

ENERGY AND POVERTY IN BANGLADESH



Challenges and the Way Forward



United Nations Development Programme

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Way Forward**

Regional Energy Programme for Poverty Reduction
UNDP Regional Centre in Bangkok

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FOREWORD

More than a billion people in the Asia-Pacific region do not have access to electricity and 1.7 billion are dependent on traditional biomass fuels for their cooking and heating needs. Access to affordable modern energy services can improve their productivity and enhance their living standards.

Even so, there are no specific targets for the energy sector in the Millennium Declaration, a historic document signed seven years ago by the world's leaders. Affordable and sustainable modern energy services are a necessity for countries to meet their Millennium Development Goals (MDGs). Efforts of the countries in the Asia-Pacific region to meet these aims will be hindered unless adequate attention is paid to the crucial role energy services play in the development process. This is particularly true for the economic, environmental and social well-being of the poor.

With fluctuating energy prices, the poor in many countries in the Asia and Pacific region face a daunting future. For them, access to affordable and essential modern energy services, which could improve their living conditions and ensure a means to earn a living, will fall outside their reach.

Recognizing the urgency for countries to factor in access to modern energy services, particularly when shaping national poverty reduction initiatives, the United Nations Development Programme (UNDP) provided technical and financial support for national-level rapid energy assessments. The primary aim of this work, carried out through UNDP's Regional Energy Programme for Poverty Reduction (REP-PoR) and completed in 2006, was to identify gaps and priority needs in linking energy services provision with poverty reduction.

The framework for rapid gap assessments linking energy and poverty was developed as a joint effort of the UNDP Regional Centre in Bangkok (RCB) and UNDP country offices in the region, with the support of experts from the region. The draft framework was discussed at two sub-regional meetings, one held in Bangkok, Thailand (August 2005), and the other in Apia, Samoa (September 2005). The meetings were helpful in customizing the framework to suit specific needs and circumstances of the participating countries.

Subsequently, the UNDP country offices held national-level stakeholder consultations to consolidate the findings and recommendations of the assessments. This work benefited immensely from the support of government officials and representatives of civil society. Documented in individual country reports, this work serves as a resource and reference material for programming and planning for access to modern energy services for the underserved, particularly, the poor.

This document is a summary of the Country Report on Bangladesh and is part of a series of REP-PoR's Asia-Pacific publications. It draws on the key findings of the country report, summarizes the challenges faced at the national level and provides priority recommendations. Specifically, critical issues related to energy policy, including institutional structures, regulatory frameworks, priority programmes, financing measures, gender concerns, as well as monitoring and evaluation support are highlighted. It offers a way forward, outlining issues and options for the country.

Our hope is that this document will be of relevance to national policy-makers, development partners, energy service providers, civil society organizations and academia in implementing various measures to promote access to modern energy services for the poor.



Elizabeth Fong
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PREFACE

This report sets out to examine the ways and means for providing affordable, accessible and reliable energy services towards achieving the Millennium Development Goals (MDGs) and poverty reduction in Bangladesh. The underlying premise of this study is that access to affordable and sustainable sources of energy has strong links with poverty reduction. This is particularly the case in terms of energy and its effects on household income, health, education, gender and the environment. The report also offers options for the country to overcome its energy sector challenges.

This study is particularly valid in the context of Bangladesh, a highly disaster-prone country, which is also one of the most densely populated countries in the world, where as much as 63 million people are poor. Per capita energy consumption is one of the lowest in the region, and a large proportion of the population is highly dependent on biomass fuels. Estimates reflect that as much as 85 percent of the rural populace still meets its energy needs from straw, jute stick, animal dung and fuelwood.

This study examines critical energy access linked poverty issues in Bangladesh, including the institutional structure of the energy sector, policy and regulatory framework and sectoral programmes. It analyses reasons for the narrow reach of energy services to rural provinces, unsustainable dependence on traditional fuels and inefficient technologies, the restricted supply of energy by rural energy enterprises and inadequate means of financing for energy sector projects and programmes. It highlights the urgent need for key data and indicators to support energy monitoring and evaluation of energy access for areas that are least served.

This report concludes that the lack of a clear and responsive mechanism mandated to coordinate the entire energy sector is a major constraint to the creation of a comprehensive pro-poor energy strategy. Such an institution could be established or an existing one could be strengthened to enhance and facilitate inter-agency coordination. The proposed institution could provide a socio-economic vision and a poverty reduction road map to the entire energy sector. It could bring together fragmented energy markets; remove barriers to efficient functioning of existing and new markets; promote the exchange of information;

encourage coordination; and avoid duplication of efforts among various isolated players. Experiences elsewhere show that policy convergence through consultative and coordinating mechanisms at the highest institutional level does help synergize energy access to overall development strategies in a country.

Many promising initiatives already exist both at national and household levels in Bangladesh. Through national budget allocations over the last decade, the Government has provided substantial support to conventional energy development, with about 20 percent of total public sector investments in the different plans allocated for the sector.

National Energy Policy, 1996, recognized the role of energy in socio-economic development and mandated the Government to provide access to commercial energy to rural population. The policy proposed to establish a renewable development agency to promote renewable energy technologies in the country. SEP (Sustainable Energy Programme), initiated by the United Nations Development Programme (UNDP), is among the nation's first attempts at creating a sustainable environment for human and economic development in rural areas. Based on this success, UNDP and the Power Division of Ministry of Power, Energy and Mineral Resources formulated a long-term programme framework in 2005 for sustainable energy development in line with the country's Poverty Reduction Strategy Paper. The programme framework was designed as a pro-poor, market-oriented application of sustainable energy service delivery systems.

The commitment of the Government of Bangladesh to expand energy services for poverty reduction – especially to achieve the key goal of 100 percent rural electrification – to support pro-poor economic growth is highly commendable. Under the national programme framework developed jointly with the UNDP, a seven-year national SEP has been formulated to address energy and development issues in a sustainable manner. SEP aims at holistic approach, from national to grass-roots levels, to integrate livelihood improvement into energy provision strategy including policy interventions, institutional reforms, capacity building of key players and research and development.

The success of these programmes will largely depend on the Government's commitment and follow through at the decentralized institutional levels. To veer away from current 'grid expansion' approach to a more successful nationwide access to energy service approach, the rural electrification programme should be part of a wider development plan, such as a rural energy development programme, that aims to remove disparities in standards of living between the urban and rural areas as well

as strengthen rural economy by introduction of productive uses of energy services.

We trust that this report is unique in terms of giving insights into bridging the gaps between the access to energy and poverty reduction efforts in the context of Bangladesh. Our aim is to provide country-specific information on institutional structures, energy resources, policy recommendations, and capacity and financial gaps that can point the way towards improving access to modern energy services, particularly for the poor.



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This report is the second in the series of nine country reports for Asia and a synthesis report on similar lines for the Pacific island countries. Like any multi-stakeholder work, this report reflects the efforts of many people over last two years. We would like to express our appreciation for the inputs, suggestions and support provided by them.

We appreciate the excellent support provided by the energy and environment team of UNDP Bangladesh in the entire process of the gap assessment. We especially thank Shireen Kamal Sayeed and Shakil Ahmed Ferdousi, who provided support through their reviews and comments during the initial drafting of the *Country Summary Report*, in addition to providing critical data and information to complete this report. We acknowledge the national expert Iftikhar Hussain, who was responsible for preparing the original *Bangladesh Country Report* and went the extra mile in capturing, consolidating and processing all the inputs gathered from an elaborate country consultative process. Ibrahim Hafeezur Rehman provided overall technical support and insightful guidance in the preparation of the original report to the country team. We place on record our appreciation for the national country team consisting of members representing all relevant government institutions, energy utilities, financial institutions, non-governmental organizations, academics and private sector bodies who participated in the many national consultations. We convey our gratitude to senior officials of the Government of Bangladesh, Nazrul Islam (the then Secretary of Power Division, Ministry of Power, Energy and Mineral Resources) and B D Rahmatullah (the then Director of Power Cell), for their expert review and advice, as well as Md Shah Alam and other members of Sustainable Energy Unit (SEU) of the Ministry of Power, Energy and Mineral Resources for their valuable support in completing successfully the gap assessment that preceded the preparation of this summary report. We thank Subir

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LIST OF ACRONYMS/ABBREVIATIONS

