Defining ESMAP policies and strategies
- Endorsing the three year Business Plan and financing plan
- Reviewing ESMAP performance of the previous year
- Overseeing the TAG

Technical Advisory Group

TAG's mission is to provide an informed, independent opinion to the CG of the ETFPs, which include ESMAP, about the purpose, strategic direction, and priorities of ETFPs. In particular, TAG is asked to provide advice and suggestions to the CG in the following areas:

- Current and emerging global issues in the energy sector that are likely to have an impact on growth and development in low- and middle-income countries
- Strategy, overall priorities, and their development into practical business plans, taking into account the volume of likely donor funding that can be secured for each trust-funded program in the context of the World Bank's energy business strategy
- Business plans for each of the energy trust funded programs and their contribution to the implementation of the World Bank's energy business strategy.
- Potential impact of each program and a high-level assessment of the actual impacts from implementation, especially on the World Bank's energy business and on the programs and interests of the donors.

- Potential for the program to arrive at innovative approaches and new knowledge for improving energy service delivery in developing countries.
- Any other area, as requested by the chair of the CG.
- Review of the overall impact of implementing the ETFPs.

At the CG meeting of March 14–15, 2004, it was decided to reduce the TAG membership from five members to three, with a view to facilitate communication between the TAG members and to raise the level of personal engagement of the members in their mission. The members were selected on the basis of their expertise in various areas related to energy services and poverty reduction and appointed on August 2, 2004, by the Bank. The list of members of the TAG is given in Table 4.1.

The TAG met in Washington, DC, from November 29 to December 6, 2004, to review and comment on the draft 2005-07 ESMAP business plan prior to its presentation to the CG on March 17-18, 2005.

ESMAP Program Unit

The ESMAP Program Unit is responsible for the day-to-day management of the ESMAP program, following the general strategy of its business plan and annual work program approved by the Director of EWD and then by the CG. The unit comprises eight staff (see Table 4.1).

The unit delegates the implementation of certain tasks to Bank staff outside of ESMAP and relies on the support of external consultants and expertise to deliver certain activities. Consultants and external services are procured following the Bank guidelines on procurement.

The key responsibilities of the ESMAP Program Unit include:

- Delivering on ESMAP's annual work program and business plan.
- Preparing the annual work program and budget and the ESMAP business plan for review and approval by the CG.
- Reviewing proposals for ESMAP assistance, in accordance with the criteria and procedures approved by the CG.
- Providing support services to the CG and the TAG.
- Maintaining relationships and ensuring adequate reporting with the donors and contributors.
- Maintaining effective relationship with external stakeholders, including recipient countries, civil society, academia, and the international energy practice.
- Maintaining relationships with the Mining and Energy Sector Board of the Bank and with the Bank energy practice.
- Managing the ESMAP human and financial resources in accordance with sound management principles and the World Bank standard practices.

Project Selection Criteria

The projects that are financed by ESMAP are selected according to the following criteria:

- Alignment with, and contribution to, the ESMAP business plan.
- Alignment with the ESMAP annual work program.
- Support from the recipient country or relevance to the international development community.
- Coordination with other donors' activities.
- Complementarity with analytical work already available.
- Linkage to specific monitorable outcome indicators.
- Cost effectiveness.
- Last resort source of financing after possibility of funding from Bank projects or from its own budget and from other donors' programs have been explored.

Table 4.1: Donors and Members of the Consultative Group, Technical Advisory Group, and ESMAP Team

CONSULTATIVE GROUP	TECHNICAL ADVISORY GROUP
• BELGIUM General Administration for Development Cooperation • CANADA Canadian International Development Agency • DENMARK Royal Ministry of Foreign Affairs • FINLAND Ministry of Foreign Affairs • FRANCE Agence Française de Développement • GERMANY Bundesministerium f_r Wirtschaftliche Zusammenarbeit und Entwicklung • NORWAY Royal Ministry of Foreign Affairs • SWEDEN Swedish International Development Cooperation Agency • THE NETHERLANDS Ministry of Foreign Affairs, Climate, Energy, and Environment Technology Division (DML/KM) • UNITED KINGDOM Department for International Development • UNITED NATIONS FOUNDATION **COSPONSORING ORGANIZATIONS** • WORLD BANK GROUP • UNITED NATIONS DEVELOPMENT PROGRAMME **CHAIR OF THE CONSULTATIVE GROUP** Nemat Talat Shafik[c] Katharine Sierra Jamal Saghir, Acting Chair	Alfredo Mirkin[b] Andrew Barnett Elizabeth Cecelski Jan Moen[b] Jyoti Parikh[b] Amitav Rath Youba Sokona[b] ESMAP MANAGEMENT AND ADMINISTRATIVE TEAM Dominique Lallement, Manager Marjorie Araya Douglas Barnes M. Ananda Covindassamy Maureen Cuffley Laurent Durix[b] Matthew Gardner Muthoni Gikonyo[d] Ghislaine Kieffer[a] Kazim Saeed[a] Nyra Wallace-Crawford Xiaodong Wang Yabei Zhang REPRESENTATIVES FROM SPONSORING ORGANIZATIONS World Bank Group Sector Board Jamal Saghir Penelope Brook Henk Busz Yusupha Crookes Susan Goldmark Dominique Lallement Junhui Wu Peter van der Veen Alain Barbu Alvaro Umana (UNDP) Susan McDade (UNDP) Minoru Takada (UNDP) a. Until March 2004 b. Until June 2004 c. Until September 2004 d. Through December 2004

5. Financial Review

Contributions Received

ESMAP raised a total of US$8.5 million from its donors in calendar year 2004. This marks a 9.5 percent decrease as compared to a total of US$9.4 million in calendar year 2003. This year, eight donors, in addition to the World Bank, made cash transfers to ESMAP through trust funds. It is worth noting that donors have already made pledges of about US$17.8 million for calendar year 2005. This marks a significant increase as compared to previous years. This is mainly because EWD's Director and ESMAP's management intensified efforts to raise additional funds in preparation of its 2005-07 business plan.

Table 5.1 shows actual receipts by individual donor for the period 2002-04, which are also illustrated in figure 5.1.

Core and Thematic Funding

Core contributions totaled about US$1.47 million in 2004 or 17 percent of total contributions (Table 5.2). United Kingdom provided core, thematic, and project-specific funding. Sweden provided core and project-specific funding, and Germany and Norway provided core and thematic funding.

The World Bank's contribution (which is considered core) was US$0.52 million in 2004, a marginal decrease of about 2 percent from its contribution of US$0.54 million in 2003.

The total contribution received for thematic funding in 2004 was US$4.1 million. The Netherlands made a contribution of US$2.9 million, Germany US$0.47 million, Norway US$0.35 million, and United Kingdom US$0.38 million.

Table 5.1: ESMP Receipts 2004, (thousand US$)

	2002	2003	2004	Pledges for 2005	Total 2002-2004	Of which, core 2002-2004	% of total receipts 2002-2004	% of total receipts 2004	% of total core
UNDP	100.0	100.0	100.0	100.0	300.0	0.0	1.2%	1.2%	0.0%
World Bank	545.4	535.0	523.8	400.0	1,604.2	1,604.2	6.2%	6.1%	24.1%
Canada	737.8	277.6	563.8	0.0	1,579.2	0.0	6.1%	6.6%	0.0%
Germany	899.5	892.3	558.0	4,100.0	2,349.8	495.2	9.1%	6.5%	7.5%
Finland	82.8	0.0	108.0	112.0	190.8	190.8	0.7%	1.3%	2.9%
Netherlands	3,097.0	3,964.3	2,924.0	5,200.0	9,985.3	0.0	38.7%	34.3%	0.0%
Denmark	258.1	0.0	0.0	881.0	258.1	258.1	1.0%	0.0%	3.9%
Norway	0.0	1,150.0	700.0	700.0	1,850.0	925.0	7.2%	8.2%	13.9%
Sweden	636.4	1,023.2	396.6	1,600.0	2,056.2	597.0	8.0%	4.7%	9.0%
France	0.0	0.0	0.0	396.0	0.0	0.0	0.0%	0.0%	0.0%
United Kingdom	1,125.0	1,246.3	2,047.2	4,035.0	4,418.5	2,575.0	17.1%	24.0%	38.7%
United Nations Foundation	335.0	300.0	600.0	316.0	1,235.0	0.0	4.8%	7.0%	0.0%
Total	7,817.0	9,488.7	8,521.4	17,840.0	25,827.1	6,645.3	100.0%	100.0%	100.0%

Note: Based on projected disbursements.

Figure 5.1: ESMAP Receipts

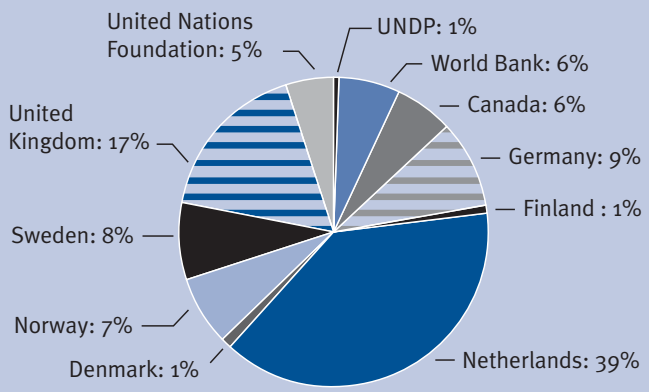


Table 5.2: Core and Thematic ESMAP Donor Contributions, 2001–04 (thousands US$)

Year	Total donor[a] contributions (million US$)	Of which, core (million US$)	Of which, core plus thematic (million US$)	Core as percent of total donor contributions	Core plus thematic as percent of total donor contributions
2002	7.17	1.92	5.02	26.8	70.0
2003	8.85	1.65	7.45	18.8	84.7
2004	7.89	1.47	5.58	18.6	70.7
Total	23.91	5.04	18.05	21.1	75.4

a. Does not include World Bank and UNDP.

Project Funding

Project-specific funding totaled US$2.3 million in 2004 (Table 5.3) compared with US$1.4 million in 2003. These contributions were provided by Canada, Sweden, the United Kingdom, and the United Nations Foundation.

Expenditures

Table 5.4 shows that disbursements in 2004 totaled US$8.9 million, an increase of US$1.4 million from disbursements in 2003. Expenditures on work program development (time spent by ESMAP staff to help develop specific ESMAP projects) increased from US$0.75 million to US$0.1 million. Program management costs increased from US$0.4 million in 2003 to US$0.6 million in 2004. This increase is mainly due to the expansion of staff strength at ESMAP and the increased volume of activities.

