The Energy Challenge for Achieving the Millennium Development Goals

UNITED NATIONS

UN-Energy

Energy and the MDGs

Contents

1 Eradicate extreme poverty and hunger

Energy inputs such as electricity and fuels are essential to generate jobs, industrial activities, transportation, commerce, micro-enterprises and agriculture outputs.

Most staple foods must be processed, conserved and cooked, requiring heat from various fuels.

2 Achieve universal primary education

To attract teachers to rural areas electricity is needed for homes and schools. After dusk study requires illumination. Many children, especially girls, do not attend primary schools in order to carry wood and water to meet family subsistence needs.

3 Promote gender equality and empower women

Lack of access to modern fuels and electricity contributes to gender inequality. Women are responsible for most household cooking and water boiling activities. This takes time away from other productive activities as well as from educational and social participation. Access to modern fuels eases women's domestic burden and allows them to pursue educational, economic and other opportunities.

4 Reduce child mortality

Diseases caused by unboiled water, and respiratory illness caused by the effects of indoor air pollution from traditional fuels and stoves, directly contribute to infant and child disease and mortality.

5 Improve maternal health

Women are disproportionately affected by indoor air pollution and water- and food-borne illnesses. Lack of electricity in health clinics, illumination for nighttime deliveries, and the daily drudgery and physical burden of fuel collection and transport all contribute to poor maternal health conditions, especially in rural areas.

6 Combat HIV/AIDS, malaria and other diseases

Electricity for communication such as radio and television can spread important public health information to combat deadly diseases. Health care facilities, doctors and nurses, all require electricity and the services that it provides (illumination, refrigeration, sterilization, etc) to deliver effective health services.

7 Ensure environmental sustainability

Energy production, distribution and consumption has many adverse effects on the local, regional and global environment including indoor, local and regional air pollution, local particulates, land degradation, acidification of land and water, and climate change. Cleaner energy systems are needed to address all of these effects and to contribute to environmental sustainability.

8 Develop a global partnership for development

The World Summit for Sustainable Development called for partnerships between public entities, development agencies, civil society and the private sector to support sustainable development, including the delivery of affordable, reliable and environmentally sustainable energy services.

Source: DFID and UNDP

Preface

Energy must play a more prominent role in strategies to achieve the Millennium Development Goals (MDGs). Consumption of modern energy services by the poor falls far short of needs – and potential. Today's situation, this report argues, "entrenches poverty, constrains the delivery of social services, limits opportunities for women, and erodes environmental sustainability at the local, national and global levels." International experience gives guidance as to what can successfully be done to provide much wider access to energy services for poor people. This report entitled "The Energy Challenge for Achieving the Millennium Development Goals" is the first by UN-Energy, and presents specific recommendations for linking production and access to energy services to poverty reduction programmes and national MDG strategies and campaigns.

The World Summit on Sustainable Development (WSSD) requested in its Johannesburg Plan of Implementation that a new collaborative mechanism between United Nations agencies, programmes and institutions be formed. In response, UN-Energy was created in 2004 as the principal interagency mechanism in the field of energy. Its purpose is to help ensure coherence in the UN system's multi-disciplinary response to WSSD and to collectively engage non-UN stakeholders. This innovation in the way the UN system works is still in its infancy. We will build a solid basis to realize cooperative approaches, synergies in implementation and efficiency of effort in achieving the objectives as laid out by the UN intergovernmental bodies and as committed to in the recently published UN system report to the 2005 World Summit, "One United Nations-Catalyst for Progress and Change". In this way, we will do our part to improve the management of global issues. We recognize our responsibility to work with accountability across institutional boundaries.

The September 2005 World Summit in New York will give further guidance to enhance the work of the UN system. Following the summit, UN-Energy will focus on its collective contribution to the Commission on Sustainable Development, which in 2006 and 2007 will have energy on its agenda. Our work program presently addresses energy access, particularly in Africa, renewable energy including biomass fuels, energy efficiency, and instruments for policy integration, capacity building and awareness raising at the country level. Taking the opportunity to meet at other events, such as the Energy for Development conference in Noordwijk, the Netherlands, in December 2004, the World Bank Energy Week in March 2005, and the Global Forum on Sustainable Energy in Vienna in May 2005, we will in future develop our engagement with stakeholders.

