

# 2006 ANNUAL REPORT

ENERGY  
SECTOR  
MANAGEMENT  
ASSISTANCE  
PROGRAM



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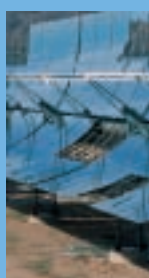
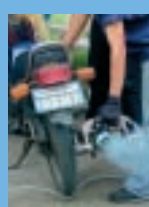
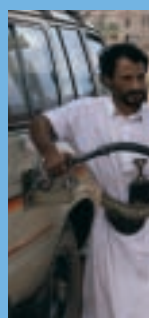
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## ENERGY SECTOR MANAGEMENT ASSISTANCE PROGRAM

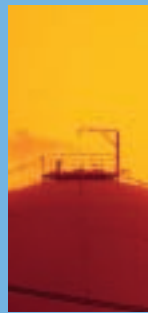


*Promoting the role of energy for poverty reduction and environmentally sustainable economic growth*

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“The close collaboration with the regional energy teams has allowed for a strong focus on policy dialogue, inter-regional learning opportunities, and well-informed project preparation.”

Anyone who sees this photograph of students in Guinea reading by streetlights at the airport, under the headline, “When the lights go out, students take off to airport,” would find it difficult to argue the fact that access to energy opens doors for young people in Africa. The fact that the energy sector has incredible potential for improving the lives of poor people is something the Energy Sector Management Assistance Program (ESMAP) has known for years and a cause we work toward. As we see more momentum toward the Millennium Development Goals, clean energy and climate change, and more attention on Africa and the rest of the developing world, I wanted to take the opportunity of the ESMAP Annual Report to share this photograph with our partners and to commend the many people working to provide access to energy to more people around the world.

The year 2006 was a significant year for ESMAP. It was the midpoint of ESMAP’s 2005–2007 Business Plan and a year that emphasized global vision, innovative research, and knowledge sharing. Since 2005, ESMAP has been taking a regional-centric approach to project management and become more demand-driven than ever before. The close collaboration with the regional energy teams has allowed for a strong focus on policy dialogue, inter-regional learning opportunities, and well-informed project preparation.

In addition to its continued focus on support to developing partner countries through country- and regional-level activities, ESMAP’s own global projects continue to generate new cutting-edge knowledge and analytic results. In 2006, the ESMAP team placed a significant focus on renewable energy and energy efficiency while working closely with the World Bank on its Clean Energy Investment Framework. In fact, ESMAP remains a key support mechanism for upstream analytical work on clean energy and climate change – and is considered vital to the implementation of the Clean Energy Investment Framework.

ESMAP also started groundbreaking work on the G+5 Countries’ Energy Efficiency Indicators Project to develop a common set of efficiency indicators for Brazil, China, India, Mexico, and South Africa, as well as to foster new research on the interactions between agricultural and energy markets and their effect on global



In Guinea, students head to the airport when lights go out.  
Credit: AP Images



trade in biofuels. This project is timely and relevant considering the International Energy Agency estimates that a 65% reduction in greenhouse gases by 2030 could come from energy efficiency in developing countries.

Our analytical work remains top-shelf: one of our studies conducted in 2006, *Coping with Higher Oil Prices*, surveyed 38 developing countries that face staggering oil prices and found that 23 of them agreed to specific studies or efforts to commence biofuel production in the near future.

The ESMAP team has also contributed to the dialogue on market efficiency, sector reform, and energy poverty alleviation with an empirical study called *Power Sector Reforms in Africa: Assessing the Impact on the Poor and Influencing Policy Decisions* that analyzed the long-term effects of market reforms and competitive energy markets on the poor. ESMAP also contributed with technical expertise and financial resources to the Africa Energy Access Scale-Up Action Plan which calls for a doubling of financial resources to reduce energy poverty in the region through investments in regional generation and transmission projects, expansion of electricity provision, energy services for schools and hospitals, as well as dedicated attention to illumination services and improved cooking.

ESMAP had a productive year and so far 2007 promises to be even more so. In 2006, ESMAP received a total of \$16 million from its contributing donors for future activities. Total disbursements in 2006 exceeded for the first time the \$10 million mark. As ESMAP approaches its 25th anniversary in 2008, we are looking toward next-generation energy research, focusing on timely, relevant projects and innovative studies that will help inform the global community in the 21st century. Together with our partners and donors, ESMAP is helping reach the energy-related Millennium Development Goals and helping developing countries overcome the challenges of providing environmentally sustainable, affordable energy to people.

Jamal Saghir  
 Director, Energy, Transport and Water  
 Chair, Energy and Mining Sector Board

“ESMAP’s 2005–2007 Business Plan is designed to provide faster response and better targeted support to counterpart countries by acknowledging the fact that each region faces a different combination of sector issues and challenges.”

## Accounting for Regional Diversity and Emerging Energy Challenges with New Portfolio Management Approaches – Faster Response and Greater Impact

In 2006, the global energy scene continued to be roiled by energy price volatility and security concerns, while the fundamental issue of whether conventional energy development paths are sustainable gained increased attention. These new concerns join long-standing sector challenges, including the impact on the poor of lack of access to affordable and reliable modern energy and continuing problems in mobilizing private sector investment and know-how in badly needed capacity expansion and utility operations.

ESMAP’s 2005–2007 Business Plan is designed to provide faster response and better targeted support to counterpart countries by acknowledging the fact that each region faces a different combination of sector issues and challenges. With the new portfolio management approach, ESMAP invites the World Bank’s regional energy teams to propose a prioritized list of projects in each of the four main thematic areas (Energy Security and Energy Efficiency, Renewable Energy, Energy Poverty, and Market Efficiency and Governance), with ESMAP retaining overall approval authority. ESMAP thematic team leaders are responsible for the quality review of regional proposals, and for identifying emerging cutting-edge topics and global projects to extract the lessons of experience across regional programs. This new approach brings a balance between regionally-focused blocks of activities that provide better service to individual developing countries, and cutting-edge research and globally relevant projects. How does this decentralized business model work? Upon review and approval by the ESMAP technical team, each World Bank regional energy unit managed its own portfolio of projects at the country and

regional level. The support provided by ESMAP to each of these regional portfolios in 2006 averaged US\$1 million, with the total value of “block grants” to regional energy teams in 2006 totaling almost US\$7 million. This represented over 60 percent of the total annual support of new projects launched and funded. The remaining portfolio is reserved for global activities, as well as ESMAP’s think tank and knowledge clearinghouse functions. By all accounts, this new programmatic management model is achieving its objectives of greater regional relevance, improved leveraging of country-specific assistance and lending, enhanced quality with global and country validation, and increased management attention, as evidenced by the regional highlights in Section IV.

## Energy Security through Regional Cooperation and Competitive Market Development

It is well established that regional interconnection and development of cross-border energy trading are important means for stabilizing energy supply, increasing reliability, reducing price volatility, and fostering competitive markets. Regional energy markets also are important inducements for broader economic development and regional trade. During 2006 and before, ESMAP has supported several groundbreaking efforts encouraging regional energy infrastructure development and trading as a key energy security strategy. These long-term efforts have recently paid important dividends, as evidenced by the recent approval of the Southern Cone governments to proceed with preparation of a framework protocol for gas network integration. ESMAP played a crucial role in assisting the collaborative efforts of Argentina, Brazil, Chile, Paraguay, Peru, Bolivia, and Uruguay in this landmark of regional cooperation. A similar landmark was recently achieved in the Greater Mekong Subregion (GMS), with the establishment of the GMS Regional Power Trade Coordinating Committee (RPTCC) to manage the development of regional power trade. ESMAP has been supporting this effort since 2002, and will continue supporting what will be a multiyear effort to develop the frameworks, agreements, operating protocol, and infrastructure investments necessary to realize the huge power-trading potential of the GMS region.





ESMAP is committed to the concept of energy security through regional cooperation, and is supporting other regional efforts as well. In 2007, ESMAP will support the Central American Regional Energy Trade project, which will facilitate trade between those Central American countries to be linked through the Central American Electrical Interconnection System. Another ESMAP-supported project in the Latin America and the Caribbean region will examine the technical aspects and possible institutional arrangements for a power supply interconnection between Brazil and Uruguay.

## Environmentally Sustainable Development through Scaled-Up Investment in Energy Efficiency and Renewable Energy

The emerging imperative for environmentally sustainable development has placed a premium on maximizing investment in economically efficient forms of renewable energy (RE) and energy efficiency (EE) investments. Recent problems with availability and price volatility of oil and gas, and pressure on governments to develop new policies and programs to enhance energy security, have added new imperatives to the clean energy development and climate change mitigation agenda. The World Bank Group (WBG) has taken on a leading role in the clean energy agenda, stemming from its commitment to scale up investment made at the 2004 Bonn conference and its subsequent agreement to implement the Investment Framework for Clean Energy and Sustainable Development that emerged at the 2005 Gleneagles G-8 summit. In 2006, the ESMAP program played a growing role in supporting the World Bank's responsibilities for scaling up EE and RE programs, both through cutting-edge analytic work and through operational leveraging efforts.

Operational leveraging of EE investment through ESMAP support was most readily apparent in China, where a cluster of activities managed by the energy unit of the East Asia and Pacific region addressed several aspects of the critical EE agenda. Projects include support for developing more efficient production techniques and cleaner use of coal; sector reforms and institutional framework development for the municipal heating sector; and an awareness-building regarding energy conservation opportunities and practices by the fast-growing household and commercial consuming sectors in Shanghai. In addition, the long-standing cooperative activity between energy services companies and commercial bankers comprising the Three Country Energy Efficiency Project (3CEE) has successfully leveraged preparation of a large-scale EE project (with potential life-cycle energy savings of 45 million tons of coal equivalent (tce) to be financed through Chinese financial intermediaries with World Bank support, beginning in 2008.

“By all accounts this new programmatic management model is achieving its objectives of greater regional relevance, improved leveraging of country-specific assistance and lending, and increased management, as evidence by the regional highlights in Section IV.”



ESMAP's global activities and analytic work will also further the EE agenda in critical developing economies such as China, India, and Brazil. *The Plus Five Countries Energy Efficiency (EE) Indicators Project*, launched with ESMAP support, will develop a common set of EE indicators for G+5 countries (Brazil, China, India, Mexico, and South Africa) based on a similar system that tracks EE trends in Organisation for Economic Co-operation and Development (OECD) countries. This initiative is co-funded by the International Energy Agency and the Inter-American Development Bank. The project will complement macro-level EE indicators with end-use level indicators—such as in buildings, industry, transport, and agriculture sectors—and provide a valuable analytic tool in fine-tuning EE programs and policies by consuming sector and over time.

### Mainstreaming Power Sector and Commercial Fuels Markets for Renewable Energy

Oil price increases and energy security concerns have helped open up large new markets and commercial opportunities for renewable energy (RE) technology. In 2005–2006, there was a rapid increase not only in such well-established RE technologies as wind energy but solar thermal electric power and biofuels as well. ESMAP is supporting the WBG's commitment to a 20 percent annual growth target for renewables and EE, as agreed upon at the 2004 Bonn International Conference for Renewable Energy. There is considerable evidence that renewable energy is reaching a commercial readiness threshold. In February 2006, the Grid-Connected Renewable Energy Policy Forum, organized by ESMAP and several partners, attracted hundreds of participants and led to pledges by a number of developing countries to ramp up investment in large-scale, grid-connected renewable power plants. Also

in 2006, ESMAP assisted Morocco in developing a landmark energy law that will include special financing mechanisms and a new energy management agency, both focused on increasing the role of renewable energy in Morocco, with the objective of generating 20 percent of electricity from domestic renewable energy sources, and reducing greenhouse gas emissions by 10 percent. Finally, an important new study on the burgeoning trade in biofuels identified some of the opportunities and pitfalls in this rapidly developing area. This first study of several identified the highly complex interaction between markets for agricultural products and energy markets, with the result that any liberalization of trade in biofuels and/or agricultural products will have major and possibly unpredictable impacts on both markets.

## Sustaining the Commitment to Alleviate Rural and Urban Energy Poverty

Of the four thematic areas in the ESMAP business plan, the challenge of energy poverty has the greatest variability across regions. Some regions have for the most part eliminated energy poverty, for example middle-income countries in Middle East and North Africa and in Europe and Central Asia, although some countries in these regions continue to face a recurrence of energy poverty because of sector reforms and skyrocketing fuel costs. The most pervasive energy poverty, however, remains in South Asia and Sub-Saharan Africa, where four out of five people without access to electricity live, mostly in rural areas. The rural poor in these regions remain mired in a pattern of reliance on biomass to meet their basic energy needs and lack of modern energy services for livelihood improvement or economic development. Women and children are additionally affected by the drudgery of traditional biomass collection and the health impacts of indoor air pollution from inefficient cooking and heating.

For almost two decades, ESMAP has been a pioneer and a leader in addressing the problems of energy poverty in all its manifestations. ESMAP continued to lead in 2006, using its new operational framework comprising cutting-edge analytic work, country-specific knowledge generation and policy advice, and operational leveraging. Noteworthy accomplishments included the landmark survey effort entitled "Meeting the Challenges of Rural Electrification in Developing Countries," which summarizes two decades of rural electrification best practice, along with emerging new business models.

The ESMAP energy poverty portfolio recognizes that gaps in access to modern energy are not restricted to the rural poor. Urban poor people depend on commercial wood or charcoal for cooking and often pay high prices, depending on the resource conditions surrounding urban markets. In 2006, ESMAP supported a workshop in Brazil focused on addressing the energy needs of the periurban poor. The workshop centerpiece was an ESMAP-funded report entitled *How Do the Peri-Urban Poor Meet their Energy Needs: A Case Study of Caju Shantytown, Rio de Janeiro*, which stimulated considerable discussion on the role of distribution utilities in converting illegal connections into paying customers. The experiences of utilities that have set up successful programs to provide energy services to urban slums suggest that it is not enough to concentrate exclusively on electricity. There also is a need to address the cooking and heating needs of the urban poor, as they often spend a significant amount of their income on energy. In anticipation of expanding problems of urban and periurban energy access, this important area of work in ESMAP will most likely broaden in 2007 and beyond.



“ESMAP promotes the role of energy in reducing poverty and promoting environmentally sustainable economic growth.”

## I. ESMAP at a Glance

### ESMAP at a Glance

The Energy Sector Management Assistance Program (ESMAP), established in 1983, is a global, multidonor technical assistance program aimed at promoting environmentally sustainable energy solutions for poverty reduction and economic growth. ESMAP recognizes that access to affordable, reliable, and sustainable energy services is indispensable in achieving the Millennium Development Goals (MDGs).

ESMAP is administered by the World Bank and is organizationally located in the Energy, Transport and Water Department of the Sustainable Development Vicepresidency. ESMAP is governed by a consultative group of donors that financially contribute to the program.

ESMAP provides policy advice and helps build consensus on environmentally sustainable energy development in developing countries and economies in transition.

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





The core objective of the current and prior business plans is to promote and secure access to energy for poverty reduction and economic growth. The nexus of linkages that have formed the ESMAP strategy since inception—energy and poverty, environmentally sustainable development, private sector participation, and market efficiency—are still highly relevant. However, the current business plan adds new activities focused on energy security and the social dimension of each thematic area, especially the low-income groups and the gender dimension.

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 750 activities since its inception. The ESMAP program continues to evolve in response to changing conditions and client needs.

## How ESMAP Delivers Services

ESMAP-financed activities are led by World Bank Group staff in partnership with developing country governments and international, national, regional, and local organizations. International and local consultants are extensively used. Their services are procured using World Bank guidelines. More information about procurement arrangements and consultancy opportunities is available on the ESMAP web site – [www.esmap.org](http://www.esmap.org).

## How ESMAP Pursues Its Mission

ESMAP pursues its mission based on a business plan. The current ESMAP Business Plan (2005–2007) has four major thematic areas:

- Energy security, including energy efficiency
- Renewable energy
- Energy poverty
- Market efficiency and governance.

“72 new projects were launched during 2006. The volume of ESMAP’s active portfolio is 80% more in 2006 compared with five years ago.”

ESMAP funded 265 projects in calendar year (CY) 2006, compared to 226 projects in the previous year. ESMAP’s portfolio of projects under implementation increased from 147 to 171, with a total budget of US\$31 million. This is the second year of portfolio expansion since the launch of the new ESMAP business plan and the new regional window approach now followed by ESMAP in developing and approving projects.

A total of 72 new projects were launched during 2006. Total new funding for the year was almost US\$14 million, which supported both newly launched projects in 2006 and some ongoing projects from 2005. As part of a focused effort to complete legacy projects and refresh the ESMAP portfolio, 41 projects with a total budget of US\$6.2 million were finalized during 2006. An additional 15 projects worth US\$4.2 million were financially closed as of December 31, 2006.<sup>1</sup> As a result of these efforts, the total value of closed and published projects increased from US\$8.9 million in 2005 to US\$10.6 million in 2006. This dedicated effort to complete legacy projects implies that the growth of the total value of the ESMAP portfolio was less than what would have

been if the project closures in 2006 had been kept at the same higher level of closures as in 2005. **Table 2.1** summarizes the evolution of the ESMAP portfolio from the beginning to the end of 2006, while **Figure 2.1** provides a historic trend of ESMAP active portfolio size. The volume of ESMAP’s active portfolio is 80 percent more in 2006 compared with five years ago.



**Table 2.1: The Evolution of ESMAP Portfolio in CY2006**

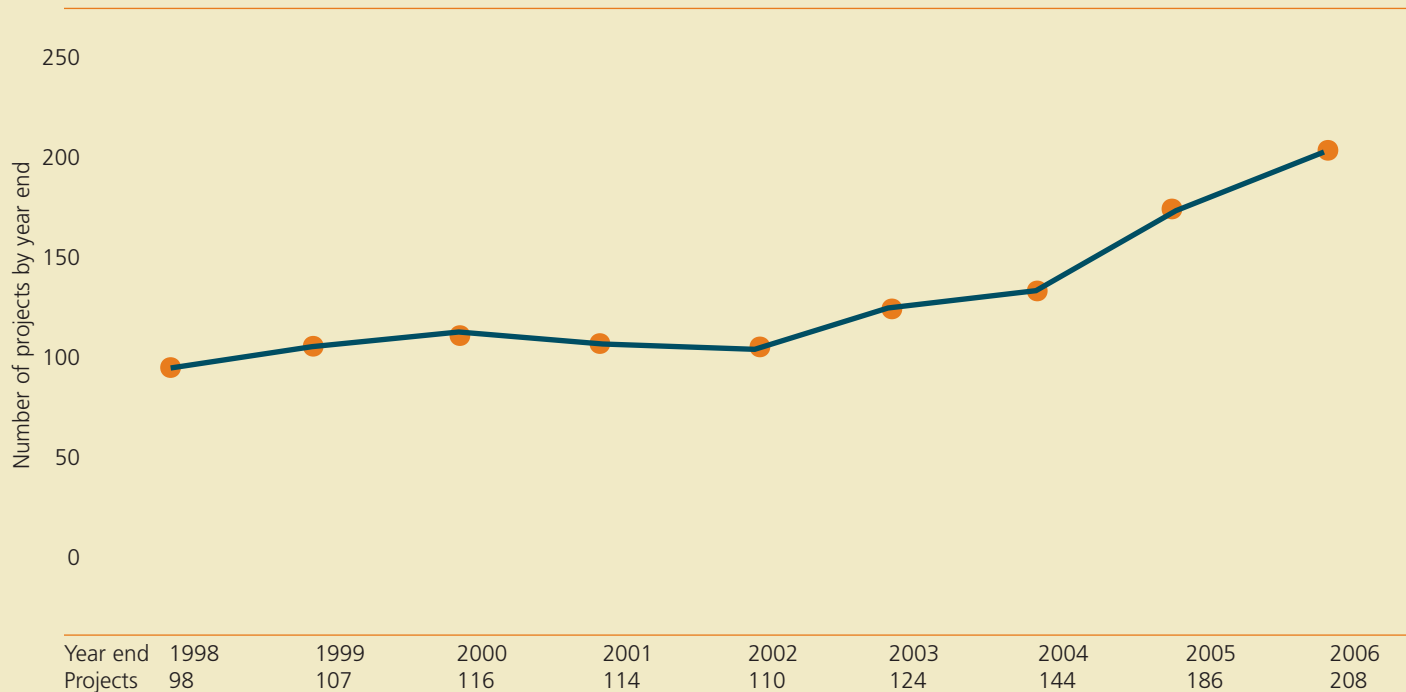
Status and Movements	Number <sup>a</sup>	Value (US\$ million)
Active Portfolio as of January 1, 2006	186	34.29
Activities completed, with publications in process	39	9.12
Portfolio under implementation as 01/01/2006	147	25.17
New activities launched/funded during 2006	72	13.88
Activities closed and published during 2006	(63)	(10.55)
Financially closed	(41)	(6.16)
To be financially closed	(15)	(4.17)
Dropped	(7)	(0.22)
Active Portfolio as of December 31, 2006	208	40.18
Activities completed, with publications in process	37	9.08
Portfolio under implementation as of 12/31/06	171	31.10

Source: ESMAP project database and regional block grant agreements, 2006.

Note: a. Project numbers for the 2005 active portfolio in this report were adjusted. Different from the practice in *2005 Annual Report*, 2005 regional programmatic windows and projects are counted on the basis of activities, instead of on a program basis. The project numbers increased to 147.

1. Closure of projects takes place upon final publication or completion of the main project output.

Figure 2.1: Historic ESMAP Portfolio, 1998–2006



Source: ESMAP database and regional block grants, 2006.

The 2005–2007 ESMAP Business Plan called for a new portfolio management approach that aggregated the direct support to developing countries through regional block grants. These grants support a prioritized list of projects proposed by the regional energy units and reviewed and approved by ESMAP. Under this new portfolio management approach, ESMAP funded 68 projects in 2006, including 47 newly launched projects, with a total value of around US\$7 million. A more detailed description on the thematic areas, regions, and sectors of these projects is presented in **Table 2.2** and **Figure 2.2**. It is important to note that some global programs, such as the Energy Small and Medium Enterprise (SME) program supported by DFID, with a specific thematic focus are not included in the statistics of the regional block grants (as presented in **Figure 2.2**).

**Figure 2.3** presents the thematic distribution of the entire active ESMAP portfolio. The largest theme in terms of value and number of activities is Energy Poverty (with 35 percent of the activities and 52 percent of the value). The thematic distribution in **Figure 2.2** focuses only on the regional block grant programs. A main condition of the approval of these block grants is a clear link with energy poverty to the greatest extent possible for all projects proposed. A specific section of the project summary for evaluation purposes focused on this linkage. From a thematic standpoint, energy security, as well as market efficiency and governance had the largest monetary shares, respectively, at 33 percent (**Figure 2.2**). Renewable energy had the third-largest share.

“It is important to note that the present thematic portfolio classification used by ESMAP assigns only one theme to each project. This portfolio classification approach defined in the 2005-2007 Business Plan does not properly reflect the multithematic nature of most activities supported by the program.”

Table 2.2: 2006 Regional Programmatic Windows<sup>a</sup>

Regional Energy Team	Projects	Value (US\$ million)
Africa	9	1.70
East Asia and the Pacific	10	0.69
Europe and Central Asia	7	0.77
Latin America and the Caribbean	15	0.96
Middle East and North Africa	9	1.11
South Asia	6	0.96
Oil and petroleum	12	0.78
Total	68	6.96

Source: ESMAP regional block grant agreements, 2006.

Note: a. 31 percent of projects in the regional block grants for fiscal year 2007 were started in 2006.

It is important to note that the present thematic portfolio classification used by ESMAP assigns only one theme to each project. This portfolio classification approach defined in the 2005–2007 Business Plan does not properly reflect the multithematic nature of most activities supported by the program. This is particularly clear in the energy poverty theme. The large majority of our activities have as an ultimate objective to deal with energy poverty, but the primary thematic focus may be on governance and markets or on energy security. The single theme classification of ESMAP projects provides a uni-dimensional view of activities. Another example is with energy security projects, which in many cases include renewable energy as a critically important option in the portfolio of options to tackle energy security. ESMAP is currently modifying its portfolio classification process to better reflect the multiple themes associated with an activity. We expect this improved system will provide a more accurate picture of the thematic areas of work supported by the program.

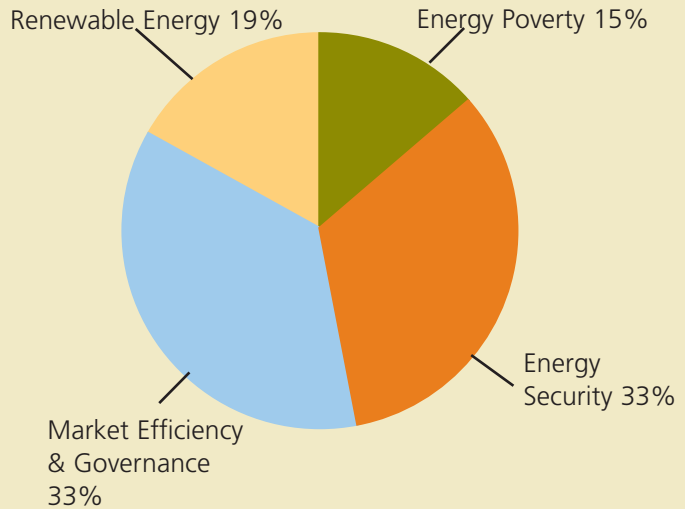
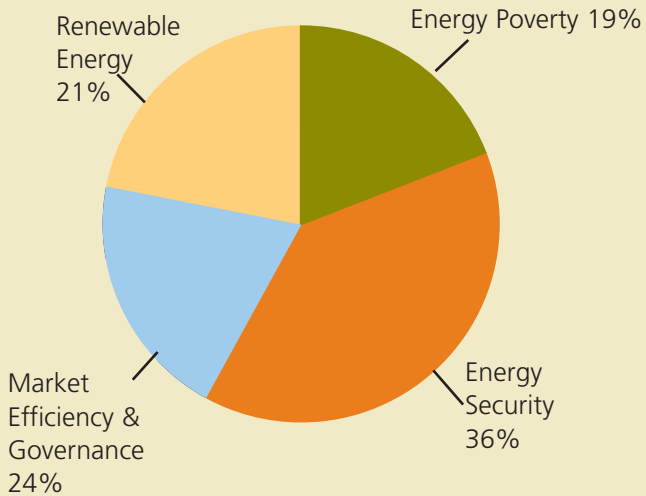
Concerning the geographical breakdown of ESMAP’s active portfolio (**Figure 2.4**), Africa, Latin America and the Caribbean, East Asia, and the global portfolio each accounted in 2006 for roughly equal shares of less than 20 percent. South Asia, Europe and Central Asia, and Middle East and North Africa had a little less than 10 percent each. There was no dramatic change in terms of geographical distribution of projects between 2005 and 2006 (**Figure 2.5**).



Figure 2.2: ESMAP 2006 Regional Block Grants by Thematic Area

Percent of Activities

Percent of US\$ Values

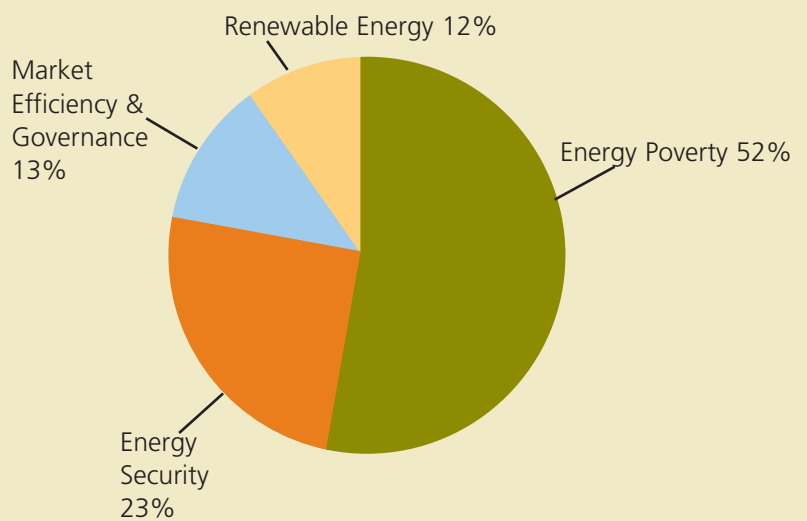
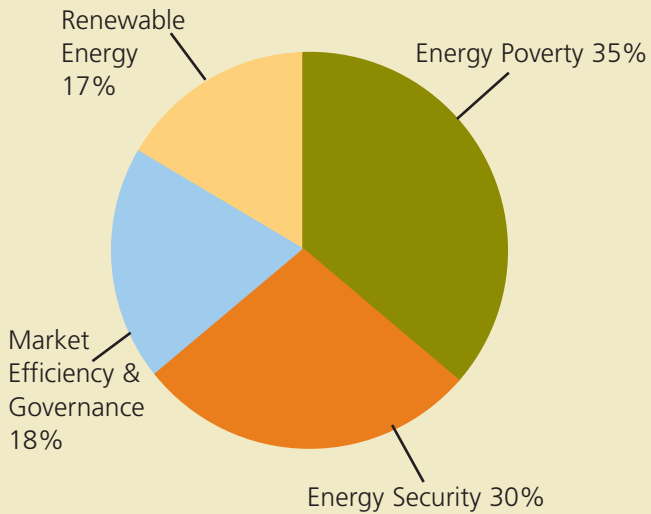


Source: Regional block grant agreements, 2006.