Sources and Uses of Funds

From ESMAP receipts of US$8.5 million, US$6.7 million was allocated to projects prior to 2004 that were partially funded. A total of US$1.0 million was expended on work program development, knowledge dissemination, and program management governance. Knowledge dissemination expenses include brown bag lunches, publications, workshops, and web page development and maintenance expenses. The balance of funds not yet allocated to projects was US$0.8 million, of which US$0.2 million are core funds and the remaining US$0.6 million non-core funds. This illustrates the renewed trend in more non-core than core funds.

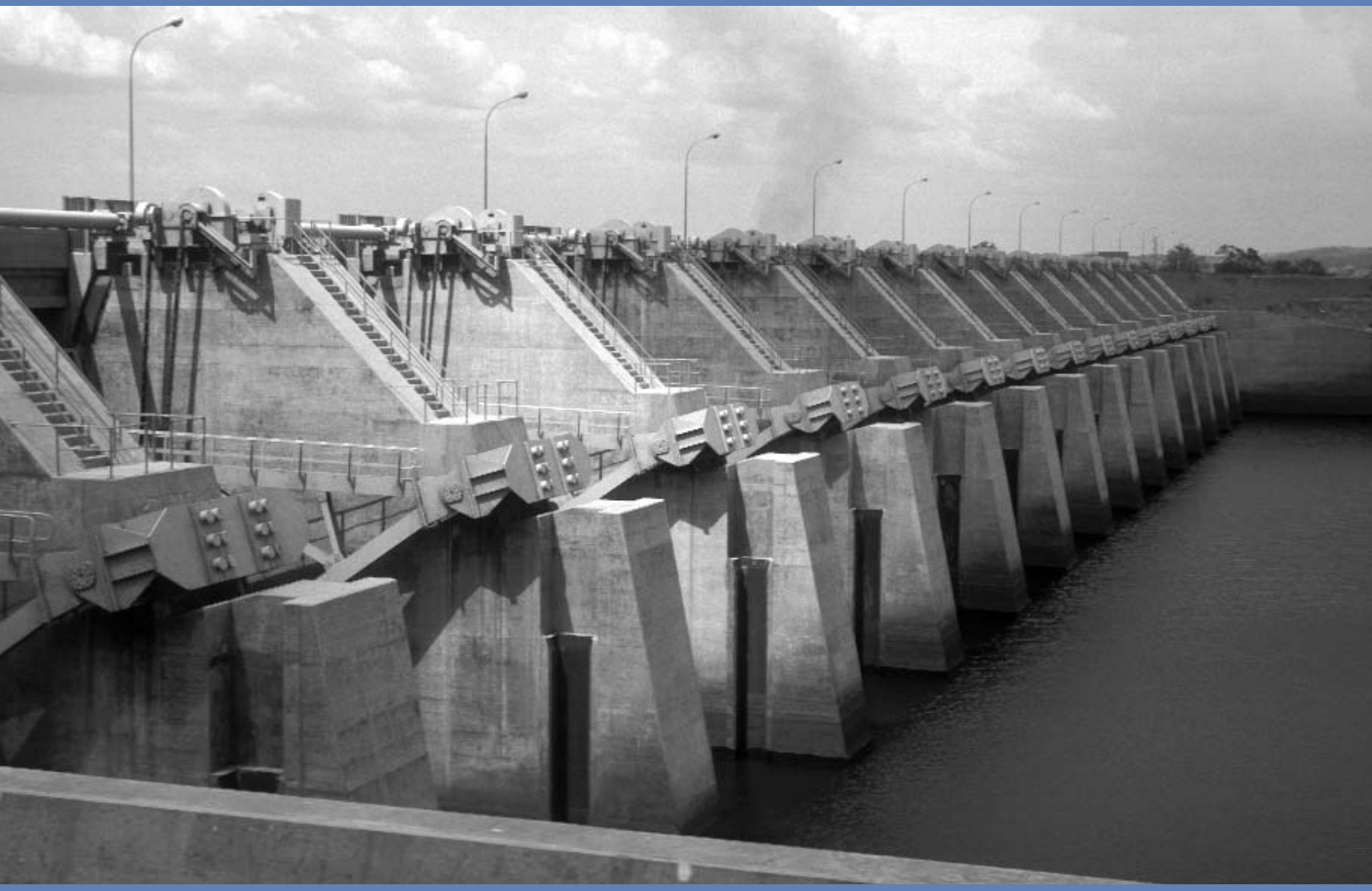
Table 5.3: Receipts by Type of Funding in 2004

	Amount (million US$)
Bank contribution	0.524
UNDP	0.100
Core	1.475
Thematic	4.106
Project	2.316
Total	8.521

Table 5.4: ESMAP Disbursements and Expenditures, 2002-04 (thousand US$)

	2002	2003	2004
Project costs	5,224	6,727	7,886
Work program Development[a]	51	75	103
Program Management	394	401	597
Knowledge Dissemination	170	165	125
Governance	172	212	252
Of which TAG	72	133	52
Of which CG	100	79	42
Total	6,011	7,580	8,963
Of which funded by donors	5,366	7,045	8,439
Of which funded from World Bank budget	545	535	524

a. Includes review of proposals.



Annex 1: Proceedings From The Joint Consultative Group Of The Energy Trust–Funded Programs

AEP/ASTAE/ESMAP, March 15–16, 2004, Washington, DC

Summary Proceedings

The Consultative Group (CG) for the energy trust–funded programs (ETFPs) managed by the World Bank met in Washington, DC, on March 15–16, 2004. Mr. Jamal Saghir, the World Bank's Director for Energy and Water and Chair of the World Bank's Energy and Mining Sector Board, chaired the meeting. This document presents a summary of the meeting's proceedings.

In her welcoming remarks, Ms. Nemat Shafik, the World Bank's Vice President for Infrastructure, emphasized that the World Bank had reengaged in the infrastructure business and that the Infrastructure Action Plan (IAP) had laid out a clear-cut strategy. The Bank Group is now focusing on operationalizing the IAP, which was the theme of Energy Week 2004 (March 8–11). It highlighted the crucial role played by energy in the implementation of the IAP. Ms. Shafik addressed the importance of energy services to reduce poverty and to achieve the Millennium Development Goals (MDGs). She expressed her appreciation to donors for their commitment to the energy trust–funded programs and encouraged donors to focus on implementation.

Post-World Summit on Sustainable Development (WSSD) Implementation Plans

Mr. Saghir's Presentation

In his opening remarks, Mr. Saghir first outlined the issues, observations, and lessons from Energy Week 2004. The key points were:

- **The multidimensional nature of energy security:** One dimension is the contrast between the energy rich and energy poor. Industrialized countries have clear motivations regarding energy security and have developed well-articulated strategies, while developing countries have complex motivations and no clear strategy. There are also tensions within developing countries with major disparities in the availability of affordable and efficient energy services between income groups, geographical regions, and rural and urban populations.

- **Access to energy services:** Mr. Saghir emphasized the enormous need for investment into expanding access to energy services through a wide range of technologies, including the use of hydrocarbon products. Also, renewable energy can make a significant contribution. Mr. Saghir stressed the World Bank Group's commitment to scaling up renewables, including large-scale hydro (see below). He also stated that the Bank Group was working on developing implementation plans for scaling up both energy services and renewables. Under these initiatives, each regional energy team outlined its scale-up strategy during Energy Week.

- **The growing energy investment gap:** Rapid urbanization and economic growth in developing countries has posed a huge demand for energy infrastructure investment. For example, electricity infrastructure in developing countries needs about US$120 billion of new investment per year until 2010, according to the International Energy Agency. However, there is a large and growing gap to supply the demand. Private sector investors are few; international private investors have retrenched, and domestic capital participation is also very limited. The investment lags have resulted in shortages, system failure, and slow system expansion, which slow economic growth.

- **Public-private partnership:** Despite the Bank Group's plan to scale up its energy business, the magnitude of the needs is such that all possible resources from all stakeholders, including the international financial institutions, public sources, bilateral funding, the private sector, and civil society, will need to be pooled. To begin engaging the private sector, the Bank Group has issued a guidance note to staff on public-private partnership and will follow this with a series of technical notes on how to operationalize this guidance note. The Bank Group is also convening a roundtable of the CEOs of leading power investors in developing countries to initiate a process of engagement.

- **Renewable energy:** Mr. Saghir made special mention of the Bank Group's increased focus on new renewable energies and the need to leverage existing resources for renewables. Mr. Saghir was emphatic about the Bank Group's support to large-scale hydroelectric power. Large hydro is a renewable energy resource and has a significant potential for meeting the energy needs of developing countries; at the same time, the Bank recognizes that large hydro projects must be undertaken in an environmentally and socially sustainable way.

- **The Infrastructure Action Plan:** With the Infrastructure Action Plan, approved by the World Bank Board of Executive Directors in July 2003, the infrastructure business, including energy, is back on the Bank Group's agenda. The lending for energy projects is already increasing, and the Bank Group will do more. The Bank is combining all instruments (International Bank for Reconstruction and Development [IBRD] and International Development Association [IDA] loans, credits and guarantees, International Finance Corporation [IFC] loans and investments, and Multilateral Investment Guarantee Agency [MIGA] guarantees) to scale up its energy services.

Mr. Saghir highlighted the progress made by the three ETFPs on deliverables identified at the Berlin CG meeting in April 2003. Since the Berlin meeting, Asia Alternative Energy Program (ASTAE) has broadened the definition of alternative energy, with a focus on access to modern energy services and environmental sustainability. It has also developed a new strategy and business plan for donor review. Africa Rural and Renewable Energy Initiative (AFRREI) and Regional Program for the Technical Energy Sector (RPTES) have transformed into a single Africa Energy Sector Multidonor Trust Fund with greater strategic coherence and focus on biomass energy and rural electrification. ESMAP has expanded its team to deliver greater intellectual leadership and has developed proposals for a new business model to operationalize its intellectual leadership agenda.

At the end of his presentation, Mr. Saghir outlined the objectives of the CG meeting: For the first day, to hear from each donor its present aid cooperation policy in energy since the World Summit on Sustainable Development (WSSD), to hear from the Technical Advisory Group (TAG) its retrospective review and ideas for the future, and to discuss the major initiatives taken by Germany on renewables and the Netherlands on energy for development. For the second day, to discuss the business plans of the ETFPs and to analyze the implications for the donors, in terms of both financial commitments and the organization of the CG. During the ensuing discussion, donors emphasized that they expect from the Bank to continue its leadership in scaling up renewable energy.