ADB	Asian Development Bank
ADP	Annual Development Programme
BERC	Bangladesh Energy Regulatory Commission
Bol	Board of Investment
CDM	clean development mechanism
DC	direct current
FI	financial institution
GDP	gross domestic product
GEF	Global Environment Facility
GoB	Government of Bangladesh
GTZ	German Agency for Technical Cooperation
IAP	indoor air pollution
IDCOL	Infrastructure Development Company Ltd
IMED	Implementation, Monitoring and Evaluation Division
M&E	monitoring and evaluation
MDG	Millennium Development Goal
MIS	management information system
MoPEMR	Ministry of Power, Energy, and Mineral Resources
Mtoe	million tonnes of oil equivalent
MW	megawatt
NEC	National Economic Council
NEP	National Energy Policy
NGO	non-governmental organization
PBS	Palli Bidyut Samities
PC	Planning Commission
PDB	Power Development Board
PFA	Platform for Action
PRSP	Poverty Reduction Strategy Paper
R&D	research and development
REB	Rural Electrification Board
RET	renewable energy technology
SEDA	Sustainable Energy Development Agency
SEP	Sustainable Energy Programme
SHS	solar home system
SME	small and medium enterprise
SRE	Sustainable Rural Energy
Tcf	trillion cubic feet
UNDP	United Nations Development Programme
USAID	United States Agency for International Development

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Capital	Dhaka
Area	144,000 square kilometres
Population (2006)	144.4 million
Total primary energy supply/Population (2004)	0.16 toe/capita
Gross domestic product (GDP) (2004)	55.97 billion US\$ 2000
Energy production (2004)	18.39 Mtoe
Poverty (the most recent year available during 1990–2003)	49.8% (population living below the national poverty line)
Traditional fuel consumption (2003)	51.5% of total energy requirements
Electricity consumption/Population (2004)	140 kWh/capita
Net imports (2004)	4.38 Mtoe
GDP per unit of energy use (2003)	10.4 US\$ 2000 PPP per kg of oil equivalent
CO₂/Population (2004)	0.24 t CO ₂ /capita

Sources IEA (2006); UNDP (2006); and UNFPA (2006)

ENERGY AND POVERTY IN BANGLADESH

Challenges and the Way Forward

Bangladesh is one of the most densely populated countries in the world. It experiences higher vulnerability to natural disasters such as floods and faces formidable development challenges due to environmental threats related to deforestation and impacts of climate change (for example, sea level rise). Good macroeconomic management leading to declining inflation rates, reduction in fiscal deficits and economic liberalization has contributed to a higher annual gross domestic product (GDP) growth at approximately five percent in the past decade. Although the absolute number of the poor continues to be large (about 63 million) and an estimated 85 percent of them live in rural areas,

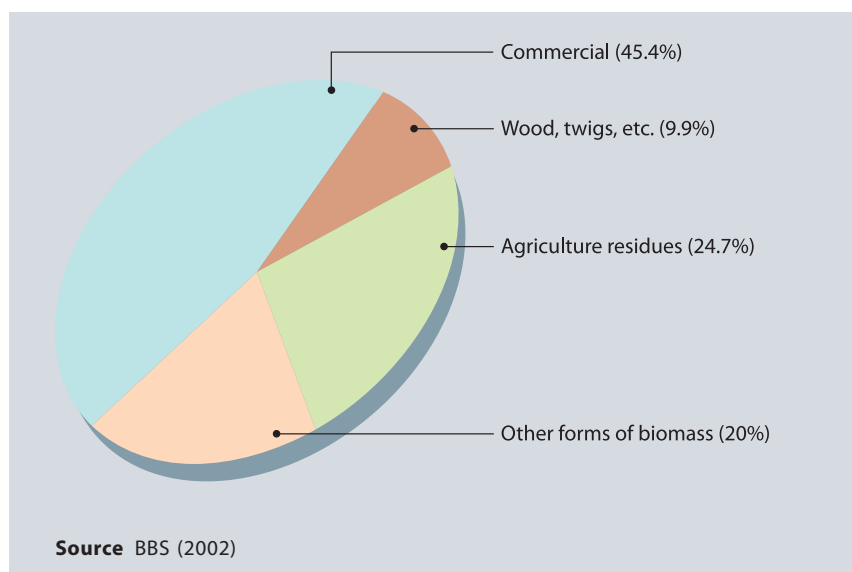
BACKGROUND

poverty levels have declined from 62.6 percent in 1983–1984 to 44.33 percent in 2000 (GoB and UNCT 2005).¹

Per capita consumption of commercial energy and electricity is among the lowest in the region. Bangladesh is also highly dependent on biomass fuels. Of the total energy consumption in Bangladesh, biomass fuels account for 54 percent and the balance comes from commercial fuels, namely, natural gas, oil, electricity and coal. Low electricity coverage,² high demand–supply gap and frequent supply disruptions (UNESCAP 2001, 2002 and 2005) are other problems associated with the electricity sector. Issues of energy security and non-access to electricity by roughly 60 percent of the total population remain as major concerns in the form of excessive pressure on biomass reserves leading to deforestation. Rural electrification programme, the core of rural energy programme, began in Bangladesh in 1977 when electricity supply to rural households was almost negligible. By 2003, it was able to extend grid coverage to about 40 percent of rural households.

The rural–urban disparity is glaringly evident in terms of the type of energy source (Figure 1). The energy needs of the estimated 85 percent of Bangladeshis living in rural areas are primarily met through biomass: straw, jute stick, animal dung and fuelwood (Figure 2). The impacts of

FIGURE 1
SHARE OF
DIFFERENT
SOURCES OF
FUELS IN TOTAL
ENERGY
CONSUMPTION



¹ The Bangladesh Millennium Development Goals Progress Report (GoB/UNCT 2005) estimates that 49.6 percent of population lives below one dollar a day.

² About 65 percent of the urban areas and only 22 percent of the rural areas had access to electricity in 2002.

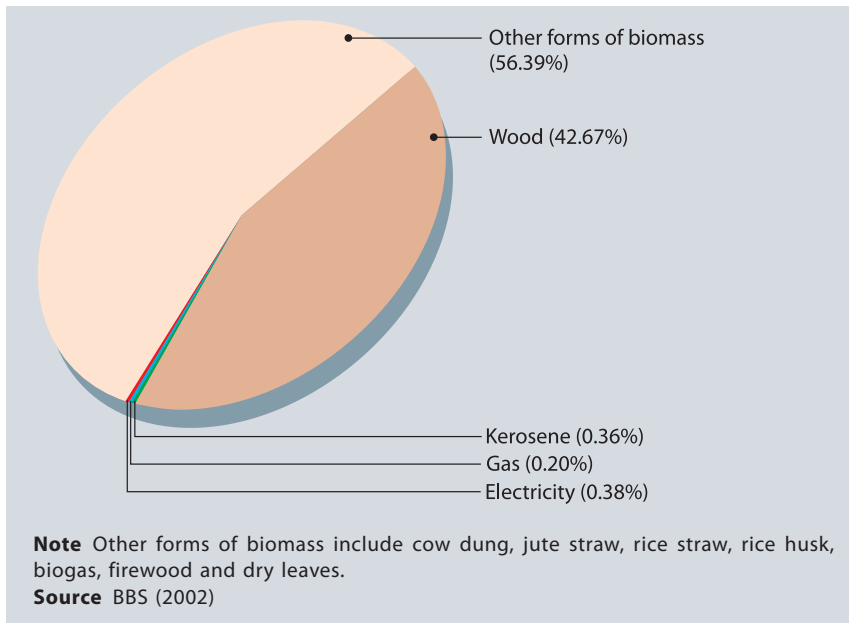


FIGURE 2
PERCENTAGE OF
HOUSEHOLDS
USING DIFFERENT
SOURCES OF FUEL
IN RURAL AREAS

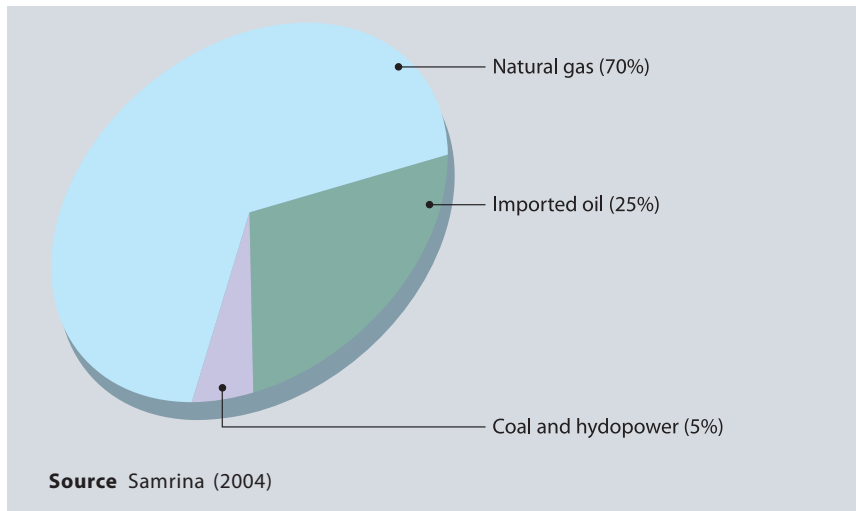
energy deprivation include drudgery for rural women and children burdened with the task of collecting, processing and using biomass, as well as health impacts related to indoor air pollution (IAP). The development of informal rural markets for even low-quality traditional biomass sources (for example, rice husk and animal dung) indicates an impending rural energy crisis, with prices of even the most basic fuel sources spiralling out of the reach of the very poor.

