

FUEL FOR THOUGHT

Third World energy in terms of US policy, Down to Earth, June 15, 1993. ©

Fueling Development: Energy Technologies for Developing Countries, U.S. Congress, Office of Technological Assessment, 1992. Price not mentioned.©

Conventional wisdom tells us that one of the most important indicators of the level of development of a society is the quantity and quality of energy consumed by it. One look at the gross disparity in the per capita consumption of energy between the industrialized countries and the developing countries makes this point clear, at least within the established framework to measure development (The United States alone consumes more energy than Africa, Latin America, India and China together!). The debate on the desirability of conventional developmental indicators notwithstanding, it is evident that energy plays a vital role in improving the living standards of the ever increasing population of the developing world.

If energy is a key ingredient in promoting development, then what are the options before a developing country to meet its growing energy needs? Historically, the answer to this has been an increase in the supply of energy with the energy mix being different in different countries. For instance, China has met a growing percentage of its energy needs by indigenously produced coal while India's consumption of oil has been increasing at an alarming rate. But this strategy of increasing supply is clearly not a sustainable one, as the non-oil producing countries realized during the oil crisis. Economically, increasing oil imports lead to a balance of payments crisis for most developing countries, sending them into a debt-trap. Environmentally, greenhouse effect and acid rain are amongst some of the glaring problems associated with an increased burning of fossil fuels. In the face of these financial and environmental constraints, it seems reasonable to assume that conservation and the use of energy efficient technologies is certainly an option to be considered.

The book under review is a detailed study of this particular option. It is a document prepared by the Office of Technology Assessment, a division of the U.S. Congress, on request from several committees of the U.S. Congress and Senate. It seeks to bring together a lot of empirical studies in various developing countries in a unified analytic framework to assist policy-makers in the United States.

After laying down the analytic framework for the study, an overview of the issues is presented. Energy use, supply of energy, and the trends in energy demand are discussed. Some of the facts presented are absolutely astonishing and serve to underline the extreme importance of energy in the economic life of a nation. For instance, India spent more than 30% of its total Public Investment on Energy alone in the early eighties. Or that annual power sector investments would have to be a whopping \$125 Billion annually to provide adequate supplies in the developing countries. Interestingly, there is also a discussion of

energy and economic growth. The fact that even today, the single largest source of energy in developing countries is biomass, the nexus of energy and traditional economy is also explored. Unfortunately, though there seems to be an awareness on the part of the authors to be sensitive to such extremely important subjects like inequities in resource distribution, access to resources and the role of women and children, the whole matter is treated too briefly to be of any great use.

The bulk of the Report is taken up by a detailed analysis of energy use and related subjects. Energy use in developing countries is looked at sectorally; residential and commercial, industrial and agriculture, and transport. In each of these sectors there are very significant issues (not all of them technical) which are discussed in some detail. In the residential and commercial sector, the fact that there is usually consumer resistance to the purchase of energy efficient appliances is explored. Here one of the crucial determinants is the higher initial costs of the appliance to which the consumer is very sensitive. Given that the system wide costs of energy inefficient appliances are significantly more (because of increased power generation costs), the policy options which would encourage efficient appliances need to be thought. The technologies already commercially available can result in a tremendous saving in generation costs, but pointed intervention in terms of incentives and disincentives need to be put in place.

Though at the present moment the transport sector consumes the least amount of energy (amongst the three sectors) in developing countries, increased urbanization and the integration of the rural areas to urban centers, will make this sector to be one of high growth. There is also the important consideration that in most developing countries, bulk of the oil consumption is in this sector. Since oil is mostly imported, the demand in this sector can have devastating implications for the balance of payments situation of most countries. The Report discusses energy efficiency in the transport sector and makes a very strong case for controlling unplanned urbanization. It also argues for modal shifts in urban transport, from personalized cars and two wheelers to busses and mass transit systems. The Report evaluates the various programs in place around the world, like Brazil's ethanol conversion program (which unfortunately seems to be running into trouble). There are important lessons to be learnt from this section for India. In the last decade we have seen a phenomenal growth in two and three wheelers so much so that now their share of petrol consumption is about 50%! Given the inefficiency of their two stroke engines and the high emissions caused by them, there is certainly some rethinking required on the desirability of filling it and forgetting it!

Whether it is natural gas or wind turbines, the Alternative technologies and fuels are going to be of vital importance to energy starved developing countries. Thus there is need to invest

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in the commercial development of these options. Even though the initial capital cost of some of these technologies is high, the savings over time could well make them worth it. For instance, in a remote community in the Dominican Republic, photovoltaics cells (solar cells) supply all of the residential requirements, thus obviating the need for setting up power distribution network. Ethanol manufacturing, more efficient biomass use, microhydro power and wind turbine technologies are some of the other technologies which the Report elaborates.

Why is the percentage of cyclists to the bus travellers in Beijing important to the U.S. Congress? Here the Report is refreshingly candid in laying out the motives behind such a study. It clearly states "...that energy needs (of developing countries) directly relates to a number of U.S. policy concerns". These include international political and financial stability, trade and competitiveness, environmental issues and humanitarian grounds. The motive behind it notwithstanding, this is a very professional document. There is a lot of information which is very well presented. The information is collated from a vast variety of sources and this is both a strength and a weakness of the Report. Strength because it allows a sensitivity towards local detail which is usually not possible in a single author work. On the other hand, there is a certain unevenness and incompleteness in statistics which is somewhat annoying. On the whole, this is an extremely useful document, both for its scope and its details about a topic which is just beginning to catch the attention of policy planners.

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