



# Sustainable Energy

## I For social and economic development – Energy services are vital for poverty reduction and the MDGs



**The poor need energy** for cooking, lighting, heating, refrigeration, communication, transportation and information services.



**Income growth** - Most economic activity would be impossible without energy, even the small and medium-scale enterprises that are the main source of new jobs for the poor. Energy services enhance productivity, boosting incomes. Thus the kind of economic growth that creates jobs and raises incomes depends on greater and more efficient use of energy.



**Health** - In health clinics, electricity makes it possible to refrigerate vaccines, operate medical equipment and provide lighting after sunset. Clean fuels that replace traditional biomass fuels reduce indoor and urban air pollution that damage the health of millions.



**Education** - Electric lighting in homes enables adults and children to read after dark. TV watching and radio made possible with electricity bring information, entertainment and the modern world to those who were previously living in isolated villages.

## II For macroeconomic stability



**Energy Security**- Renewable Energy contributes to energy security by broadening the portfolio of options for energy resources and for reducing dependence on fuels with significant price volatility and availability concerns. This reduced dependence on imported fuels improves balance-of-payments accounts and frees fiscal space for other needed spending.



**Government borrowing and liabilities** - Governments must carefully manage their support for large energy infrastructure investment, as major liabilities can destabilize government finances. Reforms that bring private sector financing to the energy sector can reduce the strain on public finances and protect social spending.



**Taxation revenue** - Energy taxes are an important source of Government revenues. In some oil producing countries petroleum taxes are the largest source of Government revenues making effective taxation and good contract design in production sharing agreements essential.



**Renewable energy** - Increased local production of renewable energy can contribute to improved balance of payments.

## III For good governance



**Government policy making** - Good governance in the energy sector is essential to protect the interests of consumers, owners, investors and workers. In the extractive petroleum sector, transparency in revenue management permits informed social dialogue, better planning and reduces risks of misappropriation of revenues. Governments achieve good governance through policy formation and execution such as setting fair conditions and rules for investors, administering price adjustment mechanisms, and through regulation. Eradicating both grand corruption in the award of large contracts and petty corruption should also be addressed.



**Compensating for market failure** - A role of Government is to compensate for market failure. Governments can mobilize financing of access costs to modern energy for the poor (and see to it that energy subsidies benefit only the poor) and reduce market barriers to entry of new service providers and new technologies.



**Private sector investment and operation** - The private sector can deliver efficient investments and improved services provided that the right business incentives and regulatory arrangements are in place. A role of Governments is to mitigate risks beyond the control of private investors and private risk insurers in energy supply.

## IV For environment



**Clean Energy for development**- Climate change presents an urgent and additional challenge, which will require mitigating greenhouse gases and adapting to the impacts of climate change. To realize a low carbon economy will take an aggressive program on energy production and end-use efficiency improvements, significant penetration of renewable energy technologies and fuel switching. Low-cost, high impact approaches should be addressed first.



**Renewable energy and energy efficiency** - Renewable energy in off-grid electricity service can help dispersed rural populations with relatively low income and demand levels gain access to lighting and power services. Grid connected and off-grid renewable energy can contribute to energy supply security. Energy efficiency measures help consumers reduce their expenditures on energy services, improve indoor air quality and improve SMEs' competitiveness by helping reduce their energy bills.



**Sustainable management of the natural forest** - Sustainable management of the natural forest transforms the use of traditional fuel that is harvested unsustainably into a renewable energy source while promoting significant rural development, ecosystem rehabilitation and carbon sequestration.



# What is the World Bank Group Doing?

## The World Bank Group's commitment

The World Bank Group's priority is to help governments design and implement policies for reducing poverty. The overarching goal of the World Bank Group's energy business is to improve access to clean, modern and affordable energy services for the world's poor and to achieve sustainability in the environmental, financial, and fiscal aspects of the energy sector. It is committed to providing support for this goal through targeted interventions and assistance in the energy sector of its borrowers operating across the entire spectrum of public and private provision of energy services

## The World Bank Group's Energy Program

The World Bank Group's Energy Program rests on four pillars:

### ❖ Helping the poor directly

- Facilitating access to modern fuels and electricity
- Reducing the cost and improving the quality of energy supplied to low-income households
- Ensuring that energy subsidies are targeted to and reach the poor
- Promoting energy-efficient and less polluting end-use technologies for traditional fuels
- Creating energy supply & service enterprises run by the poor
- Supporting energy needed for social services (health, education, communication)