Natural gas is Bangladesh's most significant source of commercial energy, with production of 420.6 billion cubic feet (about 48.8 million barrels of oil equivalent) in 2003. It accounted for about 70 percent of commercial primary energy consumption in 2003, with imported oil and hydropower production making up the balance (Figure 3).

The principal natural gas consuming sectors include the power sector, the fertilizer industry and bulk retail including residential/commercial, captive power and transport. Captive power plants and compressed natural gas plants have emerged as fast-growing natural gas consumers. All these consumers more or less completely rely on natural gas, leaving the overall economy vulnerable to any disruptions in gas supply. This vulnerability is of even greater concern since current production levels of about 0.5 trillion cubic feet (Tcf) per year may lead to the depletion of the currently known recoverable reserves in the near future (MoPEMR 2006). Mining of coal reserves of about 1.4 billion tonnes (38.5 Tcf gas equivalent) is under way in northern districts (GoB 2006).

Excessive dependence on natural gas leaves the overall economy vulnerable to any disruptions in gas supply.

FIGURE 3
PRIMARY
COMMERCIAL
ENERGY
CONSUMPTION BY
SOURCE, 2003



The Vision Statement on Power recognizes energy as a prime resource for poverty reduction (GoB 2000). Rural electrification has been made a key goal and the Government has targeted 100 percent electrification of all 84,000 villages in the country by 2020 (GoB 2004a). The national emphasis on rural electrification is also reflected in the national Poverty Reduction Strategy Paper (PRSP), which identified rural electrification as a key area to foster economic growth with a pro-poor orientation (GoB 2005). However, the big challenge for Bangladesh is to increase access to electricity, ensuring that the poor are not excluded. Interestingly, compared to their urban counterparts, rural Bangladeshi consumers receive fewer subsidies, pay their bills more promptly and engage in less pilferage. The widening gap between the rich and the poor, however, could lead to greater challenges.

THE CHALLENGES

Centralized institutional setting

The broader and ambitious policy goals for development and utilization of clean energy systems and technologies, and judicious and efficient utilization of domestic resources and energy, ensuring supply of energy to rural areas, have given rise to multiple institutions/agencies with specific or overlapping missions/mandates. These multiple institutions, including ministries and their departments, and the public sector have posed greater challenges of coordination (Table 1). Reforms were initiated to encourage competition and bring in efficiency and better accountability. Power sector reforms brought forward greater challenges of governance as reforms did not yield the desired impact in

TABLE 1
THE ENERGY
INSTITUTIONAL
STRUCTURE
BASED ON
FUNCTION

Function	Responsibility
Investment and policy planning	<ul style="list-style-type: none"> ▪ The National Economic Council (NEC) holds the primary responsibility for investment and policy planning. The Ministry of Power, Energy, and Mineral Resources (MoPEMR) and the Planning Commission (PC) play an advisory role. MoPEMR prepares proposals, which the PC recommends and puts up to NEC for approval. ▪ The Board of Investments (BoI) and the sponsoring ministry look into matters relating to foreign and local private participation. The sponsoring ministry, the PC, and – where appropriate – the BoI jointly handle this function.
Project formulation and management	<ul style="list-style-type: none"> ▪ The Bangladesh Power Development Board manages, operates and maintains the existing power generation units for urban areas. ▪ The Dhaka Electric Supply Agency and the Dhaka Electric Supply Company look after electricity distribution in Dhaka.
Strategic and operational oversight and administration	<ul style="list-style-type: none"> ▪ The Power Grid Company of Bangladesh looks after transmission. ▪ The Oil and Gas Corporation (Petrobangla) manages, operates and administers existing assets through a number of agencies that are owned or controlled wholly or partly by the Government. The Bangladesh Petroleum Corporation has similar responsibilities for liquid fuels.
Rural energy provision	<ul style="list-style-type: none"> ▪ The Rural Electrification Board (REB), along with private companies and non-governmental organizations, supplies grid electricity and promotes decentralized systems in renewable energy.
Private–public partnership programme	<ul style="list-style-type: none"> ▪ The Power Division promotes and administers private–public partnerships.
Regulation	<ul style="list-style-type: none"> ▪ The Bangladesh Energy Regulatory Commission (BERC) frames rules and regulations to protect consumer and industry interest, sets tariffs and issues licenses for organizations in the energy sector in Bangladesh.

terms of improved efficiency and/or improved financial health of the institutions.

REB is the only governmental dedicated agency that has so far been established to promote rural energy services. Its focus, however, has been to increase electricity coverage through decentralized, local-level participatory institutions known as *Palli Bidyut Samities*³ (PBS). Each PBS has been mandated to work towards removing rural–urban disparities

³ Bengali name for a Rural Electric Society.

Both monetary and human resources are skewed towards increasing urban energy supplies.

Box 1: KEY INSTITUTIONAL BARRIERS

- Other than REB, the focus of all other existing energy institutions is on providing energy to urban areas. Hence, resources – both monetary and human – are skewed towards increasing urban energy supplies.
- Institutionally, there is little or no understanding/appreciation of the relationship between energy and poverty. Even the PRSP, a major document guiding the Government investment, does not focus on effective measures and investments to link energy provision and poverty reduction.
- There are no linkages between rural development institutions and energy service providers at national or local levels, thereby inhibiting the growth of rural energy services.
- Energy sector institutions behave autonomously and interact little among themselves, and thus their policies and programmes are non-synergistic and often contradict each other.
- There is a general lack of experience among national economic planners in the area of linkage between energy and poverty.
- Within institutions, decision-making is top-down, creating highly centralized and institutional command-and-control systems. Such management structures inhibit autonomy in sub-agencies, partners or private sector players.

concerning supply of electricity. PBS is a consumer-owned, independent entity, which distributes electricity to its members and other consumers. Despite this arrangement, the following major factors have limited the delivery of modern energy services to the poorer section of the population.

- Limited resources (both monetary and human), given the challenge of reaching out to about 60 million poor living in rural areas.
- Weak policy orientation for supply-side management, development of traditional energy supply systems and meeting urban requirements.
- Limited institutional capacities to link energy provision and poverty reduction.
- A top-heavy, control-and-command structure for energy service delivery despite commitment to decentralization/partnerships.

Policy and regulatory framework

The current policies for energy sector establish guiding principles to promote further use of clean and indigenous energy sources; attain energy self-sufficiency; accelerate rural electrification to improve the quality of rural life; and continue reforms, deregulation, corporatization and privatization of the energy sector to promote efficiency.

The major energy sector policies are listed below.

- 'National Energy Policy (NEP), 1996' establishing guidelines and specified targets for the overall development of the energy sector.
- 'Private Power Generation Policy, 1996' establishing guidelines to encourage private sector investments in electricity generation. Following the enactment of the law, an agency called the 'Power Cell' was created to oversee private power generation projects.
- 'Small Power Generation Policy, 1998' designed to encourage private investment in small (up to 10 MW) electricity generation plants. The primary reason for a separate policy was to target smaller plants to augment rural energy supply.
- A 'Draft National Energy Policy, 2004'.
- A 'Draft Renewable Energy Policy' has been prepared by the Power Cell of MoPEMR to promote rural energy programmes.