Figure 2.3: ESMAP 2006 Portfolio by Thematic Area

Percent of Activities

Percent of US\$ Values



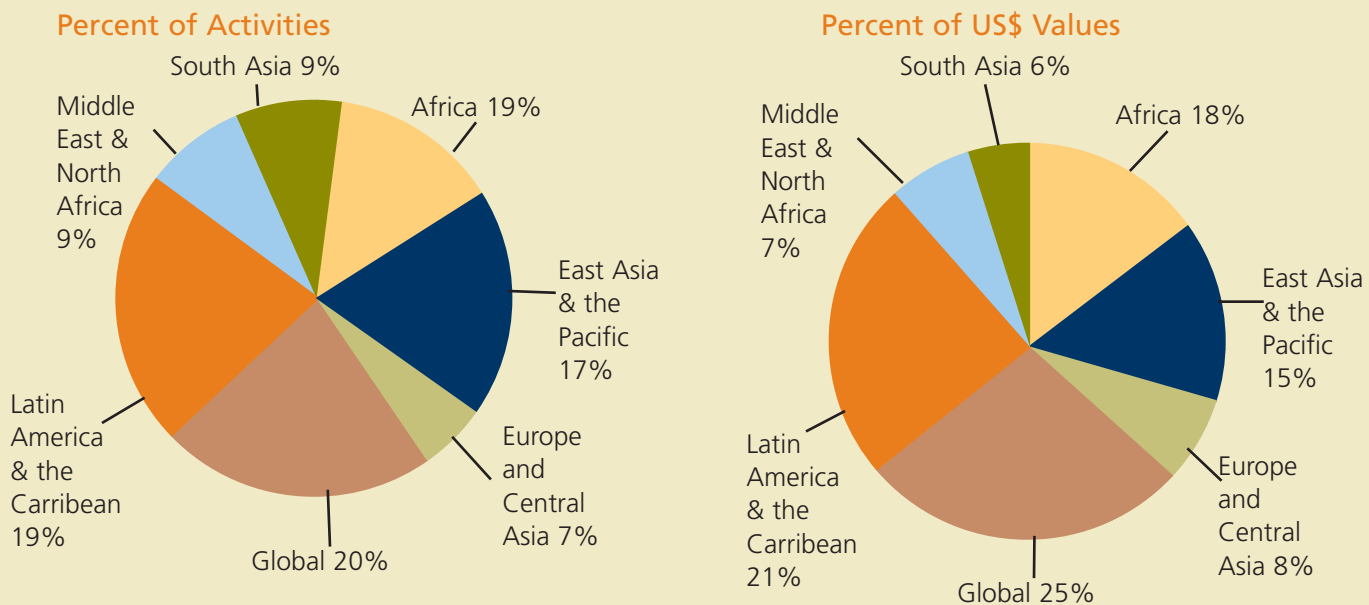
Source: Regional block grant agreements, 2006.

“The large majority of our activities have as an ultimate objective to deal with energy poverty, but the primary thematic focus may be on governance and markets or on energy security.”

With regards to the geographical breakdown of ESMAP’s active portfolio (Figure 2.4), Africa, Latin America and the Caribbean, East Asia and the global portfolio each accounted for roughly equal shares of ESMAP activities. Projects in South Asia, Europe and Central Asia, and Middle East and North Africa were relatively under-represented in terms of both number and total value of activities in the ESMAP portfolio at the end of 2006. There was no dramatic change in terms of geographical distribution of projects when ESMAP’s portfolio evolved from 2005 to 2006 (Figure 2.5).

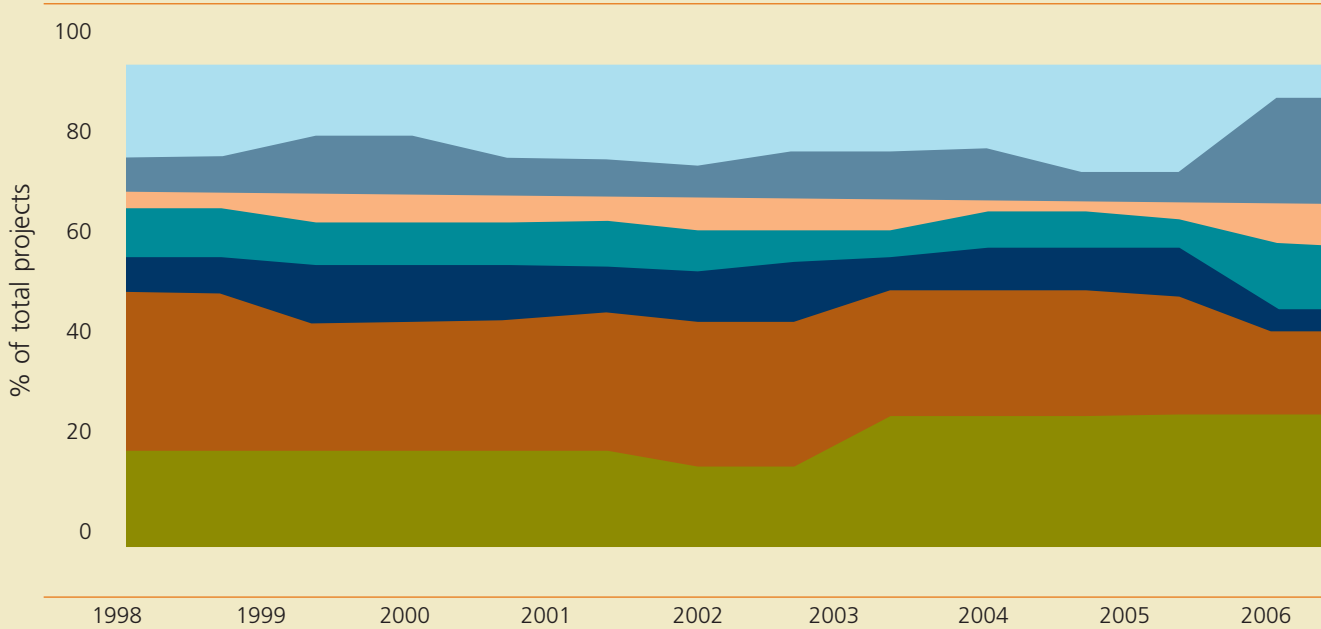


Figure 2.4: ESMAP 2006 Portfolio by Geographical Area



Source: ESMAP database and Regional block grant agreements, 2006.

Figure 2.5: ESMAP Portfolio Geographical Distribution, 1998–2006



Source: ESMAP database and Regional block grant agreements, 2006.

- Latin America and the Caribbean
- Middle East and North Africa
- Europe and Central Asia
- East Asia and the Pacific
- Africa
- Global



“Better management of energy demand and reduced energy demand growth are excellent ways to provide improved energy security at low cost.”



### Energy Security

Energy security was first introduced to the ESMAP thematic portfolio in 2005, reflecting a growing concern that the poorest countries were also the most susceptible to volatility in imported fuel costs and availability. ESMAP’s focus on energy security is intended to help poor countries to design policies that mitigate vulnerability to limited fuel resources, fuel price volatility, and lack of reliable modern energy distribution networks. The intent is to deepen the policy work so that economies, enterprises, and households are no longer caught off guard by energy market disruptions and the volatility of oil and energy prices. Countries both rich and poor must develop the short-term capacity to manage market disruptions as well as long-term policies that encourage economic resiliency and safeguard livelihoods, especially of the poor, against energy supply dislocations.

Fuel price increases have a disproportionately greater impact in retarding the economic growth of poorer countries. Studies show that the impact of a fuel price increase on economic prosperity is inversely proportional to a country’s per capita gross domestic product; thus, the least developed countries are most strongly affected. Since global dependence on fossil fuels will most probably continue to grow, and oil and gas production will be increasingly concentrated in just a few countries and regions, the issue of managing increasing price and supply volatility will be relevant for many years to come.

Another energy security issue relates to the need for increased investment in expanding energy infrastructure. At present, the energy infrastructure in many countries is insufficient to meet existing or forecast energy demand. This is particularly the case with the capital-intensive power and natural gas sectors, where generation and transmission capacity and pipelines require large investments, long lead times, high levels of public sector involvement or public-private partnership, and long-term financial and operational commitments. Real and perceived difficulty in the regulatory and investment climate is frequently a deterrent to the needed investments. Ensuring the local and international conditions needed to facilitate the energy infrastructure investment needed for reliable and affordable energy supply is a major, ongoing challenge.

### 2006 Energy Security Portfolio Overview

The Energy Security Portfolio has 39 projects constituting a total commitment of US\$5.4 million, including:

- US\$3.9 million total commitment for 26 Energy Efficiency projects<sup>2</sup>
- US\$1.5 million total commitment for 13 projects on Energy Security issues.

The geographical and thematic distribution of Energy Security projects is shown in **Table 3.1**.

**Table 3.1: Key Activities in the ESMAP 2006 Energy Security Portfolio**

Region	Theme
Latin America and the Caribbean	• Electricity Utility Benchmarking
	• National Energy Security Strategy for Uruguay
	• Southern Cone Integration of Gas Pipeline Networks
	• Reform of the Hydrocarbon Sector in Paraguay
	• Extending the Use of Natural Gas to Inland Provinces in Peru
	• Colombia: Natural Gas Development Strategy for the Sector
East Asia and the Pacific	• Country Energy Security Strategies for China and Indonesia
	• Sustainable Coal Development in China
	• Flagship Report: <i>Sustainable Energy in China: The Closing Window of Opportunity</i>
South Asia	• Energy Security Strategy for India
	• Improving Regional Energy Trade
Middle East and North Africa	• Management of Hydrocarbon Revenues in the Region
Africa	• Improving Petroleum Trade in Rwanda, Uganda and Kenya
Global	• Analysis of Oil Price Volatility
	• Global Trade of Biofuels
	• Special Report: <i>How Developing Countries Are Coping with High Oil Prices</i>
	• Experiences with Oil Funds
	• Institutional and Financial Aspects
	• Best Practices in Mainstreaming Environmental Safeguards into Gas Pipeline Projects
	• Potential for Biofuels for Transport in Developing Countries

2. These projects are detailed in the separate section on Energy Efficiency.

“By pooling resources such as natural gas and electricity, participating countries can diversify their energy resources and achieve greater resiliency in reacting to supply disruptions.”

Finally, energy security includes activities to manage energy demand, recognizing that satisfying all energy needs with supply-side expansions may not be as economical as reducing energy demand. Better management of energy demand and reduced energy demand growth are excellent ways to provide improved energy security at low cost.

An important area of advanced analytic work on energy security is the *effects of oil price volatility and the apparent paradigm increase in prices*. Research in 2006 was a natural evolution from earlier work that sought to measure the deleterious impact on poor countries (and the poor within those countries) of increased oil prices. Work in 2006 sought to examine policies to deal with such conditions. The report, *Coping with Higher Oil Prices* (P092878, ESMAP Formal Report 323/06), looks at ways that higher costs to end users can be mitigated, with these higher costs more equitably borne by different parties throughout the economy. It also looks at the practical matter of getting public buy-in for such policies, particularly relevant since many countries have long-standing (and financially unsustainable) oil price subsidy policies.

*Coping with Higher Oil Prices* reviews available policies to mitigate the effects of higher oil prices, including the specific government policies (including fuel pricing and subsidies) of 38 developing countries of varying size, varying income levels, and degree of oil and gas market liberalization. The report also reviews the possible fuel policy approaches that governments might consider in light of increased uncertainty regarding future world oil prices. The report and its conclusions have found instant application in the country dialogue between developing country governments and teams from the World Bank and the International Monetary Fund considering the macroeconomic costs of various oil pricing and supply security policy options. The report also was useful input into World Bank Board dialogue regarding the impact of oil prices on the global development agenda.



*Regional integration and international energy trade* has emerged as an attractive means of enhancing energy security. By pooling resources such as natural gas and electricity, participating countries can diversify their energy resources and achieve greater resiliency in reacting to supply disruptions. In 2006, three ESMAP-funded projects examined the energy security benefits of regional integration and cross-border energy trade. One, Southern Cone Gas Integration (see **Box 3.1**), examines the technical, economic, environmental, and financial aspects of gas integration among the countries of Argentina, Bolivia, Brazil, Chile, Paraguay, Peru, and Uruguay. The results have already been presented in a regional workshop and follow-on work will be undertaken to help governments move toward regional integration.

Another ESMAP-funded project looked at possibilities for trade among the Middle Eastern and Central Asian countries of the Economic Cooperation Organization. This effort included a June 2006 workshop in Tehran, Iran, leading to further work, including: (i) multilateral work and prefeasibility studies of regional power trade, and (ii) regional projects that can be readily undertaken through subgroups of interested countries. Finally, the South and Central Asia: Regional Energy Trade project is looking at possible electricity trade models for the two regions.

### Box 3.1: Strategic Study for the Integration of Gas Networks on the Southern Cone of Latin America

In 2005, the governments of Argentina, Brazil, Chile, Paraguay, Peru, and Uruguay (later joined by Bolivia) requested the assistance of the World Bank and the Inter-American Development Bank to develop a major South American gas pipeline project. Expanded regional gas networks will help provide reliable, abundant supplies of natural gas to the regional economy, preventing energy from becoming a bottleneck to growth. This ESMAP-funded project has provided resources and management for the study of the technical, economic, environmental, and financial aspects of this gas integration project.

Four experts meetings were held to review data on reserves, production profiles, demand scenarios, alternative energy prices, and transport tariffs and to agree on critical assumptions on economic growth and international oil prices. In the “non-integration” alternative, the costs of satisfying projected demand for imports, including LNG, would reach US\$6.0 billion per year in 2015 and US\$11.2 billion per year in 2025. These figures demonstrate the significant economic merits of regional gas network integration.

Three pipeline projects were selected as key for the regional integration concept: (i) the Humay–Tocopilla pipeline (linking gas from Peru to northern Chile and, later, northern Argentina); (ii) the Northeastern Argentina Gas Pipeline (supplying gas from the main regional reserves in Bolivia to the principal demand centers of Argentina); and (iii) a pipeline linking Uruguay and Porto Alegre, Brazil.

The initial investment in new pipelines has been estimated at US\$4.2 billion, and total investment with all compression expansion during the period of the projection totals US\$6.8 billion. The evaluation demonstrates that these projects are viable, can be constructed without major environmental difficulties, and, if demands are secured, require tariffs less than US\$1 per million British Thermal Units.

The World Bank has already committed to facilitate the preparation of a framework protocol. The study estimates that the projects will be in operation in 2009, which supposes that the political agreements for cooperation will be reached and that regulatory frameworks will be in place to allow private and public operators to enter into the required agreements and contracts.

This study has used government experts’ data and a mutually agreed methodology to prove the viability and economic merits of gas integration. The experts remain committed to continued efforts to prepare a framework to harmonize the gas regulations and facilitate the development of projects under public-private funding schemes.

*Contributed by:* Eleodoro Mayorga Alba, Lead Economist, Chemicals, Oil, Gas and Mining Division, the World Bank Group.



*Establishing the synergies between improved environmental performance and enhanced energy security* was another focus of ESMAP’s 2006 energy security work. This work is driven by considering that many benefits attributable to improved environmental performance (for example, reduced demand and increased renewable energy production) will also enhance a country’s overall energy security. The project, China Sustainable Coal Sector Development, responds to a request from the government of China to reform its coal sector. China’s coal sector, the world’s largest, has enormous potential to increase its efficiency, management, and regulatory framework. The current situation has led to a poor safety record and high levels of pollution. In this context, reform is vital, both to curb economic damages from harmful emissions and poor occupational safety and to position coal as a more sustainable source of energy in helping to meet rapidly growing demand. The project, Power System Planning in India: Incorporating Environmental Externality Costs and Benefits, responds to a request from the government of India to consider how externalities, including environmental concerns, can be incorporated into system planning.

“Continued interest in expanding the Energy Security Portfolio has provided momentum for additional projects in 2007.”



### Energy Security Projects for 2007

Continued interest in expanding the Energy Security Portfolio has provided momentum for additional projects in 2007.

*Regional energy trade and integration* continues to receive considerable attention. New projects in 2007 include Central American Regional Energy Trade, which will facilitate trade between those Central American countries to be linked through the Central American Electrical Interconnection System. Another ESMAP-supported project will examine the technical aspects and possible institutional arrangements to follow up a Memorandum of Understanding for a power supply interconnection between Brazil and Uruguay. There will also be follow-on work in both the South Asia and Europe and Central Asia regions based on the work performed in 2006. Finally, ESMAP will support a major energy project in East Asia that will examine and promote regional frameworks for countries to cooperatively enhance both regional and national energy security.

Several ESMAP projects continue to focus on *mitigating the continuing economic fallout from high oil prices*, especially for fossil-fuel-poor developing countries. One project, Oil Price Volatility, will measure and assess price volatility and examine ameliorative macroeconomic measures such as physical and financial hedging.

*Linking the complementary benefits of greater security with improved environmental performance* will also be pursued further in 2007. Two projects in India will look at rehabilitating that country's coal-fired capacity through operations and management best practices and improved planning and regulation. Coal could provide a secure, plentiful domestic resource for India, but its role is limited as current practices are not environmentally sustainable. If coal's environmental profile can be improved, it will allow its expanded use and thus improve the country's security.





*Allowing demand-side response as an effective security tool* is also being examined in coming ESMAP-supported projects. Two projects in Egypt are looking at ways to curb energy demand. One involves load management and the other involves the design and application of time of use pricing. Both will allow a reduction in demand, thus forgoing the need to add new supply infrastructure, and both will target demand that comes at peak times or times of high energy prices.

## Energy Efficiency

The 2004 Bonn International Conference on Renewable Energy was a forum for global leaders from government, industry, business, and multilateral organizations to confirm the critical role of renewable energy and energy efficiency in eradicating poverty, protecting the environment, and enhancing energy security. The importance of RE and EE investments for meeting the MDGs has become even more critical as the WBG undertakes a leading role in the implementation of the Investment Framework for Clean

Energy and Sustainable Development that emerged at the 2005 Gleneagles G-8 summit.

The ESMAP program plays a growing role in supporting the scaling up of EE investment in the developing world. Heightened visibility of climate change and environmental sustainability issues has led to a universal acknowledgment by both public and private decision makers that clean energy must play a central role in energy sector reform and sector expansion. Recent problems with availability and price volatility of oil and gas, and pressure on governments to develop new policies and programs to enhance energy security, have added new imperatives to the clean energy development agenda.

EE can directly address problems of energy security and energy vulnerability. There is a vast potential for EE improvements across different countries and sectors, as most developing countries have high energy intensities or are facing the prospect of very rapid energy demand growth. Real and perceived financial and transaction risks associated with EE projects and a lack of an enabling institutional, policy, and regulatory environment in many countries, however, has constrained the scaling up of EE investments. Various activities under ESMAP have addressed these barriers and developed a menu of solutions for transforming the enormous potential for EE improvements into large-scale investment.

In 2006, the EE subthematic portfolio comprised 23 projects, including projects on clean coal technologies and coal bed methane/coal mine methane in China, for a total commitment of US\$3.8 million.<sup>3</sup> The geographical and thematic distribution of these projects is provided in **Table 3.2**.



3. This portfolio is currently mapped under the Energy Security thematic area.

“ESMAP’s energy efficiency activities are focused on generating knowledge, conducting analytical work, developing innovative financial mechanisms, formulating policy and institutional frameworks, and identifying market transformation strategies that can scale up energy efficiency investments.”

**Table 3.2: Key Activities in the ESMAP 2006 Energy Efficiency Portfolio**

Region	Theme/Title
Latin America and the Caribbean	<ul style="list-style-type: none"> <li>Mexico: Energy Design Guidelines for Housing<sup>a</sup></li> </ul>
East Asia and the Pacific	<ul style="list-style-type: none"> <li>China: Policy on Implementing Clean Coal Technology Projects</li> <li>Shanghai Energy Conservation Promotion Project</li> <li>Mongolia Urban Heat Pricing and Regulation</li> <li>China Municipal Heat Regulation – Phase 1 Preinvestment</li> <li>China Energy Efficiency Policy, Regulation, and Institutional Framework Study, Phase I</li> <li>China Coal Bed Methane Strategy</li> </ul>
Middle East and North Africa	<ul style="list-style-type: none"> <li>Energy Efficiency Policy in Morocco</li> <li>Morocco: Global Efficiency in Sidi Bernoussi Industrial and Peri-urban Area</li> <li>Regional Workshop at Sidi Bernoussi, Morocco: Dissemination of the Results of the ESMAP Sidi Bernoussi Industrial Park Study</li> <li>Egypt: Demand Management Workshop</li> </ul>
Africa	<ul style="list-style-type: none"> <li>Uganda Energy Efficiency Activity/Emergency Response</li> </ul>
Eastern Europe and Central Asia	<ul style="list-style-type: none"> <li>Poland: Innovative Energy Efficiency Financing Mechanism</li> <li>Lithuania: Heating Supply to Small Cities/Towns</li> </ul>
Global	<ul style="list-style-type: none"> <li>Developing Financial Intermediation Mechanisms for Energy Efficiency Projects in Brazil, China, and India</li> <li>Review of World Bank Energy Efficiency Activities</li> <li>Energy Efficiency Good Practice Note</li> <li>Energy Efficiency Investment Forum at CSD-14</li> <li>G-8 Clean Investment Framework on Energy Efficiency</li> <li>Energy Efficiency Needs and Toolkit Assessment</li> <li>Building Up on Energy Efficiency Institutional Best Practices</li> <li>Win-Win: Demand Side Management Options in Developing Countries</li> </ul>

Note: a. Some of these projects were withdrawn, terminated, completed or financially closed as of end December, 2006.

### 2006 Energy Efficiency Portfolio

The EE portfolio is consistent with the broad-based Bonn and Gleneagles commitments made by the WBG. Recent studies indicate that improved EE in buildings, industry, and transport could lead to between 17 and 33 percent lower energy use globally by 2050.<sup>4</sup> ESMAP’s activities cover both supply- and demand-side EE opportunities and are focused on (i) enhancing energy security, (ii) alleviating poverty, (iii) improving economic competitiveness, (iv) reducing local and global environmental impacts, and (v) creating positive fiscal impacts.

ESMAP’s EE activities are focused on generating knowledge, conducting analytical work, developing innovative financial mechanisms, formulating policy and institutional frameworks, and identifying market transformation strategies that can scale up EE investments. For countries like China, where coal is the major primary energy source, much of the ESMAP activities are aimed toward analyzing the technical options and regulatory approaches to promote the production and use of coal (including for heating and electricity) in more environmentally sustainable ways. Many of the ongoing activities in the ESMAP EE portfolio address common market, institutional, and technical barriers, such as demonstrations of

4. International Energy Agency, *Energy Technology Perspectives: Scenarios and Strategies to 2050* (2006), p. 28.



innovative financing mechanisms for scaling up EE investments in Brazil, China, India, and Poland. The new global-level projects in the ESMAP portfolio are focused on addressing the institutional models essential to developing and monitoring effective EE policies that would enable scaling up of both supply-side and demand-side EE investments.

Several major EE activities were completed in 2006, in line with the ESMAP Operational Framework and its three functional pillars: think tank, knowledge clearinghouse, and operational leverage. A flagship project, *Developing Financial Intermediation Mechanisms for EE Projects in Brazil, China, and India* (3CEE), has contributed greatly to furthering the think tank function of ESMAP by bringing energy market practitioners and domestic financial-sector stakeholders together to promote EE projects in Brazil, China, and India. With the flagship publication nearly complete, dissemination of project results in 2007 will provide essential tools and models for other countries to replicate.

“Recent studies indicate that improved energy efficiency in buildings, industry, and transport could lead to between 17 and 33 percent lower energy use by 2050.”

The long-standing cooperative activity between energy services companies and commercial bankers that make up the 3CEE project is continuing apace, with a large-scale EE project with life-cycle energy savings of 45 million tce to be financed shortly through Chinese financial intermediaries. This proposed FY08 US\$200 million China financial intermediary investment also benefited from discussions with Chinese policy makers under another ongoing ESMAP activity, China Energy Efficiency Policy, Regulation and Institutional Framework Study—Phase I. Another direct product of the 3CEE project was a May 2006 decision by the Development Bank of Brazil to establish a credit line guaranteeing 80 percent of the credit risks in EE projects to be implemented in coordination with the Brazilian Association of Energy Service Companies.

The analytical and policy work conducted under the *Energy Efficiency Policy in Morocco* has contributed to the development of a draft energy-management law focused on energy conservation, EE, and EE institutions. It is being used as an input to a Development Policy Lending (DPL) loan for future World Bank investment, thereby demonstrating the operational leveraging function of ESMAP.

Another ESMAP project reflective of its think tank function is a forthcoming compilation of demand-side management program experiences entitled *Win-Win Demand Side Management Options in Developing Countries*. This project looks at the strengths and weaknesses of utility Demand Side Management programs, including World Bank-funded programs in Kenya, Thailand, Vietnam, and Brazil and non-World Bank programs in India, Tunisia, Hungary, and the Dominican Republic.

The Shanghai Energy Conservation Promotion Project is helping build awareness regarding energy conservation opportunities and practices among the fast-growing industry, residential, and commercial sectors of Shanghai Municipality, thus following the footsteps of the predecessor ESMAP-funded Shanghai Jade Electricity Project activity. Similarly, both the Mongolia Urban Heat Pricing and Regulation Project and the China Municipal Heating Reform and Regulation Project



have directly benefited development of methodologies for rational heat pricing, drafting of heat regulations at the national level, and identification of preinvestment opportunities (see **Box 3.2**).

The ESMAP-supported China Coal Bed Methane Strategy Project has furthered understanding of the complex dynamics of investing in the coal mine methane sector in China, and helped identify the legal and regulatory framework issues that need to be addressed. The recommendations for institutional and policy choices are consistent with not only the government's strong commitment to coal mine methane development, but also as a means to achieve higher levels of safety in coal mine operations. A report outlining the project's conclusion was well received by the central government and Shanxi provincial authorities, and formed the basis of an industry workshop held in 2006.

The Energy Efficiency Investment Forum held in conjunction with the Commission on Sustainable Development (CSD-14) and cosponsored by ESMAP, attracted more than 120 EE stakeholders and practitioners from dozens of countries. This activity demonstrated how ESMAP can integrate the knowledge clearinghouse and think tank pillars of the ESMAP Business Plan. The key outcome of the



forum was a communiqué to the CSD-14 calling for significant scale-up of EE investment in the developing world.

An Energy Efficiency Thematic Group was established in the World Bank Group (see **Box 3.3**) under ESMAP's Energy Efficiency Needs and Toolkit Assessment project, with members from across regional departments and the International Finance Corporation (IFC) providing a knowledge clearinghouse to exchange operational ideas and solutions across core energy and other (transport, urban, agriculture) sectors. The cross-sectoral interactions from this effort have started a dialogue on operational strategies designed to scale up EE investments within the lending portfolios managed by other sector boards (transport, urban, rural). The World Bank's overall EE scale-up strategy is also being developed through this project.

An ongoing ESMAP activity, Building Up on Energy Efficiency Institutional Best Practices, examines the potential of public-sector-based institutional frameworks (for example, EE authorities and centers) that enable EE awareness building, project development, and investment. This project falls within both the think tank and knowledge clearinghouse functions of ESMAP, with a stakeholder workshop in Seoul cosponsored by the Korea Energy Management Corporation that attracted 25 participants from developing countries together with invited experts

## Box 3.2: Improved Heating Efficiency through Pricing Reforms

ESMAP has funded a pro-poor national heat pricing and reform activity in China entitled "China Municipal Heat Regulation—Phase I Pre-Investment." This activity has helped set up a National Heat Pricing method that was adopted by the Ministry of Construction. The pricing management method lays out an innovative approach to setting prices that can accommodate market-oriented, variable-flow heating systems with billing based on actual consumption.

Cities in northern China will soon be expected to phase in new heat tariff schedules and billing approaches, based on central government guidance but reflecting local circumstances. Tianjin Municipality became the first large city to adopt reforms in 2005/2006 for a pilot area of 2 million m<sup>2</sup> of flats to fully shift responsibility for paying heat bills to consumers.