### ❖ Improving macroeconomic and fiscal balances

- Rationalizing energy taxes
- Stabilizing the balance of payments effects for oil importing countries and expenditure stabilization for oil exporters
- Replacing public investments with private ones
- Managing risks associated with contingent public liabilities
- Closing loss-making coal mines
- Enhancing effective payment by all energy users to eliminate operating subsidies
- Improving procurement and marketing of imported and exported energy products

### ❖ Promoting good governance and private sector development

- Creating objective, transparent, and nondiscriminatory regulatory mechanisms
- Introducing and expanding competition and cross-border trade
- Ensuring transparency in petroleum revenue management and public disclosure of all government revenues
- Divesting assets to strategic investors and regulating markets in ways that are socially responsible and corruption free
- Catalyzing private investment by liberalizing entry to energy markets
- Strengthening the voice of consumers and communities
- Strengthening local financial institutions to provide long-term financing for rural energy business

### ❖ Protecting the environment

- Development of an Investment Framework for Clean Energy and Development to outline the key elements of an associated strategic work program
- Promoting clean transport fuels and switching from coal to gas
- Strengthening environmental management capacity in energy supply
- Removing market and regulatory barriers to renewable energy and energy efficiency investments for power and biomass (such as community based forest management, improved carbonization and improved cooking stoves)
- Reducing gas flaring and facilitating carbon trading and joint investments to reduce greenhouse gas emissions

### The facts and figures

- Between 1970 and 1990, 800 million people in rural areas gained access to electricity.
- 1.6 billion people still lack access to modern energy services. By 2030, 1.4 billion people will still lack access to electricity, if current policies are not changed.
- 2.6 billion people rely on traditional biomass for cooking.
- Indoor air pollution (from cooking and heating with biomass over open stoves) is a leading cause of infant and child mortality in developing countries.



### The finances – current situation and future need

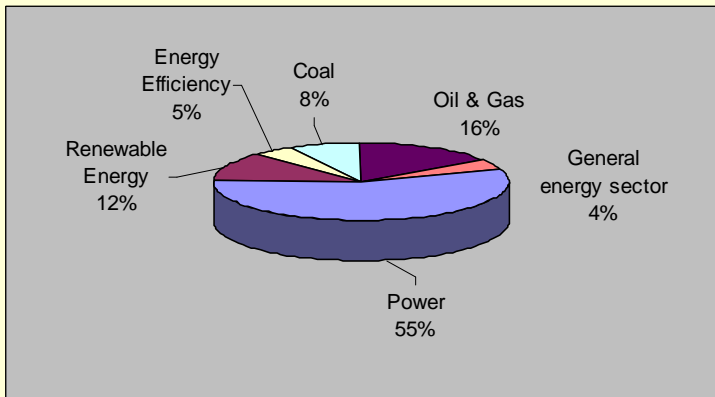
- Average annual investment in energy worldwide is currently about \$413 billion.
- From now to 2030, average investment needs to amount to \$319 billion annually for developing and transition countries alone.

## World Bank Group instruments

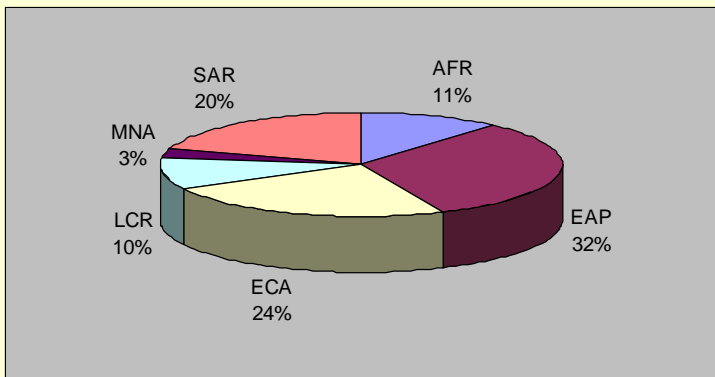
- ❖ Loans, credits, and equity investments
- ❖ Guarantees
- ❖ Advisory work and policy dialogue
- ❖ Partnerships

### WB lending for Energy and Mining FY1990-2005

#### by sub-sector



#### by region



### IBRD/IDA Lending portfolio

In fiscal year 2005, loans, grants and guarantees amounting to \$1,917 million in 77 projects (IBRD/IDA, GEF, Carbon Offset, Guarantees) were approved. Projected lending in FY06 will further increase

### IFC Lending

The International Finance Corporation's (IFC's) lending during fiscal year 2005 was \$695 million net commitments, \$231 million of which were for 9 power projects.