This report was chosen as our first because of the centrality of providing energy services in the pursuit of the MDGs; a key topic for the international community in this year. The report reflects the insights and experience of participating UN organizations. It was drafted by a team from the World Bank and UNDP, and extensively discussed and commented upon by UN-Energy members before being finalized. We offer it to inform and vitalize dialogue on national and global policy choice, and to support public and private sector investment in energy services to meet the Millennium Development Goals.

Mats Karlsson
Chair, UN-Energy

July 22, 2005

The Energy Challenge for Achieving the Millennium Development Goals

This UN-Energy paper on the importance of energy for achieving the Millennium Development Goals (MDGs)[1] was drafted collectively by the United Nations (UN) agencies, programmes and organizations working in the area of energy, reflecting their insights and expertise.

Currently, the available energy services fail to meet the needs of the poor. Worldwide, 2.4 billion people rely on traditional biomass for cooking and 1.6 billion people do not have access to electricity. This situation entrenches poverty, constrains the delivery of social services, limits opportunities for women, and erodes environmental sustainability at the local, national and global levels. Much greater access to energy services is essential to address this situation and to support the achievement of the MDGs.

The World Summit on Sustainable Development (WSSD) recognized the explicit link between access to energy services and poverty reduction. The Johannesburg Plan of Implementation (JPOI) called for the international community to work together at all levels to improve access to reliable and affordable energy services for sustainable development sufficient to facilitate the achievement of the MDGs[2]. However, governments face serious challenges for improving energy services for the poor, and they need the full financial and institutional support of other stakeholders to produce and deliver more energy.

Main messages

- Energy services such as lighting, heating, cooking, motive power, mechanical power, transport and telecommunications are essential for socio-economic development, since they yield social benefits and support income and employment generation.
- The poor obtain energy services by gaining access to modern fuels, electricity and mechanical power. This access is particularly important for women and girls since they are often the most affected by inadequate energy services.
- Reforms to the energy sector should protect the poor, especially the 1.1 billion people who live on less than $1 per day, and take gender inequalities into account in recognizing that the majority of the poor are women.
- The environmental sustainability of energy supply and consumption should be enhanced to reduce environmental and health hazards. This requires measures that increase energy efficiency, introduce modern technologies for energy production and use, substitute cleaner fuels for polluting fuels, and introduce renewable energy.
- Large amounts of financial resources need to be mobilized for expanding energy investments and services in developing countries. They account for a much larger share of gross domestic product compared to OECD countries. Public sector resources will remain crucial for investing in energy service delivery for the poor due to the private sector's limited appetite for risk in emerging markets.
- The role of energy and the costs of energy services should be factored into overall national economic and social development strategies, including poverty reduction strategies and MDG campaigns, as well as to donor programmes in order to reach development goals. Energy planning must be linked to goals and priorities in other sectors.

[1] The links between energy services and the MDGs are summarized in the inside front cover.

[2] Johannesburg Plan of Implementation, paragraph 9.

1 Purpose of the paper

This UN-Energy paper on the importance of energy for achieving the Millennium Development Goals (MDGs)[3] was drafted collectively by the United Nations (UN) agencies, programmes and organizations working in the area of energy, reflecting their insights and expertise. It forms a contribution to the international discourse surrounding the review of progress made towards the MDGs by representatives of business, government and civil society.

The paper presents messages based on technical analysis from the perspective of the economic and social services that energy helps provide, particularly the services covered by the MDGs. It presents specific recommendations for linking production and access to energy services to poverty reduction programmes and national MDG strategies and campaigns. This builds upon the agreement reached in 2002 at the World Summit on Sustainable Development (WSSD) reflecting the linkages between energy the MDGs that were included in the Johannesburg Plan of Implementation (JPOI).

The term 'energy services' refers to the benefits produced by using energy supplies. These services can be generated from a variety of primary energy sources – oil, gas, coal, renewables. They can be delivered by different energy carriers and systems for the transformation and transportation of energy, ending with the delivery of energy services within the operation and regulation of energy markets. Energy services include lighting, heating, cooking, motive power, mechanical power, transport and telecommunications.

