

Fence Oil taxes and expand the alternative energy sectors

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As the vibrant debate on the price of Petrol and other oil based fuels is taking place both on the streets of the city and among the discerning public, the question of maximizing the country's natural assets to harness alternative energy is pre-occupying the minds of several leading scientists. Mercifully, the untiring efforts of some pioneers in the field of dendro energy, (that is energy generated with biomass, particularly Gliricidia) have been recognized. Dr. Ray Wijewardene, P. G. Joseph, Parakrama Jayasinghe and Dr. Jayantha Gunatilaka are four scientists who recently received National Science and Technology Awards for their untiring and dedicated work over several decades. It was their persuasion that inspired the then Minister of Plantation Industries, Anura Priyadharshana Yapa to get the Cabinet to accept Gliricidia as the fourth Plantation crop in the country. (The first three are Tea, Rubber and Coconut, which were established during the colonial period by the British.) Very little publicity has been given to this event although it was of great historical significance.

The current price of oil has dropped to less than USD 40 but considering the world market prognosis this is a temporary phase. Saudi Arabia the largest supplier projects the price to get back to USD 70 and others anticipate the figure to be USD 100. With the world wide economic downturn the gradual devaluation of the rupee as already seen is unavoidable. As such on rupee terms the imported oil will be much more expensive than these predictions indicate. The coming decade will bring with it price hikes, fuel shortages and stricter laws on climate change. Sri Lanka has to prepare for this with much larger investments on bio-energy and a basket of other alternative sources of energy such as solar,

wind, waves and even energy from sewerage and garbage. Apart from this much the subject of nano technology has also to be researched in the next decade and that needs money. The financial meltdown and the cut back on construction work especially in the Middle East will mean that many workers will come back from abroad and fewer will find employment overseas. The country will therefore have to focus on creating local employment at every level of society mainly for local consumption. Jobs have to be created for scientists, engineers, agriculturists and labour. Production of fertilizer and food production to replace imports have to take a pivotal role in all our planning. Dependency on external sources for our energy has to be restricted to manageable limits. Income lost because workers have to return from abroad have to be matched with income generation in the villages. Only the implementation of all these initiatives will ensure the security and stability of the country in the coming years. All this will need investment on production as well as on research.

This article deals with only one aspect of the country's energy requirements, namely the subject of thermal energy for industrial use and concentrates on setting out a proposal for achieving energy independence in that sector. Replacement of oil with biomass (from Gliricidia) alone can save the country foreign exchange to the value of between USD 100 million and USD 200 million.

Industrial Heat

Presently over 425,000 tonnes of petroleum fuel (costing Rs 23.3 billion) is being consumed in the industrial sector in Sri Lanka for the purpose of generating heat energy for industrial processes. Already, about 4% of national requirements have been replaced with the introduction of Gliricidia cultivation. Even after the reduction of furnace oil price to Rs. 55,000 per tonne, replacing furnace oil with Gliricidia results

in a saving of fuel cost by over 50% (Rs 10.5 billion). If adequate quantities of Gliricidia wood are cultivated in a sustainable manner, most of the petroleum fuels used in the industrial sector could be replaced in this manner. In addition the use of Gliricidia foliage as fodder or fertilizer would bring significant income to

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the cultivators.

Replacing 425,000 tonnes of petroleum fuels requires 1,700,000 tonnes of wood annually. To obtain this quantity of wood 450 million Gliricidia trees need to be established. (That is 38 kilos per tree per year) As most of the industries are located in and

around the coconut triangle in Sri Lanka, the concentration of planting can be in the Coconut belt. The inter-cropping on coconut lands based on figures with spacing worked out by the Coconut Research Institute and Coconut Cultivation Board will be 2250 Gliricidia trees per hectare. If 50% of the coconut lands (that is 200,000 hectare) in Sri Lanka were intercropped with Gliricidia, it would be possible to establish the required number of trees. The benefit to the coconut cultivation will be the reduced cost of fertilizer inputs as well as substantially improved yields by the introduction of Gliricidia as an intercrop. This is well documented by the Coconut Research Institute and irrefutably demonstrated in practice by Dr Ray Wijewardene

Targets

2009: 45 million trees
2010: 225 million trees
2011: 180 million trees.