The 1996 NEP was the first comprehensive document spelling out the Government policy on commercial and non-commercial energy. Based on NEP, a number of plans were formulated to address issues relating to small power, private power, captive power and hydrocarbon development and its use. NEP recognizes the role of energy in socio-economic development and mandates the Government to provide access to commercial energy to people in rural areas, especially to those who do not have access to biomass. The Draft Power System Master Plan Update 2006 estimates that energy supply must increase by about 7.9 percent per year if Bangladesh is to sustain economic growth at the 5.2 percent level (ADB and GoB 2006). The requisite rate of growth in energy supply is considered achievable, given the country's available natural resources, boosted through some imports. NEP addresses energy issues of rural areas with greater focus. Further, the policy proposes to establish a renewable energy development agency to promote renewable energy technologies (RETs) in Bangladesh.

Even within the overall progressive policy frameworks, there seem to be an overemphasis on grid electrification and indifference to local requirements such as energy needs for cooking. Also, these programmes

... energy supply must increase by about 7.9 percent per year if Bangladesh is to sustain economic growth at the 5.2 percent level.

do not seem to offer a conducive environment for operation and management of decentralized energy services including inadequate allocation of funds for the promotion of renewable energy solutions. In the absence of any potential linkage of energy solutions for productive purposes, most energy technologies face considerable financial barrier.

The policy framework has been complemented by regulatory mechanism for the energy sector in Bangladesh. The Government has established BERC in 2003 (GoB 2003). Since then, regulation of the energy sector is being gradually taken over by BERC, which performs the following functions.

- Frame rules and regulations to protect the interests of the consumers and the industry.
- Establish and approve tariffs.
- Set codes and standards and enforce these.
- Permit, license and repeal or amend such permits.
- Promote competition.
- Advise the Government on energy sector policies and programme development.

Policies for each sub-sector, such as Power Policy, Petroleum Policy, Private Sector Policy and now the Draft Renewable Energy Policy, have been promulgated. These policies have, in effect, made these sub-sectors act independently with no linkages with the policies and programmes of other sub-sectors. This lack of coordination in policies and programmes is visible in the functioning of sub-agencies or companies under the ministries of these sub-sectors. For instance, sub-sectors such as energy and minerals do not coordinate their policies and programmes with each other, but they do coordinate with the power sector independently.

Therefore, the current situation of having several policies with no synergies among them may lead to policy confusion in the energy sector. This scenario may even weaken the regulatory environment. What is missing is policy convergence through a consultative or coordinating mechanism at the institutional level in these sub-sectors.

Until today, few of the reforms carried out over the years have had the results intended in the policy documents. Reforms have focused on un-bundling assets, structural changes in institutions and management reorganization, but, in practice, these were essentially de-concentration measures and not decentralization. Lack of autonomy to the new institutional set-up as part of reforms remains a concern. With no major change in the mindsets of the senior management, the new institutions function exactly as the parent organizations, and, thus, challenging the intent and purpose of the reforms. In addition, centralized decision-

Box 2: KEY POLICY AND REGULATORY CHALLENGES

- Energy policies have no strong linkages with policies in other key sectors and with ministries such as agriculture, industries, transportation and rural development.
- Policies in sub-sectors (for example, power, petroleum, private and renewable energy) of the energy sector in Bangladesh need convergence through a formal consultative or coordinating mechanism to avoid policy confusion.
- Continued support to loss-making operations and entities makes the energy sector financially vulnerable. Further, the energy sector suffers from inefficiency and does not provide quality services.
- Electricity should be made accessible at a reasonable and affordable price to fulfil the Government of Bangladesh's vision of providing 'Electricity for All by 2020'.
- There is an urgent need for transparency and accountability in awarding contracts to the private sector.

making within the Board continues without unravelling the creative potential of an independent management.

Fragmented programme framework in the energy sector

There are many programmes in the energy sector. The fundamental problems associated with programmes for increasing supply of energy include the ones listed below.

- Inadequate supply of modern fuels
- Constraints of adequate foreign exchange
- Budget constraints for making heavy investment to generate electricity
- Narrow programme focus to improve equitable energy accessibility
- Inadequate institutional and personnel capacity to implement policies
- Lack of appropriate national and regional partnerships

Programmes in the energy and poverty reduction sectors are being implemented on a stand-alone mode. The interventions in renewable energy programmes are further disaggregated into technology-specific programmes on biogas, solar, micro-hydro and so on. Poverty reduction programmes focus on such issues as livelihood creation and micro-credit without much assessment of the needed support infrastructure. This is evident from the nature of interventions. There were no attempts to link

Energy- and poverty-related programmes are being implemented on a stand-alone mode.

poverty reduction with energy provision. For instance, a micro-credit programme planned for agriculture or fisheries takes into account only the sector-specific problems such as workforce and market linkages. It does not cover aspects of potential impact on these sectors through better provision of energy services for agro-processing or cold storage. This was perhaps due to the state of knowledge and the existing paradigms. Energy was always thought of in terms of electricity, whether captive or grid and, therefore, was considered too large to have any synergy with rural programmes. Even the Government's five-year plans reflect the state of knowledge. Energy was a supply issue involving large investments.

The orientation of the Government towards supply management and its focus on urban areas has guided the Government programmes in the past. Therefore, programmes have always concentrated on development of conventional energy and exploitation of indigenous hydrocarbon resources. PRSP, a major document guiding Government investment, does not focus specifically on effective measures and investments to link energy and poverty reduction. The rural energy programmes have made considerable progress in increasing the grid coverage but have failed in two major aspects—systems stability and in creating conditions to enable access by the rural poor.

In some cases, these programmes have been unable to bring the rural poor under coverage even in villages that have been electrified. This is partly because little effort has been made to organize them into formal or informal organizations that could assist them to access electricity for productive use to raise their income possibilities. In addition, there is lack of innovative programmes to reduce the initial financial burden.

Box 3: KEY CHALLENGES TO FRAMING BALANCED PROGRAMMES

- The focus of most programmes remains limited to conventional electrification. Little attention is paid to livelihood options. The Government's appreciation of sustainable energy needs must be substantially complemented through appropriate policy, institutional and financial support.
- Sustainable energy development in Bangladesh is not a key development agenda of most international development partners. Most donor activities focus on awareness building and advocacy, but not on sustainable energy development as such.

Discussions with focus groups indicated that there is a large gap in information sharing among promoters of RET programmes. The efforts currently under way to disseminate RETs are at a nascent stage. Knowledge sharing, therefore, is not only expedient but also necessary to avoid duplication of coverage areas.

Inadequate attention to energy efficiency

Mirroring the substantial energy inefficiency and the glaring lack of energy conservation measures, the environmental impact of Bangladesh's energy use is disproportionately high. Energy-efficiency improvements, whether voluntary or not, can play a key role in improving industry efficiency levels, leading to energy savings. The Power Division has estimated that about 445 megawatts (MW) peak power demand can be saved by replacing all the present energy-consuming normal bulbs with compact fluorescent lamps. Even a conservative estimate shows that energy efficiency in lighting alone could approximately save 100 MW peak power demand through voluntary initiation of energy efficiency improvement and/or conservation measures in domestic and industrial sectors (GoB 2004a).

The energy efficiency sector faces challenges in actual implementation. Recommendations from several energy assessments and analyses carried out in various industrial units by the Energy Audit Cell, a sub-unit of the Power Division, are yet to be translated into action. Lack of effective institutional and enforcing mechanisms and incentives to adopt energy-efficient measures have dampened the urgency for these initiatives. The Government's thrust to create awareness in these areas is reported to have remained low. A few past initiatives focused on improving fuel efficiency in the transport sector and brick-making industry. In 1999, the Bangladesh Environment Management Project, funded by the Canadian International Development Agency started an efficient technology diffusion process in the transport sector. The project now shows signs of success, which need to be replicated. The policy changes are yet to be in place for effective facilitating of energy efficiency enhancement across other sectors.

Inefficient use of biomass fuel for cooking, a major livelihood energy need in rural Bangladesh, leads to high levels of IAP. Ninety percent of domestic cooking energy needs are met through traditional biomass resources. While global estimates on IAP are available, there is lack of documentation of such impacts in Bangladesh. Based on such information, effective strategies for meeting cooking energy needs in rural Bangladesh could be devised.

Approximately, 100-445 MW peak power demand can be saved in domestic and industrial sectors through energy efficiency and conservation measures in lighting alone.

Efficient use of biomass in the domestic sector has not been paid adequate attention.