Donors' Presentations

The donors and observers presented their respective aid cooperation policies in energy since WSSD. Their positions on energy and their priority energy issues are summarized in the table on the following page:

The donors also raised the importance of harmonization of aid cooperation policies between donors, as well as between the International Financial Institutions (IFIs). In this context, numerous partnerships were highlighted by donors: Global Village Energy Partnership (GVEP), EU Energy Initiative, Global Network for Sustainable Energy Development (GNSED), Renewable Energy and Energy Efficiency Partnership (REEEP), LPG Challenge, Energy-Environment Partnership (Central America), Extractive Industry Transparency Initiative (EITI), Gas Flaring Initiative, and so forth.

The donors also emphasized the importance of effective monitoring and evaluation. They highlighted the need for accounting for results and greater country-level engagement. The issue of enhancing the participation of the local

	Is energy high on agenda?	Priority Issues					
		Access scale-up	Regional project/ energy trade	Renewable energy	Public-private partnership	Energy security	Capacity building for policy/strategy
Canada	Not yet	X	X			X	X
Denmark	Not yet	X					
Finland	Not yet	X	X	X	X		X
France	Yes	X	X	X	X		X
Germany	Yes	X		X	X		
IsDB	Yes		X		X		
Netherlands	Yes	X			X		
Norway	Yes	X	X	X	X		
Sweden	Yes	X	X	X			
UNDESA	Yes						
UNDP	Yes	X		X	X		X
UNF	Yes	X		X			
United Kingdom	Not yet	X			X		X
United States	Not yet				X		

Note: IsDP, Islamic Development Bank; UNDESA, United Nations Department of Economic and Social Affairs; UNDP, United Nations Development Programme; UNF, United Nations Foundation.

private sector in development-oriented activities was also mentioned. Within this context, the Netherlands mentioned a call for ideas, inviting proposals from the private sector and NGOs.

The ensuing discussion focused on how to put energy higher on the donors' agenda. It was pointed out that out of WSSD a consensus has emerged that energy is not an end in itself, but that energy needs must be addressed at the country level, within the overall development agenda. Concerns were raised that energy issues were not included in many Poverty Reduction Strategy Papers (PRSPs). Mr. Saghir confirmed that the Bank conducted a review of energy issues in PRSPs, and the results were disappointing. Nevertheless, the Bank has committed to work with countries and to scale up energy services at the country level. Donors supported the idea of an "energy champion" on the international scene to raise the profile of energy in the development agenda.

Report of the Technical Advisory Group (TAG)

Mr. Andrew Barnett, acting moderator of the TAG, presented the report of the TAG to the CG. He stated that the TAG supported the change in the Bank's energy sector policy, which was viewed as "less ideological and more programmatic." After revisiting the Berlin conclusions of the need for "increasing coherence among the ETFPs," Mr. Barnett stated that the TAG recognized the good progress that had taken place in that direction. TAG reported on the India Client Survey led by Jyoti Parikh. Forty-five clients provided feedback through questionnaires and interviews, covering four ESMAP projects and one ASTAE project. They reported that ESMAP made a significant contribution to the formulation of the Power Sector Reform and Renewable Energy Policy in India, and that ESMAP's value added is to bring the international experience. They would like to see a faster publication process and broader consultations and participation in the definition of the ESMAP activities. At the request of the chair of the CG, the TAG presented its view on the key energy challenges facing the donor community:

- Africa's energy future remains a critical and complex issue. It is important to identify the key interlocutors for energy in the discussions on PRSPs and MDGs.
- There is a need to develop an "energy alert" system that could give the global energy and development community early warnings about important issues such as security of supply failures.
- How to ensure "sustained political will" to ensure that reform transitions are implemented successfully.
- There is a need for more systematic research on the energy-related household health issue, which is beyond indoor air pollution.

The TAG stated that it thinks that the ETFPs are worthwhile from the cost-benefit prospect and that it sees the ETFPs add value to the work of the Bank and the wider community. The TAG stressed that the ETFPs (especially ESMAP) needed to be more "ahead of the curve," helping the donor community to anticipate and find a way through the tough issues that would emerge in the energy sector over the next few years. Mr. Barnett stated that the TAG is now in a critical period. In the past, the TAG was intended as an instrument to overlook ESMAP. Later on, other ETFPs were added. The Bank is of the opinion that the TAG should now become less focused on the process and more on strategic issues.

Energy Trade Review

During 2003, the TAG supervised a review of the ESMAP energy trade portfolio, conducted by Dr. Robert Means and funded by ESMAP. Mr. Jan Moen, a TAG member, presented the following summary of Dr. Means' conclusions:

- The work generally was successful in developing political support for regional power trade and the development of institutions capable of dealing with the technical issues involved in regional trade.
- ESMAP should continue to extend support to such regional initiatives, which may look risky because they require significant upfront resources, because it should continue to operate in the more difficult areas of energy sector development.
- ESMAP's ability to draw on its extensive experience in regional power trade was restricted by deficient record keeping on some projects.

The TAG commented that the review provides valuable results even though it was limited by insufficient information. The TAG agreed with ESMAP's project selection and stated that the risks ESMAP took were fully acceptable. The TAG also suggested that ESMAP draw all the experience of energy trade into a manual and give priority to developing broader partnerships if new projects are supported. During the ensuing discussion, ESMAP was complimented for providing a forum for discussion of energy trade issues and pulling together resources for countries (especially for high-level officials) on this topic. ESMAP's management response is included in the report.

Energy Conferences

Mr. Manfred Konukiewitz of BMZ, Germany, presented the background, preparation arrangements, and structure of the Renewables 2004 Conference in Bonn, Germany, and invited all donors to the conference. He stated that this conference has gained a high level of political support and is being organized to be action-oriented and demand-focused, and he encouraged all to present news ideas and actions needed.

Mr. Paul Hassing of the Ministry of Foreign Affairs, the Netherlands, presented the Energy for Development Conference, December 2004. He stated that the conference's objective was to discuss sustainable development with energy, which would directly respond to WSSD. He stressed the acknowledgement of different prospects from developing countries regarding climate change. There will be a long debate on the tension between economic growth, poverty reduction, and environment protection. But new ideas are also expected from this conference. Mr. Hassing stated that the conference was still in the process of preparation, and he welcomed ideas and comments.

Mr. Fernando Echavarria of the U.S. Department of State presented the progress of the African Rift Geothermal Development Facility and the achievements of the 2003 East Africa Regional Geothermal Conference. He focused on Kenya's successful experience in using geothermal energy and showed the vision that geothermal, as a clean energy alternative, would address local resources for sustainable development. The concerns of environmental impact and the price of geothermal energy were raised in the following discussion. The monitoring of groundwater levels and quality was raised as an issue.

Overview of the Energy Trust–Funded Programs

Africa Energy Program (AFTEG)

Mr. Yusupha Crookes, Africa Energy Sector Manager of the World Bank, presented the context and the strategy of the World Bank's Africa energy unit. He presented the regional constraints of weak utilities, weak financial sectors, and few private players. Given the performance of the energy sector, he addressed five immediate outcomes the Africa Energy Program (AFTEG) aims to achieve: increasing the sustainability of biomass fuel use in urban areas, mitigating health and environmental impacts of energy use, increasing electrification, expanding access to services, and reducing the fiscal burden of the energy sector. In addition, Mr. Crookes pointed to the approaches that the program is taking, including the representation of energy in PRSPs and country assistance strategies (CASs), strengthening institutional capacity, building links with other sectors, and integrating the instruments in the Bank.

In his commentary, Mr. Anders Cajus Petersen of the Swedish International Development Agency welcomed the broad picture Mr. Crookes provided and raised the question of how the energy trust fund could contribute to regional development in Africa. The TAG commented that the Africa energy trust fund needs to be complementary to the Bank Group's strategy and operations in the Africa region, instead of being fully integrated into the Bank's program. Mr. Crookes responded that the focus of the trust fund was biomass-based services and rural electrification, as well as analytical work. He emphasized that the trust fund was a coherent part of the whole program and that it should be integrated into the country and regional program. In addition to the overall program strategy, donors requested AFTEG to give detailed and specific proposals for funding consideration.

Asia Alternative Energy Program (ASTAE)

Ms. Junhui Wu, Sector Manager of the World Bank for East Asia and the Pacific (EAP), presented the EAP energy strategy, the follow-up of the CG meeting in Berlin, and ASTAE's commitments to support the regional strategy. She emphasized that ASTAE would "stand on three legs"—access, efficiency, and renewables—to scale up sustainable energy development. Ms. Wu outlined that in fiscal 2003, ASTAE disbursed US$2.2 million and supported more than 14 projects and programs, including support for nonlending activities. She provided two examples to illustrate ASTAE's support work. The first was the Green Electricity project in Shanghai, which is the first introduction of a green electricity scheme in a developing-country city. ASTAE supported its implementation in cooperation with ESMAP. The second activity was the Cambodia Rural Electrification and Transmission project, under which ASTAE supported the development of a 10-year Renewable Energy Action Plan and mini- and micro-hydro schemes.

In his commentary, Mr. Gerry Collins of the Canadian International Development Agency appreciated the good progress ASTAE has made since the last Berlin CG meeting. He noted that the issue of climate change and the benefits of renewable energy need to be addressed. The issue that ASTAE's identity was not well known was raised in the discussion by the TAG, as a result of its consultation with Indian partners. The ASTAE team responded that ASTAE was already well known in China and that more efforts would be taken to expand its identity in the rest of Asia. In responding to the question of the comparative advantage of ASTAE relative to other funds, Ms. Wu emphasized the flexibility of ASTAE, which could quickly respond to demand (for example, through prelending activities, midterm review, supervision, and so forth). Ms. Wu noted that ASTAE was complementary, instead of competing with Bank or bilateral projects.

Energy Sector Management Assistance Program

Ms. Dominique Lallement, Manager of ESMAP, first introduced two new senior staff members at ESMAP, Mr. Douglas Barnes and Mr. Ananda Covindassamy, who have joined the team as a response to the CG's request for additional staff to assist with the implementation of ESMAP's mandate on intellectual leadership. Ms. Lallement's presentation first highlighted ESMAP's progress and impact in 2003, then proposed a new business model for ESMAP for 2005–07. Ms. Lallement highlighted (a) the strength of the demand for ESMAP, with an increase in proposals received

through ESMAP's call for proposals from 10 in March 2002 to 42 in October 2003; (b) the improvement in the success rate of proposals also increased, from 39 percent to 49 percent, showing greater presubmission engagement of proponents with the ESMAP team; (c) efforts to maintain efficiency, a 10-week call-for-proposals cycle (down from six months before 2002) and management costs at 5.6 percent of contributions in 2003; and (d) ESMAP's intellectual leadership on conceptualizing multisector approaches to energy-poverty reduction for PRSPs implementation plans and energy services projects, on evaluation methodologies to assess the impact of reform on the poor, and through its initiative to address regulation of decentralized energy services. ESMAP's knowledge management was illustrated by the substantial improvement in the timeliness of its publications and the support to a large number of knowledge-sharing events around the world, including in cutting-edge areas such as gender in energy and mining. Ms. Lallement cited ESMAP's Honduras education-ICT project as an example of innovation by ESMAP. ESMAP's support for changes in policies, legislation, and lending are examples of specialized technical assistance. In addition, ESMAP continued to work through partnerships, especially the GVEP, Regional Power Trade Committees, and the Energy Efficiency Network.