These heat pricing and billing reforms have considerable replication potential throughout China, and will contribute to the central government's goal of a 20 percent reduction in energy intensity by 2010. The lessons learned will also be valuable for other countries, including those in Central and Eastern Europe that have highest shares of inefficient energy consumption and tariffs in the district heating sector.

Source: Ashok Sarkar, Senior Energy Specialist, ESMAP.



“The project funding requests under the 2007 ESMAP regional block grants include numerous energy efficiency projects spanning the regions and cutting across the major consuming sectors.”

from Organisation for Economic Co-operation and Development countries. There is considerable potential for operational leveraging in South Africa, Jordan, Sri Lanka, and Thailand, as the World Bank is currently assisting these countries in strengthening their EE institutions.

The ESMAP-funded Uganda Energy Efficiency activity/Emergency Response activity, associated with the Energy for Rural Transformation project (approved FY02), developed and designed an EE program for households based on bulk procurement and distribution of 800,000 compact fluorescent lamps by the local electric utility. The Uganda program, which began implementation in 2006, will reduce peak load by 25 MWs and alleviate a debilitating power shortage. There is considerable potential throughout Africa for replicating this utility-based business model for stimulating investment in efficient household lighting.

The Plus Five Countries Energy Efficiency Indicators Project, launched with ESMAP support, will develop a common set of EE indicators for G+5 countries (Brazil, China, India, Mexico, and South Africa) based on a similar system that tracks EE trends in Organisation for Economic Co-operation and Development countries. This initiative is cofunded by the International Energy Agency and the Inter-American Development Bank. The project will complement macro-level EE indicators with end-use-level indicators such as in the buildings, industry, transport, and agriculture sectors. A harmonized framework of EE indicators across the G+5 countries would allow meaningful cross-country comparisons between EE policies and their impacts in terms of environmental and energy demand at the national, sectoral, industry, and equipment levels. The key outputs of the Plus Five Countries Energy Efficiency Indicators Project include (i) a harmonized framework of EE indicators to enable cross-country comparisons, (ii) improved understanding of how the impacts of EE policy development and programs can be monitored via EE indicators, (iii) knowledge transfer via an EE indicators methodology developed for specific sectors in G+5 countries, and (iv) a flagship publication on EE indicators for developing countries.

Technology advances have led to new approaches for the production, distribution, and use of energy, including the development of commercially attractive options for EE. The project funding requests under the 2007 ESMAP regional block grants include numerous EE projects spanning the regions and cutting across the major consuming sectors. The ESMAP philosophy in funding these regional projects is that they will lead to more effective EE policies and programs and increased investments in EE technologies and services.

An important area of work that cuts across the energy efficiency and energy poverty themes is Indoor Air Pollution (IAP). Research on IAP has conclusively demonstrated the connection between inefficient fuels and poorly ventilated stoves and an array of respiratory-related and other diseases. In 2002, the World Health Organization identified IAP as the fourth-leading cause of death and morbidity in the developing world, surpassed only by malnutrition, unsafe sex, and unsafe water and sanitation. Poor families in rural areas are disproportionately affected, as they lack the resources and opportunity to access cleaner, more efficient fuels and appliances.

While household energy consumption behavior varies around the world, a common feature is that women are mostly responsible for cooking. Because women also bear the primary responsibility for child care, children and infants may spend several hours a day inhaling harmful pollutants. In colder climates, where heating is essential throughout a significant portion of the year, the picture of energy use and IAP exposure becomes more complex (see **Box 3.4**).

IAP and household energy use behavior are closely related to several MDGs. Reducing IAP exposure improves women’s and children’s health (Goals 4 and 5). Transitioning to more efficient and cleaner fuels reduces the drudgery of biomass fuel collection, both empowering women with more free time and allowing more children, especially girls, to attend school (Goals 2 and 3). Moreover, switching to cleaner fuels and improved cooking and heating technology can reduce pressure on forests and reserve crop residues for more sustainable uses, such as fertilizer (Goal 7).

### Box 3.3: Energy Efficiency Knowledge Management within the World Bank Group

Since 2006 the ESMAP-supported WBG Energy Efficiency Thematic Group has steadily expanded its role as a forum for exchanging operational knowledge on mechanisms encouraging higher uptake of EE. The Energy Efficiency Thematic Group brings together staff members from across the World Bank's regional departments and IFC on a regular basis to discuss EE topics of relevance and importance.

Monthly meetings have featured presentations by senior World Bank and IFC staff, and external experts describing their experience with mainstreaming EE within the traditional energy spheres as well as cross-sectoral initiatives in the transport, urban, and agriculture sectors. In November, Dr. Pramod Deo of the Maharashtra Electricity Regulatory Commission in India discussed the commission's experience in mobilizing demand management and EE to address power shortages, including innovative tariffs, demand-side resource acquisition, and a revolving fund earmarked for energy conservation initiatives.

In 2007, this forum will continue to strengthen the linkages between the Energy Anchor and regional energy units, and will facilitate knowledge management and information exchange within and outside the World Bank.

Source: Ashok Sarkar, Senior Energy Specialist, ESMAP.



### Box 3.4: Indoor Air Pollution (IAP) in East Asia and the Pacific

IAP's enormous relevance to international development and global health is well established, but identifying effective ways to change energy-consuming behavior has proved daunting. Recent advances in intervention science—spanning a wide range of disciplines, from engineering to epidemiology and the social sciences—can help fill the gap between advocacy and action. No intervention program can be sustained, however, unless it comprehensively takes into account the social, cultural, and physical complexities of household energy use. The World Bank, in cooperation with China's Ministry of Health and the Chinese Center for Disease Control and Prevention, initiated in 2002 a project entitled Sustainable and Efficient Energy Use to Alleviate Indoor Air Pollution in Poor Rural Areas of China. This multisectoral project drew on decades of international IAP research and experience in China and around the world.

The project seeks to test whether behavioral interventions (health education) plus appropriate technology (improved stoves and better ventilation) constitute an effective mitigation of IAP in poor rural areas. The central tenet was that a multisectoral approach, incorporating insights and approaches from the fields of health, energy, environment, education, and poverty reduction, might create conditions conducive to community effectiveness of IAP exposure-reduction interventions. A community-based trial of combined stove and health education interventions was carried out in four low-income Chinese provinces (Gansu, Guizhou, Inner Mongolia, and Shaanxi). Separate townships in each province were assigned different multisectoral mixtures: stove plus behavioral interventions, behavioral interventions alone, and control. Data on household fuel and stove use and indoor air quality (respirable particles, carbon monoxide, and sulfur dioxide) were collected before and after interventions to provide direct evaluations of intervention effectiveness. Evaluation efforts focused on the efficacy of different interventions according to time of year (peak heating versus late heating season) and principle use of stoves (heating or cooking). Gansu was the only province where combined stove and behavioral interventions led to pollution reduction where cooking was the primary purpose of stove use. Improved technology was shown to be a critical part of the intervention, as compared to the control group; no significant IAP reductions were seen in groups with health education alone.



Source: Enis Baris, Senior Public Health Specialist, World Bank Group.

“The World Bank Group is committed to meeting a 20 percent annual growth target for renewables and energy efficiency, as agreed upon at the 2004 Bonn International Conference for Renewable Energies.”

## Renewable Energy

Renewable energy (RE) is a core component for providing access to modern energy and developing environmentally and economically sustainable infrastructure in the developing world. Developed in tandem with improved EE, renewables not only contribute to a cleaner environment but deliver heightened energy security and reduced exposure to volatile fossil fuel prices.

The WBG is committed to meeting a 20 percent annual growth target for renewables and EE, as agreed upon at the 2004 Bonn International Conference for Renewable Energies. Renewable energy is one of four ESMAP priorities, with ESMAP resources providing tech-

nical assistance to policy analysis and supporting development of sector strategies and renewable energy markets.

ESMAP's 2006 portfolio of projects with primary thematic focus on renewable energy comprised 15 projects and US\$2.2 million of commitments focused on four main areas:

- Developing policy and regulatory frameworks
- Examining market opportunities
- Financing renewable resource assessment, sector work, and project development
- Creating knowledge and providing knowledge management for practitioners.

**Table 3.3: Key Activities in the ESMAP 2006 Renewable Energy Portfolio**

Region	Theme/Title
Latin America and the Caribbean	• Social and Economic Impacts of Biodiesel Production in Brazil
	• Policy Framework for Increased Reliance on Renewable Sources of Energy in Colombia
East Asia and the Pacific	• Policy & Strategy for Promoting Renewable Energy in Nicaragua
	• Capacity Building among Small-Scale Off-Grid Energy Suppliers (Mongolia)
South Asia	• Study of Voluntary Green Electricity Schemes in Beijing and Shanghai
	• Bhutan Hydropower Sector (Export) Study
Eastern Europe and Central Asia	• Private Sector Small-Scale, Grid-Connected Renewable Power Generation in Sri Lanka.
	• Impact Analysis of Policies to Increase Renewable and Low Carbon Energy Use (Serbia & Montenegro)
Africa	• Study on the Potential for Biofuel Production in Mozambique
	• Clean Energy Strategy for the World Bank Africa Energy Unit
	• Uganda Geothermal Development Planning
Middle East and North Africa	• Strengthening the Moroccan Electricity Sector Regulatory Framework for the Promotion of Renewable Energy with Emphasis on Large-Scale Grid-Connected (LSGC) Technologies
Global	• Global Trade in Biofuels
	• Risk Assessment Methods for Power Utility Planning
	• Rising Energy Prices and Their Impacts on Developing Countries: The Role of Renewable Energies and Energy Efficiency (Meeting)
	• Grid-Connected RE Policy Forum
	• Grid-Connected RE Topical Briefs
	• Grid-Connected RE Policy Forum + follow-up



## Box 3.5: Global Trade in Biofuels

Interest in biofuels has grown rapidly, owing to rising oil prices, concerns over the security of oil supply, and environmental considerations. Biofuel production may also be a future source of economic growth for a number of developing countries with large biomass resources.

At present, most commercial biofuel supplies are produced and consumed domestically. This results in barriers to trade that usually originate in agricultural policies. Countries often impose tariffs and quantitative restrictions on imported biofuels. They also provide production subsidies and tax expenditures to support only biofuels, which are domestically produced.

So-called first-generation biofuels are produced from agricultural crops that have alternative markets in food (and sometimes cosmetics) products. The interaction between markets for agricultural products and energy markets is highly complex, and a liberalization of trade in biofuels and agricultural products will have major impacts on both sets of markets.

ESMAP has supported a major study of these issues by World Bank staff, with a view to developing policy recommendations. The results of the study will be published in 2007.

*Contributed by Soren Krohn, Senior Renewable Energy Specialist, ESMAP.*

The geographical and thematic distribution of the 18 active projects is shown in **Table 3.3**. In 2006, the ESMAP program on renewable energy devoted approximately half of its funding to global and regional issues facing the development of renewable energy, whereas the other half was devoted to country-based projects.



## 2006 Renewable Energy Portfolio

Two major think tank tasks related to renewable energy were supported by ESMAP in 2006. An analytical study of regional biofuels trade work (see **Box 3.5**) examined the consequences of global trade in biofuels and the complex interaction with agricultural and trade policies. The research results suggest that some biofuel promotion policies may have undesirable side effects on both the environment (including increased greenhouse gas emissions) and agricultural markets.

A second think tank activity was a seminar on risk assessment methods for power utility planning, the results of which will be documented in a planned 2007 ESMAP publication. This activity will also provide background for further research focused on improved analytical methods for assessing the value of alternative generating portfolios in power systems.



“ESMAP and GEF have jointly committed more than US\$1 million for technical assistance and advisory services to these countries.”



ESMAP's work as a knowledge clearinghouse for renewable energy was visible in the Grid-Connected Renewable Energy Policy Forum conducted in 2006, which presented selected best practices in regulatory practice and grid systems management. Each of these issues is part of the ESMAP think tank agenda as found in the present Business Plan.

The scoping study for voluntary green electricity schemes in China, to be published in 2007, will further contribute to ESMAP's knowledge clearinghouse function. This report will also be a valuable addition to the Renewable Energy Toolkit; an ongoing Web-based flagship product that directly serves ESMAP's operational leveraging function.

ESMAP's operational leveraging function has resulted in numerous studies on renewable energy issues in each region, as further described below.

### Large-Scale Renewable Energy Policy

In February 2006, ESMAP organized the Grid-Connected Renewable Energy Policy Forum, in collaboration with the government of Mexico, the Global Environmental Facility (GEF), the World Bank, and the Global Wind Energy Council. This conference in Mexico City included 300 participants from 35 developing and industrialized countries exchanging experiences on renewable energy policy, grid integration, private sector participation, and the economic valuation of renewable energy. During this forum, several developing countries reaffirmed their interest in ramping up renewable energy programs with a view to building more large-scale, grid-connected renewable power plants. As a follow-up to the forum, ESMAP and GEF have jointly committed more than US\$1 million for technical assistance and advisory services to these countries and others to scale up grid-connected RE.

## Comparing Renewables with Conventional Power Generation

Comparing the economic value of renewable energy power supplies with fuel-based power generation poses methodological problems not adequately captured by traditional economic analysis methods. For example, a conventional fuel-fired power plant has considerable uncertainty in levelized costs over the plant's life, as future costs are largely driven by unpredictable and uncertain fuel prices. In contrast, power generation using renewable energy, with the exception of biomass-electric schemes, is fuel-free and therefore has a more predictable future cost stream. Traditional economic analysis uses alternative fuel price forecasts, but does not adequately capture the fuel price-risk element; hence, traditional analysis tends to favor fuel-intensive conventional power generation over capital-intensive renewables generation.

In 2006, ESMAP actively engaged the practitioner community on these power-system-planning and risk-assessment-methodology issues. ESMAP organized a seminar on Risk Assessment Methods for Power Utility Planning in June 2006, with participation by World Bank staff, academics, and power system planners. The seminar reviewed existing and emerging risk assessment methods for power systems planning, noting their inadequacy to deal with key risk factors and the interdependence between the risk elements in power systems planning.

As a follow-up, in 2007 ESMAP will prepare a framework and a plan for developing advanced risk-based power-systems planning methods applicable to developing countries. The outcome of these efforts should be more robust assessment methods that help utility planners in developing countries to minimize their risk-adjusted energy supply costs.

## Renewable Resource Assessment and Energy Sector Development

In 2006, ESMAP funded an analysis of the potential for biofuel production in Mozambique, plus an assessment of the social and economic impacts of biodiesel production in Brazil. Another study analyzes the potential for exploitation of the geothermal resources in Uganda, while a World Bank study for the government of Bhutan analyzes the technical and economic options for further development of hydropower.

## Rural Renewable Energy Access

Modern energy services such as electricity for lighting and electronic media in households, schools, and clinics are important for poverty reduction, livelihood improvement, delivery of health and education services, and overall economic development. Constructing large-scale, grid-connected electricity supplies, however, is not an economically viable option in areas with highly dispersed populations and a low density of electricity demand. An alternative electrification approach is to serve these areas using locally available renewable energy sources.

Mongolia has immense rural areas with a very low population density, a perfect example of when a central electrical grid cannot efficiently serve rural households. In 2006, ESMAP financed a study to establish a supply chain for providing solar- and wind-based energy to rural (and often nomadic) Mongolian households. The study outlines the technical, financial, and regulatory requirements and provides capacity building for small off-grid energy suppliers.

## Policy Frameworks for Renewable Energy

Several 2006 ESMAP projects have supported development of policy frameworks for renewables, at the global, regional, and national levels (see **Table 3.3**). The projects included a review of policies promoting small-scale renewable energy projects in Sri Lanka, a broad-based Clean Energy Strategy for the World Bank's Africa Energy Unit, and assistance with regulatory frameworks for several countries, including Colombia, Morocco (see **Box 3.6**), and Serbia and Montenegro.

“One-third of the world’s population in rural and poor urban areas still rely on traditional methods of biomass collection and use to meet their basic energy needs for cooking and heating.”

**Table 3.4: Key Activities in the ESMAP 2006 Energy-Poverty Portfolio**

Region	Theme/Title
Africa	• Implementing the Action Plan for Energy Access Scale-Up in Africa
	• Support for Forum of Energy Ministers of Africa (FEMA)
	• Rural Lighting Initiative for Africa
	• Sustainable Biomass Supply and Use
	• Modern Biofuels Studies in Mozambique and Ethiopia
	• 3A-ESMAP Implement Action Plan (FY07)
	• GH-Energy Policy Part 2 (FY06)
	• SN-ESMAP Multisector Impact Rural Electrification (FY06)
	• MW-Infrastructure Services SIM
	• 3A-ESMAP Product Uses of Electricity (FY09)
	• Lessons from Nigeria Development of LPG Markets
	• Zambia Energy-Poverty Action Plan (GVEP)
	• Niger Energy-Poverty Action Plan (GVEP)
	• Africa Rural and Renewable Energy Initiative (AFRREI)
	• Promoting Productive Uses of Electricity in Rural Areas
	• AFTEG Rural and Renewable Energy
	• Energy Access Action Plan for Africa
	• Lagos Strategy for Economic Development and Poverty
	• Maximizing Poverty Reduction Impact of Rural Electrification in Senegal
	• Energy-Poverty Action Plan (GVEP) <sup>a</sup>
• Facility for the Follow-Up of Africa Energy-Poverty Workshops <sup>a</sup>	
• Expanding SME Outsourcing Opportunities from Utility Sector Reform— A Survey of Eastern and Southern Africa <sup>a</sup>	
East Asia and the Pacific	• ID-Electricity Access for Rural
	• ID-Fuel Substitution Analysis
	• MN-Mitigation Sector Reform and Tariff Adj <sup>a</sup>
	• Training for Access to Renewable Energy
	• Development of Pro-Poor National Heat Pricing and Billing Policy
	• Infrastructure Services to the Rural Poor
	• China: Enabling Universal Access to Electric Power
	• Development of East Asia and the Pacific Energy Business Strategy
	• National Rural Electrification Planning
	• Sustainable Energy Use to Alleviate IAP in Poor Rural China <sup>a</sup>
	• Rural Electrification Policy Development and Conceptual <sup>a</sup>
	• Energy Services Delivery Projects to Improve Rural Health and Education <sup>a</sup>
• Global Village Energy Partnership (GVEP) Asia Initiative <sup>a</sup>	
• Financing for Small-Scale Power Supply and Decentralized Systems <sup>a</sup>	
Europe and Central Asia	• Provision of Energy Services to the Poor in Tajikistan
	• Women in Mining: Chance for Better Life Workshop
	• Power and Poverty: Lessons from Energy Sector PSiAs in ECA <sup>a</sup>
	• People and Power: Electricity Sector Reforms and the Poor in Europe and Central Asia <sup>a</sup>

Note: a. ESMAP energy poverty projects completed or nearing completion at end-2006.

*continued*

## Box 3.6: A Legal Framework for Renewable Energy and Energy Efficiency in Morocco

Morocco is 95 percent dependent on imported fossil fuels, which has focused the attention of the government on ensuring energy supply security and adjusting the Moroccan economy to accommodate energy price shocks. Morocco is also well endowed with renewable energy resources, and has a substantial economic potential for EE improvements. With this in mind, the government has since 2005 engaged in an energy sector dialogue with the World Bank for the preparation of an energy-sector development policy loan. ESMAP provided support to this dialogue, catalyzing activities for EE and renewable energy, two sectors in need of extra capacity to formulate policies and measures. ESMAP financed several projects that are providing the foundation for a central legal framework for renewable energy and EE in Morocco, including special financing mechanisms and creation of a new energy management-implementing agency focused on

- (i) Increasing the role of renewable energy in Morocco, with the objective of generating 20 percent of electricity from domestic renewable energy sources by 2015;
- (ii) Promoting more efficient utilization of energy in industry and public buildings and for residential users; and
- (iii) Reducing greenhouse gas emissions by 10 percent by 2015.

In 2006, ESMAP-supported projects focused on building consensus among stakeholders on goals and measures to boost wind electricity and EE. Those projects facilitated working groups within the government that were able to draw upon lessons learned from previous efforts in Morocco and best practices observed elsewhere to help the government prepare a comprehensive legal framework for energy management. This framework eventually took the form of a single law on renewable energy and EE that provides an enforceable tool to catalyze the preparation of additional policy and regulatory measures and investments. The law sets up goals and specifies interventions, such as 1,000 MW of additional wind-electricity-generation capacity by 2012, mandatory EE audits, and the preparation of improved sectoral EE standards. The law also establishes an energy management agency charged with promoting EE and supporting small renewable energy technologies for households and businesses. The law also launches two special funds—one fund to pool donor financing to support private sector investment in large wind and power generation capacity, and a second fund to support EE investments. In 2007, ESMAP will support additional work to prepare the business plans and to design the organization of the new energy management agency and the funds.

Source: Pierre Audinet, Senior Energy Economist, Energy Unit, Middle East and North Africa Region, World Bank Group

## Energy Poverty

In the past 25 years, the world has extended access to electricity and modern fuels to more than 1 billion people; however, big gaps 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. One-third of the world's population in rural and poor urban areas still rely on traditional methods of biomass collection and use to meet their basic energy needs for cooking and heating. While today most of the people without access live in rural areas, over the next three decades almost 95 percent of the population growth is expected to occur in urban areas. This means that new access gaps may emerge in the developing world's cities. Substantially reducing the number of people lacking access to electricity and better-quality cooking and heating fuels will therefore require targeting efforts to poor urban as well as rural areas.

The ESMAP Energy Poverty programmatic contribution includes improved understanding of access issues through high-quality analytical work, promoting an increase in the quality and number of the World Bank's portfolio of energy access projects, and disseminating research and operational results to the international development community through ESMAP's several knowledge management series. For the period 2005–07, the program focus includes

- Assessing the development impact of energy and implications for the MDGs
- Improving the World Bank's electricity access performance, including monitoring and evaluation systems
- Addressing the household energy nexus, including strategies for alleviating the impacts of IAP and improving access to efficient and safe energy for cooking and heating
- Promoting innovation in financing of rural energy services
- Meeting the energy needs of the peri-urban poor.

The geographical and thematic distribution of the 53 active projects is shown in **Table 3.4**.

“Adequate and affordable supplies of electricity and modern fuels must be available to households if they are to have a good living standard.”

**Table 3.4: Key Activities in the ESMAP 2006 Energy-Poverty Portfolio** *(continued)*

Region	Theme/Title	
Latin America and the Caribbean	• Monitoring and Evaluation of Energy Project	
	• Development of Regional Capabilities in Three States of the Republic [Mexico] to Foster Energy Projects for Rural Areas, Focusing on Renewable Energy (GVEP)	
	• 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 (GVEP)	
	• Honduras: Delivery of Energy Services in Rural Areas (GVEP)	
	• Peru Rural Electrification	
	• LAC-Low Income Energy Assistance	
	• LAC Subsidy Review Study	
	• Energy Solutions for the Poor Marginalized Communities (in the framework of GVEP follow-up)	
	• Haiti: Scoping Study for Household Energy Strategy	
	• National Biomass Programme	
	• Renewable Energy Systems in Peruvian Amazon Region (RESPAR Project)	
	Middle East and North Africa	• Social Safety Net for LPG Subsidy Reduction
		• Determination of Gas Pricing for Poor Households in Egypt (Regional Allocation Grant)
• Energy Sector Strategy for Poverty Reduction and Growth <sup>a</sup>		
South Asia	• Improving Rural Electricity Services through Renewable-energy based Distributed Power Generation	
	• Improving Health of Women and Children through Renewables and Efficient Cookstoves	
	• Kabul Household Energy Survey (SAR Regional Grant)	
	• Enhancing Access and Rural Electrification - Willingness to Pay	
	• Commercialization of Improved Stoves <sup>a</sup>	
Global	• Exploring Opportunities for Improving Rural Energy Access <sup>a</sup>	
	• Monitoring and Evaluation Support to Operations	
	• Concept Note Development for Gender	
	• Gender and Youth	
	• Communities Impacted by Coal Activities and Application to Oil and Gas	
	• Impacts of Oil, Gas, and Mining Development on Women and Youth	
	• Connecting the Poor to Natural Gas	
	• GVEP-GAPFund	
	• Rural Electrification BP Dissemination - Session at Energy Week	
	• Energy Modules for Multitopic Household Surveys <sup>a</sup>	
• Energy Services for the MDGs <sup>a</sup>		
• Meeting the Energy Needs of the Urban Poor: The Case of Electrification <sup>a</sup>		
• Electrification and Regulation: Principles and a Model Law <sup>a</sup>		

Note: a. ESMAP energy poverty projects completed or nearing completion at end-2006.

## Box 3.7: Energy Guidelines for Living Standards Measurement Studies

Adequate and affordable supplies of electricity and modern fuels must be available to households if they are to have a good living standard. Recognizing the role that energy services play in poverty reduction, governments everywhere wish to implement policies and investments that will accelerate the transition from use of traditional fuels to modern fuels and electricity. Consequently, policy makers increasingly seek empirical evidence of the relationship between investments made in energy infrastructure, the energy policies they implement, and welfare improvements at the household level.

One common instrument used in the preparation of the World Bank's poverty reduction strategies is the Living Standards Measurement Studies (LSMS). Unfortunately, at present the data on household energy use collected through LSMS surveys are insufficient for extensive energy policy analysis. The purpose of the guidelines financed by ESMAP is to offer advice on how an LSMS or other multitopic household survey can be modified to improve its usefulness for the energy sector.

As a result of this ESMAP study, there are plans under way to have LSMS surveys make use of these guidelines. In summary, LSMS surveys containing better information on household energy use provide important insights into the role energy services play in household welfare and the policies that would be most effective in accelerating the household transition to use of modern fuels.

Source: Kyran O'Sullivan, and Douglas F. Barnes. 2005. "Energy Modules for Multi-topic Household Surveys: Guidelines for LSMS Survey Designers." Forthcoming World Bank Technical Paper, World Bank, Washington, DC.

ESMAP's Energy Poverty program highlights included two high-quality flagship reports. *The Urban Household Energy Transition* was jointly published by ESMAP and Resources for the Future, and provides a readable summary of household energy issues for urban areas in developing countries. *Environmental Health and Traditional Fuel Use in Guatemala*, published jointly by ESMAP through the Directions in Development series of the World Bank, provides a look at the problems and possible solutions to the extensive exposure of people in developing countries to the smoke produced by cooking with unvented biomass fuels.

The work on the impact of energy on development yielded several products. Of particular note is the publication of a paper entitled *Energy Modules for Multitopic Household Surveys* under the auspices of the LSMS. These studies form the basis for many poverty reduction strategies undertaken by the donor community, so the acceptance of energy modules as mainstream practice is a significant advancement for the energy sector (see **Box 3.7**). Additional operational support areas of note include the impact of energy on development in Yemen entitled *Household Energy Supply and Use in Yemen*. This work will continue in 2007 via high-quality analytical work in Peru, Vietnam, and elsewhere.

As mentioned earlier, work on environmental health issues related to traditional fuel use was highlighted by the flagship product for Guatemala. This work was complemented by a paper entitled *The Impact of Improved Stoves on Indoor Air Quality in Ulaanbaatar, Mongolia*, which has had a significant impact on rural energy policy in Mongolia. Other studies are examining whether improved housing ventilations systems in Bangladesh and China can reduce indoor air pollution.



“Urban poor people depend on commercial wood or charcoal for cooking and often pay high prices, depending on the resource conditions surrounding urban markets.”



In 2006, the World Bank continued its global leadership role in enabling access to electricity, especially rural electrification.<sup>5</sup> To support this broad-based program ESMAP has circulated a landmark survey effort entitled *Meeting the Challenges of Rural Electrification in Developing Countries*, which after extensive peer review will be published as a flagship report in 2007. This survey of two decades of rural electrification work will be the basis for a significant knowledge dissemination effort to developing country practitioners and counterpart governments.

5. It is worth noting that electricity was chosen as the main energy indicator to be monitored under the International Development Association's 14th replenishment approved April 2005.

ESMAP has supported a variety of rural electrification-related technical assistance efforts in each region still facing gaps in modern energy access. For example, ESMAP has provided technical assistance to assess the benefits of electrification in Peru. This project leveraged significant co-financing from the government of Peru (see **Box 3.8**).

Gaps in access to modern energy are not restricted to the rural poor. Urban poor people depend on commercial wood or charcoal for cooking and often pay high prices, depending on the resource conditions surrounding urban markets. While modern fuels theoretically may be available to them, thin markets and, in some countries, limited imports or high taxes, may make these choices impractical. In 2006, ESMAP supported analytical work in several areas covered under sector reform and the poor, including a recently completed but not yet published flagship paper on *Power and Poverty: Lessons from Energy Sector Reforms in Eastern Europe*.