The benefits from providing energy services matter from the viewpoint of human and economic development. Poor people require affordable, accessible and reliable energy services to support their household, economic and social welfare activities. Fuels used traditionally by the poor[4] provide few and low quality energy services – such as basic heating for cooking and limited quality lighting. By contrast good quality heating and lighting, modern fuels[5] and electricity[6] provide mechanical power for agro-processing, refrigeration for clinics, motive power for transport and telecommunications for education and public awareness. These benefits are the reason why providing access by the poor to modern fuels and electricity are important for achieving the MDGs, and they are therefore covered extensively in this paper.

The paper adopts the following outline. Section 2 shows that current levels of energy services fail to support the socioeconomic development of the poor. Section 3 shows that energy has strong links with poverty reduction – through household income, health, education, gender, and the environment. Section 4 describes the various ways in which access to energy services helps achieve the MDGs. Section 5 outlines ways to overcome the challenges for improving energy services for the poor and recommends priority actions to meet these challenges. Section 6 concludes that energy should continue to be discussed at the international level.

2 Current energy services fail to meet the needs of the poor

Worldwide, 2.4 billion people rely on traditional biomass fuels[7] for cooking because they do not have access to modern fuels. Access to cooking fuel is essential for good health. Hundreds of millions of people – mainly women and children – spend several hours daily gathering fuelwood and water, often from considerable distances, for household needs. Because of these demands on their time and energy, women and children are denied opportunities for other endeavours such as economic activities and school attendance, respectively. They also suffer considerable damage to their health, especially respiratory diseases from indoor air pollution, by having to cook indoors on poorly vented stoves.

[3] The links between energy services and the MDGs are summarized in the inside front cover.

[4] Fuels used traditionally by the poor are fuelwood, charcoal, local coal and kerosene in urban areas, and fuelwood, crop residues and dung in rural areas.

[5] Modern fuels include natural gas, liquefied petroleum gas and modern biomass fuels such as ethanol, biodiesel and methanol.

[6] Electricity is generated from depletable energy resources (coal, natural gas, petroleum fuels and geothermal energy) and renewable energy resources (solar, wind, hydropower, biomass).

[7] International Energy Agency. World Energy Outlook 2002. OECD/IEA 2002. Paris

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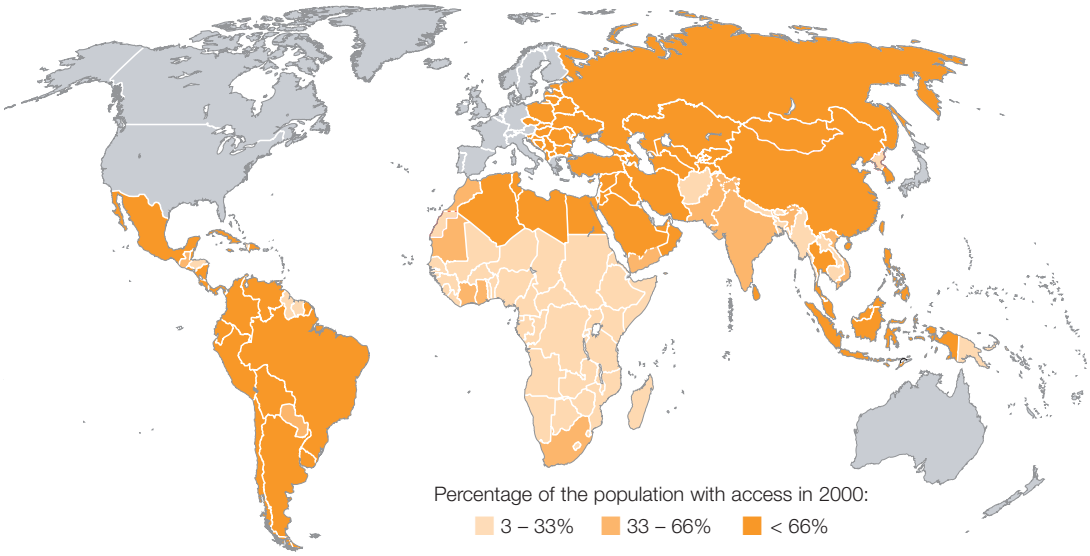
Currently, at least 1.6 billion people do not have access to electricity[8] for lighting, refrigeration, mechanical power, telecommunications and other beneficial uses. So many people lack access even though more than 1 billion people gained access to electricity during the past 25 years. Four out of five people without access to electricity live in rural areas of the developing world, mainly in South Asia and Sub-Saharan Africa (Figure 1). In Sub-Saharan Africa only 8 percent of the rural population has access to electricity, compared with 51 percent of the urban population. Likewise in South Asia, only 30 percent of the rural population has access compared with 68 percent of the urban population. Moreover, under today's policies and investment trends in energy infrastructure, 1.5 billion people will still lack access to electricity in 2030.[9] Hence a major expansion of electricity supply is needed in both the urban and rural areas of these regions.

