

Inequity in the energy sector and the need for a pro poor energy policy

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Energy services are vital in the economic and social development of the country. The energy needs of the people are diverse dependent on several factors such as socio-economic, geographical, cultural, gender etc. The objective of a national energy policy is to guide and direct relevant authorities to formulate and implement activities for the provision of energy services to meet the diverse energy needs within a policy framework designed according to the specific objectives of the various stakeholders contributing towards the national development goal. Therefore policies of various sectors, transport, agriculture, industry, household, health, environment etc need to be of concern in the preparation of the national energy policy. However it is observed that conventional energy strategies do not address the issues related to energy requirements for sustainable livelihood activities such as cooking, women's income generation and other rural industrial activities surviving on biomass energy. This is evident by the fact the energy policy (if at all there is an energy policy) is focused on commercial fuels only and that too based on supply side interventions which relates to annual growth patterns. The drawback of this conventional approach is it covers only technological options and thereby loses the opportunity to address user needs and perspectives.



Impressed and influenced by the glory and glamour of economic growth and affluence of the western countries the natural tendency is to follow a similar energy intensive development path followed by the West.

Despite the growth, the quality of development riddled by a host of health and environmental hazards, over consumerist lifestyle patterns, lack of energy security due to geopolitical instability in the oil producing countries and unexpected price fluctuations, the wisdom of such a development path has been questioned even in the western world. Moreover such a path was characterised by the availability of cheap energy, colonial authority and the ignorance of the unwelcome features which have come to light by now. Had the current energy prices and trends prevailed then, it is very likely that a different pattern of energy mix and technologies would have emerged.

There is no doubt that fossil fuels have to be an important component in the energy mix in Sri Lanka but there is a lot to learn from the experiences of the West, which warrants some safeguards. Being sensitive to the vagaries of extensive use of fossil fuels, higher composition of renewables in the energy mix is favoured by many energy planners. As a result in addition to other renewables, biomass is making a serious comeback as an important and a viable modern energy resource in the developed countries. Technologies have been developed to use biomass as a liquid and a gaseous fuel and to generate electricity. In the USA it is estimated that by the year 2010, 10% of the electricity will be generated from biomass. Use of biomass and efficient wood stoves are identified as proven strategies contributing towards the mitigation of global warming by reducing the CO₂ emissions based on the assumption that wood is produced and consumed sustainably. A study carried out in Sri Lanka by the University of Surrey and ITDG(UK) states that use of one "Anagi" improved wood stove could reduce the CO₂ emissions by 600 -1200 kg/year.

In the Sri Lankan context, apart from being exposed to the global concerns and various harmful effects by the use of fossil fuels, nearly 10% of the export earnings were spent on importing fossil fuels in the year 2000. Yet fossil fuels were only 35% of the total energy requirements. With escalating oil prices this percentage will be much higher. In this respect one must be happy that nearly 65% of the energy supply in Sri Lanka is from renewables comprising of 8% hydro power and 57% biomass. Use of biomass in fact has acted as a buffer and minimised the ill effects of price escalations and extensive dependence on imported fossil fuels particularly in the household sector. Yet biomass is not in the national energy agenda and is considered to be primitive and associated with under development. While there are powerful institutions to look into the issues connected to commercial energy sector, it is unfortunate that the Ministry of Power & Energy has not paid adequate attention to biomass energy issues despite the fact that biomass energy is the major energy resource which sustains the rural economy and the quality of life of the rural and urban poor. Since the victims are the most under privileged in the society, this lack of concern can be construed as a grave social injustice.

The objective of this paper is to discuss the issues and highlight the lack of concern of development planners of the importance and role of biomass energy in the development of the country.

While biomass is emerging as a modern fuel and there is a remarkable shift of perception internationally which warrants the attention of the commercial energy sector, the emphasis of this paper is on the importance of biomass as a traditional cooking fuel although there is the stigma attached to it as a fuel only suitable for primitive communities.

