Bridging the funding gap to ensure energy access for the poor

The urgent and the important need

During the last few decades a compelling body of evidence has emerged highlighting the crucial role of energy in human development. In parallel there is increasing understanding about the barriers and the challenges faced around the world in increasing energy access in developing countries, particularly for the poorest sectors of society. Practical Action believes that energy for development is essential and should be urgently attended to. However the real and biggest challenge lies in providing energy access to the poorest sectors of the population; those without capital, capacity, knowledge and influencing power; those whom the private sector may not be interested in engaging with. Therefore international development agencies, donors and governments in poor countries need to make energy access for the poor a priority in their agendas, if they are serious about eradicating poverty and meeting the MDGs

Energy poverty

Energy is critical in providing access to almost all other services including health, education, drinking water, communications, warmth, food production and preparation, transport. Energy can greatly contribute to the enhancement of people's daily economic and social activities; it adds value to production, facilitates access to market and contributes to job creation, recreation and other basic economic and social activities. Energy access, properly planned and delivered, also contributes to balance the work load and benefits between women and men and to improve the health conditions of women and children in particular.

International development organizations such as the UN, World Bank and others acknowledge the strong relation between the MDGs and energy access[1] and often emphasise that the achievement of the MDGs will only be possible if energy access is available. However they also recognise that a large proportion of the world's population confront a situation of energy poverty. The energy-poor lack sufficient choices to access the adequate, affordable, reliable, high quality, safe and environmentally benign energy services they need to support their economic and human development (UNDP and WEC, 2000). Present statistics show that 2 billion people have no access to electricity and nearly 3 billion use biomass for cooking which, for most poor women and especially for the poorest, means huge drudgery, many hours of work to collect wood and increased risks.[2] Likewise, to fulfil their lighting needs poor people without access to electricity currently use extremely poor quality lighting resources (wax candles, kerosene lamps) and, unable to reach any of the subsidies commonly used on electricity access, generally pay more than those people who have access to electricity.

For the above reasons energy access needs to be urgently extended to the poor. In developing countries this will only be possible if governments show the political will to recognise the significance of energy poverty and assign the necessary resources, establish pro-poor financial mechanisms, and develop and implement clear policies on energy access for the poor. Furthermore development agencies, multilateral and bilateral donors must commit sufficient funds to support these developing countries in meeting their objectives on energy access for the poor. Energy poverty should not remain an invisible issue in sustainable development.

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[1] http://www.energyandenvironment.undp.org/undp/indexAction.cfm?module=Library&action=GetFile&DocumentAttachmentID=1010

[2] UNDP, UN, WEC; World Energy Assessment 2000 "Energy and the Challenge of Sustainability", United Nations Development Programme, Bureau of Development Policy, United Nations Plaza, New York, NY 10017

Energy inequities

There are currently massive inequalities in global energy access and consumption. According to the World Energy Council (WEC), the 20 per cent of the world's population who live in industrialized countries - slightly more than one billion people - consume nearly 60 per cent of the world's energy supply. In the other extreme, about 27 per cent of the world's population does not have any access to electricity - only 15 per cent of the population in Africa has electricityi and in South Asia this figure raises to only 40%. In the development world larger towns have generally more and better access than small isolated towns, while isolated villages and communities are neglected due to their limited political weight and engagement with the government or influential politicians.

Electricity consumption also shows large inequalities when comparing countries. In 2003 per capita electricity consumption in the USA was 13,629.8kWh, in Canada 17,209.8kWh and in Norway 23,195.8kWh; while in developing countries such as Cameroon it was 178.2kWh, Guatemala 492.3kWh and Haiti 30.9kWh.

In developing countries inequities cut across, gender, socio-economic and ethnic groups and are reflected in poor households using less energy than wealthier ones and the latter having more choices and capacities to afford modern energy and related appliances which often translates in savings per unit of energy consumed.

Energy for the poor

The world's leaders and decision makers need to bear in mind that 'energy for sustainable development' does not necessarily equate to 'energy access for the poor'. According to the World Energy Outlook a rough estimate of US$ 8 trillion investment is needed between 2006 and 2030 for energy in developing countries. In spite of such monumental investment required, roughly 1.4 billion people will still not have access to electricity and over 2.6 billion people will continue to rely on biomass for cooking and heating.ii

The World Bank foresees a huge funding gap -about half of the funds needed- for energy infrastructure for the period 2005-2030 in developing countries. According to the proposed Clean Energy Investment Framework of the World Bank, the foreseen investment is expected to come mainly from the private investment sector. At the same time, while the investments of its Energy Sector Programme have increased in size over the past years, the allocation of resources for new renewable at large scale grid connected, the support for options that could reach the rural poor are very limited in comparison with its support to conventional energy sources.