### MIGA Guarantees

The Multilateral Investment Guarantee Agency (MIGA) provided guarantees for energy projects in fiscal year 2005, for a total value of \$232 million.

### Advisory work and policy dialogue

To produce the greatest impact from its assistance, the World Bank Group combines financing with advice and knowledge transfer through policy dialogue. It also provides free-standing technical assistance and advice as part of the services under each business line, in some cases through special programs such as the Energy Sector Management Assistance Program.

### Guarantees

World Bank, IFC, and Multilateral Investment Guarantee Agency (MIGA) guarantees help governments attract private investors to the energy and mining sector through mitigation of perceived government performance risks.

### Innovative Instruments

The World Bank Group is actively supporting a number of innovative instruments to leverage financing into the sector— such as specialized guarantee schemes and targeted subsidies.

## Renewable Energy and Energy Efficiency

Since 1990, the World Bank Group, often with GEF leverage, has been the largest lender for energy efficiency and renewable energy projects in the developing nations, investing more than \$9 billion in Bank-managed resources. In 2005, each dollar of WBG commitment in RE and EE projects leveraged, on average, nearly five dollars from public and private sources. Since the setting up of the Prototype Carbon Fund in 2000, the WBG carbon finance business has grown strongly, currently managing over \$1 billion in funds. In FY05, the WBG surpassed its Bonn commitment to an average growth rate of 20 percent per year for renewable energy and energy efficiency projects over the next five years.

## Selected Partnerships

The World Bank Group works together with numerous public or private sector partners.



### Energy Sector Management Assistance Program (ESMAP)

<http://www.esmap.org/>

ESMAP is a global technical assistance program of the World Bank and UNDP that promotes the role of energy in poverty reduction and economic growth in an environmentally responsible manner. Its work in low-income, emerging, and transition economies contributes to the achievement of internationally agreed development goals. It is focused on upstream (i.e. pre-investment) issues that have clear potential for key policy formulation and energy investment.

### Global Village Energy Partnership (GVEP)

<http://www.gvep.org>

Launched in Johannesburg during the WSSD in 2002, GVEP brings together developing and industrialized country governments, public and private organizations, multilateral institutions, consumers and others in an effort to ensure access to modern energy services by the poor.



### Asia Alternative Energy Program (ASTAE)

<http://www.worldbank.org/astae/>

The Asia Alternative Energy Program (ASTAE) was established in 1992 to mainstream renewable energy and energy efficiency in the World Bank's power sector lending operations in Asia. Since its inception, ASTAE has and continues to support a broad portfolio of alternative energy projects.



### Global Gas Flaring Reduction Initiative

<http://www.worldbank.org/ggfr>

The Global Gas Flaring Reduction Initiative was launched at the 7th Conference of Parties in November 2001 and received renewed impetus at the WSSD in Johannesburg. The purpose of this public-private partnership initiative is to help create incentives to develop and finance sound investments in gas flaring reduction.



### IFC Carbon Finance Unit incl the IFC-Netherlands Carbon Facility (INCaF)

<http://www.ifc.org/carbonfinance>

IFC's Carbon Finance Unit currently has \$80 million under management in arrangements under which IFC will purchase greenhouse gas emission reductions for the benefit of the Netherlands using the CDM and JI mechanisms. Other funds are under consideration in collaboration with the private sector.



### World Bank Carbon Finance Business incl. Prototype Carbon Fund (PCF)

<http://www.carbonfinance.org>

The Carbon Finance business in the World Bank Group manages a family of trust funds that purchase greenhouse gas emission reductions on behalf of public and private participants: They include the PCF, the Netherlands CDM Facility, the Community Development Carbon Fund (CDCF), the BioCarbon Fund and the Staff Climate Program, with additional funds under development.



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The World Bank Group is one of the world's largest sources of development assistance. In 2005, the institution provided US\$20.1 billion for 245 projects in developing countries worldwide. It works in more than 100 developing economies with the primary focus of helping the poorest people and the poorest countries.