"Towards A Comprehensive National Energy Policy"

CHIBUZO N. NWOKE

Nigerian Forum, March-April 1987, Nos 3&4

Man, as a tool-maker, has always depended on energy as his tool-mover. Like the basic needs of shelter, food, clean air and water, benign forms of energy are a necessity of modern life. Without ample energy, our industry and commerce would come to a grinding halt; and modern civilization will cease to exist. Energy thus plays a crucial role in the process of economic growth and development in all nations. In fact, to some people, the r-ate of per capita energy consumption is an acceptable index of the level of national advancement. The problems of scarcity of sources of energy supply, its relative price, the exhaustion of non-renewable sources of energy, and the development of alternative energy forms have therefore become crucial inputs into the long-term strategic planning of nations, developed and underdeveloped, that wish to survive.

This paper concerns the energy problem and policy options of Nigeria, a Third World oil-exporting country. Appreciating that energy is an international good, two background developments, which describe the position of the Third World in the world energy economy, are worthy of note.

First, the developed countries together, with about 30 percent of the world population, consume as much as 85 percent of the world's energy. Their average per capita energy consumption was 6000 kg of coal equivalent in the 1970s. In contrast, the Third World, accounting for 70 percent of the world population, consumes only 17 percent of the world's energy, with an average per capita consumption of less than 500 kg of coal equivalent, i.e., less than 10 percent of the consumption of developed countries. Such an asym-metric distribution of energy consumption raises a number of questions pertinent to a rational Third World energy policy.

Second, and perhaps of greater significance for policy formulation, is the difference between the volume of use and output of energy in the developed and underdeveloped countries. Since 1950, there has been a fundamental change in the levels of output and use of energy in the -developed and underdeveloped countries. While in 1950, the developed countries were nearly self-sufficient in the output and use of energy, at about 1900 million tons of coal equivalent (mtce), in a quarter of a century thereafter, their energy use rose to 4800 mtce, i.e., about three times the 1950 level. But their own output of energy increased by only 1400 mtce, thus creating a gap between their use and domestic output of some 1500 mtce. The deficit, which has continued to widen, is currently being filled through their imports of energy supplies mostly from Third World countries.

At the same time, as the dependence of the advanced countries was evolving, a new trend was developing in the energy scene of the Third World, where energy use rose from 140 mtce in 1950 to 750 mtce in 1974, and where output rose from 350 mtce to 2,800 mtce. Thus, over two thirds of its energy output was surplus, destined to fill the gap in energy: requirements, mainly of oil, of the developed countries. ; While this phenomenal rise in energy output may be seen as a major advance in Third World's productive capacity, it must be understood that there is no other sector where the distinction between geographical location of output and control of production is as crucial as in the energy sector. In this critical area, the entire production process, from discovery of oil to its delivery to the final consumer, is in the control of giant transnational corporations from the West. Only a few years ago, Third World countries had no control over exploration, production, transportation, refining and distribution of their oil. And even today, their control of the key elements in these operations is only nominal. Their capability to formulate policies that would respond to their individual and group interests is therefore severely limited.

Even though the advanced countries have been the most voracious consumers of the world's energy resources, the use of energy (especially oil) by Third World countries in the near future (2000) may be as high, and perhaps higher than, that of the advanced countries today. However, it is probable that by the time Third World countries reach the stage of accelerated development, the advanced countries may in fact have used up the Third World's economically exploitable non-renewable energy reserves, thus denying Third World countries the use of what is primarily their own major resource. As a result, there will simply not be enough energy to promote the Third World's growth. This gloomy prospect constitutes the critical Third World energy problem today, and it calls for a most careful assessment of new policies.

At the national level, the objective of policy is to solve the energy problem as conceptualised. An energy policy should be long-term, involving a conscious and systematic selection of an appropriate pattern of energy development and consumption, considering the availability of resources and the nation's energy requirement. In the final analysis, the ultimate objective is to provide relatively cheap energy at present and to guarantee its continous availability for the needs of future generations.

Nigeria has an energy problem. Constant power failures, petrol, kerosene and cooking gas shortages are a continual feature of the ordinary Nigerians life. Those in the rural areas especially face firewood and charcoal scarcity. Social and industrial infrastructures constantly face electric power shortages, a disruption that often has disastrous consequences. And yet, Nigeria is more than averagely endowed with energy resources. Our abundant endowments include oil, coal, natural gas, rivers (for hydroelectric power), forests (for woodfuel), and .solar energy from the sun. The problem of energy scarcity in the Nigerian economy is therefore not due to lack of primary natural resources but due to structural shortcomings of the energy sector, a situation which calls for a comprehensive national energy policy now.

As an oil-exporting country, Nigeria needs to formulate a comprehensive energy policy, in view of the recent claims that the world will soon (by the year 2000) run out of oil if the present phenomenal rate of consumption continues. Our response to this impending situation must be to formulate a programme of national energy independence. However, what we have at present does not amount to a comprehensive energy policy, even though there are many energy-related projects accommodated in our various national development plans. Let me illustrate briefly with a few examples.