### Box 3.8: Assessing Demand and Electricity Benefits in Rural Peru

ESMAP supported a 2006 survey of rural electricity use in Peru that contributed to developing a national rural electrification strategy. ESMAP assisted the government in developing the national survey, while the government of Peru financed survey implementation.

The survey results have helped the government of Peru to justify changes in the provision of subsidies to rural electrification. The new approach supports local distribution companies in focusing subsidies on serving poor populations in isolated areas with conventional and unconventional electrification approaches. The ESMAP work helped leverage an investment project whose main objective was to finance subprojects supplying electricity services to about 160,000 isolated rural households, businesses, and public facilities, including schools and health clinics.

The role of the survey was to assist in the development of a subsidy policy that takes into consideration the affordability and willingness to pay for electricity by Peru's poorest populations.

Source: Susan Bogach, Senior Energy Economist, Energy Unit, Latin America and the Caribbean Region, World Bank Group



A major effort to address the energy needs of the peri-urban poor was initiated by a workshop in Brazil entitled Alleviating Urban Energy Poverty in Latin America and an accompanying case study on energy and equity in one particular Brazilian favela. This report, entitled *How Do the Peri-Urban Poor Meet Their Energy Needs: A Case Study of Caju Shantytown, Rio de Janeiro*, stimulated considerable discussion on the role of distribution utilities in converting illegal connections into paying customers. The experiences of utilities that have set up successful programs to provide energy services to urban slums suggest that it is not enough to concentrate exclusively on electricity. There also is a need to address the cooking and heating needs of the urban poor, as they often spend a significant amount of their income on energy. In anticipation of expanding problems of urban and peri-urban energy access, this important area of work will most likely broaden in 2007 and beyond.



“Initiated in 2005 with funding from the UK’s Department for International Development, the ESMAP Energy Small and Medium Enterprises Program fosters development of SMEs providing energy services to poor populations in remote and hard-to-serve areas.”

ESMAP continued its involvement and support to the Global Village Energy Partnership (GVEP), which pays particular attention to the role of small and medium enterprises (SMEs) in providing energy access. A major undertaking in 2006 was the GVEP Action Programs Fund (GAPFund), which is a grant program facilitating country actions related to the GVEP mandate. The GAPFund became operational during the fall of 2005 and will continue to be implemented for a period of 18 months.

### Energy SME Program

Many years of experience have shown that foreign direct investment is unlikely to flow to poor rural and peri-urban areas, where risks are high and returns uncertain. Absence of private sector investment or public financing perpetuates lack of access to energy as a barrier to poverty reduction and economic development. In response to this dilemma, ESMAP has developed a specific program to encourage local small energy-services providers, particularly in poor countries.

Initiated in 2005 with funding from the U.K.’s Department for International Development, the ESMAP Energy Small and Medium Enterprises Program fosters development of SMEs providing energy services to poor populations in remote and hard-to-serve areas. Through 2006, the program has launched three global projects and seven individual country projects (Bolivia, Cambodia, Cameroon, Haiti, Mongolia, Nicaragua, and Peru). Five more individual country projects are to be launched in early 2007. The program cuts across regions and thematic areas, including improved cook stoves in Haiti; small-scale, off-grid systems in Cambodia and Cameroon; and solar home systems in Bolivia. In 2006, the program produced a cross-country study on the regulation of small energy providers, with a first application to the case of Cambodia. Another cross-country study looked into low-cost technologies appropriate for small systems development.

### 2006 Energy SME Portfolio Description

The three global SME projects have similar objectives: how better to include and engage energy SMEs at the policy and planning levels. In 2006, ESMAP carried out the following activities under its think tank function:

- In cooperation with the Energy Anchor, published a report on the regulation of small electricity systems entitled *Electrification and Regulation: Principles and a Model Law* (see **Box 3.9**)
- Completed a comprehensive study of low-cost energy systems for rural electrification in developing countries
- Collaborated with the Public Private Infrastructure Advisory Facility in undertaking a Global Survey and Mapping Initiative that sought to identify and quantify the role of small-scale water and electricity providers in Bangladesh, Cambodia, Kenya, and the Philippines.



The Africa region has succeeded in merging the SME program with the World Bank's Clean Energy Investment Framework's Energy Access agenda. In Cameroon, the program focused on promoting institutional and regulatory reform to promote the development of SMEs in the power sector, and developing mechanisms to mobilize financing. The main priority for the Energy SME program in Africa in 2007 is to expand into four more countries, likely Burkina Faso, Zambia, Tanzania, and Senegal.

The East Asia and the Pacific Region has focused its SME operational leveraging efforts in Cambodia and Mongolia. In Cambodia, the SME program builds on ongoing work in the effective delivery of decentralized energy services by small and medium enterprises in rural areas. Training programs are being implemented for entrepreneurs and technical staff of rural electricity enterprises. Technical assistance is also being provided to local organizations in scaling up successful pilot projects in biomass gasification and improved cookstoves. In remote areas of Mongolia, ESMAP is helping expand the local private distribution network of solar home and wind turbine systems through training in bookkeeping, billing, and collection services and access to the services of local microfinance institutions.

The SME operational leveraging work in Latin America and the Caribbean Region has built on past ESMAP work in Haiti and Bolivia. In Haiti, a project has been developed to create a sustainable market for improved charcoal stoves by targeting both producers and consumers in a comprehensive capacity-building program (see **Box 3.10**). In Bolivia, the government's interest in universal access is fostering smaller and cheaper solutions for electrifying isolated poor populations. One solution with considerable market potential is household solar lighting kits. ESMAP is helping develop the supply chain of solar home systems for producers and distributors of such products in rural areas. Lessons from this experience will inform similar ESMAP SME-funded activities in Peru.

### Box 3.9: Tanzanian Electricity Law Incorporates Principles from an ESMAP Report

A recent ESMAP report, *Electrification and Regulation: Principles and a Model Law*, focuses on how to design and implement regulatory systems that will "help" rather than "hinder" electrification. The paper recommends four guiding principles and provides examples of successful and unsuccessful implementation of these principles from various developing countries. Several of the recommendations were adopted in a new draft Electricity Act in Tanzania. The paper is available at <http://siteresources.worldbank.org/INTENERGY/Resources/EnergyPaper18.pdf>

*Contributed by Bernard Tenenbaum, Lead Energy Specialist, Energy Transport and Water Department. The paper was written by Kilian Reiche, Bernard Tenenbaum, and Clemencia Torres.*



### Box 3.10: Dissemination of Improved Stoves in Haiti

The Haiti Energy SME Project builds on the 2005 ESMAP-funded report, *Strategy to Alleviate the Pressure of Fuel Demand on National Woodfuel Resources*, which promoted the production of improved stoves. Initiated in October 2006, the project is providing

- (i) Training to potential stove makers. Stove-producing artisans will now buy bulk stove kits from large metal workshops, thereby greatly increasing their productivity and guaranteeing the supply of the right materials.
- (ii) Improved branding. The EE labeling program will promote all types of efficient stoves, including charcoal, kerosene, and liquefied petroleum gas (LPG).
- (iii) Publicity campaigns designed to stimulate demand and better inform the households about the improved stoves and the EE quality label.

The strong commitment of the Haitian government will help ensure sustainability of the improved stoves market.

*Contributed by Ella Lazarte, Energy SME team, ESMAP.*

“The Energy and Gender Program in 2006 included both global activities and operational leveraging, per the business plan.”

## Gender-Specific Activities

In addition to the four principal thematic areas—energy security, renewable energy, energy poverty, and market efficiency and governance—ESMAP continues to support two ongoing special topic areas, gender equity in energy development and energy environment. The 2005–07 ESMAP Business Plan recognizes *gender equity in the development of energy services* in developing countries as a key challenge, in line with the MDGs. The World Bank Energy and Mining Sector Board has recognized the importance of gender in infrastructure, and the strong link between the gender and the energy poverty agendas, including such basic facts as the high share of women among the poorest (70 percent), the disproportionate impact on women and children of indoor air pollution, the time burden of biomass cooking fuel and water supply at the expense of more productive and income-earning activities, the undervaluation of women’s labor on the critical path of successful fuel transition, and the precarious situation and the vulnerability of women in mining communities. The Energy and Gender Program in 2006 included both global activities and operational leveraging, per the business plan.

Regarding knowledge clearinghouse activities, the *Gender and Energy Web page* was launched on the World Bank’s intranet, and became live on the World Bank’s external Web site in October 2006. The Web site was developed jointly between the Poverty Reduction and Economic Management (PREM) gender group and the ESMAP team, and was endorsed by the World Bank’s Gender Board. The Web site has been well received, and World Bank staff continues to develop references to toolkits and methodologies that may be helpful to practitioners seeking to mainstream gender in energy projects.

In addition to the breakout session on energy and gender during Energy Week 2006, ESMAP actively participated in the World Renewable Energy Congress in August 2006, which had a “gender track” that attracted considerable attention from those working on access issues and with SMEs.



During 2006, ESMAP produced two technical reports: *Ghana: Women’s Energy Enterprise Developing a Model for Mainstreaming Gender into Modern Energy Service Delivery*, and *Ghana: Sector Reform and the Pattern of the Poor, Energy Use, and Supply*. Other reports with gender equity and energy development themes include the special report, *Household Energy, Indoor Air Pollution and Health: A Multisectoral Intervention Program*, and the report on *Lessons from Improved Stoves Program in India*, which will be issued as a flagship publication in 2007.

The 2006 Gender and Energy Program also included operational leveraging activities. ESMAP took the lead in coordinating the preparation of the infrastructure sector’s contributions to the World Bank’s new four-year Gender Action Plan, which is largely focused on women’s economic empowerment (see **Box 3.11**). The results of a stock-taking exercise of the constraints preventing mainstreaming of gender in the infrastructure sectors were

- Some sectors (transport, rural water, mining, and telecom and information and communications technologies) seemed to have made more progress in mainstreaming gender issues within the assistance and lending portfolio.

## Box 3.11: Empowered Women Bring Solutions: Sustainable Energy through the Gender Lens

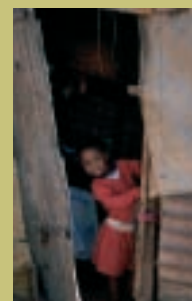
Gender equality is a key consideration in delivering energy services, as access to productive resources for both women and men can significantly improve the prospects for economic growth and poverty reduction. When designing energy services delivery programs, it is important to keep in mind that access to modern energy affects women and men differently. Taking men's and women's different constraints and needs into consideration when designing energy policies and projects can significantly enhance economic development prospects and the project's overall sustainability. Women can also be an unrealized potential asset for the development of the energy supply and demand chains.

The recently approved World Bank Gender Action Plan targets women's empowerment in the economic sector, emphasizing the role of infrastructure and energy services. Gender-focused issues are now an integral part of the World Bank's agenda on access to modern energy services, and social inclusion features prominently on the agenda of the Sustainable Development Network. As part of this commitment the network will train at least 25 percent of World Bank staff on gender issues during the 2008 fiscal year.

Training sessions focus on how to operationalize gender into the World Bank's energy work, based on mutual learning and experience sharing. The first part of the session consists of a brief introduction to the recently completed Web-based resource center on Gender and Energy, plus a panel discussion focused on the main entry points for furthering Gender and Energy operational work: indoor air pollution, SMEs; and energy production.

Case studies from different regions and themes illuminate the lessons learned in each case. The second part of the session comprised a dialogue between practitioners to identify concrete options—and possibly constraints—to operationalize the mainstreaming of gender into energy projects.

*Contributed by Dominique Lallement, Consultant, Sustainable Development Network.*



- There are common legal framework issues across infrastructure categories; for example, land-titling for urban services or rural woodlots and “titles” to e-mail accounts.
- There are useful common tools where greater cross-sectoral collaboration might be productive, such as Web sites, Living Standards Household Surveys, Poverty Impact Assessments, and Carbon Adsorption System Monitoring Indicators.
- The main constraints on mainstreaming identified were (i) insufficient staff understanding of gender issues in infrastructure, (ii) insufficient knowledge of methodologies on how to undertake gender analysis and design gender-sensitive components in infrastructure policies and projects, and (iii) insufficient human and financial resources to do the sector and project work necessary for mainstreaming.
- The three main entry points for gender mainstreaming in the energy and mining sector relate to (i) IAP, with its household access to modern energy dimension; (ii) participation of women in SMEs and the potential for economic empowerment; and (iii) the institutional and financial empowerment of women in mining communities.

The Gender Action Plan has now been approved by the World Bank's Board of Directors, and launched at the Annual Meetings. Preparation of the detailed implementation plan is to start shortly.

“ESMAP’s energy market efficiency and governance program is focused on creating the conditions necessary for energy markets to become more competitive and thus better able to contribute to poverty reduction.”



### Market Efficiency and Governance

ESMAP’s energy market efficiency and governance program is focused on creating the conditions necessary for energy markets to become more competitive and thus better able to contribute to poverty reduction. The ESMAP 2005-07 Business Plan puts forward three areas of focus for this theme:

- Developing environments that support efficient and stable energy markets, private sector investment, and the poverty reduction agenda
- Improving the institutional capacity of policy makers and regulators, particularly for energy sector revenue management
- Creating effective public-private partnerships, especially those that can engage small and medium enterprises focused on energy development and delivery.

Sector reforms and regulatory development over the past decade were aimed mainly at attracting international private investment to construct large energy projects in interconnected systems. Largely overlooked were access projects in isolated rural and peri-urban energy, as well as the potential of local entrepreneurship. These sector reforms only incidentally overlapped with the poverty reduction and energy poverty agendas. Beginning in 2006, ESMAP began to focus on this apparent gap between the reform agenda and the energy poverty agenda. ESMAP has also sharpened its

focus on small private enterprises as an alternative to large utilities or independent power producers, and on the potential for local entrepreneurs to provide energy services, particularly in rural and peri-urban areas. Another recent focus is the need for improved governance of the energy production industries in countries experiencing a surge in revenues generated by high international oil and gas prices.

The geographical and thematic distribution of the 28 active market efficiency and governance projects is shown in **Table 3.5**.

In 2006, ESMAP continued to support developing environments that support *efficient and stable energy markets, private sector investment, and the poverty reduction agenda*. In particular, ESMAP continued its support to the regional power interconnection and energy market development agenda, focusing on disseminating experience and drawing conclusions from earlier work on successful power systems interconnection and pooling. ESMAP also supported consensus building in regional energy trading through the preparation of the political framework agreement for the Mekong region under the project, Greater Mekong Sub-Region Power Trade Strategy. This project culminated with the signing by Cambodia of the critical Inter-Governmental Agreement. Several new initiatives for power market regional integration were developed with ESMAP support, including technical assistance for establishing a Water-Energy Consortium in Central Asia, Regional Energy Trade (South and Central Asia), and Energy Integration of the Great Lakes Systems in Africa, which is now well advanced with the preparation of an integrated investment plan for the participating countries. ESMAP support played an important role for structuring the institutional arrangements through sharing World Bank group experience in other regions and catalyzing the political consensus-building process around such projects (see **Box 3.12**).

**Table 3.5: Key Activities in the ESMAP 2006 Market Efficiency and Governance Portfolio**

Region	Theme/Title
Latin America and the Caribbean	• LAC Energy Strategy
	• Benchmarking Electricity in LAC
	• Honduras: Petroleum Exploration and Management
	• Power Sector Strategy
East Asia and the Pacific	• Greater Mekong Sub-Region Power Trade Strategy Meeting <sup>a</sup>
	• Vietnam—Policy Dialogue Seminar and New Mining Code <sup>a</sup>
	• Study of Voluntary Green Electricity Schemes in Beijing and Shanghai
South Asia	• Regional Energy Trade
Middle East and North Africa	• Yemen Gas Incentive Framework Study
	• Strategy to Expand Gas Distribution and Utilization in Turkey <sup>a</sup>
Africa	• MU Energy Sector Assessment
	• 3S Power Investment
	• 3A Utility Performance
	• 3A Energy Integration
	• Developing Regional Power Markets in West Africa
	• Mainstreaming Low-Cost Innovations in Electricity Distribution <sup>a</sup>
	• Ghana: Energy Sector Strategy <sup>a</sup>
Eastern Europe and Central Asia	• South East Europe Gas Market Development Study
	• Development of Power Generation in South East Europe: Implications for Investments in Environmental Protection
	• Energy Sector Regulation (including gas project) <sup>a</sup>
	• Developing a Power Market in South East Europe <sup>a</sup>
	• World Forum on Energy Regulation
Global	• Development Marketplace (CSD)
	• Corruption Issues in the Energy Sector
	• Strategies and Instruments for Power Projects Stress Situations <sup>a</sup>
	• Code of Conduct/Performance Benchmarks for Electric Power PPPs <sup>a</sup>
	• Experiences with Oil Funds <sup>a</sup>
	• ESMAP's Energy Sector Reform & Market Development Work <sup>a</sup>

Note: a. 2006 ESMAP market efficiency and governance projects with publications in progress and nearing completion.

At the country level, ESMAP sought to draw conclusions from a decade of energy sector reforms in terms of achievements and contribution to poverty reduction. An ESMAP study *The Evolution of Enterprise Reform in Africa: From State-Owned Enterprises to Private Participation in Infrastructure...and Back*, analyzes the transition of many African parastatals to private ownership. It points out that the poor performance of these state-owned enterprises was the main reason for the reform, and concludes that

for the reform process to be successful, the first phase of reform ought to be the commercialization of parastatals, and the second phase the introduction of private participation in infrastructure. It also suggests that the public sector capacity must be enhanced for the private sector to perform well.

“A challenge for most developing countries is the decrease in foreign direct investment (FDI) in energy, from nearly 40 percent of sector investment as recently as 1997 to less than 10 percent today.”

Economic and regulatory theory holds that market reforms and more competitive energy markets will benefit the poor, through enhanced sector efficiency and better quality of service. To test this hypothesis, the impact of 10 years of energy sector reforms on poverty was analyzed in its tariff, access, and quality of service dimensions in a 2006 ESMAP project and report entitled *Power Sector Reforms in Africa: Assessing the Impact on the Poor and Influencing Policy Decisions*. The project report concluded that unless sector reforms were designed with poverty reduction as a main target, the reform outcomes generally did not benefit the poor. Therefore, a different approach to sector reforms may be called for—or at least, pro-poor reforms in the energy sector should be embedded in power sector reforms, rather than developed in parallel. Beyond the Africa region, ESMAP supported a study, *Assessing the Impact of Global Sector Reform on the Poor*, to check the validity of the conclusion of the Africa study in other regions. This study was completed in 2006.

A challenge for most developing countries is the decrease in foreign direct investment in energy, from nearly 40 percent of sector investment as recently as 1997 to less than 10 percent today. ESMAP supported several projects aiming at understanding the underlying causes to the ebbing of foreign direct investment in the power sector, with a view to developing instruments susceptible to restore private sector appetite for the energy sector. The study, *Designing Strategies and Instruments to Address Power Projects Stress Situations*, developed in partnership with private sector investors, analyzed the causes and consequences of power project failures worldwide and possible workout instruments for those projects that experience stress situations in various regions. It traces the main causes of stress not only to macroeconomic shocks, but also to hasty sector reforms conducted without adequate sociopolitical consensus building. The report proposes specific approaches to resolve stress situations transparently and through a broad consensus-building process. Another project, the study *Governance Standards and Code of Conduct*, examined the minimum reform platform needed for successful private investment, and proposed risk management approaches to advance opportunities for foreign direct investment.

Another threat to sector reforms and foreign direct investment is power shortages resulting from weak market structure. Research on practical measures to help countries minimize the economic and social consequences of power shortages led to the publication of a study on *Implementing Power Rationing in a Sensible Way: Lessons Learned and International Best Practices*. This work examined best practices in handling power crises, based on case studies from Chile, China, California, the Dominican Republic, Japan, and Brazil. The study highlights the case of Brazil as a best international practice, in which government, energy providers, and consuming sectors cooperatively developed a flexible quota system with open market price signals. Lessons learned from the analysis of several case studies tell us that blackouts are the worst way to deal with electricity shortages and should be considered the last resort, and that alternative allocation mechanisms based on market signals can be developed quickly and successfully.

Another area of focus in the ESMAP's 2006 Market Efficiency and Governance portfolio was *improving the institutional capacity of policy makers and regulators, particularly for energy sector revenue management*. ESMAP has a long-standing involvement in energy revenue management issues, having supported clients in promoting transparency and good governance in the energy sector for over a decade. With the recent spectacular increase in revenue from petroleum exports for a number of already exporting developing countries, the entry of new significant exporters in the market (Mauritania and Equatorial Guinea, for example), and with the emphasis of the international community on governance, the sharing of ESMAP experience and knowledge has become even more relevant. In 2006, ESMAP published a study, *Experiences with Oil Funds: Institutional and Financial Aspects*, to provide to clients a comprehensive synthesis on best international practices in petroleum revenue management. The study reviews and compares several alternative approaches in revenue management based on recent experience and proposes guiding principles for clients and donors for their dialogue on the management of petroleum revenue. For the benefit of countries that have already established revenue management mechanisms, ESMAP supported a case study of the effectiveness and critical element of a revenue management system in Nigeria. The study, *Nigeria:*



### Box 3.12: Sub-Saharan Africa: Introducing Low-Cost Methods in Electricity Distribution Networks

The level of electrification in Sub-Saharan Africa is low, with less than 10 percent of the rural households having access to electricity. One of the key barriers to accelerating access is the high cost of connections, arising, inter alia, from the use of outdated, unsuitable, high-cost methods in electricity networks. A second key barrier is the small and dispersed nature of electricity demand, arising from low density of population and low income levels, which lead to high average costs of providing electricity service.

The objective of this report is to help in reducing the high costs of electrification by documenting proven, low-cost methods and techniques in electricity networks that have not yet become widely used in Sub-Saharan Africa. The report is based on studies related to innovations in Tunisia, Ghana, South Africa, Australia, and New Zealand, and field visits by an expert group of technical specialists to Zambia, Mozambique, Tanzania, and Uganda.

There are many low-cost methods that are worthy of consideration; this report focuses on four of them that are likely to have a significant cost-reducing impact and are also likely to be widely applicable in Sub-Saharan Africa:

- Appropriate design engineering
- Development of an institutional cost-cutting culture
- Single Wire Earth Return
- Shield wire systems.

In summary, this study has confirmed that power utilities and technical experts in Uganda, Tanzania, Mozambique, and Zambia are interested in low-cost methods that would reduce the costs of networks. Proven low-cost methods are available that would significantly reduce both capital and variable costs.

However, so far there have been no systematic efforts to introduce and mainstream low-cost methods in electricity networks in most Sub-Saharan countries. Some of the barriers to these low-cost innovations are the lack of knowledge, lack of capacity to undertake the required engineering analysis and work, and lack of a systematic framework for planning and designing cost-effective networks. The mitigation of these barriers requires capacity building as well as a significant change in the managerial and operational culture of the utilities.

Source: *Sub-Saharan Africa: Introducing Low-Cost Methods in Electricity Distribution Networks* (ESMAP Technical Paper 106/06).



*Petroleum Revenue Transparency Audit*, identified the positive and replicable features of the Nigeria revenue management systems, while highlighting weaknesses and pitfalls to be avoided by newcomers in the group of energy-exporting countries.

## IV. Regional Highlights of ESMAP's Portfolio

Beginning with the 2005-07 Business Plan, ESMAP has substantially modified the review and management of project proposals. Under the previous process, each activity manager would submit a proposal to ESMAP for review and approval. This led to many small projects that did not necessarily reflect regional priorities or receive sufficient management attention by regional managers. Under the new approach, regional activities supported by ESMAP are prepared by the regional operational units of the World Bank, prioritized at the regional level, and submitted to ESMAP for review and approval. This approach has led to several improvements, notably

- Regional activities proposed for ESMAP support are better coordinated and more reflective of regional priorities.
- ESMAP projects have a much higher influence and leverage of operational World Bank programs.
- ESMAP-supported activities are receiving more management attention, as the performance of the regional portfolio (in terms of disbursements, quality enhancement, and timely delivery of outputs) is a factor in the allocation of regional funding envelopes.

This section presents regional highlights of the 2006 ESMAP program. Note, however, that the regional review in this chapter is intended to highlight regional issues rather than comprehensively describe the activities in each region. The description of the ESMAP portfolio by thematic element, provided in the previous chapter, provides the more substantive program review.



### Sub-Saharan Africa

ESMAP's support to the Africa Region in 2006 included research and assistance on power generation, electricity distribution, biomass energy, and decentralized electricity access. However, ESMAP's major investment in support of Sub-Saharan Africa has been to the action plan for scaling up modern energy access. This Action Plan supports country-led initiatives to address the root causes of low energy access. Key objectives include

- Ensuring energy access for enterprises and households, through electrification programs and enhanced generation capacity, in support of economic growth and livelihood improvement
- Achieving the MDGs, by providing modern energy services to key public facilities such as schools and clinics
- Meeting basic energy needs of lighting, by equipping unconnected households with affordable, modern lighting, and cooking, through clean, sustainable technologies and household fuels.

At the core of the Action Plan is a World Bank commitment to coordinate closely with the donor community on sector-wide energy access implementation program in those countries where the policy framework is favorable. Such a programmatic approach is designed to harmonize donor support, building on each others' programs through knowledge sharing and coordinated assistance. The World Bank will operationalize the approach in a few countries by preparing medium-term electricity sector investment plans that mobilize donor and private sector financing. The World Bank, with ESMAP support, will advocate development partners to take similar leading roles in several other countries. A sector syndication prospectus to be prepared as part of this programmatic approach will set out projects and subprojects requiring financing; policies that the government agrees to implement; and access targets and service levels for households, public facilities, and enterprises.

Specific ESMAP projects in support of the Action Plan that were initiated in 2006 included a project to support productive uses of energy and to fully develop an implementation plan for the new energy access strategy. Among the activities supported was a workshop in Tunisia on scaling up rural electrification and the initiation of a dialogue and cooperation with the Africa Development Bank on the Action Plan. As tariff policy is very important for creating incentives to promote electricity access, this process was supported by a project in Rwanda. These and other activities are providing the basis for promoting the energy access agenda in Africa.

Projects proposed for 2007 are designed to continue supporting the new programmatic strategy in Africa. The proposals include a large rural lighting initiative for public facilities such as schools and health clinics, and a study on modern biofuels for Mozambique and Ethiopia. The Rural Lighting Initiative for Africa addresses a core element of one of the tracks (Meeting Basic Needs) by equipping households with affordable, modern lighting, etc. of Pillar 1 of the Clean Investment Framework. The objective of this initiative is by 2030 to offer modern, affordable, and reliable lighting services that can be sustainably provided over the long run to 50 percent of those 500 million people in Sub-Saharan Africa without access to modern energy services.

To further support the action plan there will be a continuation of support to the energy ministers of Africa, with planned workshops and meetings to discuss policy strategies. The forum is an informal mechanism to facilitate advocacy on the importance of energy in the development

agenda, and to cooperate more effectively in order to find solutions to the onerous challenges facing Africa's energy sector.

A major new project is being launched on sector syndication. This project provides a practical, programmatic way of harnessing donor assistance to finance credible, long-term programs for energy access. The idea is to give donors a choice of projects to finance through their own program, while the World Bank's Africa energy unit provides guidance and support. The project will include technical assistance to evaluate investment requirements, financing, policies, and appropriate existing or new institutions necessary for the purpose of scaling up energy access in Africa.

For the electricity sector, proposed projects involve rehabilitation of hydropower and the benchmarking of utility performance. The benchmarking study will develop a consistent framework and methodology to conduct a clear and comprehensive examination of the performance of power utilities in Sub-Saharan Africa. A set of standard indicators will be developed for capturing key parameters of utility performance and benchmarks. This will allow a much better comparison on the functioning of African utilities, and the results will help to identify the needs of those that are underperforming.



# East Asia and the Pacific



## East Asia and the Pacific

Rapid growth in energy demand, negative environmental impacts of energy use, the need to integrate energy in countries' poverty reduction strategies, and concerns about the security of oil supply are all factors driving the demand for a more sustainable energy supply in the East Asia and the Pacific (EAP) region. ESMAP's support to the region in 2006 focused on developing the technologies and institutional frameworks for scaling up sustainable energy supplies.

ESMAP is supporting the efforts of the government of China to increase the use of coal bed methane and coal mine methane to meet the growing demand for energy. This technology can also reduce greenhouse gas emissions and increase the safety of mining operations. A parallel project will promote more efficient production techniques, cleaner use of coal, and environmentally and socially sustainable development of the coal sector. ESMAP is also funding sector reforms and institutional framework development, including a municipal heating reform project in China that will develop a rational pricing scheme and identify preinvestment opportunities and a project to enable EE financing programs in several Chinese provinces, based on an analysis of current barriers to EE.