Poor urban people spend a much greater share of their household income on energy than the share spent by higher income groups. This is because they have smaller and less predictable incomes than higher income groups, and their appliances use fuels much less efficiently. This situation applies particularly to poor households headed by women. Global evidence shows that most expenditure on energy services by poor people is on fuels for cooking, while the remainder is spent on fuels or batteries for light, typically in an 80/20 percent ratio. In general, fuelwood provides heating and cooking for the urban poor at a higher cost than liquified petroleum gas (LPG) used by higher income groups. Likewise, kerosene provides lighting for the urban poor at a higher cost than electricity used by higher income groups. The poor's cost of acquiring energy is increased by having to buy fuelwood, charcoal and kerosene in small amounts because they lack cash resources needed to buy these fuels in larger quantities. Ways to reduce the costs of these services to the poor need to be developed.

Poor rural people also incur a high cost for using energy services. In rural areas where wood is scarce, poor people may pay for fuelwood or shift to less efficient and convenient energy sources such as crop residues or dung for cooking. In resource depleted areas in Sub-Saharan Africa, people spend up to five hours



This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal staus of any territory, or any endorsement or acceptance of such boundaries.

IBRD 31300 MAY 2001

Figure 1. Many People in Developing Countries Lack Electricity.

[8] idem

[9] idem

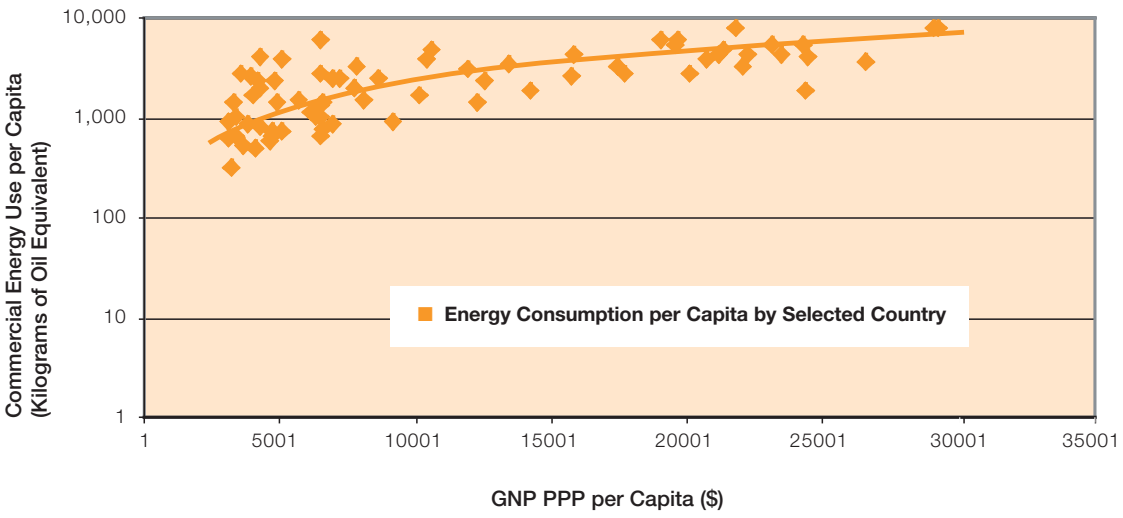
per day on gathering fuelwood. So the traditional fuels used by poor people are not free; instead, they come at a high cost in time and labour. These costs should be recognized in developing policies and priorities for helping the poor.

3 Energy has strong links with poverty reduction – through household income, health, education, gender, and the environment

Energy's links with other sectors are crucial for the economic growth that is central to sustained poverty reduction. This is because energy is central to practically all aspects of sustainable development, including access to water, agricultural and industrial productivity, health care, educational attainment, job creation and climate change impacts. Some 1.1 billion people in the developing world live on less than $1 per day[10]. Affordable, accessible and reliable energy supply is critical for reducing this number of poor people as well as for economic growth. The WSSD recognized the explicit link between access to energy services, poverty reduction and sustainable development.