Strategy

The cost of establishing a Gliricidia tree and maintaining it till harvesting time of one and a half years is around Rs.10. Of this amount around Rs. 4 per tree is needed to be provided as an incentive to the cultivators to encourage them to undertake this task.

The estimated budget for the next three years for this activity is as follows:

2009: Rs. 180 million for the 45 million trees
2010: Rs. 900 million for the 225 million trees
2011: Rs. 720 million for the 180 million trees

Total cost for planting 450 million trees Rs 1.8 Billion.

As petroleum prices have come down in the international market in the recent past, it is an appropriate time to introduce a cess or tax on petroleum fuels consumed by the industrial sector. This could be introduced at the time of next price reduction of petroleum fuels. Any price reduction of furnace oil for industrial heat application should be carried out with the incorporation of this tax. In this manner there may not be an

actual increase in price of this item.

Based on the expected amount of petroleum fuel used in the industrial sector, the extent of this tax to be levied could be as follows:

2009: Rs.180 for 425.47 litres (that is Rs. 0.42 on a litre of Petroleum). This will give the Treasury Rs 180 million for the yearâ™s (2009) plantation programme.

2010: Rs.900 for 382.743 litres (that is Rs. 2.35 on a litre of Petroleum). This will give the Treasury Rs 900 million for the yearâ™s (2010) plantation programme.

2011: Rs.720 for 170.19 litres (that is Rs. 4.23 on a litre of Petroleum) This will give the Treasury Rs 720 million for the yearâ™s (2011) plantation programme.

Cost for conversion from petroleum to bio mass

The capital cost for the equipment to convert a 1 tonne oil per facility per day from petroleum fuel to biomass fuel is estimated at Rs. 5 million. Total estimated cost for the years 2009/2010 and 2011 are given below:

2009: 43,000 tonnes oil per year = 150 tonnes oil per day: Cost: Rs. 750 million

2010: 215,000 tonnes oil per year = 750 tonnes oil per day: Cost: Rs. 3,750 million

2011: 172,000 tonnes oil per year = 600 tonnes oil per day: Cost: Rs. 3,000 million.

Total investment for the equipment for conversion: Rs 7 Billion.

This investment can be recovered by the individual industries in less than a year by the savings in fuel costs.

Credit line

Negotiated credit line between the Governments of India, China or Malaysia for the purchase of boilers will give local industrialists the necessary impetus to

switch from petroleum fuels to biomass fuels. This credit line should be made available to industrialists without any additional collateral (other than the project itself), at a reasonable rate of interest.

Organising and financing the programme

In spite of the obvious savings in energy cost and insulation against future energy cost volatility, the main reason for the reluctance of the industries to convert to bio-energy is the lack of confidence on availability of the fuel wood.

Therefore, organising a massive agricultural and industrial programme on the planting of Gliricidia and the conversion from oil based thermal generation to bio-energy will need a major commitment from the government. Certainly in the short term, the responsibility to kick start this proposal can be entrusted to the Coconut Research Institute and Coconut Cultivation Board who have considerable experience with the propagation of Gliricidia.

Another important but perhaps less recognized benefit from the creation of a substantial supply base of renewable fuel wood is the elimination of the pressure on natural forests. Even at present large amounts of forest trees find their way to the factories, particularly in the north western province. There would also be a demand from other industries to tap this source of energy for their requirements.

Investing in the future

Rather than bringing down the fuel prices, which may be politically prudent, the public have to be persuaded to invest for the future. The revenues from fuel taxes should be ring-fenced for areas connected with the consumption of energy and the relevant research entailed. Sri Lanka could take an example from Switzerland where revenues from fuel taxes are used primarily to improve transportation and energy generation. ■