In outer Mongolia, an ongoing project is providing new models for rural electricity supply, while another project will assess coal and lignite use for domestic power and heat production. In Vietnam, the World Bank will assist the government in its review of its master plan for natural gas field development, while another project will assist the government of Indonesia in developing cleaner fossil fuel technology options. Finally, ESMAP funding has been requested for an East Asian regional energy flagship study, which will develop policy recommendations to strengthen regional cooperation in East Asia to improve energy security and reduce the economic and environmental risks associated with energy use.

Taken together, the ESMAP portfolio in East Asia and the Pacific reflect a gradual change in energy development priorities. Previously, the emphasis was on access to energy in the remaining unserved rural areas without access to energy. However, many countries in the region now have well-articulated access policies that are under implementation, including China, Cambodia, Lao People's Democratic Republic, Vietnam, Indonesia, and the Philippines. On the other hand, most countries in the region remain challenged by rapid demand growth, growing environmental impacts, and insufficient financing to support continued sector expansion. For example, China's emerging policies in response to the booming demand for energy include more efficient use of energy, regulation supportive of efficient pricing and utilization of energy, and the introduction of the health dimension in energy production and consumption. The 2007 ESMAP projects in East Asia and the Pacific are supportive of this new agenda, and include many new projects in support of sustainable energy utilization (Shanghai Energy Conservation, China Municipal Heat Regulation, China Preinvestment to Scale Up Energy Efficiency, and China Sustainable and Efficient Energy Use to Alleviate Indoor Air Pollution).

The concern of a number of EAP region countries with energy security, cost-effectiveness of energy supply, and the growing interest in regional trade and investment is reflected in the ESMAP technical assistance program, which includes support to the Greater Mekong regional power trading scheme. The project, Greater Mekong Subregional Power Trade, extends continued support to the participating countries in order to develop and reinforce the political commitment of the governments and to facilitate consensus building on common trading rules.





## Europe and Central Asia

In the Eastern Europe and Central Asia Region, the diversification of energy supply, energy efficiency, and market integration are the focal points of ESMAP's support. ESMAP support included a gas market development study, a gasification study, the development of innovative EE financing mechanisms, energy trade, impact analysis on increasing renewable and low-carbon energy use, a renewable energy resource assessment, and regulatory frameworks for renewable energy resources.

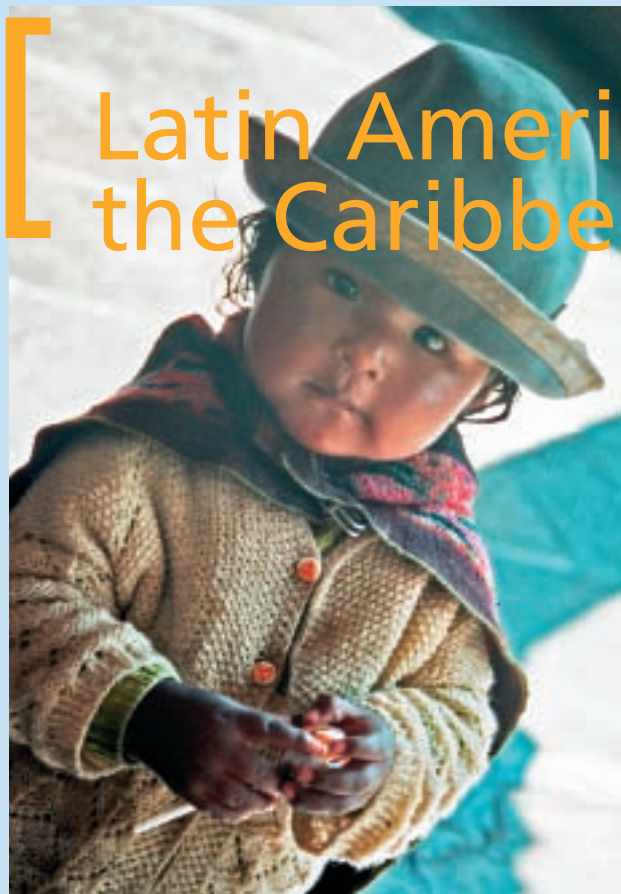
Since 2003, ESMAP has been supporting a project addressing barriers in EE financing in Poland's residential and public sectors. This project has made significant progress, and several innovations were achieved and put into effect in 2006, including innovative financial programs, including long-term amortization periods, and an energy audit agreement, resolving the challenges under Polish Procurement law on the reimbursement for audit costs. This project has been able to open contacts to Polish financial institutions and developed a pipeline of projects eligible for financial intermediaries.

The findings for the gas market development study in South East Europe are expected to help support the EU Athens process of developing an integrated gas market in South East Europe. The analysis on increasing renewable and low-carbon energy use is expected to advise policy makers on the potentials of utilizing renewable and low-carbon energy in Serbia and Montenegro. The progress in 2006 generated interests among various stakeholders, including local public agencies, donors, and local consulting firms, which are expected to be galvanized and solidified into commitments to implement recommendations.

Regarding the energy trade efforts between South Asia and East Asia, ESMAP's support focuses on a Commercial Assessment study. The assessment examines options for implementing the project through a public-private partnership arrangement and proposes institutional, financial, risk, and legal structures for the project. It is expected that the study will contribute to a decision as to whether and how to proceed with implementation of the electricity trade/transmission line project among Tajikistan, Kyrgyz Republic, Pakistan, and Afghanistan. South Asian countries depend on cross-border electricity trade to improve supply, while Turkey looks for domestic sector reform to secure and mitigate risks of its medium-term electricity supply. Specifically, ESMAP's support covers the design and implementation of competitive auctions of electricity generation and related capacity schemes as well as institutional capacity building.

In parallel, although energy service access in Europe and Central Asia is high compared to that in many other poor regions of the world, the challenge is to maintain its access level and to maintain or improve the affordability, quality, and environmental impacts of electricity and heating services. The challenges arise from the context of rising primary energy prices but at the same time capped tariffs, antiquated power plants, lack of modern pollution controls, and so forth. ESMAP supported the project identifying options for social protection of energy services in Tajikistan and Uzbekistan. The resulting mid-term tariff policy was adopted, and implementation has begun in both countries. ESMAP also started to support projects on affordable gas-fired district heating in Ukraine, Belarus, and Moldova and need-cost-and-benefit assessment on thermal power plant rehabilitation from regulatory, policy, and investment perspectives in Ukraine.





# Latin America and the Caribbean

## Latin America and the Caribbean

The themes of energy security, rapidly growing energy demand, and need for sustainable energy solutions are to be found throughout the Latin America and the Caribbean countries. The regional ESMAP program in 2006 addresses these thematic concerns with a variety of assistance and research activities.

In 2006, ESMAP support focused on the benefits of regional integration for energy security and meeting demand growth through the Southern Cone Gas Integration Project. This project examined the technical, economic, environmental, and financial aspects of gas integration in the countries of Argentina, Bolivia, Brazil, Chile, Paraguay, Peru, and Uruguay; the results were presented in a regional workshop (see **Box 3.1**).

The 2007 portfolio of LAC includes several new projects spanning regional energy trade to country-level climate strategy analyses. In Brazil and Mexico, the emphasis of ESMAP support will be for the development of low-carbon growth strategies and action plans for climate change mitigation, in support of the World Bank's initiatives under the Clean Energy Investment Framework. Cost-effective mitigation options, including scaling up of EE and renewable energy use in these countries, will be included in the Action Plan. Linked to the country study in Brazil are two projects dealing with EE: (i) support to establish a guarantee facility for energy service companies through BNDES (Brazilian Development Bank) and (ii) an EE strategy study for Brazil to identify key sectoral interventions and related policies and financial instruments. Mexico and Brazil will also be a part of a global-level ESMAP activity, being jointly implemented with the International Energy Agency and Inter-American Development Bank, for developing EE indicators in G+5 countries. Given intense interest worldwide in biofuels, the region is examining the economics of biodiesel production and use in Brazil, looking at the production of different feedstock under different production conditions.

The country studies in Ecuador and Honduras, which face energy shortages, are aimed at developing a robust strategy for energy supply that would encompass higher levels of energy security. The Central America Regional Trade project will examine the market agreements related to export and import of energy and expected volume of energy trade in the medium and long term, and the capacity of regional markets to integrate demands in order to facilitate the development of new supply sources and improve service delivery. Another similar ESMAP activity will assess the potential for Uruguay to diversify its energy dependence away from Argentina to Brazil through implementation of an interconnection project between these two countries.





# Middle East and North Africa

## Middle East and North Africa

The focus of the ESMAP program in the Middle East and North Africa region is on aspects of energy policy that are not covered by other sources of Technical Assistance funds (European Union, U.S. Agency for International Development) and to emphasize impact on the ground. The ESMAP program has therefore concentrated on a small number of countries where the impact of the ESMAP program is established (Egypt, Morocco, Djibouti), and on the EE and renewable energy thematic areas.

ESMAP has supported the Morocco Energy Efficiency Policy, which set the policy framework for EE and developed institutions for implementation; and the Morocco Renewable Energy Regulation Project and Morocco Energy Reforms—Social and Environmental Effects, which supported the preparation by the Moroccan government of comprehensive legislation on EE and renewable energy (particularly wind energy) to be adopted in the second quarter of 2007. The development of an EE and renewable energy regulatory framework has been a key pillar of a World Bank-financed policy loan and of a large €40 million grant from the EU.

Hydrocarbons and management of petroleum resources is a top priority for the Middle East and North Africa region, particularly under unstable market conditions. ESMAP has supported the Egypt Determination of Gas Pricing Project, which helped the government develop a rational gas pricing strategy that will encourage the efficient utilization of natural gas, while protecting low-income groups.

The World Bank has not been involved in the gas sector in Egypt for more than a decade. With the help of ESMAP and the Global Program on Output-Based Aid (GPOBA), the World Bank was able to re-engage the government of Egypt in this important sector. Technical assistance was provided in two main areas in the gas sector, namely, on gas conversion of the residential sector and in determining the economic costs of natural gas for the domestic market.

The government of Egypt will connect 6 million new households to natural gas over the next decade. Currently, households are using heavily subsidized LPG to meet their domestic energy needs, with subsidies amounting to more than 2 percent of gross domestic product. ESMAP-supported technical assistance demonstrated the financial and economic viability of switching

## IV. Regional Highlights of ESMAP's Portfolio

residential load from LPG to natural gas, despite the lack of domestic heating load in Egypt. The analysis has led to a request by the government for a US\$70 million World Bank loan to support the roll-out of household connections.

In parallel, technical support was provided to determine the economic and financial costs of natural gas for the domestic sector. As natural gas is currently subsidized, knowing the true costs of supplying the domestic sector demand provides an important instrument in shaping future energy policy, including disposition of price subsidies. With the help of ESMAP, a user-friendly costing model was developed in cooperation with the Ministry of Energy and the Egyptian Natural Gas Holding Company (the state-owned gas utility), and training was provided to relevant staff. ESMAP has further approved support to the Egyptian Natural Gas Holding Company, to determine its financial costs of buying the gas under the existing production-sharing agreements.

Last, the regional project, Hydrocarbon Revenue Study, examined the consequences on public finances and governments' capacity to finance social programs, of alternative international price scenarios, for both oil-exporting and -importing countries.





## South Asia

In 2006, ESMAP supported studies on regional trade and energy and poverty. A major regional energy trade project focused on the unexploited potential for energy trade in South and Central Asia. Neither electricity nor gas is crossing Pakistan's borders, except for some small quantities of electricity imported from Iran in the border region. India has power-trading arrangements with Nepal and Bhutan, but the trade so far has remained much below potential, especially with Nepal. The energy poverty and access portfolios are in Afghanistan, Bangladesh, India, and Pakistan, including one regional energy access project. This project examined the development of analytical frameworks to compare and evaluate micro-level private sector participation across countries, as well as a multicountry survey of experience of micro-level private sector participation, including consultations with sector stakeholders.

The 2007 ESMAP South Asia portfolio includes new projects for EE improvements and investment planning and regulations for coal-fired power plant rehabilitation in India, plus continuation of the regional energy trade project. A second stage of the World Bank's initiatives under the Clean Energy Investment Framework will conduct case studies in G+5 countries on this issue. A new project on Strategies for Low Carbon Growth in India will be initiated. Finally, two new projects related to the promotion of renewable energy will begin. A project on Distributed Generation Projects Based on Renewable Energy Sources (mainly biomass) will augment generation and ensure better quality of supply in grid-connected and off-grid rural areas. A project on renewable energy and efficient cookstoves seeks to improve the health of women and children in Bangladesh and Nepal. This latter project will develop community participatory and health surveillance tools and catalogue the newest technical options to tackle indoor air pollution.

“ESMAP is located in the Energy, Transport and Water Department (ETW) of the World Bank Group Sustainable Development Vice Presidency.”

ESMAP is located in the Energy, Transport and Water Department (ETW) of the World Bank Group Sustainable Development Vice Presidency. ESMAP reports to the director of ETW 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, Sustainable Development. 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. A program unit manages day-to-day ESMAP activities in accordance with the strategy and principles laid out in a business plan approved by the CG.

### The Consultative Group

As provided by the ESMAP charter, membership in the CG is open to all contributing organizations without restrictions (**Table 5.1**). Contributions can be either for core funding of ESMAP or for noncore thematic funding, where use is restricted to specific themes, activities, or regions. ESMAP remains open to receiving contributions from official donors, international financial institutions, official agencies, and private enterprises. The CG meets annually to review the strategic directions of the ESMAP program, its achievements, and its use 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.

### The Technical Advisory Group

TAG's mission is to provide an informed, independent opinion to the CG of the ETFPs, which includes ESMAP, about the purpose, strategic direction, and priorities of ETFPs. In particular, TAG provides 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 ETFPs and their contribution to 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.



**Table 5.1: Donors and Members of the CG, TAG, and ESMAP Team****Consultative Group**

BELGIUM  
General Administration for  
Development Cooperation

CANADA  
Canadian International  
Development Agency

DENMARK  
Royal Ministry of Foreign Affairs

FINLAND  
Ministry of Foreign Affairs

FRANCE  
Ministry of Foreign Affairs

GERMANY  
Federal Ministry for Economic  
Cooperation and Development  
(BMZ)

ICELAND  
Ministry for Foreign Affairs

NORWAY  
Royal Ministry of Foreign Affairs

SWEDEN  
Swedish International  
Development Cooperation  
Authority

THE NETHERLANDS  
Directorate General for  
International Cooperation

UNITED KINGDOM  
Department for International  
Development

UNITED NATIONS FOUNDATION

UNITED STATES  
Department of State

**Chair of the Consultative Group**

Katharine Sierra  
Jamal Saghir, Acting Chair

**Technical Advisory Group**

Andrew Barnett  
Elizabeth Cecelski  
Amitav Rath

**ESMAP Management and Administrative Team**

Ede Ijjasz-Vasquez, Manager  
Marjorie Araya  
Douglas Barnes  
Samantha Constant  
Jonathan Coony  
M. Ananda Covindassamy\*\*\*  
Maureen Cuffley\*  
Tae Yong Jung  
Soren Krohn  
Lydia Kruse-Tietz  
Dominique Lallement\*\*  
Maria Ella Lazarte  
Marlon Lezama  
Pedro Marques  
Dirk Pauschert  
Vishweshwaran Ramanathan  
Ashok Sarkar  
Xiaoyu Shi  
Ananda Swaroop  
Nyra Wallace-Crawford  
Heather Worley

\* Until November 2006

\*\* Until October 2006

\*\*\* Until December 2006



“ESMAP reports to the Director of ETW 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, Sustainable Development.”



## The ESMAP Unit

The ESMAP 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 endorsed by the Consultative Group (CG).

The unit delegates implementation of certain tasks to World 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 World 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
- Providing support services to the CG and the Technical Advisory Group (TAG)
- Maintaining relationships and ensuring adequate reporting with the donors and contributors
- Maintaining effective relationships with external stakeholders, including recipient countries, civil society, academia, and the international energy practice
- Maintaining relationships with the Energy and Mining Sector Board of the World Bank and with the World Bank energy practice
- Managing the ESMAP human and financial resources in accordance with sound management principles and the World Bank standard practices.

## ESMAP COMMUNICATIONS STRATEGY: Sharing Knowledge and Raising Awareness

Active in six regions with more than 170 projects, ESMAP relies on strategic, professionally managed communications to get the most impact from our ongoing activities. Our donors, client governments, and international partners work at the forefront of energy solutions to alleviate poverty around the world, work that is helping map the road toward a more sustainable and equitable energy future. The results of these projects are disseminated in a variety of forms, through several report types, workshops, symposia, and international conferences, all of which benefit from consultation with our communications team. This consultation ensures that messages are appropriately framed to reach target audiences and that sometimes complex information is packaged in accessible language, increasing the impact and reach of ESMAP projects. Strategic communication also plays a role internally, ensuring efficient cross-regional and cross-sector collaboration.

## Events

From a communications perspective, Energy Week 2006 was the high point of last year's activities. As part of this World Bank-sponsored worldwide gathering of energy policy makers and practitioners, ESMAP sponsored events and plenary and training sessions that showcased its four thematic focus areas:

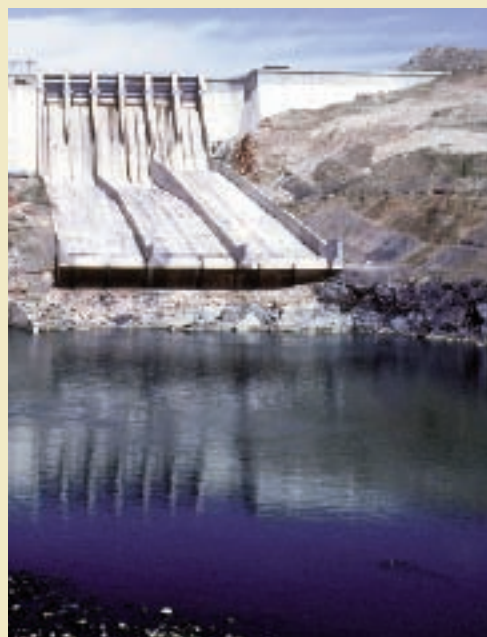
- Energy Security (EE)
- Renewable Energy (Environment)
- Energy-Poverty (Gender and SME's)
- Market Efficiency and Governance

Central to the organization of the event was a concentration on some areas of ESMAP's business lines: energy security, clean energy and low-carbon energy development, governance and anticorruption in the energy sector, and energy for growth and poverty reduction in Africa.

Another major event, which featured ESMAP as a cosponsor, was the *Development Marketplace 2006*. The theme of the event was Innovations in Water, Sanitation, and

Energy Services for Poor People, and participants were asked to present ideas that would provide concrete benefits to communities by meeting basic needs for clean water, hygienic sanitation, and access to energy. A total of 2,525 proposals were received from 154 countries. There were three rounds of assessment at which 118 proposals were chosen representing 55 countries. The largest number of winners from a single country was India with five, followed by Benin, Cambodia, Kenya, and Senegal with two each. Winners were then invited to exhibit their ideas in a booth while being able to network with participants of the 14th Meeting of the Commission on Sustainable Development (CSD-14) in New York. ESMAP also displayed key publications and distributed the books *Energy Services for the MDGs* and *Potential for Biofuels for Transport in Developing Countries*.

Along with providing a networking space during CSD-14, ESMAP held side events. One of these was the Energy Efficiency Investment Forum, which attracted more than 120 participants and 40 speakers representing different EE stakeholders from various countries. Speakers demonstrated the integration of the knowledge clearinghouse and think tank functions of the ESMAP Business Plan. The key outcome of the forum was a communiqué to the CSD-14 that called for significant scale-up of EE investments in the developing world to support an aggressive global campaign to increase the use of energy efficient products and practices.



“Active in six regions with more than 170 projects, ESMAP relies on strategic, professionally managed communications to get the most impact from our ongoing activities.”

## Publications

The revised publication strategy agreed upon in the current business plan expands the Knowledge Exchange Series (KES) and has already contracted a firm to carry out the revamping of ESMAP’s Web site. ESMAP also fully outsourced all activity-related publications to a publications coordinator in India who is part of the ESMAP and the Water and Sanitation Program Communications Team. Internal publications such as flagships, annual reports, semi-annual status reports, business plans, and four-pagers continue to be produced in Washington by the ESMAP publications coordinator.

During 2006, ESMAP added four new designs to products introduced late in 2005. These new designs cover Formal Reports, Technical Reports, Workshop Proceedings, and the Special Report Series, as well as the ESMAP eNewsletter.

### Flagship Report Series

During 2006, ESMAP published the following flagship reports using publications strategies that reflected the cutting-edge nature of work in the energy poverty thematic area:

- *Energy Policies and Multitopic Household Surveys: Guidelines for Questionnaire Design in Living Standards Measurement Studies.* An ESMAP report published under the World Bank Working Paper Series, Report No. 90
- *World Bank Framework for Development of a Power Market in South East Europe.* An ESMAP-funded activity and report published under the World Bank Working Paper Series, Report No.15.
- *Electrification and Regulation: Principles and a Model Law.* Kilian Reiche, Bernard Tenenbaum, and Clemencia Torres de Mästle. An ESMAP-funded activity published under the Energy and Mining Sector Board Discussion Paper Series, Report No.18.
- *People and Power: Electricity Sector Reforms and the Poor in Europe and Central Asia.* An ESMAP report published under the World Bank Directions in Development series.



### Special Report Series

During 2006, the ESMAP program repackaged this series in a more attractive format to enhance the image of ESMAP’s publications. Each report now displays a background write-up on the back cover to introduce the thematic area for which the report is intended. A survey was also included to assess the kinds of audiences and global outreach our publications currently have.





### Knowledge Exchange Series (Four-Page Notes)

KES, developed in 2005, continues to be the dissemination means most sought after by internal and external audiences. The notes are issued by ESMAP to disseminate immediate results of significant work in the energy sector for the benefit of the entire development community. The series, which consists of short topical or “Just in Time” notes, covers topics spanning ESMAP’s four main thematic areas as well as its legacy research areas.

While they are not limited to just ESMAP activities, they are specifically geared toward topics of interest to the energy and development community. The four-pagers are distributed electronically and via in-house mailing channels to World Bank staff, and posted on ESMAP’s Web site. The following four-pagers were issued during 2006:

- *Four Regulatory Principles to Promote Diverse Electrification.* No. 3.
- *Potential for Biofuels for Transport in Developing Countries.* No. 4.
- *A Primer on Consumer Surplus and Demand.* No. 5.
- *How Are Developing Countries Coping with Higher Oil Prices?* No. 6.
- *Power Purchase Agreements for Small Power Producers.* No. 7.
- *Indoor Air Pollution in Cold Climates: The Cases of Mongolia and China.* No. 8.

### ESMAP eNews (Electronic Newsletter)

ESMAP eNews quarterly electronic newsletter is another very popular dissemination means for information on ESMAP’s program, news, and activities. The ESMAP eNews was created to inform a varied audience on publications, energy events, partners’ requests, and other information relevant to the energy practice. The newsletter reaches more than 4,000 subscribers. Feedback has been extremely positive, and requests for subscriptions continue to come in by “word of mouth.”

### Knowledge Exchange Series (Brown Bag Lunches)

With its new business plan in place, ESMAP in 2006 undertook continued efforts to promote information exchange in the international energy community. Disseminating the results of ESMAP’s broad range of activities prompted new publications and new products. Given the length of time the outsourcing to India took to implement and become a well-functioning team, 2006 saw a lower number of ESMAP’s publications being produced. As of year-end, 49 publications were completed, of which 6 were four-page notes, 6 Activity Completion Reports, 2 Administrative Reports, 4 Workshop Proceedings, 9 Formal Reports, 15 Technical Reports, 4 Flagship Reports, and 3 ESMAP eNewsletters. A detailed list of these products is provided in **Annex 4**.

KES events provide opportunities for ESMAP task managers as well as external energy practitioners and experts to exchange knowledge and experience. A more comprehensive list is available in **Annex 5** and is also available in greater detail on ESMAP’s Web site.

“ESMAP received a total of US\$16 million from its donors in CY2006.”

## Contributions Received

ESMAP received a total of US\$16 million from its donors in calendar year 2006. This marks a 7 percent increase as compared to total contributions of US\$14.9 million in calendar year 2005. This year, 10 donors, in addition to the World Bank, made cash transfers to the program through trust funds. In addition to the existing donors, ESMAP received support from the World Bank's Global Environment Facility, Iceland, and the U.S. Department of State. **Table 6.1** and **Figure 6.1** show actual receipts by individual donor for the period 2004-2006.

## Core and Thematic Funding

Core contributions totaled about US\$8.68 million in 2006 and accounted for 54 percent of total contributions. The United Kingdom provided core and thematic funding. Sweden provided funding restricted to Africa. Denmark and Germany provided thematic funding, and Finland, Iceland, the Netherlands, and Norway provided core funding. The main increase in ESMAP core funding was a result of the contribution from the Netherlands, which amounted to US\$6.3 million. This funding, along with the contributions from France and Iceland, were channeled to a multidonor trust fund established in CY2005.

**Table 6.1: ESMAP Receipts, 2004–06 (thousands US\$)**

Donor Name	2004	2005	2006	Pledges for 2007	Total 2004-06	Of which core 2004-06
UNDP	100.0	100.0	0.0	0.0	200.0	0.0
WORLD BANK	523.8	520.5	929.6	800.0	1,973.9	1,973.9
CANADA	563.8	229.5	0.0	0.0	793.3	0.0
DENMARK	0.0	824.4	1,630.0	1,588.0	2,454.4	0.0
FINLAND	108.0	0.0	205.0	0.0	313.0	313.0
FRANCE	0.0	467.2	0.0	850.0	467.2	467.2
GERMANY	558.0	3,407.5	1,770.6	2,561.3	5,736.1	495.2
GLOBAL ENVIRONMENTAL FACILITY (GEF)	0.0	0.0	1,000.0	0.0	1,000.0	0.0
ICELAND	0.0	0.0	100.0	200.0	100.0	100.0
NETHERLANDS	2,924.0	2,875.0	6,386.0	3,293.4	12,185.0	6,186.0
NORWAY	700.00	350.0	1,050.0	750.0	2,100.0	1,050.0
SWEDEN	396.6	1,834.9	754.0	750.0	2,985.5	396.6
UNITED KINGDOM	2,047.2	4,019.1	2,176.0	2,758.0	8,242.3	2,818.0
UNITED NATIONS FOUNDATION	600.0	300.0	0.0	0.0	900.0	0.0
UNITED STATES	0.0	0.0	50.0	0.0	50.0	0.0
<b>TOTAL</b>	<b>8,521.4</b>	<b>14,928.1</b>	<b>16,051.2</b>	<b>13,585.7</b>	<b>39,500.7</b>	<b>13,799.9</b>

The World Bank's contribution (which is considered core) was US\$0.9 million in 2006. This marks a 79 percent increase as compared to US\$0.5 million in CY2005.