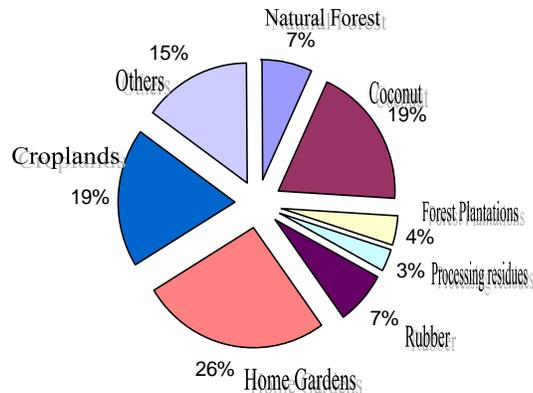
There is no doubt that commercial energy resources have contributed to the economic and industrial development of the country but why turn a blind eye to the important role played by biomass energy in the society? According to the ECF data for the year 2001, biomass comprises 57% of the national energy supply, and provides 72% of the energy required for industries and nearly 90% of the cooking needs. Biomass is used by more than 80% of the population and more than 50% of LPG users also use biomass intermittently. This amply indicates the importance of biomass energy in the socio-economic development of the country. It has been identified that access to modern energy resources as a major factor which could alleviate poverty. In this respect it is true that LPG is superior to biomass and provides a choice for the people who could afford but the reality is, at the present pace of development, majority of the rural and urban poor are unlikely to be able to afford modern fuels in the foreseeable future and dependence on biomass will continue for a long time. Despite the growth and wide spread use of commercial energy resources and modern technologies, biomass will remain to be the major source of energy for survival and sustenance of the poor. Since the major proportion of biomass energy is not within the cash economy, its impact and the contribution to the economic and social development are not visible in conventional economic terms and standards.

National consumption of LPG is less than 3% of the total energy consumption and this has cost RS 4.3 billion in foreign exchange. At this level could the country afford to replace the entire use of biomass energy with LPG? Therefore until transition to modern fuels takes place a coherent programme to facilitate continuous supply and efficient use of biomass has to be implemented to sustain the livelihood of the rural poor.

However biomass energy field is an area of considerable complexity particularly because biomass is linked to several development sectors of which energy is only an unintentional and unplanned byproduct or a commodity. As a result, the depth and scope of the issues involved are often not seen in the correct perspective and fixing the responsibilities of policy interventions becomes difficult. Unlike in the conventional energy field where the responsibility is clearly seen and can be identified, biomass energy is no man's baby. It is therefore necessary to correctly identify the major stakeholders in the field of biomass for any effective interventions. At present the entire responsibility of growing, harvesting, collecting, processing and using the biomass rest mainly on the women and consequently women are also the victims. Therefore focus on gender issues is prerequisite in policy formulation, planning and implementation processes if genuine mitigation of the consequences is to be effectively realised.

Average per capita consumption of biomass is around 1.3kg/day. In the cold and hilly areas it can be around 2.5 kg or more. The total national consumption is about 10 Million Tons annually. How do we meet this demand or do we have alternative plans to provide with modern fuels?

According to the data provided by the Energy Conservation Fund the biomass supply pattern is given below.



Source: Sri Lanka Energy Balance 2001

From this it can be seen that the biomass supply is linked to the agricultural, plantation and forestry policy, land use patterns, land ownership and other demographic factors. Moreover several organisations are involved in the supply dynamics whose major concern is not energy related. Therefore any solutions to the biomass energy problem lie outside the field of energy. As indicated earlier it is indeed a complex problem. What happens if any of our plantation industries collapse? With the current emphasis on heavy industrialisation and crisis in the plantation sector such an event may not be very unlikely.

Have we thought of the possible impact on the energy scenario as a result of such an event and the options available to meet such an eventuality? It is not only a case of supply but also of access to resources. In some cases there is likely to be unused excess resources. But access is denied or there is no mechanism to make them available either free or at a price.

What could happen in a shortage situation? In the absence of any interventions or actions by the stakeholders the people themselves adopt various measures to overcome the pressure brought upon them.

Some of these measures may be:

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- Travel a longer distance to collect the firewood.
- Use school going children in the family to collect firewood.

- Reduce the number of meals or quantity of food cooked.
- Steal firewood from the neighbours or prohibited government land.
- Discontinue rural industries, women's income generation activities such as curd making etc or reduce the quality of products.
- Use wet wood and low quality biomass for cooking.

While these acts in general lead to a wide range of disastrous consequences on the rural economy, health and quality of life of the people, the burden of this situation to a great extent has to be borne by the women.

Focussing on the consumption side the situation is as complex as the supply side. What are the implications? Here again it is the woman who takes the beating. To identify the development and social implications it is essential to look at the total picture of the linkages of Firewood-Stove-Woman and the Kitchen all of which have a low priority in the development agenda. This is the combination, which sustains the quality of life of the entire society. To consider these four components in isolation to each other is unrealistic and may be misleading. Therefore a holistic and an integrated perspective are necessary. Unfortunately the politicians and the development planners are least sensitive and shy to address this aspect of development.