Ms. Lallement presented the concept for a new business model for ESMAP as a response to the challenges given to ESMAP to provide intellectual leadership on global issues, to increase the circulation of knowledge, and to boost the scaling-up challenge. This concept is the outcome of widespread consultations:

- **Content strategy:** Ms. Lallement stated that the validity of the three pillars of ESMAP's current strategy—energy access and poverty, energy market, and energy environment—were still appropriate, but she submitted to harbor them under the overarching goal of energy security, which is at the core of energy policy and operational needs in emerging and developing economies.

- **Operational strategy:** She proposed three new business lines: (a) a cutting-edge think tank, to address the key global issues for the next decade by conducting in-depth analytical work and by providing early warning about issues on the horizon; (b) a knowledge "power plant," to generate, integrate, and disseminate knowledge for policymaking in client countries by serving as a knowledge broker and working on impact measurement; and (c) an implementation "booster," to support innovation in government strategies and policies, to help place energy in PRSPs and other development management instruments, to facilitate the development of country energy and poverty reduction strategies and action plans, and to support selective thematic strategies.

In his commentary, Mr. Peter Davies (U.K. Department for International Development, DFiD) commended the achievements of ESMAP over the past year and welcomed the news that the secretariat had been strengthened with additional full-time staff. The portfolio has grown, and the Fast-Track Window has greatly reduced the time to approve and fund proposals. Nurturing and building GVEP has absorbed a great deal of management effort. While recognizing that without this effort, GVEP would not have gained its international profile, for which ESMAP's management is warmly commended, this has been a distraction from fully addressing higher-level strategic issues. The plan to move GVEP's Technical Secretariat to another organization is welcomed, because this is not part of ESMAP's core mandate. As for the new business model, the overall goal of energy security needs a clearer definition: Is this security for end users or at a national, regional, or global level? Links to development outcomes need to be explicitly stated. Concerns about global environmental impacts and processes should not deflect attention from the core developmental issue, which is access to services to reach the MDGs. Countries may need help in designing medium- and long-term energy policies, taking account of external factors, such as the price and supply of fuel. Is there a role for ESMAP here? Stimulating private sector involvement remains a priority. Mr. Davies thought ESMAP might usefully work more closely with the Public-Private Infrastructure Advisory Facility (PPIAF), which has a strong energy sector interest.

Looking Forward: The Role of the Energy Trust–Funded Programs (ETFPs)

Mr. Saghir's summary of the three ETFPs' business lines is recorded in the table below.

Mr. Saghir requested each donor's funding position for the ETFPs. Most donors expressed their continuing support to the ETFPs. The Netherlands, the largest donor, committed to maintaining the previous year's level of funding for ASTAE and ESMAP, provided that the commitments of other donors are reasonable as well. Canada, France, and the United Nations Development Programme (UNDP) stated that they would maintain the previous year's contributions. Sweden stated that it would commit SKR 15 million for ESMAP's Africa program. Norway mentioned that it provides energy funding to the Bank Group through a single channel without sector indication, based on a three-year plan, and would alert the government on the request to reconsider funding energy in its own right. The United Kingdom stated that it would at least maintain its funding level to ESMAP and that it needs two-page concept notes for the other programs. The U.N. Foundation confirmed the current levels of commitment. Total funding levels indicated were US$7.4 million for 2004–05 (12 months), as compared with a total request of about US$15.0 million. At Mr. Saghir's request on behalf of the GVEP Board, the CG agreed that US$1.0 million of ESMAP resources would be allocated to support the GVEP Technical Secretariat for the next two years of operation.

Based on the "chilled" funding commitments, the raison d'être and the organization of the CG were discussed. A proposal to conduct two-day annual meetings for the CG was approved. The first day will be along the lines of a think tank that brings together the wider energy community to discuss the broad energy agenda. The second day would be a meeting of only the active donors to discuss each ETFP's business plan.

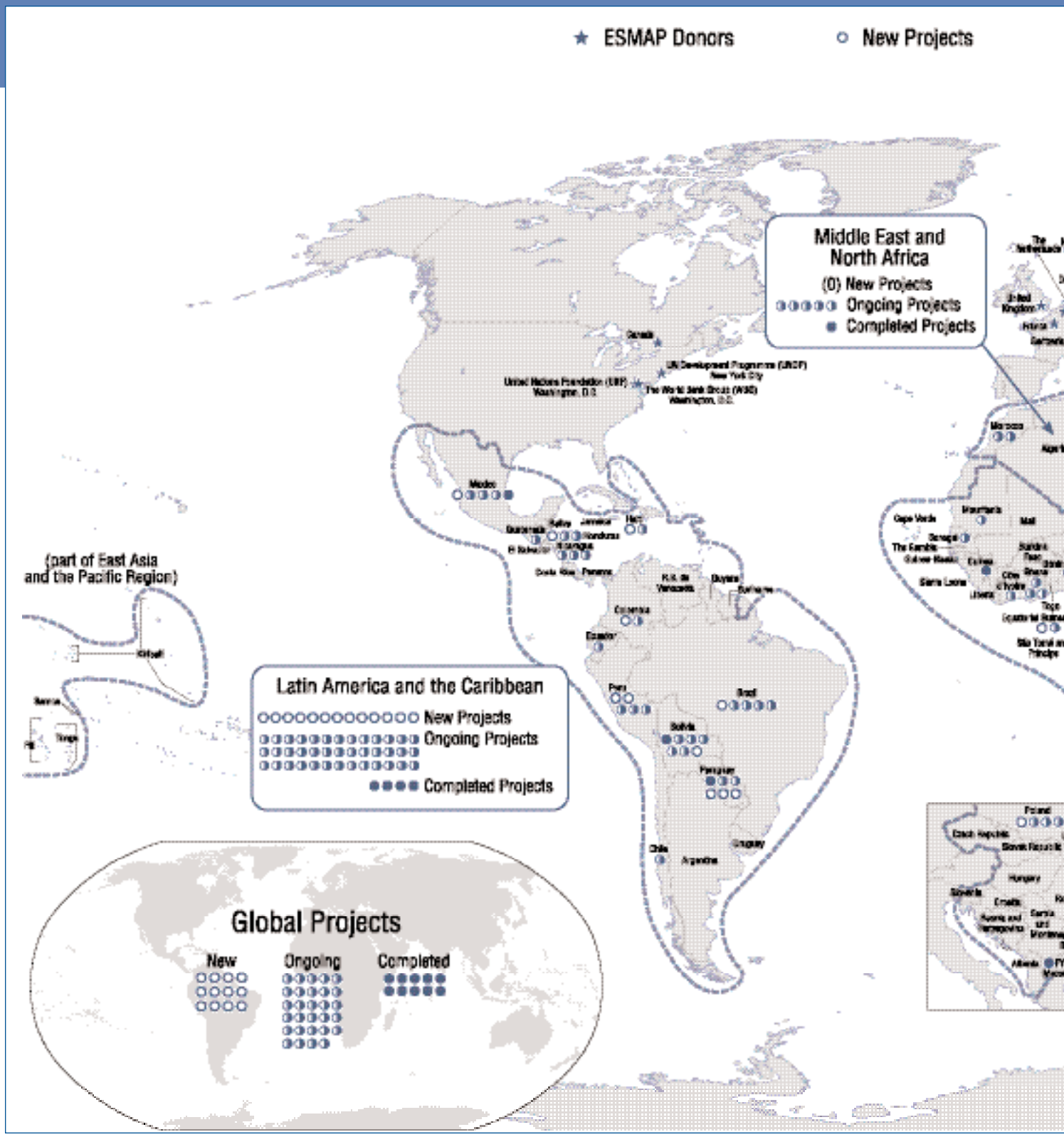
The TAG's function and performance was also discussed at the end of the CG meeting. The TAG's role as a promoter of the broader energy agenda and an independent monitor of the performance of the ETFPs was agreed as important and valuable to the CG. Because the structure of the CG would change, there was consensus that new Terms of Reference for the TAG was necessary. Messrs. Peter Davies of the United Kingdom and Anders Pederson of Sweden agreed to take the lead on reviewing the TORs and sending them to the donors by the end of April 2004, with the objective to complete them by May 30, 2004. The TAG members will continue their current contracts, and new TORs will be drafted, circulated, approved, and then contracted through ESMAP or the UNDP.