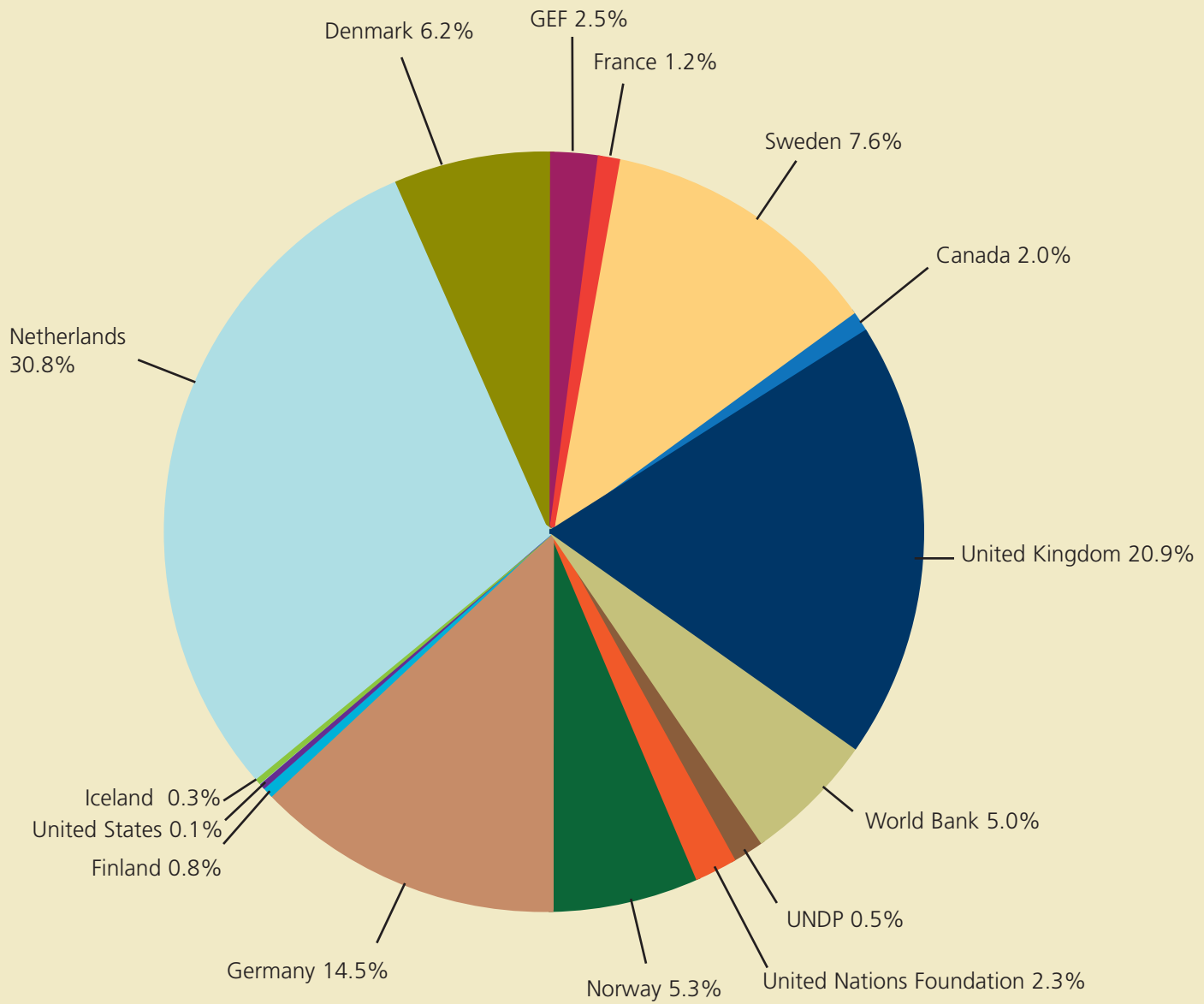
ESMAP received a total of US\$5.3 million in thematic funding. Germany contributed US\$1.7 million; Denmark, US\$1.6 million; Sweden, US\$0.7 million.



Total Receipts 2004-2006	Total Receipts 2006	Total Core
0.5%	0.0%	0.0%
5.0%	5.8%	14.3%
2.0%	0.0%	0.0%
6.2%	10.2%	0.0%
0.8%	1.3%	2.3%
1.2%	0.0%	3.4%
14.5%	11.0%	3.6%GLOBAL
2.5%	6.2%	0.0%
0.3%	0.6%	0.7%
30.8%	39.8%	44.8%
5.3%	6.5%	7.6%
7.6%	4.7%	2.9%
20.9%	13.6%	20.4%
2.3%	0.0	0.0%
0.1%	0.3%	0.0%
<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

“Project-specific funding totaled US\$1.050 million in 2006, compared to US\$0.8 million in 2005.”

Figure 6.1: ESMAP Receipts by Source, 2004–06



**Table 6.2: Core and Thematic ESMAP Donor Contributions 2004–06**

Year	Total donor <sup>a</sup> contributions (million US\$)	Of which core (million US\$)	Of which core plus thematic (million US\$)	Core as % of total donor contributions	Core plus thematic as % of total donor contributions
2004	7.89	1.47	5.58	18.6%	70.7%
2005	14.00	1.59	13.40	11.4%	95.7%
2006	15.07	8.68	14.06	57.6%	93.3%
<b>TOTAL</b>	<b>36.96</b>	<b>11.74</b>	<b>33.04</b>	<b>31.8%</b>	<b>89.4%</b>

Note: a. Does not include World Bank and UNDP.

## Project Funding

Project-specific funding totaled US\$1.050 million in 2006 compared to US\$0.8 million in 2005. These contributions were provided by the World Bank's Global Environment Facility and the U.S. Department of State.

## Disbursements

**Table 6.4** shows that disbursements in 2006 totaled US\$10.3 million, an increase of US\$1.6 million from disbursements in 2005. Of this, expenditures on project implementation went up by US\$1.5 million, representing a 20 percent increase over the previous years. Expenditures on work program development (time spent by ESMAP staff to help develop specific ESMAP projects) increased from US\$0.62 million to US\$0.78 million. Program management costs increased from US\$0.7 million in 2005 to US\$1.1 million in 2006. The increase in program management costs is mainly the result of the expansion of staff strength at ESMAP and the increased volume of activities. Expenses on knowledge management went down by 32 percent in comparison to the previous year. This was a result of outsourcing a part of the publications process to increase efficiency and reduce costs.

**Table 6.3: Receipts by Type of Funding in CY2006**

Type of Funding	Amount (millions US\$)
World Bank contribution	0.929
Core	8.689
Thematic	5.382
Project	1.050
<b>TOTAL</b>	<b>16.050</b>

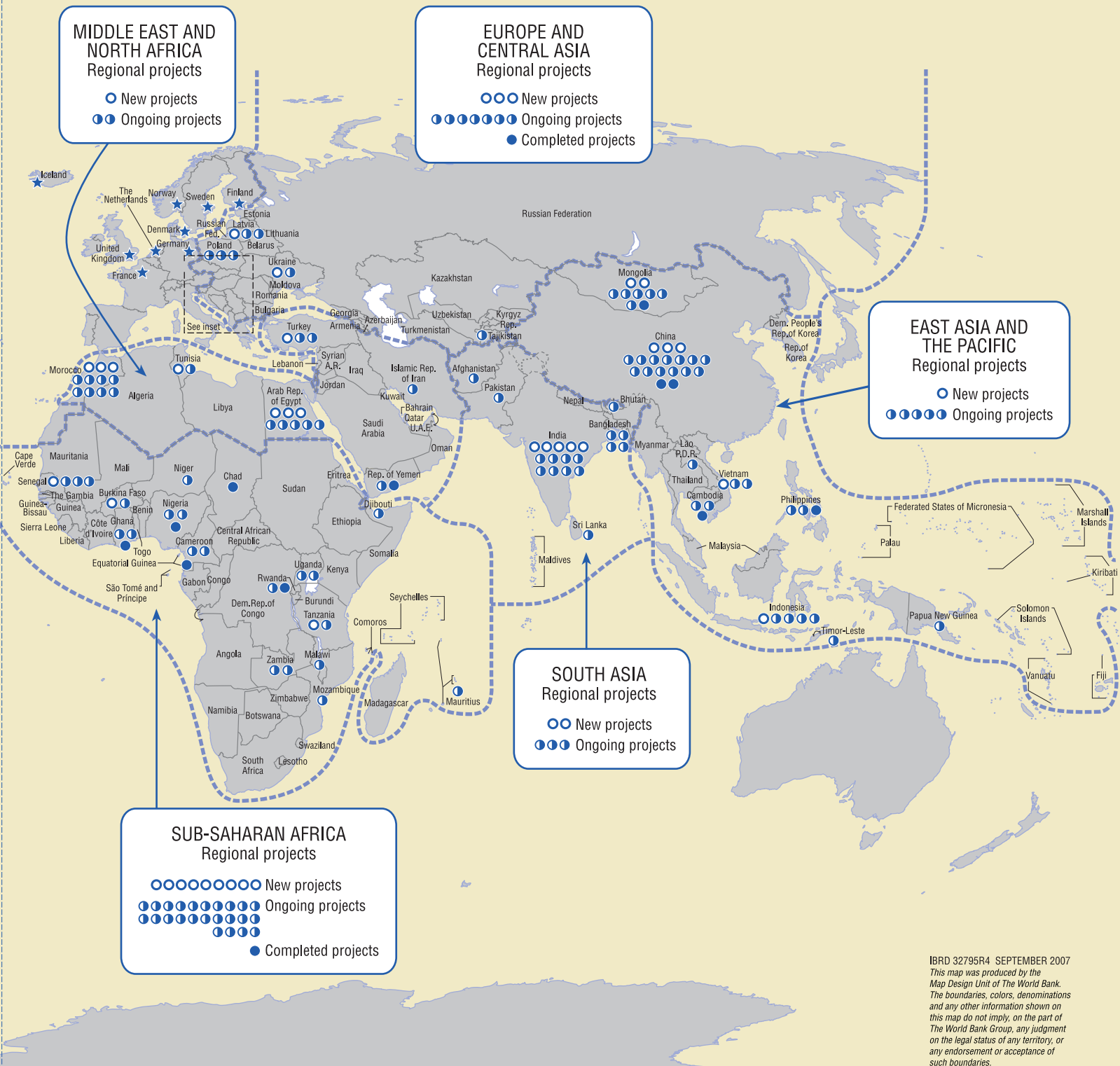
**Table 6.4: ESMAP Disbursements and Expenditures 2004-2006 (thousands US\$)**

	2004	2005	2006
Project costs	8,011	7,218	8,688
Work program development	103	62	78
Program management <sup>a</sup>	724	886	1,191
Knowledge dissemination	125	436	297
<b>TOTAL</b>	<b>8,963</b>	<b>8,602</b>	<b>10,254</b>
Of which funded by Donors	8,439	8,082	9,325
Of which funded from World Bank budget	524	520	929

Note: Historical breakdown has been restated from previous reporting for improved comparability with current definitions.

a. Includes Review of Proposals and Governance.





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# Implementation Progress toward Completion of Outputs Defined in the 2005-2007 ESMAP Business Plan

## Energy Security (including EE)

### Think Tank

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#### Tasks

- Map out the macroeconomic impact of hydrocarbon price volatility.
- Deepen the research and methodology through empirical studies for analyzing the impact of energy market instability on various income groups and on various consumer groups, and to analyze mitigation policy options and formulate risk mitigation instruments.

#### Outputs

- 1-2 flagship publications on diagnostic tools and risk mitigation instruments.

### Progress End-2006

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#### Tasks

- *Coping with High Oil Prices (P092878)*. This report looks at ways in which higher costs can be reduced for end-users and how these higher costs can be equitably borne by different parties in the economy. It also looks at the practical matter of getting public “buy-in” for any such policies, a particularly relevant question since many countries have subsidized oil products in various ways for some time. *Coping with High Oil Prices* has been extensively used to document both some of the macroeconomic costs of various policy options and build up policy options in the country dialogue between the World Bank and International Monetary Fund economic teams and the governments, for example, in the Philippines. The work for this report was also used to provide input into the Briefing to the World Bank's Board of February 9th on the Impact of Oil Prices.
- Oil Price Volatility is a project to be funded by ESMAP in FY07 to be carried out by the Chemicals, Oil, Gas and Mining Division. It is a natural follow-on to the aforementioned work product and will both measure and assess price volatility and then look at ways to ameliorate its effects. It will specifically look at some macroeconomic measures such as hedging.
- ESMAP published *Experience with Oil Funds: Institutional and Financial Aspects (P087289)*, which provides an important survey of 12 oil and gas funds and 3 other resource funds at a time when many developing countries are beginning or increasing production

and high prices translate into substantial revenues. The information on different fund types and their approaches for saving oil revenues provides a useful reference for policy makers considering establishment of an oil fund.

- Two KES: *How Are Developing Countries Coping with Higher Oil Prices?* and *Potential for Biofuels for Transport in Developing Countries*.
- *The Roundtable on Energy Security* enabled the World Bank Group to assemble a group of 12 world experts to discuss in a “Chatham House” setting the issue of energy security from the perspective of developing countries, as part of the World Bank's preparations for the G8 Summit in St. Petersburg.
- One Flagship Publication: *Sustainable Energy in China: The Closing Window of Opportunity*. Nouredine Berrah et al. Directions in Development Series, World Bank, Washington, D.C. 2007.
- Four Enhanced Reports: *Coping with Higher Oil Prices; Experiences with Oil Funds: Institutional and Financial Aspects; Best Practices in Mainstreaming Environmental Safeguards into Gas Pipeline Projects; and The Reform of the Hydrocarbon Sector in Paraguay*.
- One Technical Report: *Peru: Extending the Use of Natural Gas to Inland Provinces*.

### Operational Leveraging

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#### Tasks

- Integrate policy options and mitigation instruments in macroeconomic or sector policy dialogues and programs.
- Develop EE investment and other energy resource portfolio diversification programs, in particular to the benefits of lowest income groups.
- Increase investments to facilitate increased energy trade in favor of most vulnerable countries.

#### Outputs

- New Sector Policies documents.
- An increased pipeline of investments in EE and in energy infrastructure to facilitate trade.
- Draft project appraisal document under preparation for the China Energy Efficiency Financing project.
- New draft EE law in Morocco.



## Progress End-2006

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- Numerous ESMAP-funded reports integrate energy security policy options and mitigation strategies into programs. Ultimately, they can pave the way for policy lending. This includes Southern Cone Gas Integration (P097369), examining the technical, economic, environmental, and financial aspects of gas integration among the countries of Argentina, Bolivia, Brazil, Chile, Paraguay, Peru, and Uruguay. The results have already been presented in a regional workshop and follow-on work will be undertaken to help governments take the next steps toward integration. It also includes China Sustainable Coal Sector Development (P098394), responding to a request from the government of China to reform its coal sector, and Power System Planning in India: Incorporating Environmental Externality Costs and Benefits, responding to a request from the government of India to consider how externalities can be incorporated into system planning.
- Operational leveraging of a large-scale EE project, to be financed through local financial intermediaries, is being prepared for China and is expected to result in lifecycle energy savings of 45 million tce linked to China Energy Efficiency Policy, Regulation and Institutional Framework Study - Phase I.
- Development of the draft law of energy management focused on energy conservation, EE, and EE institutions in the “Energy Efficiency Policy in Morocco” project.
- Development of the draft law of energy management focused on energy conservation, energy efficiency, and energy efficiency institutions in the “Energy Efficiency Policy in Morocco” project.
- Design and procurement of 800,000 compact fluorescent lamps amongst residential consumers by the local electric utility in Uganda, with support from Uganda Energy Efficiency Activity/Emergency Response.

## Renewable Energy

### Think Tank

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#### Tasks

- Analyze legal and regulatory frameworks and incentive policies for renewables, adapted to the specificity of developing country needs.
- Provide systematic technical assistance, guidance, and training to support the integration of renewables in energy policies, system planning, and energy sector regulation, including the design of grid system management tools.
- Develop innovative financing instruments to address the risks and issues of small-scale renewable energy projects.

#### Outputs

- 1-2 flagship publications on regulatory frameworks and innovative financing instruments.

### Progress End-2006 Tasks

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- Global Trade in Biofuels.
- Risk Assessment Methods for Power Utility Planning (seminar).



# Implementation Progress toward Completion of Outputs Defined in the 2005-2007 ESMAP Business Plan

## Renewable Energy (cont.)

### Knowledge Clearinghouse

#### Tasks

- Facilitate cross-regional exchanges of information and lessons learned.
- Disseminate best practices of renewable energy projects.
- Review lessons of experience on how the development of renewable energy resources can benefit the poor and distill the latest review of best practices and opportunities for biomass.
- Launch a special short-note series on lessons learned from renewable energy/energy efficiency projects and conduct in country knowledge dissemination activities.
- Further develop the methodological and best practice work on the economic, social, and environmental evaluation of hydropower development.

#### Outputs

- Practitioners' Guide.
- 2-3 short notes for the Knowledge Exchange Series.
- Other publications from the analytical work and knowledge tasks.

#### Progress End-2006

- Proceedings of the International Grid-Connected Renewable Energy Forum.
- Private Sector Small-Scale, Grid-Connected Renewable Power Generation in Sri Lanka: A Review of Experience of the Past Decade.
- Rising Energy Prices and Their Impacts on Developing Countries: The Role of Renewable Energies and Energy Efficiency (Meeting).
- Grid-Connected Renewable Energy Topical Briefs.
- Grid-Connected RE Policy Forum.
- Scoping Study for Voluntary Green Electricity Schemes in Beijing and Shanghai.

## Operational Leveraging

#### Tasks

- Provide advisory and training services to policy makers, local entrepreneurs, service providers, and financial institutions in the renewable energy area.
- Provide project support by assisting World Bank teams in identifying, developing, and preparing renewable energy projects, and evaluating the development impact of these investments.

#### Outputs

- New sector policy documents, or Poverty Reduction Strategy Paper/country assistance strategy incorporating RE for 5-10 countries.
- An increased pipeline of renewable energy projects at the World Bank (added).
- A cadre of trained staff, financial intermediaries, and service providers and investors.

#### Progress End-2006

- Analysis of the Social and Economic Impacts of Biodiesel Production in Brazil.
- Review of Policy Framework for Increased Reliance on Renewable Sources of Energy in Colombia.
- Capacity Building among Small-Scale Off-Grid Energy Suppliers (Mongolia).
- Study on the Potential for Bio-Fuel Production in Mozambique.
- Impact Analysis of Policies to Increase Renewable and Low Carbon Energy Use (Serbia & Montenegro).
- Clean Energy Strategy for the World Bank Africa Energy Unit.
- Uganda Geothermal Development Planning.
- Strengthening the Moroccan Electricity Sector Regulatory Framework for the Promotion of Renewable Energy with Emphasis on Large-Scale Grid-Connected Technologies.
- Policy & Strategy for the Promotion of Renewable Energy Resources in Nicaragua.

## Energy Poverty

### Think Tank

#### Tasks

- Analyze peri-urban issues, including best practice on financing mechanisms, institutional models, service delivery models, and technical options.
- Re-establish the economic justification for subsidies to extend service.
- Undertake specific country-based applications to establish specific guidelines for the development and use of biomass options.
- Analyze the impact of energy in developing countries linked with multisector survey work and MDGs.

#### Outputs

- Established framework for new activity involving monitoring and evaluation of rural electrification projects in Vietnam, Peru, and Mongolia. Regions to use block grants, and ESMAP will play a regional coordination role. Proposals to be developed by December 2006. Regions already have committed some ESMAP block funds for individual countries in the area of US\$ 400-500,000.
- Held workshop on periurban issues in Brazil in September 2005; Report is in publication.
- Subsidy Review being completed for LAC.
- Papers published:
  - *Energy Policies and Multitopic Household Surveys: Guidelines for Questionnaire Design and Living Standards Measurement Studies*, published as Energy and Mining Sector Board Discussion Paper 17, April 2006. Will be published as a World Bank working paper for wider dissemination.
  - *Productive Uses of Energy for Rural Development*, published in Annual Review of Energy and Environment in fall 2005.
  - *The Urban Household Energy Transition*, published July 2005 through RFF Press jointly with ESMAP.
  - *People and Power*. Julian Lampietti, S. Banerjee, and A. Branczik. Directions in Development Series. 2006.
  - *Traditional Hearths and Polluted Homes: Social and Environmental Implications of Improved Stove Program in India*. Forthcoming through a press in India (Oxford or Sage) jointly with ESMAP.
  - *The Challenge of Rural Electrification: Strategies for Developing Countries*. Douglas F. Barnes, ed., to be published through RFF Press jointly with ESMAP in 2007.

- *Environmental Health and Traditional Fuel Use in Guatemala*. Kulsum Ahmed and others. Directions in Development Series, World Bank, Washington, DC. 2005.
- *Household Energy, Indoor Air Pollution, and Health: A Multisectoral Intervention Program in Rural China*. Enis Baris and Majid Ezzati. Forthcoming 2007. ESMAP Special Report.

### Knowledge Clearinghouse

#### Tasks

- Synthesize the foundation work developed in the last business plan on indoor air pollution, urban air quality, rural electrification best practices, and gender in energy.
- Complete the studies on the impact of reform on the poor, and disseminate the results of the analytical work.
- Develop with WBI training programs for various institutions in client countries and audio-visual programs to reach out to more communities and people, women in particular.
- Further the work on defining an energy-poverty index.

#### Outputs

- 4-5 short notes for the Knowledge Exchange Series.
- Training and audio-visual dissemination programs.



# Implementation Progress toward Completion of Outputs Defined in the 2005-2007 ESMAP Business Plan

## Energy poverty (cont.)

### Progress End-2006

- Gender Web site on line.
- Transformative Power: Meeting the Challenge of Rural Electrification.
- Four Regulatory Principles to Promote Diverse Electrification.
- A Primer on Consumer Surplus and Demand: Common Questions and Answers.
- In preparation: Indoor Air Pollution in Cold Climates: A Comparison of Mongolia and China.
- Funding for training and audio-visual dissemination programs was redirected to Energy Access in Africa initiative.

## Operational Leveraging

### Tasks

- Test some alternative business models and technologies to provide energy services in peri-urban areas, taking into account the needs of both men and women.
- Review Distribution of Household Petroleum Fuels and come up with recommendations to encourage more activities in World Bank lending.
- Provide operational support for the Access Scaling Up Initiative, including undertaking a portfolio review, continuing the implementation of GVEP activities, and supporting preinvestment activities.

### Outputs

- Substantial field results from preinvestment activities.

### Progress End-2006

- Peru Rural Electrification project approved in April 2006 (supported by ESMAP energy demand study, which will lead to monitoring and evaluation methodology for project).
- Haiti household energy review led to development of improved stoves project to be financed by UNDP.
- Nicaragua ESMAP project influential in changing laws to promote renewable energy. Honduras project leading to investment in microhydro development under World Bank loan.

## Market Efficiency and Governance

### Think Tank

#### Tasks

- Provide policy analysis on how to build up the public-private partnership for distributed energy, focusing on regulatory and subsidy issues.

#### Outputs

- 1 flagship publication on public-private partnership for decentralized energy.

### Progress End-2006

- Documenting the regulation of small electricity systems, which deals with the important issue of regulation of small decentralized electricity systems (highly relevant for the Africa region, as well as Latin America, East Asia and South Asia).
- The work on Review of ESMAP's Energy Sector Reforms and Market Development Work is nearing completion.
- A study on Expanding SME Outsourcing Activities in Africa, which fed into the IFC PEP (Private Enterprise Partnership) Africa initiative.
- Follow-up to the Investors' Round Table: The second volume of the study on the conclusions of the other two groups of the Roundtable on Governance Standards/Code of Conduct/Performance Benchmarks for Electric Power public-private partnerships have been assembled and is being edited for publication before the end of the year.
- Report on: "Electrification and Regulation: Principles and a Model Law."
- Draft report on "Designing Strategies and Instruments to address Power Projects Stress Situations."
- Draft report on Roundtable on "Governance Standards/Code of Conduct/ Performance Benchmarks for Electric Power PPPs."

## Knowledge Clearinghouse

#### Tasks

- Distill and disseminate best practices on revenue management or on utilities management from other countries to policy makers at various levels of government, to the World Bank internal audience and to external interested parties through two brown bag lunches.

## Outputs

- Short dissemination notes on best practice for public-private partnerships and improving utility performance.

## Progress End-2006

- Disseminated Best Practices on revenue management or utility management.
- Energy SME program: manual on low-cost electrification has been prepared and dissemination has been initiated.
- Disseminated the reports: "Ghana Poverty and Social Impact Analysis of Electricity Tariffs" and "Sector Reforms and the Poor: Energy Use and Supply in Four Countries: Botswana, Ghana, Honduras and Senegal" to the World Bank internal audience and to external interested parties through two brown bag lunches.
- "Experiences with Oil Funds" was disseminated in preparation for the spring 2006 G8 meeting, which highlighted the importance of energy and governance.
- The final report on "Mainstreaming Low-Cost Innovations in Electricity Distribution Networks in Africa" was completed, with three workshops delivered in 2005.

## Operational Leveraging

### Tasks

- Establish and manage a program on distributed energy systems with SMEs. In five-eight selected countries, pilot, assess, and scale up policy and regulatory framework, business, and financial models to stimulate private sector involvement in decentralized energy service delivery.
- Provide advice on how to enhance the performance of utilities, in particular in Africa

### Outputs

- Formulation of national policies for access in isolated areas in seven-eight countries.
- Revised local regulation for the provision of energy services by SMEs in seven-eight countries.
- Five-eight completed demonstration projects.

## Progress End-2006

- Physical implementation commenced in Cameroon, Cambodia, Haiti, Nicaragua, and Peru.
- The development of regional power projects for West Africa, Mekong, Central Asia, and Southern Europe (gas).
- Improving the performance of utilities, particularly in Africa (initial work on benchmarking the performance of African utilities has been started in the Africa region).
- The formulation of policies for access in remote areas (Cameroon) is completed, and is under active preparation in three more countries (including Haiti and Cambodia).
- Local regulation has been revised in one country (Cambodia) and is underway in Cameroon and Haiti.



## Proceedings: Annual Meeting of the Joint Consultative Group for Energy Trust-Funded Programs

### Annex 2

#### Thursday March 9, 2006, CG Open Meeting: Theme—Clean Energy, Energy Security, and Energy for Sustainable Development

The Consultative Group (CG) for the Energy Trust-Funded Programs (ETFPs) managed by the World Bank met in Washington, DC, on March 8-9, 2006. Mr. Jamal Saghir, the World Bank's Director for Energy, Transport 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.

Welcoming all participants Ms. Kathy Sierra, the World Bank's Vice President for Sustainable Development and Chair of the CG, outlined the two-day agenda for the meeting. The agenda for the first day included a recapitulation of the main themes of energy week (energy security, energy and sustainable development in Africa, and clean energy and climate change), and review of the upcoming UN Commission for Sustainable Development (CSD-14) and donor platforms for this meeting. The second-day agenda focused on the ETFPs activities in 2005 and their business plans for 2006, and the analysis of the TAG on the ETFPs. The second day of the CG meeting was restricted to the active donors of the ETFPs.

**The World Bank and the Energy Sector:** Ms. Sierra opened the meeting with an overview of the World Bank's activities in the Energy Sector, particularly the increase in the global lending and the emphasis on Africa, which currently represents the second largest region in the World Bank's lending portfolio. The World Bank has continued to achieve its goal of increased funding by 20 percent per annum on renewable energy and EE projects. Finally, the World Bank is working with the international community to outline an investment framework for clean energy and development.

The Road to CSD-14: Ms. JoAnne DiSano, Director, CSD Secretariat and Division for Sustainable Development, United Nations Department of Economic and Social Affairs, gave an overview of the topics discussed during the Energy Week conference at the World Bank in March and their influence on the agenda for CSD-14.

Ms. DiSano reviewed and appraised progress made so far in implementing the main topics of the Agenda 21, with special emphasis, given the CG audience, on Energy for Sustainable Development, and Climate Change. In a historic overview reaching back to CSD-9, Ms. DiSano elaborated that energy has since emerged as a key factor for sustainable development. This had been highlighted in the preparatory meetings for CSD-14, such as the Parliamentary Forum on Energy Legislation in Cape Town in 2005 and the meeting on Natural Gas and Sustainable Development in Qatar in February 2006. One outcome of these preparatory meeting was that energy-related issues were less considered in isolation but in an integrated manner and highly linked to issues and policies in other sectors and to their impact on EE and climate change.

**The African Perspective on Energy and Sustainable Development:** Ministers of Energy Albert Butare of Rwanda and Salvador Namburete of Mozambique presented their perspectives on energy and sustainable development in Africa, particularly in the context of the currently high and volatile oil prices. The ministers highlighted the key themes discussed during the World Bank's Energy Week from an African perspective and with specific reference to their countries. The vicious cycle of lack of investments in the energy sector that has led to a major scarcity of energy, the high vulnerability of African importing countries to oil prices, and the lack of alternative sources of energy to increase the countries' ability to respond to these shocks were issues highlighted by the ministers as key in the development of Sub-Saharan Africa. The ministers called for a more decisive support from the World Bank and other developed countries in supporting Africa in solving its energy crisis.

**Clean Energy and Climate Change:** Mr. Robert Watson, Chief Scientist and Senior Advisor to the World Bank, summarized the status of the development of an investment framework for clean energy and development currently being prepared by the World Bank with inputs of other organizations. Mr. Watson outlined the report and its review of three issues: (i) the need for, and investment requirements of, meeting modern energy needs for developing countries over the long term in a manner that provides attention to efficiency and local environmental considerations; (ii) the additional steps needed in the energy,

transport, and industrial sectors to address climate change mitigation through the reduction of greenhouse gases; and (iii) the impact of climate change and the need for developing countries to adapt adequately to changes in climate and weather variability. Mr. Watson described the timetable of completion of the investment framework, including the presentation to the World Bank Board of Directors in April 2006 and the planned set of activities by the time of the Bank's Annual Meetings in September 2006.

***Brazil's Sugar and Ethanol Industry:*** Mr. Jose Nilton de Souza Vieira from the Ministry of Agriculture of Brazil presented the Brazilian experience since the 1980s with the use of ethanol as an alternative fuel or fuel addition to gasoline, and the lessons on how to build a viable industry around ethanol as a gasoline additive. Currently, ethanol accounts for roughly 17 percent of Brazil's fuel needs and 73 percent of car sales are of the flex-fuel type. A viable and efficient sugar cane industry was a key factor in the success of the Brazil case. Mr. Viera discussed the opportunities for South-South technology transfer in this area.

