

An unprecedented energy crisis besets our world. Crude petroleum prices have hit over \$70 per barrel and credible international organisations forecast further increases.

The crisis has winners and losers. Oil company profits have soared, but non-oil developing countries, especially in Africa, have lost out badly. The environment – local, regional, and global – is a big loser too, because there will be more oil drilling, including in areas designated as wildlife sanctuaries and natural world heritage sites. High energy prices accelerate the pace of forest destruction and environmental degradation in most African countries, as households increase their charcoal and fuel wood use. When the environment loses, our planet loses, everyone loses.

Grasping *the Nettle*

MERSIE EJIGU describes the opportunity provided by biofuels for attaining development and energy security in Africa

Society needs energy to survive. The food we eat, the clothes we wear, our mobility – in a word, our livelihood – depend on it. Developed countries may have the capacity to avert the energy crisis, but this is limited or non-existent in non-oil developing countries, especially in Africa. They have to face its huge impact. Africa accounts for 3 per cent of the world's modern energy consumption – the lowest per capita share of any continent, and just half the world average. Yet it has to bear the heavier burden of high energy costs. In many African countries these breed social grievances and political tensions, create conditions for political instability, hamper efforts to reduce poverty, widen income disparity, halt the transition from subsistence to commercial economy, and force women to spend more time gathering wood and less time participating in social programmes and being economically productive.

Missed opportunities

William Shakespeare once said, "Out of this nettle, 'danger,' we pluck this flower, 'safety'". Historically, crises of the magnitude brought by high energy costs have had two diametrically opposite impacts. Huge cost increases have caused huge human suffering. Yet crises have also offered opportunities for innovation and the emergence of new products and processes. Africa has missed opportunities offered by the energy and drought crises of the past three decades. Now it is left with no choice but to seize the one created by the present energy shock.

Success in creating an 'opportunity' from a 'crisis' depends



upon institutional capacity and human resources. Though these may need strengthening in some areas, many African countries have enough of both to turn the crisis to their advantage. Only political will is needed.

Energy consumption

Africa is endowed with huge amounts of renewable energy. It has the highest average amount of solar radiation each year in the world: 95 per cent of the daily global winter sunshine above 6.5 kWh/m² falls on Africa. Its hydropower and geothermal power remain untapped – only 7 per cent of the hydraulic and 0.6 per cent of the geothermal energy potential is exploited. Reducing electricity wastage (11.3 per cent compared to the world's average of 9.2 per cent) also offers great potential.

As for consumption, many African countries derive over 90 per cent of their household energy from biomass, such as wood, charcoal, and animal and crop residues. This has a low end-use efficiency: a high concentration of these traditional fuels is needed just to produce a low level of energy. Wood, including charcoal, is perhaps the most environmentally detrimental biomass energy resource. The environmental and health concerns of Africa's biomass-based energy consumption are compounded by the world's highest leaded fuel consumption. Twenty-two of the 49 countries in sub-Saharan Africa only use leaded fuel, with 13 solely using unleaded and 14 with a dual system.

Africa must shift from traditional to modern sources of energy, improve conservation, harness its largely untapped ►



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renewable energy potential, and reduce dependence on fossil fuels.

Our first effort must focus on developing a comprehensive energy strategy that includes a clearly stated investment and macroeconomic policy direction and addresses all the key issues – production, trade, consumption, and research and investment in renewable energy. This must be fully integrated into national development strategies, such as ones for reducing poverty.

Second, investment in biomass must be substantially increased. As the primary source of household energy, it deserves better recognition and greater investment. This could, for example, involve increased tree planting by households, communities and governments. In most African countries, years of land degradation and deforestation have resulted in reduced vegetation cover, soil nutrient depletion, and dwindling biomass density. Indeed, investment in tree plantation is cheap, as planting can easily and routinely be done. Yet, it offers quick and high investment returns, helps curtail environmental degradation, and mitigates climate change through expanding carbon sequestration. At the same time, efficient use of energy by households must be promoted: reducing energy wastage

here through providing energy saving technologies is a vital component of the new renewable energy revolution.

Third, equally important, is to promote investment in biofuels – liquid transportation fuels derived from such plants as grass, sugar cane, corn, palm oil, rapeseed, and castor seeds. Biofuels substitute for expensive petroleum and are biodegradable and non-toxic. They replace lead to enhance octane rating. They increase farm income, create jobs and offer the least-cost way of attaining energy security. They burn more cleanly, with lower emissions than fossil fuels. They help curtail environmental degradation and mitigate climate change through expanding carbon sequestration. And they reduce dependence on expensive imports while diversifying, broadening and augmenting exports. There is considerable potential for extensive adaptation and use of biofuels through increasing investment in growing trees and bushes that can produce them. Africa, of course, is a food-deficit continent, and so it is important to ensure that producing biofuels avoids competition with food sector production. Biofuel technology is fast expanding towards non-food crops, and towards soil-enriching, high-yielding, less moisture-requiring, and more energy-efficient plants.

Renewable energy

Fourth and last, we must establish market and fiscal policies that promote renewable energies, stimulate private/public partnerships, and develop markets that consumers can easily access to obtain the renewable energy resources and services they need.

The livelihoods of many Africans are already threatened by environmental and energy scarcity arising from land degradation and deforestation. High crude petroleum prices, combined with Africa's heavy dependence on biomass energy, imply further deterioration in living standards and, perhaps, the breakdown of the social fabric. Yet, despite the human suffering it has caused, the energy crisis offers us a huge opportunity to rethink and redesign energy policies.

The new energy policy should be comprehensive and environmentally sustainable, encouraging public, private, community and farmer level investment in renewable energy sources, and, particularly, in reforestation and biofuels. It should not be a stand-alone policy, but an integral part and priority of the national development policy, the national poverty reduction strategy and trade policy. Indeed, reforestation and biofuel production are development imperatives that create possibilities to improve the quality of life, raise rural incomes, create jobs and improve the local and global climate. And everyone – poor and rich, young and old, men and women – can be mobilized to plant trees and produce biofuels, thereby contributing substantially to attaining energy security, and sustainable peace and development ■

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