Conclusion

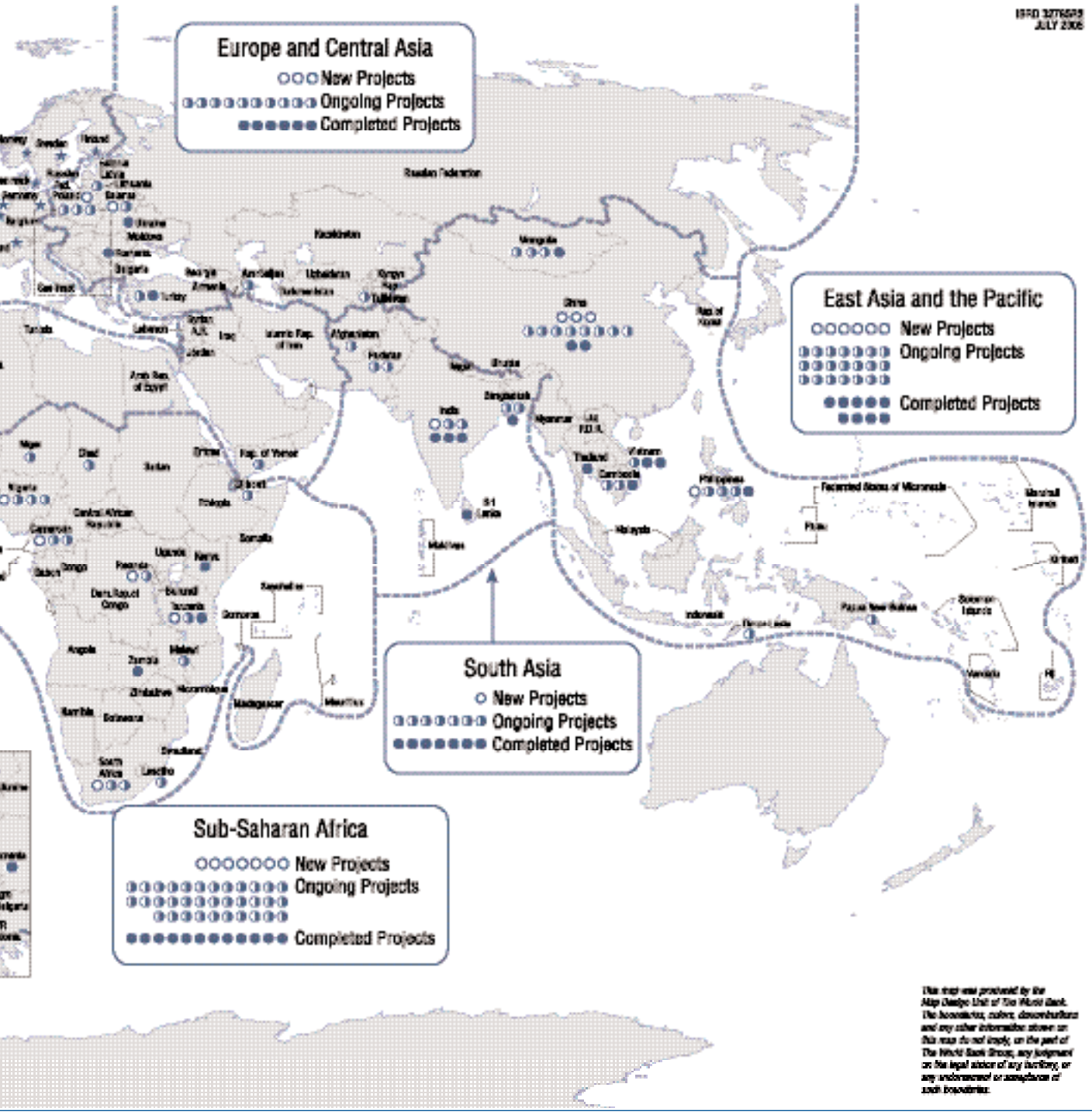
Mr. Saghir thanked the participants for their continued support to the ETPFs and for the very frank and constructive discussions. The meeting adjourned on March 15, 2004, at 5:30 p.m.

	Vision	Issues discussed	Funding requirement, US$
AFTEG	Five immediate outcomes: Increasing biomass fuel in urban areas, mitigating health and environmental impacts, increasing electrification, expanding services, reducing fiscal burden	Energy in PRSP, biomass, gender, M&E, regional trade, revenue management, utility reform, water and energy, target approach for rural electrification, and Bank lending in Africa	US$2.5 million per year
ASTAE	Three legs: Scaling up access, renewables, and efficiency	Cross-sector, climate change, target versus indicators, renewable energy/energy efficiency in national energy policy, ASTAE versus the Bank and bilateral programs	US$6.1 million for CY 2004–06
ESMAP	Three operational business lines: Cutting-edge think tank, knowledge power plant, and implementation booster	Definition of energy security, climate change, country-level policies and action plans, link with Bonn conference, intellectual leadership, public-private partnership, and advocacy energy nexus for developing countries	US$15 million per year for CY 2005–07

Annex 2:
Map and Table of Completed, Approved, and Ongoing activities in 2004



Ongoing Projects Completed Projects



ACTIVITIES COMPLETED IN 2004

Africa Region		
Conference to Promote Low-Cost Electricity Distribution and Reticulation Networks in Peri-urban and Rural Africa	Africa region	Cosgrove-Davis
Assessment of Power Sector Reform Priorities in Selected Countries in Sub-Saharan Africa: A Survey of African Power Sector Decision Makers	Africa region	Mensan-Gaba
Energy and Poverty Workshop (Francophone)	Africa region	Lallement
Institutional and Financing Framework for Rural Electrification	Kenya	Maweni
Energy and Poverty Reduction Workshop	Africa region	Lallement
Clean Air Initiative in Sub-Saharan African Cities	Africa region	Reliquet
Environment and Health: Bridging the Gaps (Phase IV)	Africa region	Saeed
Opportunities for International Power Trade in the Nile River Basin I	Africa region	Hoskote
Decentralized Rural Electrification	Guinea	Feinstein
Energy Sector Restructuring	Zambia	Saeed
TA to DOE and TANESCO	Tanzania	Feinstein

East Asia and Pacific Region		
Rural Development of Mongolia via Provision of Wind Power (Seed Funding)	Mongolia	Bale
Energy Efficiency in Water Utilities (Seed Funding)	China	Rivera
Motorcycle Fleet Upgrade to Reduce Air Pollution in Bangkok	Thailand	Shah
Regional Electricity Market: Mekong Basin Power Pool (Phase II)	East Asia and Pacific region	Trembath
China: Sulfur Emission Mitigation Policies	China	Johnson
Revision of the Existing Legal and Regulatory Framework for the Petroleum Sector	Vietnam	Svensson
Institutional Reform and Restructuring of Petrovietnam Gas Company	Vietnam	Svensson
Commercialization of a Power Company	Cambodia	Covindassamy
Electricity Benefits Assessment	Philippines	Barnes

East and Central Asia Region		
Media Workshops on Energy in East and Central Asia Region	East and Central Asia region	Osborne
Developing Mechanisms for Regional Cooperation on Oil Spill Management in the Caspian Sea	East and Central Asia region	Castberg
Turkey: Energy and Environment Review (Phase III)	Turkey	Moose
Key Aspects of Energy-Environment/GHG Strategy	Macedonia	Moose
Energy Sector Reform (Phase I)	Mexico	Feinstein
Energy Efficiency (Reconnaissance)	Romania	Atur
Integrated Heat Demonstration	Ukraine	Meyer
Central Europe: District Heating	East and Central Asia region	Meyer

Latin America and the Caribbean Region		
Power Sector Strategy for Paraguay (Seed Funding)	Paraguay	Monari
Study on Financing Public Sector Strategies (Seed Funding)	L. Amer. and the Caribbean region	Monari
Natural Gas Market Development Study	Bolivia	Durand

Middle East and North Africa Region		
Water and Sanitation and Energy Public Private Partnership Operator and Investor Workshop	Mid. East and N. Africa region	Bjerde

South Asia Region		
Renewable Energy Practitioner Workshop in South Asia	South Asia region	Cabraal
Access of the Poor to Cleaner Household Fuels in India	India	Lvovsky
South Asia Urban Air Quality Management Strategy	South Asia region	Kojima
Household Energy and Women's Lives: The Case of India	India	Barnes
Opportunity for Women in Renewable Energy Technology Utilization (Phase I)	Bangladesh	Iqbal
Energy-Environment Review	Sri Lanka	Saeed
Rural Energy Study	India	Barnes

Global		
GVEP Technical Secretariat Transition	Global	Lallement
Second World Forum on Energy Regulation	Global	Tenenbaum
Global Decommissioning of Oil and Gas Fields in Developing Countries	Global	Oduolowu
Rapid Assessment for Meeting Immediate Needs for Water and Energy Services	Global	Palmieri
Designing a Poverty-Focused, Gender-Sensitive Monitoring and Evaluation Plan for a World Bank Renewable Rural Electrification Project	Global	Barnes
Petroleum Revenue Management Conference	Global	McPherson
Alternative Energy Applications (Seed Funding)	Global	Labaste
Gas Flaring Reduction	Global	Svensson
Regional Project Identification (Strategy II)	Global	Terrado
Solar Initiative Regional Strategy	Global	Terrado

ACTIVITIES APPROVED IN 2004

Africa Region		
Energy-Poverty Action Plan (GVEP)	Cameroon	Ngankam
Equatorial Guinea: Resource Revenue Management	Equatorial Guinea	Tordo
Energy Water Assessment (Phase I)	Rwanda	Cosgrove-Davies
Mainstreaming Low-Cost Innovations in Electricity Distribution Networks in Africa	Africa region	Sanghvi
Formulating Strategies for Cleaner Fuels in South Africa	South Africa	Sanghvi
Evaluating Opportunities of Using Wood and Agricultural Residues as Energy in Tanzania Forest Areas	Tanzania	Kaguamba
Lagos Strategy for Economic Development and Poverty	Nigeria	Tewari

East Asia and Pacific Region		
Implementation Strategy for China's Energy Security Objectives	China	Berrah
Development of East Asia & Pacific Energy Business Strategy	East Asia and Pacific region	Wu
Global Village Energy Partnership (GVEP) Asia Initiative	East Asia and Pacific region	Wilde
China: Enabling Universal Access to Electric Power	China	Spencer
Creating Clean Coal Market: Environmental Monitoring and Enforcement, and Private Participation Capacity Building	China	Takahashi
Philippines Rural Electricity: Private Participation and Regulatory Reform	Philippines	Sheung Shum

East and Central Asia Region		
TA for Establishing a Water-Energy Consortium in Central Asia	East and Central Asia region	Nikolov
Women in Mining: Chance for Better Life Workshop	Poland	Strongman
Introducing the Concepts of ESCOs to Belarus	Belarus	Armaly

Latin America and the Caribbean Region		
Rural Electrification	Peru	Bogach
Power Sector Strategy	Paraguay	Monari
Options to Revitalize Investment and Private Participation in Power Distribution in the Latin American and Caribbean Region	L. Amer. and the Caribbean region	Monari
Haiti: Scoping Study for Household Energy Strategy	Haiti	Torres
Development of Regional Capabilities in Three States of the Republic to Foster Energy Projects for Rural Areas, Focusing on Renewable Energy (GVEP)	Mexico	Azuela
Renewable Energy Systems in Peruvian Amazon Region (RESPAR Project)	Peru	Wang

Latin America and the Caribbean Region *continued*		
Power Sector Strategy for Paraguay (Seed Funding)	Paraguay	Monari
TA Preparation of an Oil Supply Strategy	Paraguay	Mayorga Alba
Study on Financing Public Sector Strategies (Seed Funding)	L. Amer. and the Caribbean region	Monari
Honduras: New Approaches for Delivery of Energy Services in Rural Areas	Honduras	Rysankova
Energy Solutions for the Poor Marginalized Communities (in the Framework of GVEP Follow-Up)	Bolivia	Rysankova
Village Energy Solutions for Remote Areas of Brazil. Specific Support to the Implementation Strategy of the Universal Access Program and to the National Energy Action Plan	Brazil	Porto-Carreiro
Colombia – Natural Gas: Bases for a Development Strategy of the Sector	Colombia	Torres