**Corruption in the Power Sector:** Mr. Richard Stern, Former Vice-President of the World Bank, gave an overview on corruption in the power sector. The power sector is particularly prone to corrupt practices given its capital-intensive nature, the inherent limits to competition (even with unbundling), the discretionary power of policy makers and regulators, and the substantial shortfalls in supply that characterize many of the emerging markets. Corruption in the power sector ranges from grand to petty corruption. The two are often linked by a complex set of supportive relationships and rent taking. Understanding the exact nature and modality of corrupt practices in each particular country environment is thus critical to the design of appropriate remedial interventions. A coherent anticorruption strategy, which is owned and supported by political leaders, government, and other key actors, as well as the senior management of the utilities, is a necessary prerequisite for any power sector anticorruption interventions to succeed and be sustained. A sound anticorruption strategy is an integral component of good governance. A successful anticorruption program in the World Bank will require the development of strategic alliances between the World Bank and key actors in the field, including global and local anticorruption nongovernmental organizations, pioneer-

ing contractors, consultants and their relevant trade organizations, Organisation for Economic Co-operation and Development, and donors. Such alliances will be necessary both to develop best practice and to ensure joint action.

***Donor Platforms for CSD-14:*** Ms. JoAnne DiSano led a discussion on the existing donor platforms and preparatory activities leading to CSD-14. Representatives from the donor countries presented the views and perspectives from their governments in preparation for CSD-14, and the specific approaches in which they will support the meeting. UNDP also discussed the role of its country offices in preparation for the meeting and the ways in which they support the mainstreaming of energy in the Poverty Reduction Strategy Paper process. Issues discussed by the participants included ways to measure results from donor programs and country activities in the energy sector, including specific indicators and reporting mechanisms; approaches to share knowledge and policy options; and ways to enhance the effectiveness of partnerships in the energy sector.

***The Global Village Energy Partnership (GVEP):*** Ms. Gayathri Ramachandran, acting chair of the GVEP Board, presented an overview of GVEP, a global partnership with more than 1,000 partners in 50 countries. Some of the recent GVEP achievements presented included: (i) the development of energy poverty actions plans for three countries, (ii) the development of microfinance tools for energy services, and (iii) the development of monitoring and evaluation tools for energy poverty programs. Ms. Ramachandran discussed the funding needs of GVEP's technical secretariat. The role, effectiveness, and future of GVEP were discussed by participants. It was agreed to invite the Board to make a second presentation to the CG meeting on the second day to discuss these points. The following day, Mr. Kurt Hoffman, Director of Shell Foundation and newly elected chairman of the GVEP Board, presented an action plan to prepare a new business plan by May 1, 2006, for review by the donor community and a request to provide continued support to GVEP's technical secretariat after its funding runs out end-June 2006. Key elements of the business plan will include the target markets and the products and services that GVEP will provide to this target market. The business plan will also review the management and staffing structure of the technical secretariat.

## Proceedings: Annual Meeting of the Joint Consultative Group for Energy Trust-Funded Programs

### Annex 2

#### Friday March 10, 2006 ESMAP, ASTAE, and Africa Business Meeting

The session began with brief welcoming remarks by Mr. Jamal Saghir.

**Energy Security:** Mr. Saghir made a presentation on the global challenge of energy security, defined as the means to ensure that countries can produce and use energy at a reasonable cost and in a sustainable manner. Energy security has different meaning for energy producers, industrialized countries, and poor countries. Mr. Saghir discussed short-term options to manage the economic and energy market impacts of potentially continuing high and volatile energy prices, and also the long-term need to meet continuing global growth in demand for energy services, through active focus on EE and diversification of energy supplies.

**Donor Perspectives on ETFPs:** Ms. Anne-Charlotte Malm from the Swedish International Development Cooperation Agency and Mr. Manfred Konukiewicz from the German Federal Ministry for Economic Development Cooperation presented two donor perspectives on ETFPs. They highlighted the positive structure of ESMAP's new business plan, and the additional value the ETFPs provide such as project development, competence development, input into donor agencies' policy work, and harmonization. They also highlighted the need of the ETFPs to maintain clarity in the ownership of the work by client countries, as well as the leadership to mobilize the energy expertise at a global level; a continued focus on outcomes and impacts; enhanced knowledge capture and use from other organizations beyond the World Bank; and the need for harmonized donor support to the programs.

**Asia Alternative Energy Program (ASTAE)—2005 Implementation Report:** Ms. Junhui Wu, Energy Sector Manager of the East Asia Energy Unit of the World Bank gave an overview of ASTAE and its direct impact on the East Asia regional energy lending program. This program provides US\$314 million of lending for EE and renewable energy, or about 42 percent of the total World Bank lending in these areas. Among other highlights in 2005, ASTAE supported projects

that will provide about 750,000 households with access to energy, and improved services to 620,000 households in Vietnam; provided support to drafting the Chinese Renewable Energy Law; supported the Sri Lanka Energy Service Delivery project, which received a Good Practices Award by the World Bank Independent Evaluation Group and expanded its support to new countries such as Mongolia and several Pacific Islands. Ms. Wu described the fiscal 2007-08 business plan for ASTAE, which will further concentrate on "downstream" sustainable energy and access activities (project identification, preparation, and implementation). The comments from donor representatives was positive and encouraged ASTAE to maintain its effective focus on energy access and establish stronger linkages with bilateral programs as it has been doing so far.

**Energy Activities in AFTEG—Energy Unit, Africa Region, The World Bank:** Mr. Arun Sanghvi presented the strategic objectives of AFTEG, examples of outcomes on the ground, partner support to advance the energy sector in Africa, and a sample of activities supported by ESMAP. These activities include support to improvement of energy utility performance; learning and mainstreaming of lessons from involvement of the private sector; enhancing the impacts of energy access and renewable energy; and supporting regional market structures and integration. New areas of AFTEG work to be supported by ESMAP include the development of a template for a new type of country assessment that is more effective in supporting scale-up of energy access programs and energy mainstreaming in PRSPs; quick response to Forum of Energy Ministers of Africa priorities in areas such as demand-side management and EE; and mainstreaming carbon finance in AFTEG operations.

**Monitoring and Evaluation in ESMAP:** Ms. Pernille Holtedahl from NORAD (Norway) introduced the discussion on monitoring and evaluation (M&E) with a review of basic principles for M&E systems and indicators. Mr. Ede Ijjasz, acting manager of ESMAP, discussed the challenges faced by ESMAP in the M&E of its nonlending activities, such as the intangible nature of ESMAP products (technical assistance, policy advice, upstream sector analysis), the long time between the ESMAP activities and downstream impacts on the ground, and the complex interactions



among many nonlending activities that lead to policy reform and project design and implementation. The discussion among participants included the pros and cons of using quantitative indicators or storyline methodologies to monitor the impact of ESMAP activities.

**ESMAP—2005 Implementation Report:** Mr. Ijjasz, acting manager of ESMAP, began the presentation with an overview of the 2005-07 business plan, its four thematic lines (EE, renewable energy, energy poverty, and market efficiency and governance), and the implementation in 2005 of these thematic programs. For each thematic line, Mr. Ijjasz summarized the evolving context and ESMAP role, the current portfolio, key areas of work and products, and examples of outcomes. Mr. Ijjasz proceeded to describe the change in operational modalities from dispersed calls for proposals to strategic programmatic proposals at the regional level. The presentation then focused on improvements made to the publications and knowledge management, and other measures of the process of efficiency and streamlining between ESMAP and the Water and Sanitation Program, which are now under a single management. Mr. Ijjasz concluded with a financial review of ESMAP's position, and its constraints, such as the thematic restrictions of donor funding, the enormous growth in demand for ESMAP support, and the single-year versus multiyear trust fund agreements. The presentation was followed by a number of comments from the donor participants, such as the issue of thematic restrictions of trust funds and possible solutions (including the possibility of defining a small percentage of all trust funds for core funding); the high appreciation for the new four-page briefing notes developed by ESMAP; and the need to maintain a balance between regional and thematic use of funds, as the latter is a more common assignment of funds in donor agencies that facilitates fundraising.

**Technical Advisory Group (TAG)—2005 Report on ETFPs:** Mr. Andrew Barnett, TAG Moderator, led the discussion on the 2005 review of the ETFPs. Mr. Barnett described the changes ESMAP went through in 2005, and the major innovation of shifting funds from individual activities to regional programs. The TAG considers ESMAP is well placed to meet changing needs, but it faces a mismatch of donor funds both in scale and theme. The recommendations made by TAG included the need for

increased level and broader distribution of donor contributions, the need for ESMAP to increase services to its shareholders, to take concrete steps to strengthen the monitoring and evaluation system, to restore a balance between regional programs and its own-managed programs, to find funds for neglected areas (for example, biomass and country assessments in Africa), to conduct focused evaluations, and to post the TAG report in its Web page. For ASTAE, the TAG recommended the continued evolution to poverty issues and an increase in funding. The discussion following the TAG report included the need to increase activities and fundraising for gender issues in energy; the need for continued emphasis on Africa; the option to reach out to energy experts in embassies to disseminate ESMAP knowledge; and the number of members of TAG (which was agreed to remain at three).

**Other Business:** The donors discussed new pledges to ESMAP, including the new tranche of core funding from DFID and Iceland, and the future contribution from the United States. During the closed session, the donor representatives informed Mr. Saghir of their full satisfaction of the performance of Mr. Ede Ijjasz as acting manager of ESMAP and provided no objection to the proposal of Mr. Saghir and Ms. Sierra to confirm Mr. Ijjasz as manager of ESMAP.



## Completed, Approved, Ongoing Activities and Pending Publication in 2006

### ACTIVITIES COMPLETED

Activity	Country	Task Manager
<b>Africa Region (AFR)</b>		
Petroleum Revenue Transparency Audits	Nigeria	Charles P. McPherson
Ghana Energy PSIA of Energy Sector Reforms	Ghana	Sarah Keener
Rwanda: Energy Water Assessment Phase I	Rwanda	Malcolm Cosgrove-Davies
Impact and Determinants of Success of Private Participation in Power in SSA	AFR	Wendy E. Hughes
Revenue Management Seminar	Chad	Silvana Tordo
Equatorial Guinea: Resource Revenue Management	Equatorial Guinea	Silvana Tordo
<b>East Asia and the Pacific Region (EAP)</b>		
Philippines Rural Electricity: Private Participation and Regulatory Reform. Phase II.	Philippines	Selina Wai Sheung Shum
Creating Clean Coal Market: Environmental Monitoring and Enforcement, and Private Participation Capacity Building	China	Masaki Takahashi
Demand Side Management in a Restructured Industry	China	Jianping Zhao
Improved Heating Stoves & Health Impact on Low Income Consumers	Mongolia	Douglas French Barnes
Capacity Building for the Electricity Authority of Cambodia	Cambodia	Rebecca C. Sekse
<b>Europe and Central Asia Region (ECA)</b>		
Energy Efficiency in Urban Water Utilities in Central Asia: The Uzbekistan Case.	Central Asia	Ede Jorge Ijjasz-Vasquez
<b>Latin America and the Caribbean Region (LAC)</b>		
Rural Infrastructure in Chile: Improving Efficiency and Reaching the Poor	LAC, Chile	Jennifer J. Sara
Health Impacts of Traditional Fuel Use	Guatemala	Yewande Aramide Awe
Lessons on Offgrid Electricity, Business Development Services and Microcredit (Seed Funding)	Nicaragua	Clemencia Torres
Energy, Population and Environment	LAC	Eleodoro Mayorga Alba
Country Programme - Phase II	Bolivia	Philippe J-P. Durand
Energy from Landfill Gases for the LCR Region: Best Practice and Social Issues	LAC	Horacio Terraza
OECS Energy Sector Reform and Renewable Energy/Energy Efficiency Options	LAC	Charles M. Feinstein
Nicaragua - Pilot Commercialization of Improved Cookstoves	Nicaragua	Clemencia Torres
Technical Assistance to Proposed Expansion of Solar-Net Village Program	Honduras	Clemencia Torres
Mexico - TA for Long-Term Program for Renewable Energy Development	Mexico	Charles M. Feinstein
Stimulating the Market for Family-Hydro for Low-Income Households	Ecuador	Philippe J-P. Durand
Sustainable Water and Hydro Energy for Africa	AFR	Daryl Fields
Petroleum Downstream Markets in SSA	Africa	Marc Heitner

## ACTIVITIES COMPLETED

Activity	Country	Task Manager
<b>Latin America and the Caribbean Region continued</b>		
Paraguay: TA Preparation of an Oil Supply Strategy	Paraguay	Eleodoro Mayorga Alba
Options to Revitalize Investment and Private Participation in Power Distribution in the Latin American and Caribbean Region	LAC	Lucio Monari
Alleviating Urban Energy Poverty in Latin America: The Brazilian Case	Brazil	Dominique Lallement
Good Practice Case Study in Integrating Environment into Gas and Oil Pipeline Projects: Experiences Based on the Bolivia-Brazil Gas Pipeline	Bolivia,Brazil	Juan D. Quintero
Extending the Use of Gas to Inland Peruvian Provinces	Peru	Eleodoro Mayorga Alba
AR Power Transmission Issues and Options	Argentina	Philippe J. Durand
BR ESMAP Energy Work Program for Brazil	Brazil	Lucio Monari
MX - Evaluation of Energy Efficiency Program & Strategies for future policies	Mexico	Todd M. Johnson
<b>Middle East and North Africa Region (MNA)</b>		
Energy Poverty and Access	Yemen	Kyran O' Sullivan
<b>Global</b>		
Energy Efficiency Operational Exchange Program	Global	Robert P. Taylor
Petroleum Revenue Management Conference	Global	Charles P. McPherson
Preparation of Solar Lantern Global Technical Performance Specification and PV-GAP Recommended Specifications	Global	R. Anil Cabraal
Meeting the Energy Needs of the Urban Poor: The Case of Electrification (Periurban Electrification Workshop)	Global	Douglas French Barnes
Governance of National Oil Companies	Global	Charles P. McPherson
Toolkit for Scaling Up Rural Energy Access	Global	R. Anil Cabraal
Natural Gas Connection Charges and Conversion Costs and their Impact on Poor Households (THIS WAS CREATED JUST FOR THE SUBMISSION OF A PROPOSAL FOR A NEW ACTIVITY)	Global	Franz Gerner
Symposium on Hydropower and Sustainable Development	Global	Jianping Zhao
Knowledge Transaction: Reducing Energy Costs in Water Supply Operations	Global	Amarquaye Armar
Pioneering New World Bank Approaches in Support of Sustainability in the Extractive Sector	Global	John E. Strongman
Guidelines for Designing Energy Modules in Multitopic Household Surveys	Global	Kyran O' Sullivan
SEFI Roundtable - Renewable Energy Conference	Global	Dominique M. Lallement
Potential for Biofuels in Developing Countries	Global	Todd M. Johnson
Central America Regional Energy Trade	LAC	Fernado Lecaros
Country Case Study for Climate Change	Brazil	Todd Johnson
Clean Energy & Climate Change Strategy for LCR	LAC	Chandra Sinha
Country Case Study for Climate Change	Mexico	Todd Johnson

## Completed, Approved, Ongoing Activities and Pending Publication in 2006

### ACTIVITIES APPROVED

Activity	Country	Task Manager
<b>Africa Region (AFR)</b>		
Energy Access Action Plan for Africa	AFR	Kyran O' Sullivan
Implementing the Action Plan for Energy Access Scale-Up in Africa	SSA	Michel Layec
Support for Forum of Energy Ministers of Africa (FEMA)	SSA	Koffi Ekouvi
Rural Lighting Initiative for Africa	SSA	Anil Cabraal
Sustainable Biomass Supply and Use	SSA	TBD
Sector Syndication Prospectuses for Uganda, Senegal, and Kenya	SSA	Vijay Iyer
Rehabilitation of Hydropower Infrastructure	SSA	Daryl Fields/Pankaj Gupta
Modern Biofuels Studies Mozambique and Ethiopia	Mozambique & Ethiopia	Boris Utria
<b>East Asia and the Pacific Region (EAP)</b>		
Decentralized Energy Services - Mongolia	Mongolia	M. Ananda Covindassamy
Energy Efficiency Financing	China	Leiping Wang
Clean Fossil Fuel Technology Options Study	Indonesia	Leiping Wang
East Asia Regional Energy Flagship Study	EAP	Ranjit Lamech
Clean Coal Options Study	Mongolia	Salvador Rivera
Gas Master Plan Review	Vietnam	Richard Spencer
Biomass Cogeneration Development (Renewable Energy Only)	China	Ximing Peng
<b>Europe and Central Asia Region (ECA)</b>		
Thermal Power Plant Rehabilitation: Assessment of Needs, Costs and Benefits	Ukraine	Ostojic/Takahashi
Affordable Gas-fired District Heating in Central and Eastern Europe	Lithuania	Peter Johansen
Ensuring Energy Security in ECA: Role of Russia	Russia	Gevorg Sargsyan
Managing Operations in the New Electricity Market Structure: Utility Staff Capacity Building	Turkey	Sameer Shukla
Implementing Capacity Mechanisms in the Electricity Market	Turkey	Sameer Shukla
South East Europe Gasification Study (Phase II)	South East Europe	Franz Gerner
Central Asia - South Asia Regional Energy Trade	SAR/ECA	Sharma/Vucetic
Establishing Regulatory Framework for Renewable Energy Sources	Slovakia	Itsvan Dobozi
Renewable Energy Resource Assessment	Balkans	Demetrious Papatthasiou
<b>Latin America and the Caribbean Region (LAC)</b>		
HT-Dissemination of Improved Cooking Stoves	Haiti	Christophe de Gouvello
NI-Improved Small-Scale Energy Supply	Nicaragua	Fernando Lecaros
Small and Medium Enterprises for Energy Services Delivery	Peru	Demetrios Papatthasiou
Re-starting Tripartite Dialogues in the Amazon Basin	LAC	Eleodoro Mayorga-Alba
Cases in Regional Trade: Brazil-Uruguay	Brazil/Uruguay	Lucio Monari
Energy Sector Strategy	Brazil	Enrique Crousillat
Energy Sector Strategy	Ecuador	Susan Bogach
Energy Sector Strategy	Honduras	Lucio Monari
Clean Energy & Climate Change Strategy for LAC	LAC	Fernando Lecaros
Country Case Study for Climate Change	Mexico	Todd Johnson
Assessment of Energy Efficiency	Brazil	Todd Johnson
PROESCO Implementation Support	Brazil	Todd Johnson

## ACTIVITIES APPROVED

Activity	Country	Task Manager
<b>Latin America and the Caribbean Region continued</b>		
Assessment of Energy Efficiency	Brazil	Todd Johnson
PROESCO Implementation Support	Brazil	Todd Johnson
<b>Middle East and North Africa Region (MNA)</b>		
Design & Application of Time of Use Tariffs	Egypt	Anna Bjerde
Load Management	Egypt	Anna Bjerde
Structuring the New Energy Efficiency Agency	Morocco	Pierre Audinet
CCGT Workshop	Egypt	Anna Bjerde
Social Safety Net for LPG Subsidy Reduction	Morocco	Pierre Audinet
Energy Sector Review	MNA	Somin Mukherj
Fiscal Modeling of Gas	Egypt	Franz Gerner
Oil Products Sector Liberalization	Morocco	Pierre Audinet
Development of an Enabling Environment for Scaling Up RE and EE Investments	Tunisia	Silvia Pariente-David
<b>South Asia Region (SAR)</b>		
Coal Fired Plant Rehabilitation - Best Practice in Rehabilitation, Operations, and Maintenance Improvements	India	Sinha/Takahashi
Improving Rural Electricity Services through Renewable Energy-Based Distributed Power Generation	India	Mikul Bhatia
Improving Health of Women and Children through Renewables and Efficient Cookstoves	Bangladesh/Nepal	Priti Kumar
Coal Fired Generation Rehabilitation Project - Investment Planning and Regulatory Studies	India	Sinha/Hussian
Regional Energy Trade	SAR/ECA	Vladislar Vucetic
Strategies for Low-Carbon Growth	India	Kseniya Lvovsky
<b>Global</b>		
Energy Efficiency Investment Forum (CSD)	Global	Ashok Sarkar
ESMAP: World Forum on Energy Regulation	Global	Bernard W. Tenenbaum
Energy Efficiency Needs and ToolKit Assessment	Global	Ashok Sarkar
Building Up on Energy Efficiency Institutional Best Practices	Global	Ashok Sarkar
Gender in Energy Workprogram	Global	Douglas French Barnes
Risk Assessment Methods for Power Utility Planning	Global	Tae Yong Jung
Rural Electrification BP Dissemination - Session at Energy Week Unfunded Work	Global	Douglas French Barnes
Energy Services for the MDGs	Global	Ede Jorge Ijjasz-Vasquez
Grid-Connected Renewable Energy Topical Briefs	Global	R. Anil Cabraal
ESMAP: Energy Security	Global	Jonathan Coony
Oil Price Volatility	Global	Masami Kojima
Governance of National Oil Companies for Sustainable Development	Global	Michael Levitsky
Biofuels [TBD]	Global	Masami Kojima
Gender & Youth	Global	Adriana Eftimie

## Completed, Approved, Ongoing Activities and Pending Publication in 2006

### ACTIVITIES ONGOING

Activity	Country	Task Manager
<b>Africa Region (AFR)</b>		
UG-Power SIL 4 (FY02)/3A-ESMAP Implement Action Plan (FY07)	Uganda	Fanny Missfeldt-Ringius
BJ-Energy Srvcs Delivery APL (FY05)	AFR	Michel E. Layec
GH-Energy Policy Part 2 (FY06)	Benin	Boris Utria
GW-MS Infrastructure Rehab SIM (FY06)	Ghana	Xiaodong Wang
SN-ESMAP Multisector Impact Rural E (FY06)	Guinea-Bissau	Boris Utria
3A-ESMAP Benchmark Transm (FY07)	Senegal	Christophe de Gouvello
3A-ESMAP Petroleum Access (Part I) (FY06)	AFR	Luiz T. A. Maurer
3A-ESMAP Utility Performance (FY08)	AFR	Malcolm Cosgrove-Davies
MZ-ESMAP Increased Energy Access (FY07)	AFR	Prasad V. S. N. Tallapragada
3A-ESMAP Energy Integration (FY07)	Mozambique	Wendy E. Hughes
3S-ESMAP Power Investment Priorities	AFR	Malcolm Cosgrove-Davies
MU-ESMAP Energy Sector Assessment (FY06)	AFR	Samuel A. O'Brien-Kumi
3A -ESMAP Scaling up (FY07)/Clean Energy Strategy for the World Bank Africa Energy Unit	Mauritius	Michel E. Layec
BF-Energy Access SIL (FY06)	AFR	Xiaodong Wang
MW-Infrastr Srvcs SIM	Burkina Faso	Michel E. Layec
TZ-Energizing Rural Transform APL (FY07)	Malawi	Paivi Koljonen
MG-Emergency Energy Investment APL	Tanzania	Arun P. Sanghvi
3A-ESMAP Product Uses of Elect (FY09)	Madagascar	Stephan Claude Frederic Garnier
RW-ESMAP Tariff Policy Guidance (FY06)	AFR	Mohua Mukherjee
Lessons from Nigeria Devt of LPG Markets	Rwanda	Malcolm Cosgrove-Davies
Roundtable with Africa Energy Ministers (FEMA)	Nigeria	Mourad Belguedj
Decentralized Energy Services	Southern Africa	Arun P. Sanghvi
Design and Pilot Testing of Capacity Building Product line for SME Utility Service Providers in West Africa	Cameroon	M. Ananda Covindassamy
MZ-Modern Biofuels Assessment (FY07)	AFR	Amarquaye Armar
Zambia Energy-Poverty Action Plan (GVEP)	Mozambique	Boris Utria
Niger Energy-Poverty Action Plan (GVEP)	Zambia	Xiaodong Wang
UG-Energy for Rural Transform (FY02)/Uganda Energy Efficiency Activity/Emergency Response	Niger	Michel E. Layec
SL-ESMAP Technical & Final Review of NPA (FY07)	Uganda	Malcolm Cosgrove-Davies
Development of a Regional Power Market in West Africa	Sierra Leone	Paivi Koljonen
Africa Rural and Renewable Energy Initiative (AFRREI)	AFR	Amarquaye Armar
Promoting Productive Uses of Electricity in Rural Areas	AFR	Arun P. Sanghvi
AFTEG Rural and Renewable Energy	AFR	Arun P. Sanghvi
Sustainable Water and Hydro Energy for Africa	AFR	Arun P. Sanghvi
Energy Access Action Plan for Africa	AFR	Daryl Fields
Lagos Strategy for Economic Development and Poverty	AFR	Kyran O' Sullivan
Petroleum Downstream Markets in SSA	Nigeria	Deepali Tewari
Implementing the Action Plan for Energy Access Scale-Up in Africa	Africa	Michael Heitner
Support for Forum of Energy Ministers of Africa (FEMA)	Sub-Saharan Africa	Michel Layec
Rural Lighting Initiative for Africa	Sub-Saharan Africa	Koffi Ekouvi
Sustainable Biomass Supply and Use	Sub-Saharan Africa	Anil Cabraal

## ACTIVITIES ONGOING

Activity	Country	Task Manager
<b>Africa Region (AFR)</b>		
Sector Syndication Prospectuses for Uganda, Senegal, and Kenya	Sub-Saharan Africa	Vijay Iyer
Rehabilitation of Hydropower Infrastructure	Sub-Saharan Africa	Daryl Fields/Pankaj Gupta
Modern Biofuels Studies Mozambique and Ethiopia	Mozambique and Ethiopia	Boris Utria
<b>East Asia and the Pacific Region (EAP)</b>		
ID-Electricity Access for Rural	Indonesia	Migara Jayawardena
CN-China Coal Bed Methane Strategy	China	Jianping Zhao
ID - Fuel Substitution Analysis	Indonesia	Migara Jayawardena
China Sustainable Coal Sector Development	China	Jianping Zhao
Indonesia Overall Energy Sec. Policy	Indonesia	Leiping Wang
MN - Rural Energy Project	Mongolia	Salvador Rivera
MN-Mitigation Sector Reform & Tariff Adjustment	Mongolia	Salvador Rivera
Training for Access to Renewable Energy	EAP	Antonie De Wilde
Municipal Heating Reform and Regulation	China	Gailius J. Draugelis
Mongolia Urban Heat Pricing & Regulation	Mongolia	Gailius J. Draugelis
Shanghai Energy Conservation Promotion Project	China	Ximing Peng
Pre investment in scale up Energy (ESMAP)/China Energy Efficiency Policy, Regulation and Institutional Framework Study –Phase I	China	Leiping Wang
Decentralized Energy Services - Mongolia	Mongolia	M. Ananda Covindassamy
ESMAP: Decentralized Energy Services for IDA Countries - Cambodia	Cambodia	Rebecca Sekse
ESMAP: Decentralized Energy Services for IDA Countries - Laos	Laos	M. Ananda Covindassamy
Development of Pro-Poor National Heat Pricing and Billing Policy	China	Robert P. Taylor
Infrastructure Services to the Rural Poor	Mongolia	Salvador Rivera
China: Enabling Universal Access to Electric Power	China	Ximing Peng
Development of East Asia & Pacific Energy Business Strategy	EAP	Junhui Wu
Implementation Strategy for China's Energy Security Objectives	China	Noureddine Berrah
National Rural Electrification Planning	East Timor	Leiping Wang
Green Energy IPP (GRIPP)	Philippines	Sandeep Kohli
Energy Efficiency Financing	China	Leiping Wang
Clean Fossil Fuel Technology Options Study	Indonesia	Leiping Wang
East Asia Regional Energy Flagship Study	EAP	Ranjit Lamech
Clean Coal Options Study	Mongolia	Salvador Rivera
Biomass Cogeneration Development (Renewable Energy Only)	China	Ximing Peng
Gas Master Plan Review	Vietnam	Richard Spencer
<b>Europe and Central Asia Region (ECA)</b>		
South East Europe Gas Market Development Study	ECA	Franz Gerner
Impact Analysis of Policies to Increase Renewable and Low Carbon Energy Use	Serbia and Montenegro	Varadarajan Atur
Provision of Energy Services to the Poor in Tajikistan	Tajikistan	Raghuveer Y. Sharma
Development of Power Generation in South East Europe.		
Implications for Investments in Environmental Protection	ECA	Itsvan Dobozi
TA for Establishing a Water-Energy Consortium in Central Asia	ECA	Nikolay Nikolov

