Sustainable Energy Equals Freedoms + Choice: Bioenergy and Biofuels as Energy Solutions

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First, let me express my profound gratitude to the organizers, the UN Foundation and the German NGO Forum on Environment and Development for inviting me to participate and speak at this august gathering. It is indeed a huge privilege for me to have the opportunity to do so.

We are gathered here to explore the potential of modern bioenergy and discuss ways and means of promoting its wider production and investment. Our primary goal is the attainment of human development – development that is sustainable and balances economic growth, social equity and environmental protection.

Well, Amartya Sen, the Nobel Laureate in Economics, defines development as "the process of expanding real freedoms people can enjoy." Where development has taken place, people have more freedoms. People living in well developed countries enjoy freedoms at the individual and community levels. They can move from place to place, own property, receive education and health services, work at night if they choose to, etc. without any fear or threat.

Development and augmenting freedoms mean increasing the range of choices that citizens enjoy. People in developed countries have greater choices in terms of what they eat, dress, means of transport, when and where to move, in terms of schools, health services, workplace, etc. On the other hand, countries that are less developed have limited choices. A large percentage of the population in these countries suffers from malnutrition, disease, illiteracy, as well as from inadequate and unhealthy access to energy.

Professor Sen argues that development "requires removing sources of unfreedoms: poverty, tyranny, social and economic deprivation." The lack of access to clean, adequate and affordable energy can be included to Prof. Sen's list of un-freedoms. The food we eat, the clothes we wear, our mobility from one place to the other, in a word our livelihood, depends on energy. The lack of access to energy means the lack of access to food and shelter. It also means the lack of access to health and education services, and inability to move from place to place. Thus, the lack of access to energy can be equated to a state of slavery and economic and social deprivation.

Energy is critical to the survival of human society. It is a means to achieve development, hence freedoms. Higher level of electrification, for example, has always been a vital indicator of industrial development.

Energy is not only a means but also an end in itself. Indeed, access to energy is a fundamental human right. I don't have to wait for daylight to see you, talk to you, listen to you, and to do work. Access to energy and access to light is, indeed, a basic human necessity and a right every citizen should enjoy.

Our world is going through an unprecedented energy crisis. The price of crude oil, which was under $25/barrel in September 2003 rose to $60/barrel a year later and reached $78.40 per barrel in July 2006. Without adjusting for inflation and seasonality, these figures suggest that energy prices rose by roughly 300 percent. The turbulence in the Middle East, the war in Iraq, Iran's nuclear program, political problems in West Africa, high oil demand in China and India are often cited as the causes. Despite the absence of changes in these factors, recently, we are witnessing a decline in oil prices. The obvious truth is that energy derived from oil is heavily regulated through production or price controls. Hence, heavy dependence on oil is a source of unfreedom.

There are winners and losers in the energy crisis. For example, the profit of the big oil companies is widely reported to have surged to historically unprecedented high levels. But there are clearly two big losers: the environment and the poor in developing countries, especially those in Africa. The environment at all levels: local, regional, and global – is a big loser because there is more oil drilling including in areas where drilling, was not commercially feasible and in areas designated as wildlife sanctuaries and natural world heritage sites. In most African countries, high energy prices accelerate the pace of forest/environmental degradation as households increase the use of charcoal and fuel wood. When the environment loses, there are actually no winners. Everybody losses. Environmental loss is a source of unfreedom.

The energy crisis affects the rich and poor differently. Developed countries have the capacity to cope with the high energy crisis. On the other hand, non-oil developing countries, especially those in Africa, have limited or no such capacity and have to face the huge impact across sectors and social groups. For example, Africa accounts for 3% of the world's energy consumption- the lowest per capita modern energy consumption in the world; yet, the heavier burden of high energy costs falls on it. In many African countries, high energy costs breed social grievances, increase political tensions, hamper efforts to reduce poverty, widen income disparity, halt the transition from subsistence to commercial economy, force women to spend more time gathering wood and less time participating in social programs and being economically productive.

Last January, the first democratically elected woman president in Africa, Ellen Johsnon Sirleaf of Liberia, assumed power. The day marked a new beginning for Liberians after 25 years of political turmoil and civil war triggered by the high oil prices of the late 1970s. Thus, high energy prices have the potential to cause political instability, frustrate democratic processes, heighten repression and tyranny, disintegrate social system, and ecological integrity. In a word, high energy prices increase unfreedoms.

For example, Africa depends heavily on biomass energy (firewood, agricultural residues, animal wastes, and charcoal). Over 90 percent of the household energy in Sub-Saharan

Africa is derived from these traditional fuels. End-use efficiency for these fuels is also low. There is also high energy wastage associated with the use of traditional technology, for example, stoves. Further, wood and charcoal, are perhaps the most environmentally detrimental biomass energy resource. Today, deforestation, land degradation and the consequent environmental and energy scarcity threaten livelihoods of many Africans. So, dependence on traditional biomass is unfreedom.

Energy paradigmatic shift – which way now?

There is clearly a need to make a paradigmatic shift in the way energy is produced and consumed. That paradigmatic shift involves gradually shifting from fossil fuels to renewable sources of energy. Bioenergy, hydropower, solar, and wind energy fall in the category of renewables. A country should explore and exploit all economically, socially and environmentally feasible energy sources. Bioenergy is an option, with huge potential that merits priority attention and focus. For example, hydropower once thought to be the most dependable and least cost is no longer reliable because of recurrent drought and consequent water volumes decline. This has required the promotion and development of cogeneration technologies.

Bioenergy represents a modern, efficient, and least cost use of biomass. Biofuel/ biodiesel, on the other hand, refer to liquid ethanol and diesel as well as gas derived from plants and agricultural crops used for cooking, transportation, and lighting. It is biodegradable. Production of biofuels is based on widely growing plants and agricultural crops and uses easily transferable and adaptable technologies. Development of bioenergy benefits a large segment of the rural population. It helps meet poverty reduction, environmental regeneration and climate change mitigation targets.