South Asia Region		
Commercialization of Improved Stoves	India	Barnes

Global		
Designing Strategies and Instruments to Address Power Projects Stress Situations	Global	Covindassamy
Symposium on Hydropower and Sustainable Development	Global	Zhao
Roundtable of Power Investors for Working Group 3: Governance Standards/Code of Conduct/ Performance Benchmarks for Electric Power PPPs	Global	Armar
Natural Gas Connection Charges and Conversion Costs and Their Impact on Poor Households	Global	Gerner
Global Village Energy Partnership Workshop on Consumer Lending and Microfinance to Expand Access to Energy Services	Global	Lallement
Win-Win: Demand-Side Management Options in Developing Countries	Global	Maurer
Issues in Energy Security	Global	Lallement
Preparation of Solar Lantern Global Technical Performance Specification and PV-GAP Recommended Specifications	Global	Cabraal
Potential for Biofuels in Developing Countries	Global	Johnson
Road Map for Scaling Up Modern Energy Services and Clean Energy	Global	Cabraal

ACTIVITIES ONGOING IN 2004

Africa Region		
Ghana Energy PSIA of Energy Sector Reforms	Ghana	Keener
Impact on the Poor of the Electricity Sector Reform in the Kingdom of Lesotho	Lesotho	Pawlowska
Revenue Management Seminar	Chad	Tordo
Landfill Gas Utilization in Sub-Saharan Africa	Africa region	Takahashi
Energy Sector Strategy	Ghana	Iyer
Expanding Rural Access to Infrastructure	Nigeria	Iyer
Workshop on Rural Energy and Sustainable Development	Cote d'Ivoire	Ekouevi
CDM-assist: A Collaborative Program to Build CDM Capacity in Africa	Africa region	Hoskote
Power Trade in Nile Basin (Phase II)	Africa region	Hoskote
South Africa Workshop—People's Power Workshop	South Africa	Sanghvi
Malawi: Rural Energy Development	Malawi	Hoskote
Regional Electricity Demand Management TA (Phase II)	Africa region	Wang
Decentralized Rural Electrification	Cameroon	Wang
Impact and Determinants of Success of Private Participation in Power in SSA	Africa region	Hughes
Niger Energy-Poverty Action Plan (GVEP)	Niger	Benoit
Energy-Poverty Action Plan (GVEP)	Cameroon	Noubissie
Equatorial Guinea: Resource Revenue Management	Equatorial Guinea	Tordo
Energy Water Assessment (Phase I)	Rwanda	Cosgrove-Davies
Mainstreaming Low-Cost Innovations in Electricity Distribution Networks in Africa	Africa region	Sanghvi
Formulating Strategies for Cleaner Fuels in South Africa	South Africa	Sanghvi
Evaluating Opportunities of Using Wood and Agricultural Residues as Energy in Tanzania Forest Areas	Tanzania	Kaguamba
Facility for the Follow-Up of Africa Energy-Poverty Workshops	Africa region	Ekouevi
Petroleum Revenue Transparency Audits	Nigeria	McPherson
AFTEG Rural and Renewable Energy	Africa region	Sanghvi
Multisectoral Operational Plan to Maximize Poverty Reduction Impact of Rural Electrification in Senegal	Senegal	de Gouvello
Promoting Productive Uses of Electricity in Rural Areas	Africa region	Sanghvi
PSIA (Poverty and Social Impact Analysis) on Reforms to the Provision of Ancillary Services by the Mining Sector	Mauritania	Correia
Expanding SME Outsourcing Opportunities from Utility Sector Reform: A Survey of Eastern and Southern Africa	Africa region	Armar
Design and Pilot Testing of Capacity Building Product Line for SME Utility Service Providers in West Africa	Africa region	Armar
Africa Rural and Renewable Energy Initiative (AFRREI)	Africa region	Sanghvi
Lagos Strategy for Economic Development and Poverty	Nigeria	Tewari
Power Sector Reform in Africa: Assessing the Impact on the Poor and Influencing Policy Decisions	Africa region	Covindassamy

Africa Region *continued*		
Women's Energy Enterprise: Developing a Model for Mainstreaming Gender into Modern Energy Service Delivery	Ghana	Boateng Agyen
Development of a Regional Power Market in West Africa	Africa region	Armar

East Asia and Pacific Region		
Philippines Rural Electricity: Private Participation and Regulatory Reform	Philippines	Sheung Shum
Capacity Building for the Electricity Authority of Cambodia	Cambodia	Sekse
Rural Electrification Policy Development and Conceptual Design of Energy Services Delivery Projects to Improve Rural Health and Education Service Delivery	Papua New Guinea	De Wilde
China: Policy Advice on Implementation of Clean Coal Technology projects (Phase II)	China	Takahashi
Vietnam: Policy Dialogue Seminar and New Mining Code	Vietnam	De Sa
Coal Stove Improvement Program	Mongolia	Covindassamy
National Rural Electrification Planning	East Timor	Trembath
Implementation Strategy for China's Energy Security Objectives	China	Berrah
Global Village Energy Partnership (GVEP) Asia Initiative	East Asia and Pacific region	De Wilde
Development of East Asia and Pacific Energy Business Strategy	East Asia and Pacific region	Wu
China: Enabling Universal Access to Electric Power	China	Spencer
Creating Clean Coal Market: Environmental Monitoring and Enforcement, and Private Participation Capacity Building	China	Takahashi
Demand-Side Management in a Restructured Industry	China	Zhao
Infrastructure Services to the Rural Poor	Mongolia	Rivera
Diesel Pollution Reduction Strategies for Cities	East Asia and Pacific region/L. Amer. and Caribbean region	Shah
Greater Mekong Sub-Region Power Trade Strategy Meeting	East Asia and Pacific region	Trembath
Improved Heating Stoves and Health Impact on Low-Income Consumers	Mongolia	Kaufmann
Scoping Study for Voluntary Green Electricity Schemes in Beijing and Shanghai	China	Berrah
Rural Electrification Regulation Framework	Philippines	Sheung Shum
Development of Pro-Poor National Heat Pricing and Billing Policy	China	Taylor
Sustainable and Efficient Energy Use to Alleviate Indoor Air Pollution in Poor Rural China	China	Baris
Cambodia: Renewable Energy Action Plan	Cambodia	Sekse
Philippines: Village Power Fund and Incubator for Renewable Energy Enterprises	Philippines	Sheung Shum

East and Central Asia Region		
Strategy to Expand Gas Distribution and Utilization in Turkey	Turkey	Lamech
Azerbaijan: Natural Gas Sector Restructuring and Regulatory Reform	Azerbaijan	Townsend
Energy Efficiency in Urban Water Utilities in Central Asia: The Uzbekistan Case	Central Asia	Ijjasz-Vasquez
Energy Sector Regulation (includes gas projects)	Poland	Benmessaoud
Women in Mining: Chance for Better Life Workshop	Poland	Strongman
TA for Establishing a Water-Energy Consortium in Central Asia	East and Central Asia region	Nikolov
Development of Power Generation in Southeast Europe: Implications for Investments in Environmental Protection	East and Central Asia region	Kennedy
Introducing the Concepts of ESCOs to Belarus	Belarus	Armaly
Innovative Energy Efficiency Financing Mechanism	Poland	Johansen
Provision of Energy Services to the Poor in Tajikistan	Tajikistan	Sharma
Lithuania: Heating Supply to Small Cities/Towns	Lithuania	Stuggins

Latin America and the Caribbean Region		
Energy, Population, and Environment	L. Amer. and Caribbean region	Mayorga Alba
Rural Infrastructure in Chile: Improving Efficiency and Reaching the Poor	L. Amer. and Caribbean region	Sara
Village Power Partnership for Latin America and the Caribbean (VPP-LAC)	L. Amer. and Caribbean region	Rysankova
Policy and Strategy for the Promotion of Renewable Energy Resources in Nicaragua	Nicaragua	Torres
Good-Practice Case Study in Integrating Environment Into Gas and Oil Pipeline Projects: Experiences Based on the Bolivia-Brazil Gas Pipeline	Bolivia/Brazil	Quintero
Technical Assistance to Proposed Expansion of Solar-Net Village Program	Honduras	Torres
Health Impacts of Traditional Fuel Use	Guatemala	Awe
Brazil: Rural Electrification Strategy	Brazil	Carreiro
Central America Gender in Sustainable Energy	L. Amer. and Caribbean region	Balcet
Training Program for Key Group Representatives From Indigenous People Regional Organizations/ Rural Energy Development (Phase II)	Bolivia	Mayorga Alba
Country Program (Phase II)	Bolivia	Durand
National Biomass Program	Bolivia	Durand
Rural Electrification and Power Reform in Central America	L. Amer. and Caribbean region	Barnes

Latin America and the Caribbean Region *continued*		
Rural Electrification	Peru	Bogach
Power Sector Strategy	Paraguay	Monari
Options to Revitalize Investment and Private Participation in Power Distribution in the Latin America and Caribbean Region	L. Amer. and Caribbean region	Monari
Development of Regional Capabilities in Three States of the Republic to Foster Energy Projects for Rural Areas, Focusing on Renewable Energy (GVEP)	Mexico	Elizondo Azuela
Haiti: Scoping Study for Household Energy Strategy	Haiti	Torres
Renewable Energy Systems in Peruvian Amazon Region (RESPAR Project)	Peru	Wang
Honduras: New Approaches for Delivery of Energy Services in Rural Areas	Honduras	Rysankova
Energy Solutions for the Poor Marginalized Communities (in the framework of GVEP follow-up)	Bolivia	Rysankova
TA Preparation of an Oil Supply Strategy	Paraguay	Mayorga Alba
Village Energy Solutions for Remote Areas of Brazil: Specific Support to the Implementation Strategy of the Universal Access Program and to the National Energy Action Plan	Brazil	Porto Carreiro
Colombia—Natural Gas: Basis for a Development Strategy of the Sector	Colombia	Torres
Extending the Use of Gas to Inland Peruvian Provinces	Peru	Mayorga Alba
Alleviating Urban Energy Poverty in Latin America: The Brazilian Case	Brazil	Lallement
Latin America and Caribbean Region Subsidy Review Study	L. Amer. and Caribbean region	Rysankova
Innovative Financing Mechanism for Energy Efficiency in Mexico	Mexico	Feinstein
Diesel Pollution Reduction Strategies for Cities	East Asia and Pacific region/L. Amer. and Caribbean region	Shah
Stimulating the Market for Family-Hydro for Low-Income Households in Ecuador	Ecuador	Durand
Regional Approaches to Energy Sector Reform and Renewable Energy Development in Small Island Economies	L. Amer. and Caribbean region	Fremond
Lessons on Off-Grid Electricity, Business Development Services, and Microcredit (Seed Funding)	Nicaragua	Motta
Regulatory Issues of Off-Grid Energy Service Delivery as Part of National Rural Electrification Strategies	L. Amer. and Caribbean region	Torres
Latin America and Caribbean Region: Low-Income Energy Assistance	L. Amer. and Caribbean region	Wodon
Mexico: TA for Long-Term Program for Renewable Energy Development	Mexico	Feinstein
Nicaragua: Pilot Commercialization of Improved Cook Stoves	Nicaragua	Torres