Switching to a cleaner fuel on a large scale does not seem to be a feasible option in Bangladesh due to high prices of the cleaner alternatives. Different types of energy-efficient cook stoves have been developed by the Bangladesh Council of Scientific and Industrial Research. These improved stoves have the potential to save 50–65 percent of fuel and cooking time compared to traditional stoves (Hossain 2003). However, these designs have not caught on because of lack of innovative service delivery mechanisms involving rural women to ensure smooth operation and maintenance.

Box 4: KEY ENERGY EFFICIENCY CHALLENGES

- In general, energy conservation and efficiency have received limited and fragmented attention in Bangladesh despite the high cost of delivery of modern energy services. People are not aware of the opportunities related to energy conservation and efficiency measures.
- Specifically, efficient use of biomass in the domestic sector is not paid adequate attention despite the fact that IAP is the single largest environmental risk factor for female mortality and high rate of respiratory infections in children.

Lack of focus on renewable energy

Renewable energy has not yet been institutionalized in the energy development plans and programmes in Bangladesh. Past initiatives on renewable energy have been few and uncoordinated. At the national level, the Government has been too preoccupied with conventional power. However, numerous interventions and projects have been initiated by different bodies with funding from donor agencies (Asian Development Bank [ADB], Swedish International Development Agency, United States Agency for International Development [USAID], United Nations Development Programme [UNDP] and others). These efforts cannot be categorized as being part of any national renewable energy approach or initiative but remain individual efforts of government bodies/non-government institutions as thought appropriate by project proponents. Nevertheless, these initiatives have brought about a reasonable level of understanding of RETs.

For example, Grameen Shakti, a subsidiary of the Grameen Bank, had implemented over 50,000 solar home systems (SHSs) in different rural

areas up to November 2005. This was done under the SHS Programme of the Infrastructure Development Company Ltd (IDCOL), which demonstrated a market-based approach for SHSs. Other prominent players in the promotion and development of RETs are BRAC (a non-governmental organization [NGO]) and Rahim Afrooz Bangladesh Ltd.

About 20 percent of Bangladesh's rural areas are estimated to be beyond the reach of conventional grid electricity in the foreseeable future (Islam 2005). The cited reasons are remoteness, natural barriers (rivers, islands), scattered nature of households and high aggregate cost of grid network. Therefore, RETs like solar photovoltaic, biogasifiers and wind turbines would need to be put in place for remote area electrification in a cost-effective and sustainable manner.

The ADB-funded Promotion of Renewable Energy, Energy Efficiency and Greenhouse Gas Abatement project reviewed the status of existing sources of renewable energy, those planned for the next five years, and future potential based on estimates of renewable resources. Another study that highlighted the need for energy efficiency and renewable energy intervention for Bangladesh is the Asia Least-cost Greenhouse Gas Strategy Project, funded by UNDP and Global Environment Facility (GEF). Although different agencies have arrived at different figures, the potential of renewable energy to generate electricity and income in far-flung and remote locations is beyond question. Despite this, the focus on research and development (R&D), technology standards and off-the-shelf renewable energy solutions for rural energy requirements both for subsistence and productive uses is critically absent.

Renewable energy technologies need to be deployed in remote areas in a cost-effective manner.

Box 5: KEY CHALLENGES TO DEVELOPING ALTERNATIVE ENERGY OPTIONS

- Limited knowledge of renewable energy market potential hinders the intensification of private sector presence in the renewable energy sector in Bangladesh.
- The market is distorted due to subsidized or grant-based hardware installation programmes.
- There are no sustainable, ready-to-implement business models for renewable energy technologies.
- There are no financial incentives for renewable energy development. In fact, the involvement of the financial sector in the renewable energy sector is lacking, perhaps because there is no capacity within financial institutions to appraise renewable energy proposals for loans/grants.

Renewable energy options offer great opportunities for SMEs in energy entrepreneurship.

Constraints related to energy entrepreneurship

Small and medium enterprises (SMEs) and micro-enterprises are recognized as vital for development. There are over 6 million such enterprises in Bangladesh, contributing as much as 25 percent of the country's GDP and 40 percent of gross manufacturing output. The SME sector accounts for 80 percent of industrial jobs and about 25 percent of the total labour force as well (ADB 2004).

The need to improve access to electricity for about 75 percent of the rural population and the growing interest in renewable energy options offer great opportunities for the involvement of SMEs in energy entrepreneurship. Some efforts are already under way. Prokaushali Sangsad Ltd, a private organization, supported the DC (direct current) Lamp Enterprise in Char Montaz, where a women-owned cooperative not only sells solar power lighting systems to rural households on a sustainable basis but also installs and maintains systems.

Box 6: KEY CHALLENGES TO PROVIDING AN ENABLING ENVIRONMENT FOR ENERGY ENTREPRENEURSHIP

- Community service providers, local vendors and small manufacturers lack the technical and business capacity to become entrepreneurs in the energy business.
- Existing rural electrification programmes are focused on lighting, and neglect other productive uses of energy.
- The cost of energy service delivery is high for remote locations, considering the low purchasing power of people.
- The existing slow government procedures make it difficult for energy-based entrepreneurship to flourish. Also, there are no incentives for banks or other financial organizations to provide soft loans to motivate private sector investment.
- There is no support service mechanism for low-cost appropriate energy technologies for SMEs.
- There are limited training and development opportunities for energy-based entrepreneurship. Capacity development of key stakeholders of rural-based SMEs has been few and far between. The model of technology support diffusion that proved successful in the brick-kiln technology project (funded by UNDP and GEF) needs to be upscaled, with demonstration and technical capacity development for other smaller enterprises across rural Bangladesh.

On the other hand, energy-dependent enterprises in rural and remote areas have limited local capacity to assess their energy needs and local resources due to insufficient knowledge of equipment, services and related issues. As a result, SMEs depend largely on traditional fuels and use inefficient technologies for energy conversion. It is imperative to assess their energy requirements, develop alternative energy options and design an appropriate and comprehensive energy system.

In spite of the potential for energy entrepreneurship, little effort has been undertaken to upscale and replicate some of the experiences on a wider scale. The major constraint is the absence of Government support. Other constraints are irregular and inadequate supply of electricity (Sarder 2001) and non-availability of financing and knowledge-sharing mechanisms. Even micro-credit, which is now gradually shifting to financing production activities, has been slow to finance energy-based income-generating activities.

Gender concerns

The Fourth Five-Year Plan (1990–95) highlights ‘gender’ and adopted the objectives of ‘Women in Development’ policy. This policy incorporates concerns of women’s participation in public decision-making, productivity and income, nutrition and health. Furthermore, the Government is committed to implementing the Platform for Action (PFA) adopted at the Fourth World Conference on Women in Beijing in September 1995. PFA emphasizes the strategy of bringing women’s development into the mainstream of Government policies and programmes. Since then, gender equity has become a cross-cutting issue in most development programmes/projects globally. However, women in Bangladesh still do not enjoy improved access to modern energy services. Most rural households continue to depend on biomass as a major source of energy for cooking. The dominance of biomass in energy consumption translates into drudgery for women as they are the primary collectors of biomass, as well as its victims, since IAP is caused by biomass burning.

Inadequate electricity supply and non-availability of financing and knowledge-sharing mechanisms hamper energy entrepreneurship.

BOX 7: KEY CHALLENGES TO REDUCE DRUDGERY FOR WOMEN

- Inadequate attention is given to providing technological solutions (improved cook stoves and so on) to reduce women’s drudgery.
- Involving women in energy-based income-generating activities associated with agriculture (such as small-scale food processing and handicraft production)

Investments are inadequate to meet the growing demand for energy services, both in terms of quantity and quality.

Although there have been some efforts to employ more women in the delivery of energy services, particularly in REB's programmes, they are mainly confined to token, low-level administrative jobs with no real voice in decision-making. An evaluation of REB carried out by one of its international funding agencies corroborates the above point, indicating in its study that women were employed at lower levels, and those that did not occupy higher offices were selected rather than elected.

Constraints in access to finance

Inadequate development and provision of energy services is a major factor constraining higher economic growth in Bangladesh. Among other reasons, lack of investment capital has significantly hindered the growth of energy services, both commercial and non-commercial. If grid electricity coverage is to be extended to the entire population by 2020, as the Vision Statement envisages, installed generating capacity must expand from the existing 4,710 MW to 17,500 MW. The expansion of the generating capacity as well as the supply infrastructure would require US \$15 billion (GoB 2004b). A large part of this funding must come from the Government resources, private domestic sources and from foreign investment flows.