Probably, concerns and issues at micro level are not considered important compared to politically sensitive macro concerns at national level. However if the issues are seen within an integrated framework, solutions can be addressed within the agenda of ongoing sectoral development activities. For example housing is seen as purely providing shelter and accommodation for the people. But the kitchen needs to facilitate a number of development activities. It is the centre of health, hygiene, nutrition, culture, and income generation for women and the place where women and children spend most of their time. It is the place where most of the domestic waste is generated and stored creating health and environmental hazards. Energy wise nearly 50% of the total energy consumption takes place within the kitchen.

While housing within the macro concerns of planning is essential to address national and global issues, micro perspective outlook is also necessary to make housing programmes more meaningful and effective. Inevitably housing organisations indirectly become an important stakeholder in this respect.

According to several studies carried out in developing countries, there is growing evidence that indoor air pollution due to wood smoke is a major a risk factor, which seriously affects the health of women and children. The World Health organisation (WHO) has expressed serious concern and published many reports revealing evidence highlighting the need for further research and interventions. The WHO ranks exposure to domestic wood smoke as the fourth highest global risk to health after malnutrition, bad water, poor sanitation and HIV/AIDS. It is also estimated that two million deaths are caused in developing countries due to wood smoke.

Health Hazards of Different Parts of the fuelwood Cycle	
Collection	Trauma Reduced Infant/Child Care Bites from snakes, insects Allergic Reactions Fungus Infections Severe fatigue
Combustion Effects of Smoke Effects of Toxic Gases(CO) Effects of Heat Effects of Crouching	Conjunctivitis Upper Respiratory Infection Inflammation Acute Respiratory Infections(ARI) COLD Chronic Bronchitis Cor Pulmonale Adverse Reproductive Outcomes Cancer Poisoning Burns Cataracts Arthritis

Source: WHO- Indoor Air Pollution from biomass fuel 1992

This information indicates that the Health Department too becomes an important stakeholder in the biomass energy field.

The above examples were cited to give an idea of the magnitude and the wide spectrum of issues involved covering several development sectors and the need to identify effective interventions and the relevant stakeholders who could play an active role at national and local levels.

Understanding the complexity and depth of the problem could lead to identification of a structured involvement of relevant stakeholders and consequently initiate a policy formulation process and develop an institutional mechanism to address the issues involved. This process of facilitation and coordination obviously rest on the Ministry of Energy.

Apart from the policy and implementation strategies that need to be identified, technological interventions are necessary at the local and user level to reduce the exposure to wood smoke thus mitigating the adverse health impacts and make the kitchen more ergonomically efficient to reduce the degree of drudgery experienced by women.

Improved wood stoves are recognised to reduce smoke emissions substantially according to international research carried out thereby reducing the health hazards of using biomass for cooking. The following results are from the research done by the University of Moratuwa in collaboration with the AIT (Bangkok) on stoves in Sri Lanka.

Comparison of Improved Stoves and Traditional Stoves

	Traditional Stove	Anagi Stove	% Reduction
Firewood	1.65 Kg	0.82 Kg	50
Hydrocarbons(CH)	12.54 g/Kg	7.12	42
Total Suspended Particles(TSP)	12.54 g/Kg	7.21	42.5
Sulphur Dioxides(SO _x)	.726 g/Kg	.36	50
Oxides of Nitrogen (NO _x)	2.13 g/Kg	1.02	52.6
Carbon Dioxides	1901.37 g/Kg	905.28	52.4
Carbon Monoxide(CO)	76.95 g/Kg	61.36.	20.4

To conclude, the havoc created in the economy of the country by escalating prices of imported fossil fuels need not be emphasized as it is even seen and felt by the common man. This is not going to be a temporary phenomena as it is likely to continue in the future. To mitigate the ill effects, the wisest energy path is to use more and more of local and renewable energy and use energy more efficiently. The obvious energy source to meet these criteria at present is biomass which already plays an important role in sustaining the quality of life and rural economy which has to be recognized even though it happens within the subsistence economy. Therefore energy strategies should be broadened to incorporate activities to facilitate improved supply and efficient use of biomass and other renewable energy sources. However it must be realized that biomass energy is much more complicated than commercial fuels and warrants a broader focus to cover the linkages with other development sectors which brings in several stakeholders who are not directly related with energy into the energy picture. Since

issues related to firewood production and use are mostly micro level concerns, planning and implementation of biomass activities have to be addressed at a local level where the Provincial Energy ministries could take the lead role supported and facilitated by a strong policy framework spelled out by the Ministry of Energy. This article by no means down play the importance of the role of fossil fuels in the short and medium term energy planning but is meant purely to draw the attention of the relevant authorities to focus on a more holistic and pro rural energy policy