Energy services are an essential means to support overall development, rather than an end in itself. The demand for energy services, and thus for energy, is derived from the output of other goods and services. Most economic activity is not possible without energy, and no country in modern times has substantially reduced poverty without massively increasing its use of energy. Economic growth creates jobs and raises incomes, even for the small and medium-scale enterprises that are the main source of jobs for the poor. Figure 2 reflects the strong correlation between commercial energy consumption (when expressed in log normal terms) and national income, whereby countries with higher income are also those with higher energy consumption.[11]

By providing energy services from modern fuels and electricity, efforts to improve economic and social develop-



Source: World Bank, World Development Indicators database

Figure 2. Energy Consumption Has a Strong Link with National Income.

[10] Chen, Shaohua and Martin Ravallion. *How have the world's poorest fared since the early 1980s?*. World Bank Policy Research Working Paper 3341. World Bank. 2005. Washington DC.

[11] These are not the only variables that influence each other. Other factors influence each variable.

Source: UNDP Human Development Report 2004 Database

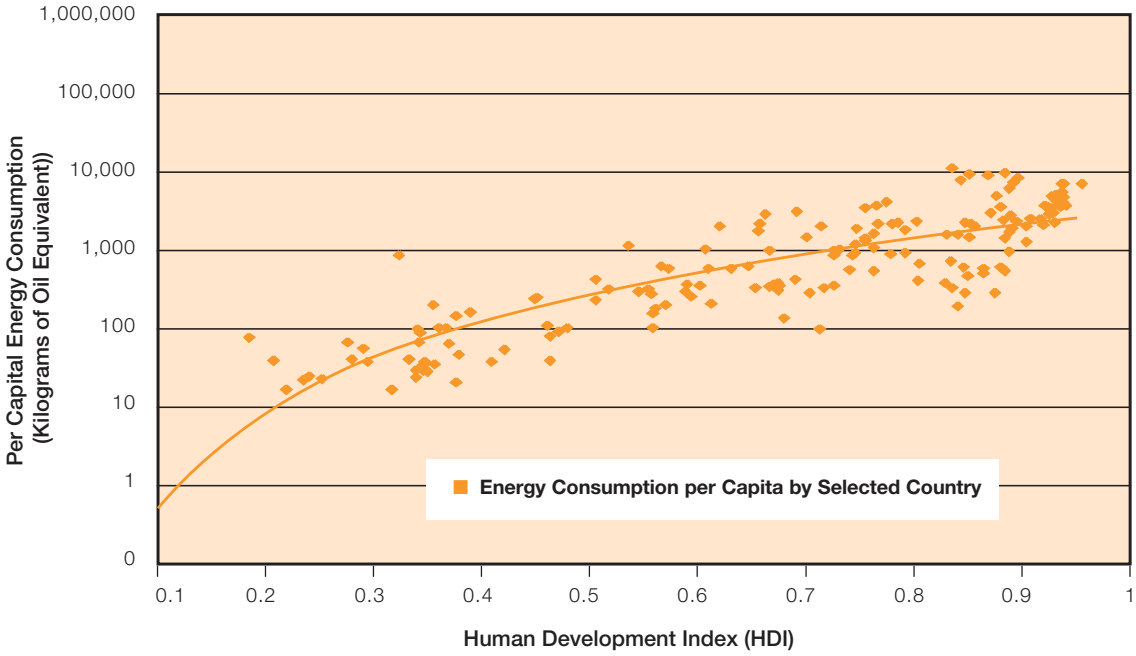


Figure 3. Energy Consumption Has a Strong Link with Human Development.

ment are mutually reinforcing. The use of energy in economic production can improve social welfare, since people are more able to afford health and other social services when they have better paying jobs. In particular, enhanced access to energy services is important for improving agricultural productivity, not just in term of volume of crops grown, but also in post harvest value added activities such as drying, processing, conservation and transport, all of standard of living (income, measured in purchasing power parity terms).

Access to energy services is particularly important for women, given that energy services and technologies are not gender neutral. The lack of modern fuels and electricity reinforce gender inequalities. Most of the poorest households are headed by women. Women and girls are disproportionately burdened