Energy programme financing in Bangladesh has been traditionally donor-driven, whether in the commercial sector or in RETs. However, over the last decade, the Government has also provided substantial support to conventional energy development, with about 20 percent of total public-sector investments in the different plan periods being allocated for the sector. The investments are still inadequate to meet the growing demand for energy services, both in terms of quantity and quality.

It has been recognized that getting funds from multilateral and bilateral institutions under soft loans and grants has become increasingly competitive over the years. In this context, the need to tap emerging opportunities under the clean development mechanism (CDM) as well as resources under GEF is becoming more important. The first registered CDM project in Bangladesh, on waste-to-electricity generation, is worth US \$6.5 million. The World Bank and GEF are supporting IDCOL's SHS Programme with other development partners. The Power Division under MoPEMR has been supported by the World Bank – and also by ADB, USAID and German Agency for Technical Cooperation (GTZ) – in its energy efficiency and conservation measures for peak power demand and energy audits. A project on improving brick-kiln energy efficiency was designed in 2006. UNDP and GEF are expected to start implementing the full-scale project in 2008.

Box 8: KEY CHALLENGES TO FACILITATE EASIER ACCESS TO FINANCE

- Few opportunities outside microfinance institutions are available for energy project financing.
- Non-conventional financing options such as clean development mechanism have not been fully explored.
- Slow government procedures and lack of transparency in the process demoralize the private sector from getting involved in energy sector projects.
- Government incentives to support energy entrepreneurship are virtually non-existent.
- There is limited empirical knowledge on the costs and benefits of the range of technologies available for providing sustainable energy options.

The UNDP Country Office is also expecting resources from GEF for its national programme on sustainable energy. However, all these non-conventional financial resources are very limited when compared to those available to neighbouring developing countries such as India and Nepal. It is important to recognize that different financial products and mechanisms must be developed for different applications. For instance, micro-credit, which is well developed in Bangladesh, could be energized to finance energy access by rural people. There is scope for innovative financial mechanisms but would require legal and regulatory support, lower collaterals and risk mitigating measures. There are missed opportunities of not effectively engaging the financial sector on a microfinancing scale, which would permit smaller enterprises to access financing. Several measures can be taken: (1) a special funding pool could be created to finance small-scale distribution systems; (2) fiscal support mandating lower interest costs could finance other small-scale rural energy projects; and (3) on the macro-level, large-scale financing must also use a combination of financing packages.

Weak monitoring and evaluation system

The existing monitoring and evaluation (M&E) system in Bangladesh is largely project-specific. The institutional responsibility for M&E for the Government-supported projects rests with the Implementation, Monitoring, and Evaluation Division (IMED) of PC. IMED monitors over 1,200 projects of the Annual Development Programme (ADP) and

There is a need to tap non-conventional financing options such as CDM.

Specific indicators that link energy and poverty need to be developed in the monitoring and evaluation system.

evaluates about 200 projects annually. The IMED output consists of

- monthly performance evaluation of projects of the ministries/divisions,
- quarterly performance evaluation reports,
- annual review report on ADP implementation,
- procurement status report,
- project evaluation reports and
- other such special reports prepared at the direction of the Hon'ble Prime Minister, Planning Minister and NEC.

What seems to be missing is an institutional arrangement to comprehensively monitor and evaluate issues related to linkages between energy and poverty. Despite a continued and major national focus on rural electrification, there are no national sectoral guidelines on M&E.

Box 9: KEY CHALLENGES TO STRENGTHENING MONITORING AND EVALUATION

- There is no central agency with the mandate and capacity to analyse the Government/donor investments for development, particularly the linkages between energy and poverty.
- There are no specific indicators linking energy and poverty on the one hand and an energy information management system that can provide information for sound planning, management and implementation for future initiatives on the other.
- There is no baseline database to help capture the socio-economic impacts of energy services.

Lack of access to information related to energy and poverty

Bangladesh's poverty-related problems are overwhelming with approximately 36 percent of the population living below US \$1 a day (UNDP 2006). The direct-calorie-intake method and the cost-of-basic-needs method are used officially to measure poverty. Poverty is often linked with food insecurity, income, nutrition and water supply and such information is available at the national level. However, there is a dearth of information on programmes for energy service provision, particularly for rural areas. There are two major reasons for this lack of information: (1) relevance of poverty in energy programmes/projects is not

understood in general and (2) a national management information system (MIS) for energy initiatives is missing.

With low awareness levels on available energy costs and options and efficient utilization patterns, communities are further constrained in availing themselves of programmes best suited to their local requirements and purchasing capacities.

There is no common platform at the national or local level to share experiences and exchange information on the benefits of rural energy intervention. Moreover, the studies that are available have been carried out by implementing agencies themselves, and not by independent bodies.

Box 10: KEY CHALLENGES TO FACILITATE EASIER ACCESS TO INFORMATION

- There is no local or national platform to discuss or disseminate lessons from rural energy projects or the impacts on poverty.
- There are no specific indicators to link energy and poverty, making information dissemination a difficult process.
- Few independent/neutral reporting and monitoring studies are available for dissemination.

Bangladesh needs to develop comprehensive strategies and find adequate resources to overcome the challenges identified in the earlier section. Further, the strategies need to be specific enough for the country to derive clear and quantifiable benefits. Suggested below are a few ideas that could make a difference in achieving the Millennium Development Goals (MDGs) in general and addressing energy and poverty concerns in particular.

Effective coordination mechanisms through a designated nodal agency

The current institutional arrangements are inadequate to meet the twin challenges of rural energy and poverty. In this context, there is a need for a vehicle to promote and monitor the development of the energy sector as a whole. An independent nodal agency, the Sustainable Energy Development Agency (SEDA), is being envisaged as MoPEMR's focal point pertaining to energy and poverty.

SEDA can be mandated by the Government to undertake sectoral coordination and formulate/modify/implement policies and strategic

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action plans. The agency should develop long-term plans to achieve the Government's vision of 'Electricity for All by 2020'. SEDA should build its internal capacity as well as the capacity of the key stakeholders including the Government, NGOs, financial institutions (FIs), civil society and private sector. It should also establish and maintain a Sustainable Energy Development Fund to support various types of energy projects/initiatives.

SEDA could be mandated to facilitate the integration of livelihood priorities into energy access for economically disadvantaged communities. It could also promote market-based commercial instruments for mainstreaming sustainable energy. Further, a centre for coordinating all renewable energy activities is proposed, which could be linked to SEDA.

Policy convergence for a unified approach

A key input for linking energy provision with poverty reduction is to develop and pass enabling legislation, policy statements and government mandates to support rural and renewable energy development and access services. To improve the master planning process for electrification, it is imperative to determine the most economical method of providing electricity: grid extension, distributed or district grids, or off-grid solutions. The energy policy needs to clearly spell out modalities to improve access to electricity in electrified villages and requires REB to set aside a percentage of connections for the poor. It would be desirable to put in place a new energy policy modifying the 1996 NEP. UNDP and GTZ worked on a draft NEP together with the Government. The work was completed in 2006 and the draft NEP was submitted to the Government. The draft NEP is a consolidation and harmonization of all existing disparate policies in the power sector. For the first time it includes sustainable energy as one of the priority areas, in addition to conventional power, coal, gas and petroleum. Recent events in Bangladesh have, however, delayed the formal adoption of the draft NEP.

For the reforms to work, greater autonomy, diverse ownership and decentralization policies could be instituted with a special rural focus. Policy reforms and policy statements are good in principle and intent, however, implementation of the principles can fall short. The Government policies are often short-circuited through executive orders by the same ministry that formulated the policies.

The impact of 'effective' policy reforms, however, can be seen in the case of REB. A study by the Asian Institute of Technology in May 2004

found that policy reforms leading to institutional restructuring improved the rate of electrification for the poor in Bangladesh to 19 percent in the post-reform period as compared to 0.2 percent in the pre-reform period.

Programme framework to promote renewable energy technologies and address the concerns of the poor

Bangladesh has its national energy policy, development plan, strategies and road map for power sector reform. The initiatives taken by the energy sector players aim at creating appropriate and enabling conditions, including a legal framework, for improved public sector performance and attracting private and multilateral capital flows on a significant scale. For instance, the Government has approved a Three-Year Road Map for Power Sector Reform (2006–2008) elaborating sector reform and investment plan in the mid-term. It has also set some yearly targets and six-monthly rolling goals. The Road Map should be effectively used to guide intervention measures.

