

CONVERTING WATER INTO WATTS AND WATTS INTO WEALTH

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While reflecting on the Economics of SHP, I am reminded of the famous book *Small is beautiful* written by the Ernest Friedrich Schumacher. He proposed alternatives to bigness mainly through policy prescriptions. At this Himalayan Small Hydropower Summit, we are speaking about the usefulness of small hydro power as an alternative to hydropower dams of Himalayan size.

The benefits of small hydropower stand out distinctly among the sources of renewable energy in terms of cost efficiency and commercial viability. In the wake of soaring energy prices, there is a quest for exploiting alternate sources of energy. The exploitation of renewable sources of energy raises a few issues related to its cost effectiveness and commercial viability. The key issues are:

- 1) Commercial viability;
- 2) High cost of low heads; and
- 3) Local empowerment.

Several institutions across countries do research on the cost effectiveness of producing bio-fuels. According to research findings, at oil prices below \$ 60 per barrel the exploitation of bio-fuel is not a commercially viable alternative source of energy. However, I am sure, the incidence of technical progress and innovative capabilities will soon make deep in-roads into the viable avenues of achieving cost-efficiency in exploiting those sources. In the case of small hydro power, the cost efficiency and commercial viabilities relative to the exploitation of other forms of renewable energy sources are well known.

Financing the installation of small hydro power stations is a critical issue. Here, I would like to draw your attention to UNIDO's efforts in Sudan to implement a few pilot projects to generate electricity from the artificially created irrigation canal structure. I would like to place on record my sincere appreciation to Mr. Arun Kumar who prepared an excellent report on the project, which was highly commended by the government, industrial stakeholders and multilateral organizations. During our presentation of the project to multilateral organizations, industrial stakeholders and government authorities, a question related to the role of multilateral organizations in establishing such power generating sources surfaced. The arguments always pointed to the need for private sector-led initiative in line with the sources of growth being triggered by globalization, privatization and liberalization. We had to convince our partners of the need for multilateral and government interventions in demonstrating the commercial viability in order for the private sector to replicate. There is scope for establishing SHP stations, capable of generating electricity ranging from 30 kw to 1.5 MW in over 100 locations in Sudan on the banks of the Nile river where artificially generated irrigation canal structures exist for exploiting such potential.

The high cost of low heads is yet another issue. Innovation is indeed the effective means to address the issue.

The degree of local empowerment in the use of small hydro power with local billing is critical for using the power for productive use and thereby alleviating poverty.

As a multilateral organization mandated with the task of fostering sustainable industrial development, UNIDO's programmatic accent is on exploiting the sources of renewable energy for productive use. Renewable sources of energy should be used as a growth stimulant, reducing poverty and not casting light on poverty.

Our experience in using power generated by our SHP projects for productive use in India and Tanzania merits attention:

Mankulam 110 kW Micro Hydro power system, Kerala, India

Mankulam Computer Centre

Flour Mill

Wet Grinding Facility

Cold Storage Facility

Kinko Micro Hydro Power Facility, Kinko, Lushoto, Tanzania. 10 kW micro hydro power system.

ICT Kiosk Grain Milling and Grinding Facility

Sugar Cane juice extraction facility

Cold Storage Facility

Building on its experience in this field, UNIDO has developed a rural energy programme aimed at:

- Demonstrating the social and economic viability of the selected energy generating approach;
- Creating sustainable local enterprises that can deliver reliable energy services based on renewable energy technologies; and
- Identifying income-generating activities related to the production/generation and/or use of energy in rural areas.

The beneficiaries of the programme would be the rural poor who would gain access to affordable and reliable energy services both to meet their basic needs (cooking, heating and lighting) and for income generating activities.

It is evident that the approach followed will vary greatly between countries and regions, since the causes for the lack of access to modern energy and the available opportunities differ greatly from one country or region to another. Individual tailor-made packages will have to be designed for different situations. This caveat notwithstanding, the overall approach for formulating a programme at the country level consists of distinct stages:

Stage 1: Determination of suitable pilot locations

Stage 2: Identification of "productive uses" of energy

Stage 3: Development of a comprehensive programme

Depending upon the appropriate energy solutions and opportunities for productive use, an integrated support programme would be developed encompassing well-defined components:

- installation, demonstration and promotion of selected energy technology option(s), with a high degree of local empowerment;
- assistance to local entrepreneurs using renewable energy for productive use; and
- implementation of a package of services that facilitate the processing and marketing of products.

The implementation of such strategy should be accompanied by the establishment of appropriate support networks for rural (micro and small) enterprise development, as well as a solid system for the provision of repair and maintenance services. For this purpose, practical and effective methodologies and tools have been developed by UNIDO with a view to tailoring the business and technical skill development programmes to fit the needs and the absorption capacity of the entrepreneurs and the support institutions. With the improved accessibility of energy resources, these services will help entrepreneurs improve their production processes and management techniques, and increase their prospects for starting up, expanding and diversifying enterprises.

Let us make big aspirations about the potential of small hydro power as a sustainable source of wealth creation and poverty reduction.

With a proper vision and action, we can convert water into power and power into prosperity. Vision without action is a daydream, and action without vision is a nightmare. I am sure that the ideas that transpire at this Summit will create a unique blend of both vision and action in order for us to use small hydropower as an effective source of economic prosperity.