Middle East and North Africa Region		
Global Efficiency in Sidi Bernoussi Industrial and Peri-urban Area	Morocco	Bouzaher
Energy Sector Strategy for Poverty Reduction and Growth	Djibouti	Bjerde
Regional Workshop at Sidi Bernoussi, Morocco: Dissemination of the Results of the ESMAP Sidi Bernoussi Industrial Park Study	Morocco	Bouzaher
Energy Poverty and Access	Yemen	O'Sullivan

South Asia Region		
India—Environmental Policies for the State Power Sector: Rapid Assessment for Karnataka and Rajasthan	India	Imran
Commercialization of Improved Stoves	India	French Barnes
Exploring Opportunities for Improving Rural Energy Access	Afghanistan	Imran
Enhancing Access and Rural Electrification: Costs and Benefits, and Willingness to Pay	Pakistan	Haider
Pakistan: Household Impact Analysis of the Energy Sector Reform	Pakistan	Kojima
Opportunity for Women in Renewable Energy Technology Utilization in Bangladesh (Phase II)	Bangladesh	Iqbal
Toward Formulating a Rural Energy Strategy	Bangladesh	French Barnes

Global		
Preparation of Solar Lantern Global Technical Performance Specification and PV-GAP Recommended Specifications	Global	Cabraal
Toolkit for Scaling Up Rural Energy Access	Global	Cabraal
Knowledge Transaction: Reducing Energy Costs in Water Supply Operations	Global	Armar
Women in Mining: Voices for Change Conference	Global	Strongman
Governance of National Oil Companies	Global	McPherson
Rationing Energy in a "Rational" Way	Global	Maurer
Global Village Energy Partnership (GVEP) Secretariat	Global	Lallement
Advancing Modern Biomass Energy Opportunities and Challenges	Global	Utria
Energy Efficiency Operational Exchange Program	Global	Taylor
Global Village Energy Partnership Workshop on Consumer Lending and Microfinance to Expand Access to Energy Services	Global	Lallement
Issues in Energy Security	Global	Lallement
Designing Strategies and Instruments to Address Power Projects Stress Situations	Global	Covindassamy
Symposium on Hydropower and Sustainable Development	Global	Zhao
Roundtable of Power Investors for Working Group 3: Governance Standards/Code of Conduct/Performance Benchmarks for Electric Power PPPs	Global	Armar
Natural Gas Connection Charges and Conversion Costs and Their Impact on Poor Households	Global	Gerner

Global *continued*		
Win-Win: Demand-Side Management Options in Developing Countries	Global	Maurer
Potential for Biofuels in Developing Countries	Global	Johnson
Road Map for Scaling Up Modern Energy Services and Clean Energy	Global	Cabraal
Resource Funds: A Comparative Analysis (Revenue Management Proposal)	Global	Tordo
Guidelines for Designing Energy Modules in Multitopic Household Surveys	Global	O'Sullivan
Review of ESMAP's Energy Sector Reform and Market Development Work	Global	Saeed
Developing a Sectoral Energy Poverty Index	Global	Sanghvi
Source Apportionment of Fine Particulates in Developing Countries	Global	Johnson
Pioneering New World Bank Approaches in Support of Sustainability in the Extractive Sector	Global	Davidson
Capacity Building and Policy Assessment in Indoor Air Pollution	Global	Johnson
Assessing the Impacts of Energy Sector Reform on the Poor	Global	Covindassamy
Developing Regional Clean Air Networks	Global	Xie
Developing Financial Intermediation Mechanisms for Energy Efficiency Projects in Brazil, China, and India	Global	Govindarajalu
Best Practices for Grid Electrification (Phase II)	Global	French Barnes

Annex 2: Publications And Knowledge Dissemination Activities

ESMAP Knowledge Dissemniation

Workshops Held Around the World Under ESMAP Activities 2004

Workshop on the ESMAP Nicaragua Policy and Strategy for the Promotion of Renewable Energy Resources Project, held in Managua, Nicaragua. February 2004 and December 2004.

ESMAP Presentation at the Request of the Infrastructure Vice Presidency for the Development of the Administrative Client Support Staff (ACS). A presentation by John Strongman on the ESMAP Activity: Women in Energy and Mining—Voices for Change: A Vision for a Better Future. March 17, 2004.

ESMAP Presentation at Columbia University on the Energy Challenge for Poverty Reduction and Economic Growth. March 23, 2004.

ESMAP Presentation at Brown University on the Energy Challenge for Poverty Reduction and Economic Growth. March 31, 2004.

ESMAP (World Bank Group) Participation in the International Conference for Renewable Energies, Bonn, Germany. June 1–4, 2004.

ESMAP Mexico's Innovative Financing Mechanism for Energy Efficiency in Mexico. Presentation Delivered to PowerMex in Mexico City, Mexico. September 2004.

ESMAP was one of the sponsors for the CAI-Asia: Better Air Quality 2004 Annual Conference for CAI-Asia in Agra India. December 4–9, 2004.

ESMAP (World Bank Group) Participation in the Energy for Development 2004 Conference in Noordwijk, The Netherlands. December 12–14, 2004.

Brown Bag Lunches (BBLs), Roundtables, and Booths Held Under ESMAP Activities in 2004

ESMAP BBL: The Dams Planning and Management Action Plan. A Tool-Kit for Bank Operations. January 20, 2004.

ESMAP/IIE/SID Presentation: Domestic Energy and Women's Lives: The Case of India. January 21, 2004.

ESMAP BBL: Regional Electricity Market Integration. January 22, 2004.

Brown Bag Lunches (BBLs), Roundtables, and Booths Held Under ESMAP Activities in 2004
continued

ESMAP/Energy and Mining Sector Board: ESMAP Activity:
Energy and Mining Sector Board Lecture Series on Some of the
Rural Electrification Work carried out by ESMAP. February 11, 2004.

ESMAP BBL: Renewable Energy Policies and Action Plans. February 26, 2004.

ESMAP/GPOBA BBL: Joint ESMAP-GPOBA-Energy and Poverty Thematic Group BBL:
Promoting Private Investment in Rural Electrification in the Philippines. March 1, 2004.

ESMAP Booth: ESMAP (World Bank Group) Participation in the International Conference for Renewable Energies, Bonn, Germany. June 1–4, 2004.

ESMAP Booth: Invited by the 5th Annual Staff Exchange and Knowledge Sharing Program Conference and Expo. June 28–29, 2003.

ESMAP/ESSD East Asia Pacific Region BBL: Air Pollution in China: Sulfur and Particulate Pollution Sources and Control Measures. July 22, 2004.

ESMAP BBL: Lessons Learned from the ESMAP Renewable Energy Portfolio.
September 29, 2004.

ESMAP BBL: ESMAP Knowledge Exchange Series: Innovative Financial Intermediation in Poland. November 11, 2004.

ESMAP/Urban Transport Thematic Group BBL: Eliminating Emissions from Two-Stroke Engine Baby-Taxis in Dhaka. November 16, 2004.

ESMAP BBL: ESMAP Knowledge Exchange Series Presents: The Uses of Pico-Hydro Technologies in Rural Development Programs. November 22, 2004.

ESMAP BBL: ESMAP Knowledge Exchange Series Presents: Scaling Up Energy Efficiency Financing in Brazil, China, and India. December 16, 2004.

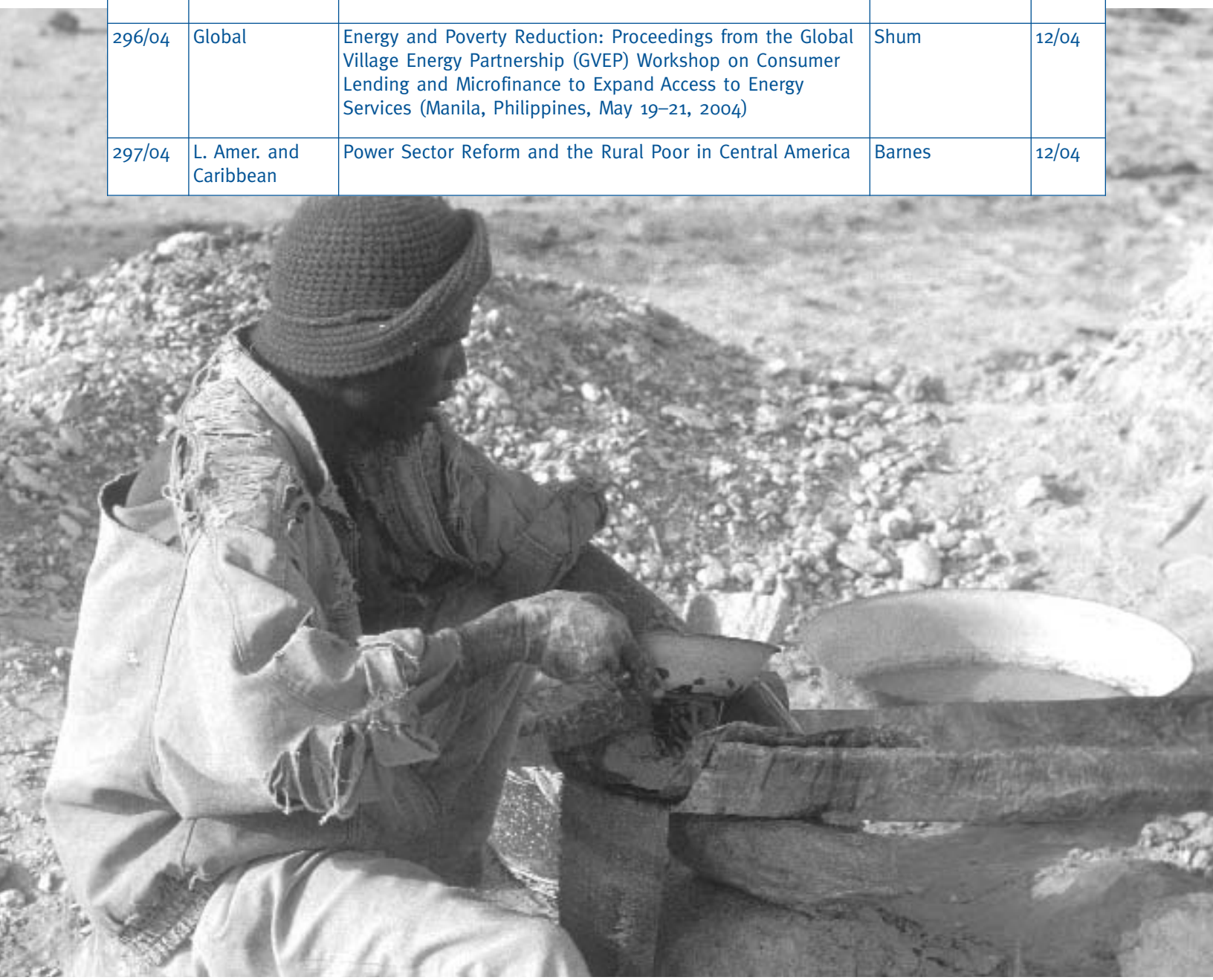
ESMAP/Energy and Water Department Booth: in the Energy for Development 2004 Conference in Noordwijk, The Netherlands. December 12–14, 2004.