UNDP's Sustainable Rural Energy (SRE) Programme is among the first attempts at creating a sustainable environment for human and economic development of rural areas.⁴ The programme's strategic approach was to build community-based natural resource management capacity and to promote, demonstrate and assist in the transfer of technologies related to the use of renewable energy in off-grid areas. Based on the experience gained in the SRE Programme, the UNDP and the Power Division of MoPEMR formulated a long-term programme framework in 2005 for sustainable energy development in line with PRSP and to achieve the MDGs. The programme framework is designed as a pro-poor, market-oriented application of sustainable energy service delivery systems. The programme will not only demonstrate renewable/clean energy and energy-efficient projects but also develop energy conservation measures for the poor and low-income communities as well as for the industrial and commercial sectors.

The Government is in a position to accord the required priority to the implementation of the national programme framework developed jointly with the UNDP. As per this framework, a seven-year national Sustainable Energy Programme (SEP) has been formulated to address sustainable energy issues. This includes policy-level interventions, institutional reforms (including the establishment of SEDA), national communication strategy and campaigns on sustainable energy, capacity building of key

UNDP and MoPEMR have formulated a long-term programme framework for sustainable energy development.

⁴ The SRE Programme is under the Sustainable Environment Management Programme, which is a follow-up to the National Environment Management Action Plan.

The Government could establish a knowledge bank and hold knowledge-sharing workshops.

stakeholders, R&D, integration of livelihood priorities with energy access, greater market-based commercial application and linkages with financial institutions. The programme includes renewable and other clean energy technologies as well as energy efficiency and conservation. The programme is expected to raise the income of the targeted rural communities, diversify their livelihood options and significantly improve their quality of life through energy interventions. It will also provide alternative and efficient energy models for commercial use, thus contributing to the conservation of power. The success of the programme will largely depend on the Government's commitment and level of internalization of the approaches.

The Government can also consider another long-term programme framework for the conventional energy sector, seeking the support of international agencies. The programme framework should consider poverty reduction as an integral part of conventional energy expansion, and build strong linkages with SEP.

A knowledge bank could be established and administered by the Government, and frequent knowledge-sharing workshops be held for integrating household energy programmes with those of rural development. These can have the desired outcome of women's economic upliftment and community development. A policy for promotion of cross-sectoral cooperation on the part of the Government can achieve such an outcome. For example, social/community forestry projects in conjunction with improved stove projects will ensure supply of biomass fuel and its efficient utilization and will improve women's health as well. On the other hand, ensuring availability of modern cooking fuels in biomass-deficient areas, through decentralized fuel processing and better transportation, can ease women's search for cooking fuels. This will also reduce the pressure on biomass resources, which is all that the very poor can afford.

The stability failure of systems is due to their tie-up with the urban supply grid and the Power Development Board's (PDB's) supply prioritization policies. To overcome this, the rural energy programme should be de-linked from PDB supply and instead be cast as a type of distributed system with its own generation programme. The draft PRSP talks about development of regional REBs. This may be unnecessary and may have an adverse effect on the autonomy of PBSs. Rather, the Government should consider loosening its grip on PBSs. There is little doubt that the rural energy programme needs to be reformed to meet the challenges of fast growth and ensure good governance and financial sustainability. The PBS Graduation Policy that was approved needs immediate implementation to (1) redefine the relationship of REB with PBSs, (2) strengthen PBS

management and (3) restructure the subsidy policy.

With regard to promotion of commercial dissemination of promising RETs for productive and consumptive use in small-scale enterprises and households, it would be desirable to include recommendations focusing on

- programmes to provide RETs to rural households, firms, institutions, cooperatives or communities through application of market-oriented approaches;
- programmes to encourage local enterprises to manufacture and assemble, market, service and repair RETs in the vicinity of their customers (which will result in support of SMEs in rural areas); and
- programmes to involve local NGOs and financing institutions, as they are important contributors to market-oriented dissemination of RETs through dedicated promotion programmes and provision of affordable financial services for both users and suppliers of RETs.

As part of the rural energy programme, the rural electrification programme too is to be seen in the context of a much wider development plan: 'the state will adopt effective measures to bring about a radical transformation in rural areas through the provision of rural electrification and removing disparities in standards of living between the urban and rural areas'. Hence, the rural energy objectives might support development of rural areas, in general, and improving living standards of the rural population, particularly those of the poor. Consequently, the programme needs to address supply of electricity for both productive use and social purposes. This implies increasing participation of rural poor.

Facilitating access, promoting efficiency, cultivating energy entrepreneurship

Innovative service delivery mechanisms need to be considered to enhance the productivity of SMEs. A focused strategy to ensure that modern energy services complement energy needs of the rural enterprises can be devised with greater integration with micro-credit mechanisms to overcome the financial and affordability barriers of the communities and enterprises running businesses. This would help them raise their quality of life as energy access would be enhanced for lighting and cooking but, more importantly, access to quality and reliable power for pursuing enterprises would also improve. This would not only generate additional income, but also enhance the viability of the energy service delivery models. Access to energy sources can be improved by deploying greater R&D resources for technology and fuel options for

The rural electrification programme should be seen in the context of a much wider development plan.

Develop innovative energy service delivery mechanisms that involve rural women.

selecting the most sustainable and economical alternatives. In all such endeavours, the needs of the consumer should be kept at the same level as the needs of the project, ensuring that short-term expediency does not result in long-term difficulties.

The Government can initiate a programme towards an energy-efficient future. To address its acute energy crisis, Bangladesh must not only enhance generation but also substantially improve energy conservation and efficiency in domestic, commercial and industrial sectors. Special financial packages and incentives will need to be given to create win-win opportunities for both users and the energy suppliers. The Government will need to facilitate greater awareness of economically viable and socially desirable options for improving energy efficiency, especially in plant and machinery.

For wider application of energy-efficient cook stoves, relevant programmes/projects should undertake studies on cook stove performances and their impacts, as well as demand assessment, system preference and social acceptance. The institutions undertaking such studies should not only look at different cook stove designs but also look for their applications both at the household and community levels (small hotels, colleges, schools, *madradas* and so on). They should also suggest innovative service delivery mechanisms that involve rural women and ensure smooth operation and maintenance of improved cook stoves.

Improving access to finance

It is imperative that the availability of finance to the rural sector is enhanced in order to meet the challenges of poverty reduction targets. The Government could take the lead by enhancing budgetary allocations as well as improving access to finance from banks and other FIs for energy-related and energy-based projects. In terms of specific financial instruments, mechanisms and modalities should include guarantee schemes much like the USAID Loan Portfolio Guarantee Scheme to eliminate non-collateral financing and lower risk perception of rural loans. The process can also be institutionalized by introducing a mandatory set-aside of 0.5 percent of all lending by commercial banks and other FIs to finance rural-energy-based income generation activities.

The Government will also need to effectively explore other international funding opportunities like CDM and GEF, as well as long-term soft loans and utilize them best for promoting sustainable energy services.

Mainstreaming gender in energy and poverty concerns

Issues related to women's drudgery can be best addressed through provision of efficient energy devices for cooking. In this context, credit-based initiatives for large-scale dissemination of biogas technologies need to be expanded. Women's micro-credit groups will need to be involved in information dissemination on IAP caused by biomass smoke and measures to mitigate its adverse effects.

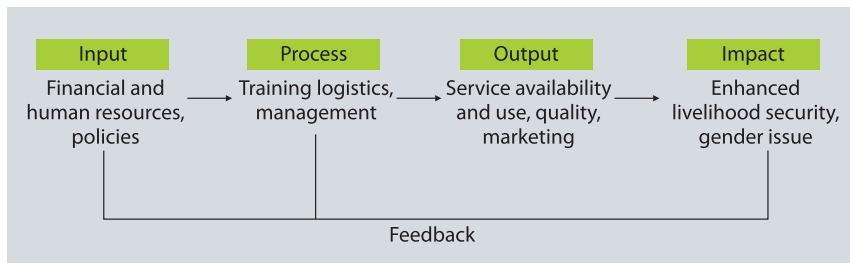
The efforts need to be complemented by focusing on measures for enhancing the productivity of women-owned small-scale agricultural farms in Bangladesh. This can be done by means of (1) exploring the potential for improving energy services for these and (2) providing training for capacity building and other necessary inputs to women.