First, with respect to crude oil production, throughout the development plan periods, the central policy that has governed the sector has been that of maximum production for export. True, the government has managed to acquire nominal participatory interests in foreign oil companies, a few refineries have been built, and a national oil company (NNPC) and a Petroleum Training Institute have been established. But beyond these measures, the oil industry is still marked by the policy of production for export, by the dominant influence of foreign oil companies, and by government's planlessness. There is a glaring lack of a conservation policy in the management of oil, and a similar lack of restraint in our internal consumption of oil.

Second, with respect to natural gas, (both associated and non-associated), the country's estimated reserves stand at over 140 billion cubic feet. This potential constitutes a possible major transitional energy resource until when more nonconventional energy resources, such as uranium and solar energy, are developed. And yet, almost 90 percent of our gas is wastefully flared, an amount whose energy content is said to be equivalent to two times the amount of petroleum products consumed in the country! Even though the local utilization of our natural gas will alleviate some of the present burden on petroleum as an energy source, the official position at present seems to be that the country's natural gas be exploited for export.

Third, with respect to wood-fuel, it is the main source of energy (for cooking) for the majority of Nigerians who live in the rural areas. However, its increasing use has resulted in deforestation, which has accelerated soil erosion and desert encroachment. The challenge for policy is to regenerate forests while still providing wood-fuel to rural dwellers who are often too poor to afford to buy kerosene or more sophisticated cooking gadgets.

Fourth, with respect to electricity, inpsite of the phenomenal growth rate of electric energy consumption in Nigeria, per capita consumption in the country is lower than that of many African countries. Electricity reaches less than 10 percent of the total Nigerian population. The country's power shortfall is expected to reach 21,000 mw by 1990. And yet electricity is central in overall energy development of the nation. The present power shortage results in an estimated net economic loss of nearly N1 billion per year! Policy has been directed at the development and expansion of coal and hydro-generated electricity, which, however, are known to cost more than natural gas-fired electricity plants.

Fifth, with regard to hydro-power, this is a very important source of energy for electricity generation. The country is known to have about 32 potential sites for hydro-electric generation from dams, with an estimated capacity of over 9000 mwe. However, at present, only about 10 percent of this estimated potential is being utilized.

In sum, Nigria's resource base is wide and varied. And yet, the country lacks a comprehensive energy policy despite its energy problem, which is apparent. What there is by way of policy are simply isolated directives in the various subsections of the energy sector. Policy does not seem to be informed by the prevailing anticipation of global energy supply shortages, or by the strategic need to ensure national energy independence, efficiency in energy allocation, and minimization of waste of energy resource. Against that background, I want to finally suggest some elements of a future national energy policy:

1. There is a need to develop and nurture manpower resources and an institutional base to cope with complex energy matters, such as project selection, energy financing and investment, as well as monitoring the performance of existing energy policies.
2. We must intensify research and development efforts on both conventional and non-conventional forms of energy. The establishment of a national energy data bank and an effective national energy information system are also necessary for planning purposes.
3. The country must immediately begin to adopt some form of energy conservation measures, appreciating that petroleum and other fossil fuels are exhaustible. Our future industrial projects must be undertaken only after a proper analysis of the type and availability of energy required. There should also be standards established for cars and trucks assembled in, or imported into, the country as to their fuel consumption, and plans must be made to shift from the wi4ely used energy - intensive personal cars to more efficient public transportation systems, such as buses, waterways and railways.
4. Since petroleum, our dominant energy source today, is exhaustible, this calls for a radical shift in policy, from simply producing oil for export to increasingly processing the country's consumption of all petroleum products, with a view to meeting the energy requirements of projects, such as the petro-chemical venture, which are fundamental to our industrial and agricultural development.
5. We must immediately implement measures for the efficient local utilization of our natural gas resources. **In** order to stop wanton waste of our natural gas, an important input into the nitrogenous fertilizer project, the 1980 reinjection laws should be strictly enforced and the official position to export the country's natural gas should be reconsidered.
6. According to NEPA, lack of maintenance of its equipment is one serious problem affecting its operation. Also, there are no standards established to regulate type of electrical and electronic gadgets imported into the country, with the result that out-moded power-consuming mechanisms

have flooded the country. This reckless situation must be checked immediately. We need to improve our technical and management methods of electricity production and delivery, and to import necessary spare parts which we cannot produce locally, while planning to begin to produce them locally soon.

7. **In** order to solve the urgent problem of deforestation, we need to implement a programme of reforestation to replenish the depleted forest reserves and to increase the supply of wood-fuel and combat the related problems of soil erosion and desert encroachment.
8. Nigeria, being a tropical country, has great potentials for renewable energy, such as solar and biomass resources. Since the rural areas are faced with the problem of lack of wood-fuel and high cost of natural gas and kerosene, a national energy policy should employ our renewable resources for meeting the energy needs of rural areas. Serious research should be encouraged in this direction with a view to popularising the application of renewable energy resources.
9. These are a few of the important elements that would go into the formulation of a comprehensive national energy policy. These elements must be applied as an integrated package to systematically deal with Nigeria's energy problem.