Formal Reports

276/04	India	The Impact of Energy on Women's Lives in Rural India	Barnes	01/04
277/04	Sub-Saharan Africa	Opportunities for Integration: Power Trade in the Nile Basin (Phase I)	Hoskote/Miller	01/04
278/04	Africa	Énergies modernes et réduction de la pauvreté: Un atelier multisectoriel. Actes de l'atelier régional. Dakar, Sénégal, du 4 au 6 février 2003 (French only) (Proceedings of the Dakar Workshop)	Durix/Lallement	01/04
279/04	Nigeria	Nigeria Strategic Plan	Beldguedj	02/04
280/04	Global	A Review of ESMAP's Rural Energy and Renewable Energy Portfolio	Wang	04/04
281/04	Sub-Saharan Africa	Toward Cleaner Urban Air in South Asia: Tackling Transport Pollution, Understanding Sources	Kojima	03/04
282/04	Europe and Central Asia	Development of Heat Strategies for Urban Areas of Low-Income Transition Economies: Urban Heating Strategy for the Republic of Armenia (Including a Summary of a Heating Strategy for the Kyrgyz Republic)	Meyer/Johansen	07/04
283/04	Global	ESMAP Renewable Energy and Energy Efficiency Reports: 1998–2004 (CD version only)	Lallement	05/04
284/04 ISBN-0-8213-6082-5	Guatemala	Guatemala: Health Impacts of Traditional Fuel Use (to be published by the Office of the Publisher; currently, there is a version posted on ESMAP's website)	Aramide/Awe/ Ahmed	08/04
285/04	Global	Regulation of Associated Gas Flaring and Venting: A Global Overview and Lessons Learned from International Experiences (joint publication by the Gas Flaring program and ESMAP)	Svensson	08/04
286/04	Africa	Énergies modernes et réduction de la pauvreté: Un atelier multisectoriel. Actes de l'atelier régional. Douala, Cameroun, du 16 au 18 juillet 2003 (French only) (Proceedings from the Douala Workshop)	Durix/ Lallement	09/04
287/04	China	Capacity Building for National and Provincial Socially and Environmentally Sustainable Management of Coal Resources in China	Husband	07/04
288/04	Global	ESMAP Women in Energy Reports and Other Related Information (CD only)	ESMAP	11/04
289/04	Global	ESMAP Indoor Air Pollution and Other Related Information (CD only)	ESMAP	11/04
290/04	Bolivia	Capacitación de Pueblos Indígenas en la Actividad Petrolera (Fase II) (Spanish and English versions)	Alba	07/04
291/04	Bolivia	Estudio Sobre Aplicaciones en Pequeña Escala de Gas Natural (Spanish and English versions)	Alba	09/04

Formal Reports *continued*

292/04	India	Environmental Issues in the Power Sector: Long-Term Impacts and Policy Options for Rajasthan	Imran	10/04
293/04	India	Environmental Issues in the Power Sector: Long-Term Impacts and Policy Options for Karnataka	Imran	10/04
294/04	Global	Energy and Poverty Reduction: Proceedings from the Global Village Energy Partnership (GVEP) Workshop on the Preinvestment Funding (Berlin, Germany, April 23–24, 2003)	Kieffer/Siegel	11/04
295/04	Global	GVEP 2003 Annual Report	Lallement/Siegel	12/04
296/04	Global	Energy and Poverty Reduction: Proceedings from the Global Village Energy Partnership (GVEP) Workshop on Consumer Lending and Microfinance to Expand Access to Energy Services (Manila, Philippines, May 19–21, 2004)	Shum	12/04
297/04	L. Amer. and Caribbean	Power Sector Reform and the Rural Poor in Central America	Barnes	12/04



Technical Reports

047/04	L. Amer. and Caribbean	Energy Policy and the Mexican Economy	Bacon/Halpern	01/04
048/04	Sub-Saharan Africa 1998–2002	Progress Report: The World Bank Clean Air Initiative in Sub-Saharan African Cities. Working Paper #10 (Clean Air Initiative/ESMAP)	Reliquet	02/04
049/04	Middle East and North Africa	Roundtable on Opportunities and Challenges in the Water, Sanitation, and Power Sectors in the Middle East and North Africa Region. Summary Proceedings (May 26–28, 2003, Beit Mary, Lebanon) (CD only)	Bjerde	02/04
050/04	Global	Energy and Environmental Health: A Literature Review and Recommendations	Listordi	03/04
051/04	Global	Petroleum Revenue Management Workshop	McPherson	03/04
052/04	L. Amer. and Caribbean	Bank Experience in Non-Energy Projects with Rural Electrification Components: A Review of Integration Issues in Latin America and the Caribbean.	Rysankova	02/04
053/04	Vietnam	Vietnam's Petroleum Sector: Technical Assistance for the Revision of the Existing Legal and Regulatory Framework	Svensson	08/04
054/04	Bangladesh	Integrating Gender in Energy Provision: Case Study of Bangladesh	Ofosu-Amaah	07/04
055/04	Bangladesh	Opportunities for Women in Renewable Energy Technology Utilization (Phase I)	Ahmad	04/04
056/04	Nigeria	Nigerian LP Gas Sector Improvement Study	Beldguedj	03/04
057/04	Nigeria	Taxation and State Participation in Nigeria's Oil and Gas Sector	McPherson	08/04
058/04	Global	Developing Financial Intermediation Mechanisms for Energy Efficiency Projects: Focus on Commercial Banking Widows for Energy Efficiency (CD only)	Taylor	08/04
059/04	Global	Evaluation of ESMAP Regional Power Trade Portfolio (TAG Report)	R. Means	12/04
060/04	Guatemala	Evaluation of Improved Stove Programs: Final Report of Project Case Studies (English and Spanish)	Awe/Ahmad	12/04
061/04	Global	Supporting Gender and Sustainable Energy Initiatives in Central America: Volume I	Abril/Balcet	12/04
062/04	L. Amer. and Caribbean	Supporting Gender and Sustainable Energy Initiatives in Central America: Volume II	Abril/Balcet	12/04
063/04	Global	Women in Mining: Voices for a Change Conference (CD only)	Stongman	12/04
064/04	South Africa	South Africa Workshop: People's Power Workshop	Mathur	12/04

Special Series Reports

000/04	Global	Status of ESMAP Portfolio of Projects: As of December 31, 2003	ESMAP	04/04
001/04	Ukraine	Ukraine: Integrated Heat Demonstration	Anke Meyer	7/04
002/04	Global	Status of ESMAP Portfolio of Projects: As of June 30, 2004	ESMAP	07/04
	Global	2003 Annual Report	ESMAP	12/04
N/A	L. Amer. and Caribbean Empowering	Information and Communication Technologies in Isolated Areas: Learning from the Solar-Net Villages Program in Honduras	ESMAP	09/04
N/A	Global	The Impact of Higher Oil Prices on Low-Income Countries and on the Poor (for discussion)	Bacon	12/04

Joint Publications

1—15	South Asia	Urban Air Pollution: South Asia Urban Air Quality Management and ESMAP Briefing Notes 1–15	Joint	2001–2004
N/A	South Asia	Indoor Air Pollution Associated with Household Fuel Use in India: An Exposure Assessment and Modeling Exercise in Rural Districts of Andhra Pradesh, India	Joint	06/04
N/A	Sub-Saharan Africa	Clean Household Energy for India: Reducing the Risks to Health	Joint	09/04

Translated Publications (New and Past)

006/00	Global	Mejores Prácticas para el Desarrollo Sostenible de la Micro-Hidroenergía en los Países en Desarrollo	Meyer	09/04
290/04	Bolivia	Capacitación de Pueblos Indígenas en la Actividad Petrolera (Fase II) (Spanish and English versions)	Alba	07/04
291/04	Bolivia	Estudio Sobre Aplicaciones en Pequeña Escala de Gas Natural (Spanish and English versions)	Alba	09/04

LIST OF ABBREVIATIONS AND ACRONYMS

AFRREI	Africa Rural and Renewable Energy Initiative
ASTAE	Asia Alternative Energy Program
BBL	Brown Bag Lunch
CASs	Country assistance strategies
CG	Consultative Group
ESCO	Energy Service Company
ESMAP	Energy Sector Management Assistance Program
ETFPs	Energy trust–Funded Programs
GEF	Global Environment Facility
GVEP	Global Village Energy Partnership
IBRD	International Bank for Reconstruction and Development
ICT	Information and Communication technologies
IDA	International Development Association
IFC	International Finance Corporation
LG	Leaded Gasoline
LPG	Liquefied Petroleum Gas
MDGs	Millennium Development Goals
M&E	Monitoring and Evaluation
MFEDO	Market Facilitating and Enterprise Development Organization
MIGA	Multilateral Investment Guarantee Agency
NGO	Nongovernmental Organization
NREL	National Renewable Energy Laboratory (United States of America)
PREM	Poverty Reduction and Economic Management
PRSPs	Poverty Reduction Strategy Papers
PV	Photovoltaic
RPTES	Regional Program for the Traditional Energy Sector
SAR	South Asia Region
SHS	Solar Home System
SMEs	Small and Medium Enterprises
TAG	Technical Advisory Group of ESMAP
TERI	The Energy and Resources Institute
UN	United Nations
UNF	United Nations Foundation
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
US	United States of America
USAID	United States Agency for International Development
WEHAB	Water, Energy, Health, Agriculture, and Biodiversity
WB	World Bank
WBG	World Bank Group
WBI	World Bank Institute
WHO	World Health Organization
WSSD	World Summit on Sustainable Development

All dollar amounts are U.S. dollars unless otherwise indicated.

The World Bank
1818 H Street, NW
Washington, DC 20433 USA
Tel 1.202.458.2321
Fax 1.202.522.3018
Internet: www.worldbank.org/esmap
Email: esmap@worldbank.org