Another key issue related to mainstreaming gender concerns is the need to develop indicators/benchmarks on benefits from energy services in general and rural energy services in particular. In the case of the latter, the indicators should take into account relationships between beneficiaries of rural energy services by income groups and gaps between rich and poor, urban and rural, and male and female.

Developing a monitoring and evaluation system

There is a need for an effective M&E system that integrates both the energy and poverty aspects of programme and policy implementation. Efforts to document experience and lessons, and establish baseline data for M&E of rural electrification programmes and their impacts on rural development programmes need to be streamlined.

Institutionalizing M&E process for effective regulatory frameworks could be developed. Figure 4 lists a few steps based on which M&E system could be developed.



Explore all funding opportunities for promoting sustainable energy services.

FIGURE 4
STEPS IN
DEVELOPING A
MONITORING AND
EVALUATION
SYSTEM

Information and knowledge management

Existing systems of data collection and surveys are either isolated or limited. For example, there may be adequate information on various energy uses, but virtually nothing on energy consumption patterns on

which emerging energy needs may be planned. Generally, studies have a project focus, and as such are limited in scope, range and time frame. Bangladesh needs a MIS and a computerized national database for energy and poverty, which would cover all energy activities to support sound national planning. There is also a need to develop a series of discussion papers on 'best practices', which could later be converted into a compendium. 'Best practices' are essentially projects that have attained their intended objectives. Such material could be put on the public domain as well for wider dissemination.

CONCLUSION

The development of Bangladesh's energy sector has been slow. Most of the population continues to rely on biomass for meeting its energy needs. Ensuring 'universal access' to cleaner, affordable and services is a key challenge. There is an urgent need to extend the amenities of modern energy to increase productivity, improve social welfare, and provide for efficient delivery of economic and social services.

In recent times, the Government has taken some steps in its development planning process, which focus on poor people's energy needs. The PRSP document of the Government identifies energy as an essential input for economic growth and for achieving poverty reduction and livelihood improvement (GoB 2005). It agreed in principle in December 2005, following a national consultation on UNDP's Framework on SEP, to establish an independent SEDA that would serve as the apex institution for bringing sustainable energy into the mainstream of the national development process. Cabinet approved SEDA on 10 April 2007, and MoPEMR proceeded with the creation of institutional structure. Recent events in Bangladesh have, however, delayed the operationalization of SEDA.

As indicated earlier, the realization of the Government's vision of 'Electricity for All by 2020' largely depends on policy convergence and successful implementation of 'pro-poor' energy policies through a broad-based programme framework, improved access to finance, and rational and efficient use of energy through energy entrepreneurship. With the launch of SEP, it is expected that Bangladesh will be on its way to bridging many or most of the gaps identified in this rapid assessment.

SCHEMATIC REPRESENTATION OF CHALLENGES AND MODALITIES TO MEET THE CHALLENGES

THE CHALLENGES

MEETING THE CHALLENGES

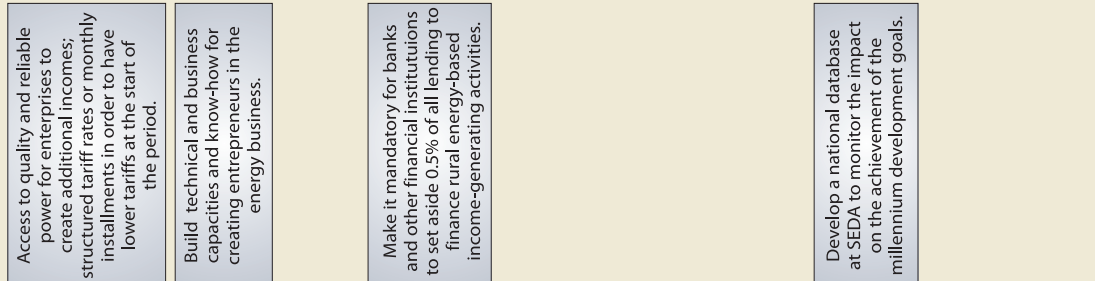
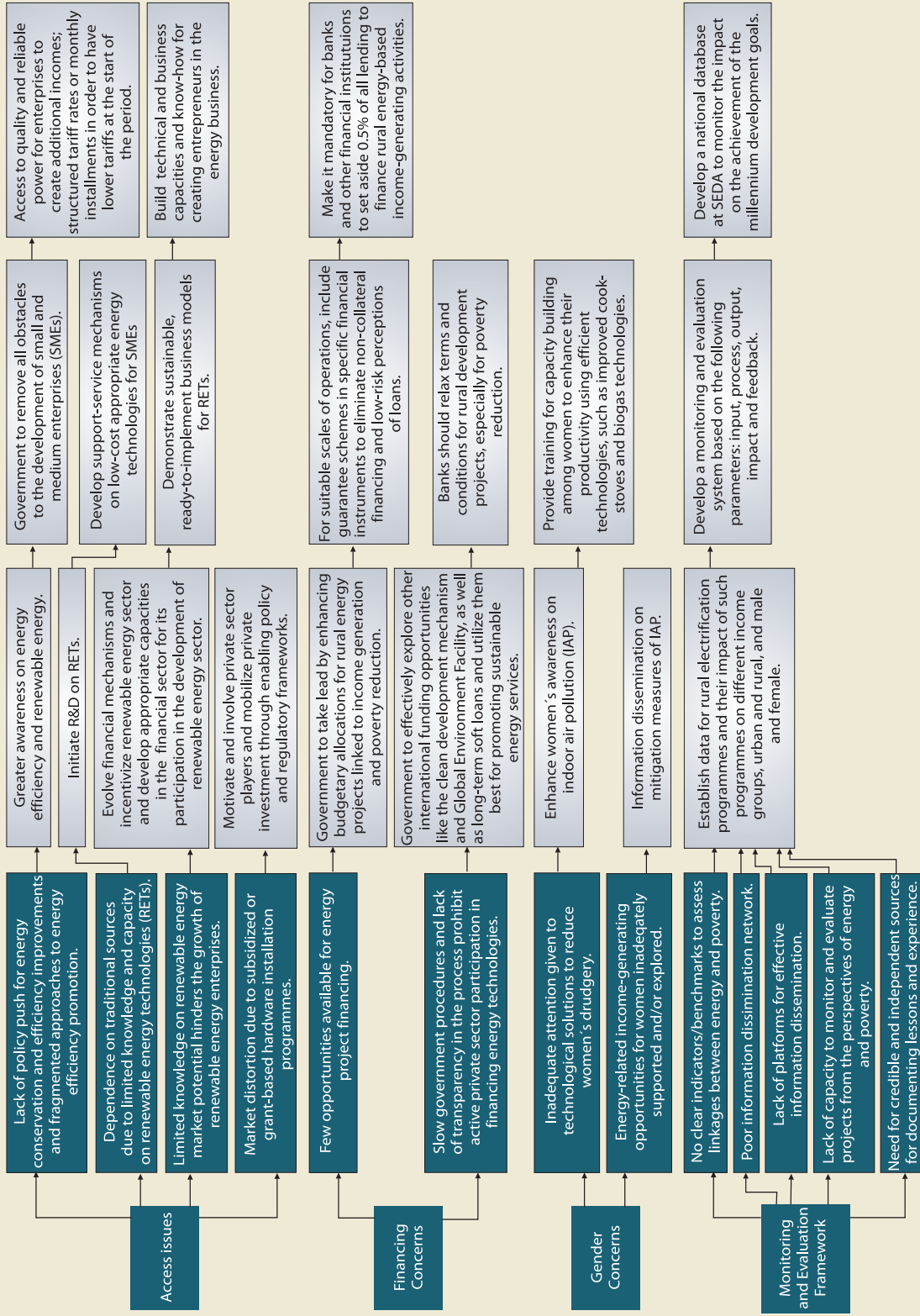


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SCHEMATIC REPRESENTATION OF CHALLENGES AND MODALITIES TO MEET THE CHALLENGES (CONTINUED...)

THE CHALLENGES

MEETING THE CHALLENGES



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The UNDP Regional Energy Programme for Poverty Reduction (REP-PoR) aims to affect broad-based interventions in the energy sector, focusing on Asia Pacific countries. The emphasis is on harnessing energy effectively to meet developmental targets laid out in the Millennium Development Goals. As a first step to achieve the objectives of REP-PoR, this publication reports on Bangladesh's energy sector and its linkages to poverty concerns, gaps therein and modalities for overcoming the same. It aims to facilitate the inclusion of a strong energy component into the Bangladesh's socio-economic development programmes.