## Completed, Approved, Ongoing Activities and Pending Publication in 2006

### ACTIVITIES ONGOING

#### Activity

#### Country

#### Task Manager

#### Europe and Central Asia Region continued

Lithuania - Heating Supply to Small Cities/Towns	Lithuania	Gary Stuggins
Innovative Energy Efficiency Financing Mechanism	Poland	Peter Johansen
Thermal Power Plant Rehabilitation: Assessment of Needs, Costs and Benefits	Ukraine	Ostojic/Takahashi
Affordable Gas-Fired District Heating in Central and Eastern Europe	Lithuania	Peter Johansen
Ensuring Energy Security in ECA: Role of Russia	Russia	Gevorg Sargsyan
Establishing Regulatory Framework for Renewable Energy Sources	Slovakia	Itsvan Dobozi
Renewable Energy Resource Assessment	Balkans	Demetrious Papathanasiou
Managing Operations in the New Electricity Market Structure: Utility Staff Capacity Building	Turkey	Sameer Shukla
Implementing Capacity Mechanisms in the Electricity Market	Turkey	Sameer Shukla
SEE (South East Europe) Gasification Study (Phase II)	SEE	Franz Gerner
Central Asia - South Asia Regional Energy Trade	SARVECA	Sharma/Vucetic

#### Global

Grid Connected RE Policy Forum	Global	Soren Khron
ESMAP: Decentralized Energy Services for IDA Countries - Global Dissemination of the Findings of Work on Communities Impacted by Coal Activities and Application to Oil and Gas Sector	Global	M. Ananda Covindassamy
Improving the Impacts of Oil, Gas, and Mining Development on Women and Youth	Global	John E. Strongman
Connecting the Poor to Natural Gas	Global	John E. Strongman
Global Trade of Biofuels	Global	Franz Gerner
GVEP - GAPFund	Global	Masami Kojima
Corruption issues in the Energy Sector	Global	Douglas French Barnes
Rural Electrification BP Dissemination - Session at Energy Week	Global	Ede Jorge Ijjasz-Vasquez
Unfunded Work	Global	Douglas French Barnes
ESMAP: Energy Security	Global	Jonathan Coony
Gender and Energy Resource Center	Global	A. Waafas Ofosu-Amaah
Gender in Energy Workprogram	Global	Douglas French Barnes
Developing Financial Intermediation Mechanisms for Energy Efficiency Projects in Brazil, China and India	Global	Chandrasekar Govindarajalu
Win-Win: Demand Side Management Options in Developing Countries	Global	Luiz T. A. Maurer
Building Up on Energy Efficiency Institutional Best Practices	Global	Ashok Sarkar
Energy Efficiency Needs and ToolKit Assessment	Global	Ashok Sarkar
Risk Assessment Methods for Power Utility Planning	Global	Tae Yong Jung
Grid-Connected Renewable Energy Topical Briefs	Global	R. Anil Cabraal
Developing Regional Clean Air Networks	Global	Marian S. De los Angeles
Source Apportionment of Fine Particulates in Developing Countries	Global	Todd M. Johnson
Oil Price Volatility	Global	Masami Kojima
Governance of National Oil Companies for Sustainable Development	Global	Michael Levitsky
Biofuels Study	Global	Masami Kojima
Gender & Youth	Global	Adrianna Eftimie



## ACTIVITIES ONGOING

### Activity

### Country

### Task Manager

#### Latin America and the Caribbean Region (LAC)

Honduras: Petroleum Exploration & Management	Honduras	Marc L. Heitner
Strengthening Small-Scale Off-Grid Energy Suppliers	Bolivia	M. Ananda Covindassamy
Benchmarking of the Electricity in LAC	LAC	Luis Alberto Andres
Southern Cone Gas Integration	LAC	Eleodoro O. Mayorga Alba
6L LAC Energy Strategy	LAC	Enrique O. Crousillat
UY -Improving Energy Security in Uruguay	Uruguay	Philippe J. Durand
Monitoring & Evaluation - Energy Project	LAC	Susana M. Sanchez
BR Biodiesel Study	Brazil	Todd M. Johnson
MX Energy Design Guidelines Housing	Mexico	Todd M. Johnson
Review of renewable energy policy and regulatory framework	Colombia	Walter Vergara
PERU Small and Medium Enterprises for Energy Services Delivery	Peru	Demetrios Papathanasiou
HT-Dissemination of Improved Cooking Stoves	Haiti	Christophe de Gouvello
NI-Improved Small-Scale Energy Supply	Nicaragua	Fernando Lecaros
Development of Regional Capabilities in Three States of the Republic to Foster Energy Projects for Rural Areas, Focusing on Renewable Energy (GVEP)	Mexico	Gabriela Elizondo Azuela
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 (GVEP)	Brazil	Dana Rysankova
Honduras: New Approaches for Delivery of Energy Services in Rural Areas (GVEP)	Honduras	Dana Rysankova
Peru Rural Electrification	Peru	Susan V. Bogach
LAC - Low Income Energy Assistance	LAC	Quentin T. Wodon
LAC Subsidy Review Study	LAC	Dana Rysankova
Energy Solutions for the Poor Marginalized Communities (in the framework of GVEP follow up)	Bolivia	Dana Rysankova
Innovative Financing Mechanism for Energy Efficiency in Mexico	Mexico	Charles M. Feinstein
Diesel Pollution Reduction Strategies for Cities	EAP,LAC	Jitendra J. Shah
PROESCO Implementation Support	Brazil	Todd Johnson
Re-starting Tripartite Dialogues in the Amazon Basin	LAC	Eleodoro Mayorga-Alba
Cases in Regional Trade: BR/UY	BR/UY	Lucio Monari
Energy Sector Strategy	Brazil	Enrique Crousillat
Energy Sector Strategy	Ecuador	Susan Bogach
Energy Sector Strategy	Honduras	Lucio Monari
Country Case Study for Climate Change	Brazil	Todd Johnson
Clean Energy & Climate Change Strategy for LAC	LAC	Chandra Sinha
Country Case Study for Climate Change	Mexico	Todd Johnson
Central America Regional Energy Trade	LAC	Fernando Lecaros
Assessment of Energy Efficiency	Brazil	Todd Johnson

#### Middle East and North Africa Region (MNA)

Hydrocarbon Revenue Generation and Management	MNA	Pierre Audinet
Determination of Gas Pricing for Poor Households in Egypt (Regional Allocation Grant)	Egypt	Franz Gerner

## Completed, Approved, Ongoing Activities and Pending Publication in 2006

### ACTIVITIES ONGOING

#### Activity

#### Country

#### Task Manager

#### Middle East and North Africa Region (MNA)

MA-Renewable Energy Regulation	Morocco	Pierre Audinet
MA-Energy Efficiency Policy	Morocco	Pierre Audinet
RY-Yemen Gas Incentive Framework Study	Yemen	Franz Gerner
MA-Energy Sector DPL/Energy Reform: Social and Environmental Effects on the Poor	Morocco	M. Ananda Covindassamy
West Bank and Gaza Energy Sector Review	MNA	TBD
IR-Energy Sector	Iran	Anna Bjerde
EG-Demand Management Workshop	Egypt	Eric Groom
Regional Workshop At Sidi Bernoussi, Morocco Dissemination of the Results of the ESMAP Sidi Bernoussi Industrial Park Study	Morocco	Noureddine Bouzaher
Design & Application of Time of Use Tariffs	Egypt	Anna Bjerde
Load Management	Egypt	Anna Bjerde
Structuring the New Energy Efficiency Agency	Morocco	Pierre Audinet
CCGT Workshop	Egypt	Anna Bjerde
Social Safety Net for LPG Subsidy Reduction	Morocco	Pierre Audinet
Energy Sector Review	WBG	Somin Mukherji
Fiscal Modeling of Gas	Egypt	Franz Gerner
Oil Products Sector Liberalization	Morocco	Pierre Audinet
Development of an Enabling Environment for Scaling-up RE and EE Investments	Tunisia	Silvia Pariente-David

#### South Asia Region (SAR)

Coal-Fired Generation Rehabilitation Project - Investment Planning and Regulatory Studies	India	Sinha/Hussian
Regional Energy Trade	SAR/ECA	Vladislav Vucetic
Strategies for Low-Carbon Growth	India	Kseniya Lvovsky
Improving Rural Electricity Services through Renewable Energy based Distributed Power Generation	India	Mikul Bhatia
Improving Health of Women and Children through Renewables and Efficient Cookstoves	Bangladesh/Nepal	Priti Kumar
Coal Fired Plant Rehabilitation - Best Practice in Rehabilitation, Operations and Maintenance Improvements	India	Sinha/Takahashi
Enhancing Access and Rural Electrification - Costs & benefits, and Willingness to Pay	Pakistan	Waqar Haider
Kabul Household Energy Survey (SAR Regional Grant)	Afghanistan	Michael Haney
Energy Trade	SAR	Vladislav Vucetic
India Energy Security	India	Alan F. Townsend
Bhutan Hydro Exports	Bhutan	Pedro E. Sanchez Gamarra
Renewable Energy Investment Climate	India	Joseph Daniel Wright
Private Renewable Power Generation Studies/Private Sector Small-Scale, Grid-Connected Renewable Power Generation - Review of Experience	Sri Lanka	Joseph Daniel Wright
Regional Energy Poverty	SAR	Andrea Ryan Rizvi
ESMAP: Decentralized Energy Services for IDA Countries - Bangladesh	Bangladesh	M. Ananda Covindassamy

## ACTIVITIES ONGOING

Activity	Country	Task Manager
<b>South Asia Region (SAR)</b>		
Regional Energy Trade	SAR	Vladislav Vucetic
Improving Indoor Air Quality for Poor Families: Proposal for a Controlled Experiment in Bangladesh	Bangladesh	Susmita Dasgupta

## ACTIVITIES COMPLETED WITH PUBLICATION IN PROCESS

Activity	Country	Contacts
<b>Africa Region (AFR)</b>		
Power Sector Reform in Africa: Assessing the Impact on the Poor and Influencing Policy Decisions	AFR	M. Ananda Covindassamy
Facility for the Follow-Up of Africa Energy-Poverty Workshops	AFR	Koffi Ekouevi
Impact on the Poor of the Electricity Sector Reform in the Kingdom of Lesotho	Lesotho	Gilberto de Barros
<b>East Asia and the Pacific Region (EAP)</b>		
Scoping Study for Voluntary Green Electricity Schemes in Beijing and Shanghai	China	Noureddine Berrah
Cambodia - Renewable Energy Action Plan	Cambodia	Rebecca C. Sekse
<b>Europe and Central Asia Region (ECA)</b>		
TA for Establishing a Water-Energy Consortium in Central Asia	ECA	Nikolay Nikolov
Introducing the Concepts of ESCOs to Belarus	Belarus	Maha J. Armaly
Azerbaijan - Natural Gas Sector Restructuring and Regulatory Reform	Azerbaijan	Alan F. Townsend
<b>Latin America and the Caribbean Region (LAC)</b>		
MX Energy Design Guidelines Housing	Mexico	Todd M. Johnson
Regulatory Issues of Off-Grid Energy Service Delivery as Part of National Rural Electrification Strategies	LAC	Clemencia Torres
<b>South Asia Region (SAR)</b>		
Pakistan - Household Impact Analysis of the Energy Sector Reform	Pakistan	Masami Kojima
Exploring Opportunities for Improving Rural Energy Access	Afghanistan	Mudassar Imran
<b>Global</b>		
Assessing the Impacts of Energy Sector Reform on the Poor	Global	Dominique M. Lallement
Capacity Building and Policy Assessment in Indoor Air Pollution	Global	Todd M. Johnson
Developing a Sectoral Energy Poverty Index	Global	Arun P. Sanghvi
Road Map for Scaling up Modern Energy Services and Clean Energy	Global	R. Anil Cabraal
Grid Connected RE Policy Forum	Global	Soren Krohn

## REPORTS PUBLISHED IN 2006

### FLAGSHIP REPORTS

Report Number	Country/Region	Publication	Author
ISBN-0-8213-6878-8	GLB	Energy Policies and Multitopic Household Surveys: Guidelines for Questionnaire Design in Living Standard Measurement Studies. World Bank Working Paper No.90.	O'Sullivan/Barnes
ISBN-0-8213-6633-5	ECA	People and Power: Electricity Sector Reforms and the Poor in Europe and Central Asia. Directions in Development Energy and Mining Series.	Lampietti/Sudeshna/Branczik
No.15	ECA	World Bank Framework for Development of a Power Market in South East Europe. ESMAP funded activity and report published under the World Bank Working Paper Series, Report No.15.	David Kennedy
No.18	GLB	Electrification and Regulation: Principles and a Model Law. An ESMAP funded activity published under the Energy and Mining Sector Board Discussion Paper Series, Report No.18.	Reiche/Tenenbaum/Torres de Mästle

### FORMAL REPORTS

Report Number	Country/Region	Publication	Author
316/06	Nicaragua	Policy & Strategy for the Promotion of RE Policies in Nicaragua. (Accompanying CD containing 3 complementary reports).	Feinstein/Torres
317/06	LAC	OECS Energy Issues and Options.	Charles Feinstein
318/06	LAC	The Landfill Gas-to-Energy Initiative for Latin America and the Caribbean.	Horacio Terraza
319/06	Paraguay	Paraguay Hydrocarbon Sector Reform (Spanish Only).	Eleodoro Mayorga-Alba
320/06	Pakistan	Pakistan Household Use of Commercial Energy.	Masami Kojima
321/06	GLB	Experiences with Oil Funds: Institutional and Financial Aspects.	Bacon/Tordo
322/06	LAC	Best Practices in Mainstreaming Environmental & Social Safeguards into Gas Pipeline Projects.	Juan Quintero
323/06	GLB	Coping with Higher Oil Prices.	Bacon/Kojima
324/06	LAC	Grid-Connected Policy Forum Mexico Proceedings.	Xiaodong Wang

## TECHNICAL REPORTS

Report Number	Country/Region	Publication	Author
093/06	Mexico	Mexico: Technical Assistance for Long-term Program of Renewable Energy Development.	Charles Feinstein
094/06	Brazil	Brazil: How Do Periurban Poor Meet Their Energy Needs: A Case Study of Caju Shantytown, Rio de Janeiro.	Dominique Lallement
095/06	GLB	Energy Sector Reform and the Pattern of the Poor: Energy Use and Supply in Four Countries: Botswana, Ghana, Honduras and Senegal.	Prasad Tallapragada
096/06	Ghana	Ghana Women Enterprise Study: Developing a Model for Mainstreaming Gender into Modern Energy Service Delivery.	Kofi-Boateng Agyen
097/06	Ghana	Energy Sector Reform and the Pattern of the Poor: Energy Use and Supply in Ghana.	Kofi-Boateng Agyen
098/06	Vietnam	Vietnam Policy Dialogue Seminar and New Mining Code.	Paulo De Sa
099/06	Azerbaijan	Azerbaijan Natural Gas Sector Restructuring and Regulatory Reform.	Alan Townsend
100/06	Macedonia	Elements of Energy and Environment Strategy in Macedonia.	James Moose
101/06	Poland	Poland (URE): Assistance for the Implementation of the New Tariff Regulatory System Volume I: Economic Report and Volume II: Legal Report.	Rachid Benmessaoud
102/06	PNG	PNG: Energy Sector and Rural Electrification Background Note.	Heffner/De Wilde
103/06	Peru	Extending the use of Natural Gas to Inland Peru (Spanish-English).	Eleodoro Mayorga-Alba
104/06	China	Policy Advice on Implementation of Clean Coal Technology (CD Only).	Masaki Takahashi
105/06	China	Scoping Study for Voluntary Green Electricity Schemes in Beijing and Shanghai.	Noureddine Berrah
106/06	AFR	Sub-Saharan Africa: Introducing Low-cost Methods in Electricity Distribution Networks.	Arun Sanghvi
107/07	Colombia	Desarrollo Económico Reciente en Infraestructura.	Clemencia Torres

## REPORTS PUBLISHED IN 2006

### WORKSHOP PROCEEDINGS

Report Number	Country/Region	Publication	Author
003/06	AFR	Impact of Determinants of Success of PP in Power in SSA. Conference on Private Participation in Infrastructure in SSA. June 6-7, 2005. Cape Town, South Africa.	Wendy Hughes
004/06	Poland	Women in Mining: Chance for a Better Life Workshop.	John Strongman
005/06	GLB	The Energy Efficiency Investment Forum: Scaling up Financing in the Developing World.	Sarkar/Siegel
006/06	Senegal	Facility for the follow up of Africa Energy-Poverty Workshops.	Kofi Ekeouvi

### ADMINISTRATIVE REPORTS SERIES

Report Number	Country/Region	Publication	Author
	GLB	ESMAP Annual Report 2005.	ESMAP
	GLB	ESMAP Semi Annual Status Report (Jan-Jun 2006).	ESMAP

### KNOWLEDGE EXCHANGE SERIES

Report Number	Country/Region	Publication	Author
No. 3	GLB	Four Regulatory Principles to Promote Diverse Electrification.	Kilian Reiche, Bernard Tenenbaum, and Clemencia Torres
No. 4	GLB	Potential for Biofuels for Transport in Developing Countries.	Masami Kojima and Todd Johnson
No. 5	GLB	A Primer on Consumer Surplus and Demand: Common Questions and Answers.	Henry M. Peskin
No. 6	GLB	How Are Developing Countries Coping with Higher Oil Prices?	Robert Bacon and Masami Kojima
No. 7	GLB	Power Purchase Agreements for Small Power Producers.	Steven Ferry and Anil Cabraal
No. 8	EAP	Indoor Air Pollution in Cold Climates: The Cases of Mongolia and China.	Enis Baris, Salvador Rivera, Zuzana Boehmova, and Samantha Constant

## ACTIVITY COMPLETION REPORTS

Report Number	Country/Region	Publication	Author
005/06	Rwanda	Rwanda Water Energy Assessment Note.	Malcom Cosgroves-Davies
006/06	GLB	Knowledge Transaction: Reducing Energy Costs in Water Supply Operations.	Armarquaye Armar
007/06	Belarus	Introducing the Concepts of ESCOs to Belarus.	Maha Armaly
008/06	Lesotho	Poverty and Social Impact Analysis of Electricity Sector Reform.	Gilberto de Barros
009/06	Afghanistan	Afghanistan: Exploring Opportunities for Improving Rural Energy Access.	Mudassar Imran
010/06	GLB	Multilateral Energy Sector Assistance to the EU Accession Countries and Assistance to EU Accession Candidates (Phase I).	Bjorn Hamso

## Knowledge Dissemination Activities

### Annex 5

#### January

The Energy Anchor and GEF presented: Renewable Energy—Global Status and Trends. Held on January 18, 2006, Washington, DC.

#### February

Fresh from Iceland: Geothermal and Hydro Solutions for Development, held on February 10, 2006. Washington, DC.

The World Summit on Sustainable Development, held in Johannesburg, South Africa, in 2002, recognized RE as a global priority. Two years later, at the International Conference on Renewable Energies in Bonn, Germany, countries and organizations from around the world made more than 200 commitments to RE scale-up. As follow-up, GEF, the World Bank Group, ESMAP, and the government of Mexico, in association with Global Wind Energy Council, are pleased to host the International Grid-Connected Renewable Energy Policy Forum to further the efforts of countries to reap the benefits of RE. The Forum took place in Mexico City, Mexico, February 1-3, 2006.

#### March

ENERGY WEEK—presentations and B-Span releases now available.

Impact of Rationalization of Kerosene and LPG Subsidy: The National Institute of Public Finance and Policy, New Delhi in its report submitted in June 2005 referred to a UNDP/ESMAP-conducted study (2003) with the primary objective of facilitating access to clean fuels, given the significant health and social benefits of switching away from traditional biomass. This study has found the price subsidy on kerosene and LPG as ineffective in expanding the uptake of these fuels as primary household fuels among the poor, and fiscally unsustainable. This study is of the view of phasing out the price subsidies on kerosene and LPG and fostering a vibrant, open, and competitive market for these fuels, given the social objectives.



The Development Marketplace, in partnership with ESMAP and the Water and Sanitation Program and the World Bank's Energy and Water practices, announced the finalists for the 2006 Global Competition, themed "Innovations in Water, Sanitation and Energy Services for Poor People." The 119 finalists, representing 55 different countries, were selected from a pool of more than 2,500 applicants.





Clean Energy for Development. Energy Week 2006. The World Bank Group's Energy Week is the pre-eminent gathering of policy makers and practitioners engaged on strategic issues of energy and development. Energy Week 2006 is a key event in the energy calendar that will build on the G8 Plan of Action adopted at Gleneagles that outlines the way ahead on clean energy, infrastructure, climate change, and Africa, and it will contribute to the discussions on energy and development to be taken up at CSD-14, the high-level forum that forges international political consensus on priority actions in May.

U.S.-Japan Bilateral Workshop on Climate Change March 22-23, 2006. Clean Household Energy & Indoor Air Pollution, by Douglas F. Barnes ESMAP Energy and Water Department, The World Bank.

## April

ESMAP Knowledge Exchange Series: Implementing Power Rationing in a Sensible Way: Lessons Learned and International Best Practices. April 12, 2006, Washington, DC.

ESMAP Knowledge Exchange Series: The Energy and Mining Sector Board, the Energy Sector Management Assistance Program under its Knowledge Exchange Series, the Operations Policy and Country Services, and PREM Public Sector Group held a Brown Bag Lunch on Checking Corruption in the Electricity Sector. April 6, 2006, Washington DC.

ESMAP eNewsletter Issue No. 3.

## May

The Energy Efficiency Investment Forum: Scaling Up Financing in the Developing World, held on May 8-9, 2006. More on the official Web site.

Global Development Market Place 2006 Final selection took place May 8-9, 2006. The theme was: Innovations in Water, Sanitation, and Energy Services for the Poor. At World Bank Headquarters in Washington, DC.

World Bank Events on Energy and Entrepreneurship: Development Marketplace Winners presented their projects during the CSD-14 meeting in NYC held on May 10, 2006, and discussed the Role of Entrepreneurs: Providing Energy Services to the Poor in the afternoon.

Joint Knowledge Exchange Series Event: Gas Integration in the Southern Cone held on May 15, 2006, Washington, DC.

ESMAP Knowledge Exchange Series: Sustainable and Efficient Energy Use to Alleviate Indoor Air Pollution in Poor Rural China, from perspectives of health, environment and energy use. Held on May 31, 2006, Washington, DC.

## Knowledge Dissemination Activities

### Annex 5

#### June

New Release: "Energy Policies and Multitopic Household Surveys: Guidelines for Questionnaire Design in Living Standards Measurement Studies." Energy and Mining Sector Board Discussion Paper No. 17.

Announcing The Ashden Awards Winners: World's Leading Sustainable Energy Awards Scheme 2006 Winners.

New Release: "World Bank Framework for Development of a Power Market in South East Europe," by David Kennedy." Energy Policies and Multitopic Household Surveys: Guidelines for Questionnaire Design in Living Standards Measurement Studies." Energy and Mining Sector Board Discussion Paper No. 15. This paper updates the World Bank's "Framework for Development of Regional Energy Trade in South East Europe," published in March 2004. It focuses on the power sector where significant reform has been undertaken in the context of the Athens process, and where previous World Bank advice has been incorporated in the evolving legal and institutional framework. This report covers work carried out by ESMAP in the area of South East Europe Market.

ACP-EU (Africa Caribbean Pacific-European Union) Energy Facility. On June 24, 2005, the ACP-EU Council approved the creation of an Energy Facility with a total fund amount of € 220,000,000.

World Bank Group Progress on Renewable Energy and Energy Efficiency: Fiscal Year 2005.

#### July

World Bank Press Release: Seizing the Window of Opportunity. The extent of the impact of global warming might still be a subject of debate, but daily news referring to climate change reminds us of the challenges we face: from the shrinking of the Arctic and glacier retreats to more floods and droughts.

World Bank Group Progress on Renewable Energy and Energy Efficiency: Fiscal Year 2005.



## August

We are pleased to inform you about a new Web-based Energy and Gender resource center. This resource center is a collaborative effort of ESMAP and PREM Gender and Development Unit (available only via the World Bank's intranet for now).

World Renewable Energy Congress - Florence, Italy, August 20-25, 2008. Gender in Energy Track.

## September

News: ESMAP-financed Kabul Household Energy Survey is going well, and teams have been sent to 17 districts in Kabul. This work is being done in collaboration between the Central Statistics Office and Kabul University. Stay alert to an upcoming brief after field work is completed. As for the analysis of the data, work is underway and a final draft will be completed shortly.

New Release: "How Are Developing Countries Coping with Higher Oil Prices" No 6.

ESMAP Participates in a Conference on Rural Electrification in Tunisia. September 20-22, 2006.

## October

Presentation by Bernard Tenenbaum: Regulation and Electrification Four Principles and A Model Law. October 30, 2006.

ESMAP staff chaired a session on Developing Country Debt at the SEFI roundtable organized by UNEP and cosponsored by the UN Foundation. New York City, October 27, 2006.

New Release: "Power Purchase Agreements for Small Power Producers" KES Note 7.

ESMAP's eNewsletter gets a new face! Issue No. 4

## November

The Energy Sector Management Assistance Program and the WB Energy Efficiency Thematic Group held a BBL (brown bag lunch) session on: Regulatory Energy Efficiency Initiatives in the State of Maharashtra, India. November 20, 2006. Washington DC.

ESMAP presented (under its Energy Efficiency Thematic Area) on November 8, 2006 entitled: "Clean Energy Development: An Example of Infrastructure and Environment Collaboration," during the Sustainable Development Network Week at the World Bank's Headquarters in Washington, DC.

ESMAP and PRMGE (Poverty Reduction and Economic Management Gender and Development Unit) cosponsored a session on November 10, 2006 entitled: "Empowered Women Bring Solutions: Looking at Sustainable Energy through the Gender Lens."

## December

ESMAP eNewsletter, December 2006, Issue No. 5.



## ABBREVIATIONS AND ACRONYMS

ACP-EU	Africa Caribbean Region-European Union
ADB	Asian Development Bank
AFTEG	Africa Energy Program
ASTAE	Asia Alternative Energy Program
BNDES	Brazilian Development Bank
BMZ	German Ministry for Development Cooperation
CAI	Clean Air Initiative
CASs	Country Assistance Strategies
CEMAC	Community Central Africa Economic and Monetary Union
CFE	Comisión Federal de Electricidad
CG	Consultative Group
CGAP	Consultative Group to Assist the Poor
CSD	Commission on Sustainable Development
CY	Calendar Year
DFID	UK Department for International Development
DoS	US Department of State
DRI	Debt Relief International
EAP	East Asia and the Pacific Region
ECA	Europe and Central Asia Region
EE	Energy Efficiency
ESMAP	Energy Sector Management Assistance Program
ETFPs	Energy Trust Funded Programs
EU	European Union
EWD	Energy and Water Department of the World Bank
EXTOP	Office of the Publisher
GAPFund	GVEP Action Programs Fund
GEF	Global Environment Facility
GMS	Greater Mekong Subregion
GNSED	Global Network for Sustainable Energy Development
GPOBA	Global Partnership on Output-Based Aid
GPPs	Global Programs and Partnerships
GVEP	Global Village Energy Partnership
IAP	Indoor Air Pollution
IBRD	International Bank for Reconstruction and Development
IFC	International Finance Corporation
IFI	International Financial Institution
IPP	Independent Power Producer
KES	Knowledge Exchange Series
LAC	Latin America and the Caribbean Region
LG	Leaded Gasoline
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
LSMS	Living Standards Measurement Studies
MDGs	Millennium Development Goals
M&E	Monitoring and Evaluation
MIGA	Multilateral Investment Guarantee Agency
MNA	Middle East and North Africa Region

MW	Megawatt
NREL	National Renewable Energy Laboratory
NORAD	Norwegian Agency for Development Cooperation
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
OED	Operations and Evaluation Department of the World Bank
PANERP	Energy and Poverty Reduction Action Plan
PEP	Private Enterprise Partnership
PREM	Poverty Reduction and Economic Management
PRMGE	Poverty Reduction and Economic Management Gender and Development Unit
PRI	Participatory Rapid Appraisal
PV	Photovoltaic
RE	Renewable Energy
RESPAR	Renewable Energy Systems in Peruvian Amazonian Region
RPTCC	Regional Power Trade Coordinating Committee
RPTES	Regional Program for the Traditional Energy Sector
SAR	South Asia Region
SEFI	Sustainable Energy Finance Initiative
SIDA	Swedish International Development Cooperation Agency
SIM	Sector Investment and Maintenance Loan
SME	Small and Medium Sized Enterprise
SOE	State Owned Enterprise
SSA	Sub-Saharan Africa
TAG	Technical Advisory Group of ESMAP
tce	Tons of coal equivalent
TERI	The Energy and Resources Institute
3CEE	Three Country Energy Efficiency Project
TOR	Terms of Reference
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
US	United States of America

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