The investments of GEF (Global Environment Facility), the most important existing environmental funding mechanism including renewable energies, show how difficult it is to provide energy for the poor, or how low a priority they have. During the period 1991-2006 only US$ 234 million have been invested in projects bellow 15MW. This compares with a portfolio of renewable energies of US$ 851 million and with the total GEF portfolio of US$ 7 billion in that period. Furthermore, in reality an amount like US$ 234 million can only provide around 150,000 new connections[3] serving about 1.25 million people which, compared with the two billion without electricity, is too small to make a significant difference.

While the private sector will definitely be one of the key players in financing energy for development, it is essential to remember that conventional private investors focussing on maximising returns would hardly be attracted by the idea of providing energy access for the poor - unless subsidies or other financial incentives are in place and unless clear policies on tariffs and risks are set in advance. However large subsidies,

[3] The cost of new connection to electricity varies from country to country, but most case studies report costs over US$ US$ 1200, sometimes three of four times this figure.

especially to cover running costs for energy services, may harm the weak economies of developing countries and especially the economies of the poorest. Therefore besides the existing funding mechanisms, other innovative mechanisms are required which can attract different sources of capital, which are specifically targeted to address energy access for the poor, and which will not stress the economies of poor countries even further.

Practical Action believes that besides the conventional involvement of the private sector in the energy business, there is a good opportunity for the mobilization of small private resources and local capital towards increasing energy access for the poor. We consider that the private sector is also constituted by small farmers, business peasants and local traders, who are looking for investment opportunities in small local businesses. If a level playing field existed, they could also consider the potential business opportunities of energy supply, and they could reach the poor and the isolated more effectively than conventional private energy investors or the government. However the mobilization of such local capital can only be possible with strong and long term commitment from governments and development agencies enshrined in regulations, incentives (subsidies), and support for local capacity and energy literacy amongst energy consumers. Practical Action's long experience in mobilizing small private local capital addressing not only energy access for the poor but also having a positive impact on local development and employment, needs to be considered by the governments present at CSD15 as an example of what can be done to bridge the funding gap faced by the energy access agenda (See Box 1)

Box 1

Mobilising local funds in poor rural areas: The revolving fund for micro-hydropower plants in Peru

This project has been running since 1993 in the Andean region of Peru. It combines the provision of credits with technical assistance and subsidies to make possible the implementation of micro-hydro schemes for electricity generation at village and community levels. The credits range from US$ 10,000 to US$ 50,000 with an interest rate of 10% and a 5 year pay back period. The clients are farmers, local business families, local authorities and groups of organised people who want access to electricity and are committed to install a micro-hydro scheme. Electricity is mainly used for a range of productive uses and/or for village electrification. Practical Action provides the credit and technical assistance for the implementation of the scheme and trains the community on how to manage the electricity businesses. The Inter-American Development Bank (IADB) facilitated the start of that project by providing a soft loan to Practical Action plus part of technical assistance funds of the 6 first years. Presently the technical assistance is funded by a range of individual or small funds from the UK.

With 36 credits awarded to date and the same number of small hydro schemes implemented, the community loans amount to a total of more than US$ 1 million, which have been leveraged to US$ 4 million, making a total investment of US$ 5 million. The leveraged money came from different sources: small amounts of up-front capital of the local investors, government funds and NGOs. All schemes are installed in small remote communities, most without access roads. About 30,000 people have been directly benefited with home electricity connection, and about 100,000 indirectly (through services and businesses run by electricity). More than 300 small enterprises and services have been created including milk chilling, milling, carpentry, ice-making, tools repairs, dental services and others.

This project has successfully mobilized local capital, promoted enterprise development and job creation and has contributed many lessons in the field of rural electrification in Peru. It has also been important to increase understanding about the large list of drawbacks and existing barriers to local capital mobilization, such as the legal status of municipalities which disables them from being recipient of credits, the lack of property titles of people applying for credits, lack of equity and others. The lessons of this project are being considered in the reformulation of the National Rural Electrification policy in Peru.

The energy needs and energy options for the poor

Literature and field experience show that the poor require small amounts of energy to meet their basic energy needs. Modern and/or better energy options for people vary according to location and their capacity to pay. For cooking needs, energy researchers and practitioners agree that for the rural poor in developing countries the most likely option for the foreseeable future is biomass; while for the urban and peri-urban poor switching to gas and liquid fuels is the most likely option. However for lighting, essential health services and some motive power, electricity is the most appropriate energy source, either from the grid or from decentralized renewable energy generation systems.

Based on our experience we believe that access to liquid and gas fuels for cooking is a realistic option for urban areas: these fuels are more efficient and in many cases cheaper than biomass options. Our work with the promotion of LPG in Sudan shows that poor women spend much less time and money on cooking with LPG than they do with charcoal or wood as long as they can purchase the gas bottles and cookers to make this fuel switch (See Box 2). However for rural areas, the promotion of efficient and cleaner stoves (see Box 3) alongside the promotion of sustainable management of existing forest resources, forestation and reforestation, are important and the only way to secure sustainable access to biomass for cooking in the future.