Bioenergy is clearly becoming a fast growing sector. It is heartening to see a rapid development in the promotion and production of biofuels. There are so many biofuels conferences going on through out the world, and invitations have crowded my inbox. Some countries are also in the process of developing national bioenergy policy. There are also a few large scale biofuels investment projects signed, for example in the Philippines. In some other countries, investors are moving in fast and have caught governments unprepared. On the other hand, sustainability of the bioenegy program requires that it be based not on available technologies but on best practices, best technologies and also on energy and cost efficient biofuels feedstock, which is not the case now.

Indeed, biofuels have the potential to be environmentally destructive if not based on the right feedstock. They have also the potential to marginalize the poor, deepen poverty, and frustrate the attainment of MDGs, if not well strategized.

While the prospects for a viable biofuels production and trade program are bright, it faces economic, technological, and environmental challenges. Biofuels need to be price competitive with petrol and affordable. Bioenergy should also help regenerate the environment instead of depleting it and avoid competition with the food sector.

At the end of the day, it is economics that matters. It is important to raise the productivity (yield per hectare) and energy efficiency (energy output per unit of input) of biofuels feedstock.

The primary biofuels feedstock of today, notably, sugar cane, jatropha, corn, oilseeds, palm oil, sweet sorghum, and cassava have varying productivity, energy and cost efficiency. We have been told that in Brazil, research and technological improvements have helped to reduce sugar cane ethanol production cost to 20 US cents per litre. This is good news. The bad news is that a majority of the population in developing countries cannot afford 20 US cents a litre. There is a need to expand research in the other biofuel crops, including genetically modifying them to reduce the land and energy requirement in the production of biofuels.

How do we move forward?

Undoubtedly, bioenergy has the potential to make a huge positive difference in the economic, social, political, and environmental well being of nations. Making this a reality requires building the bioenergy program on three pillars:

The first pillar is **policy development**. Current national energy policies of many developing countries mention biofuels only as a passing remark. The formulation of a national bioenergy strategy and policy should be given high priority. We should take a long term and strategic of the development of bioenergy that will keep us moving regardless of what happens to oil prices. The private sector is ultimately the engine of production and trade. But it can be fully engaged if there is a clearly stated policy and if a government is able to create an enabling and attractive investment climate.

The new bioenergy strategy or policy should be made an integral of the national poverty reduction strategy. Today, the international development community is fully behind national poverty reduction strategies and the attainment of the MDGs. The bioenergy strategy merits the unequivocal support of the global development community.

The bioenergy policy / strategy should also carry the full political commitment of the leadership. Such political commitment need to be a accompanied by a biofuels production target. For example, the Draft EU Guidelines on biofuels has set a target of 5.75 percent as the minimum amount of biofuels sold for transport as percent of petrol and diesel sold by 2010[1]. Countries, which do not yet have such targets, could draw lessons from EU and other countries consider adopting this figure as a possible initial target.

The second pillar of the bioenergy initiative is **awareness raising focused capacity development**. A month ago, one African minister of energy told me that because there is lack of awareness regarding the potential of biofuels by parliamentarians, issuing the bioenergy strategy and policy can take years, even if it is done well at the technical level. This suggests that the formulation of policies and awareness raising need to go hand in hand.

[1] See, http://www.dft.gov.uk/stellent/groups/dft_roads/documents/pdf/dft_roads_pdf_506835.pdf

Awareness building is often associated with posters, banners, TV & Radio, brochures, News Papers, street pole advertisements. But there is need to go beyond these. There is need to facilitate information exchange among institutions including organizing study tours to countries within Africa, Asia, Latin America where production of biofuels has advanced.

Beyond awareness and education, there is the issue of capacity for formulating and implementing the bioenergy strategy. In many developing countries, such capacity is there, say at the ministry of energy, finance and planning, agriculture and industry. But that capacity needs to be mobilized, strengthened in some areas, retained and tasks reprioritized. Relying on own capacity, as opposed to being driven by the expatriate sector, would help the bioenergy process to be sustainable.

The third pillar is **strengthening and expanding research.** The research agenda should be adaptive and multidisciplinary. It needs to focus on improving the range and quality of biofuels feedstock with the view to ensuring environmental sustainability, avoiding competition with the food sector, improving price competitiveness and energy efficiency. There is also a need to diversify and expand crops and plant sources of biofuels suited for different agro-ecological zones. For arid and semi- arid areas, there is need to base the production of biofuels on soil enriching and less water requiring plants.

Again on research, cellulostic production of biofuels needs to be a short to medium term agenda, not a long term one. It could include: assessing existing technologies and determining suitability to local conditions. The research program should also enhance research and policy link and facilitate access to research done in other countries.

In conclusion, I must say that the potential for bioenergy is clearly huge. The economic, social, and environmental benefits are strong. But there are challenges, which require efforts in the three areas I mentioned: policy development, capacity building, and research.
I must also say that local biofuels activities need to be part of a global program. The bioenergy program needs to be anchored in a multidimensional, multisectoral and multilevel approach that promotes the production, investment, and trade at the national, regional, and global levels.

The UNFAO, UNCTAD, UNDP, UNIDO, UNEP, the World Bank, and regional banks have launched bioenergy programs of some sort that needs to be coordinated. Importance need to be given, if not done so far, to developing international regulatory frameworks and code of conduct in the production of bioenergy. And this can be done better at the global level by these organizations.

Lastly, if development is expanding freedoms, choice and empowerment, bioenergy and biofuels are not only energy but development solutions. Bioenergy is a development imperative.

Thank you.