Box 2

Making better options available: Switching to LPG in Kassala, Sudan.

Since 2004 Practical Action has been supporting the local Women Development Association (WDA) in Kassala to implement a credit programme to promote access to LPG for cooking. LPG is cheaper than wood fuel and charcoal in Sudan due to the existing government policy of subsidies and since Sudan is rich in this energy resource. Through this programme the WDA lends money to their members and other families to buy the gas bottles and stoves, thereby overcoming one of most important barriers for the poor to switch to LPG. The WDA fully manages this small credit fund with Practical Action providing the initial capital for the scheme and training the women on the necessary technical, financial and administrative issues. So far more than 1200 women have switched from woodfuel and charcoal to LPG in Kassala.

This experience benefited greatly from the revolving fund system set up previously in Wau Nur and Kadugli. Many women in these poor residential areas (originally IDP camps) were able to switch to cooking with LPG and experienced the difference between using the two fuels. For instance, Amna, who is the president of WDA-Wau Nour, used to make Kisra for the market using firewood as fuel. Her monthly expenditure on firewood was SD 6,000. On switching to LPG her monthly fuel expenditure reduced to SD 1,300, representing a 78.3 % reduction. Additional benefits included no smoke, a cleaner kitchen, shorter cooking time leading to more time for other activities, and increased self-esteem and confidence.

The most appropriate source of electricity for the urban poor is the grid. But for the rural poor, and especially for those more geographically isolated the only viable option for the short and medium term is small decentralized electricity generation systems. (See Box 3)

Box 3

Reaching isolated communities: Small decentralised energy schemes

Practical Action has been working on the design and dissemination of small scale appropriate technology renewable energy generation schemes since the late 1970s. Small hydro schemes ranging from hundreds of Watts to 500 kilowatts, a diversity of turbines, generators controllers and other technologies have been designed and adapted to promote cheaper local production and reliable products. Similar initiatives have been undertaken with improved cook stoves and smoke hoods, and more recently with small wind electricity generation systems and other renewable technologies. In all cases the manufacturing technical know-how is transferred to local manufacturers because most of the locally produced systems cost only a fraction of their equivalents available on the international market. In Nepal, Peru, Sri Lanka and other countries Practical Action has contributed greatly to building the local capacity to design, manufacture, install and run these type of schemes.

A 200W wind machine (see picture) installed as part of a hybrid of 300W wind-solar (PV) system in the village of Luprang in the Himalayas feeds 11 lights in homes using energy efficient CFL bulbs (compact florescent lamps). One of these bulbs uses 8 Watts of power while providing light equivalent to an ordinary 40W incandescent bulb. The 5 houses each have 2 lamps and there is also one street lamp. They can be used for 2-3 hours per day on the basis of the power generated by the renewable system.

Policy recommendations

- Governments and donors need to define specific time-bound targets, allocate resources and define monitoring mechanisms to address energy access for the poor as part of their efforts to achieve the MDGs. Countries like Brazil and China have shown the political will and are succeeding in delivering energy access to the poor.

- Governments, international development agencies and donors need to scale up investments targeted specifically at decentralised renewable energy systems in line with the challenge to limit the expansion of energy poverty which will occur if action is not taken in rural areas. Existing successful examples and expertise around the world should be leveraged.

- Specific support is needed to facilitate the mobilisation of local indigenous funds to contribute to closing the funding gap of energy for the poor. The international financial institutions and donors can play a facilitating role and should support developing countries in this area. The mobilization of these resources would require appropriate mechanisms and enabling institutional and legal frameworks not only at national, but also at local levels.

- Developing countries need to allocate funding and resources to create local capacities and promote energy literacy to ensure the effective involvement of local women and men and their organisations in the energy planning and decision making processes. Capacity and knowledge are the key elements to empower the poor to participate in the energy debate - and in the production, implementation, operation, maintenance and use of local energy infrastructure.

- The most important existing financing mechanisms such as the CDM, the GEF and the new Clean Energy Investment Framework of the World Bank should be regularly assessed against their real impact in addressing energy poverty and ensuring access for the poor. This review process should be inclusive and should result in the modification of procedures and mechanisms in order to enable small and non conventional energy programmes targeted to the poor to receive adequate funding. Likewise the proportion of pro-poor energy investments should increase consistently with the magnitude of the current challenge. This is urgent if the funding gap is to be bridged

- As part of a comprehensive international review on energy for sustainable development by 2010 governments and donors should report on progress made to address the energy access agenda -including progress made by multilateral organisations- specifically in terms of funding for small decentralised solutions, community capacity building, leverage of local indigenous financing and the achievement of national energy access targets.

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i PSIRU (2007) 'Electrifying Africa: Power though the public sector', Public Services International Research Unit, January 2007

¡¡ World Bank (2006) 'An Investment Framework for Clean Energy and Development: A Progress Report', Background paper for World Bank Development Committee Meeting, September 2006, Page 42

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