

Policy on Transport Energy – The need for a Paradigm Shift

The wartime Prime Minister of UK, Winston Churchill once said “Never let any **Crisis** be wasted”. One may add the more familiar saying “*Behind every Crisis lies an Opportunity*”. When I commenced drafting this article, I had the issue of the drop in world oil industry in mind, which some would say is not a crisis but a boon. But now Sri Lanka is faced with the greater crisis of managing the Covid 19 virus which has now reached a worldwide pandemic status. As such it could also lead to a crisis in the energy security, of the country overriding any potential benefits from the drop in price.

The overdependence on imported sources of energy in the recent decades, would definitely lead to such problems of supplies, even if we have the funds to pay for them. The benefits of any price reduction would not be realized for many months, even if the low prices prevail. The corona virus epidemic may keep the world market oil prices depressed for some time to come. But as has been the behavior of the market in the past, the prices are bound to bounce back when the OPEC and Russia manage to overcome their differences. However, Sri Lanka has refining capacities to cater to only about 40% of the demand and thus the price of petrol and diesel will be determined by the pricing policies of the refiners, and not the published world market prices of crude oil. In the meanwhile what matters to the Sri Lankan economy and the consumers is the price per liter in Sri Lanka Rupee terms, which will inexorably go up irrespective of the world market price in US Dollars. The current trend in the face of the Covid 19 is most worrying with the Dollar already near Rs 190.00

The excellent article by Mr Dilina Kulathunga in the Daily Mirror “Did COVID-19 alter conventional economic wisdom?” “on 19th March 2020 spells out what we may have to face.

<http://www.dailymirror.lk/business-news/Did-COVID-19-alter-conventional-economic-wisdom-/273-185374>

Few extracts from this articles are quoted below.

Quote “However the virus will certainly alter the conventional economic wisdom which framed much of the economic order. It will also pose questions which require deep reckoning of the relevance of the conventional global order in politics, national security and economics which dominated the past four to five decades.

While import substitution may be a forbidden tactic in the market fundamentalists’ play book, it is time that every country starts seriously exploring ways and means of producing stuff which can be domestically produce with domestic workers.

There is closer linkage between trade and economics and national security of a nation.

It is time Sri Lanka invest in import substitution, because production and jobs create more wealth and contentment, than an instant gratification one receives from a cheaper widget from elsewhere.
via dilinaibusiness@gmail.com) Unquote

The all-important issue of energy security is certainly not ensured by depending more and more on the imported fossil fuels with the volatility of prices, supply uncertainties and more than all the impact on the value of the Rupee.

This is the thrust of this article to spell out the need for a much broader outlook, where future energy security must receive the highest priority in formulating the policies and strategies.

Elements Contributing to National Security

Late Vidya Jothi Dr. Ray Wijewardene has often said that to ensure National Security a Nation should be **None Dependent** on external sources for the following

- Defense
- Food
- Education
- Health
- Shelter
- Energy

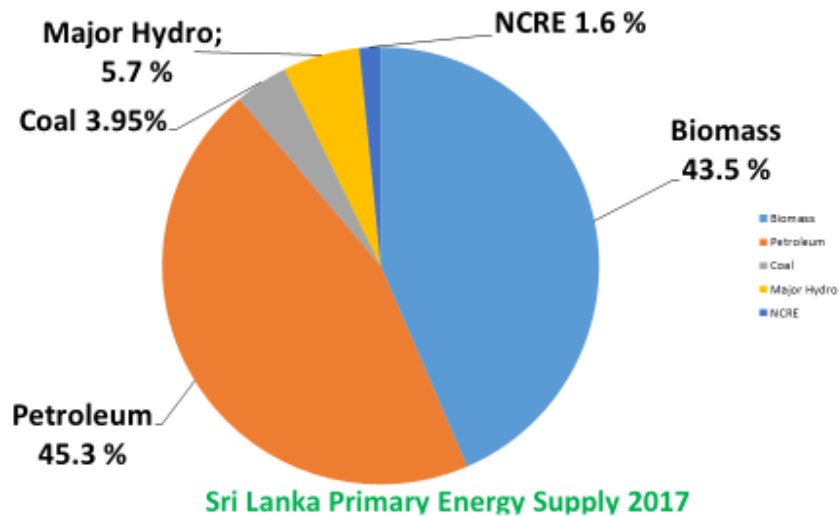
It is evident Sri Lanka has become overly dependent on external inputs on many sectors with disastrous consequences. This is particularly so in case of food and energy. Leaving the discussion on possible interventions for the other sectors to the relevant experts, this article explores the means of making use of this “Crisis” to emerge with a nationally secure energy sector, which would lead to many other spin off benefits. The emphasis is on the energy needs for the transport sector, being 100% dependent on imported fossil fuels and receives near zero attention. The President declaring a target of 80% Renewable Energy Contribution, which by the way is totally indigenous, by 2030 would look after the electricity sector.

Energy is not Electricity Alone

While some intrepid developers have contributed to reach some degree of none dependence in the electricity sector, the electricity sector has more than a good chance of achieving the Presidents target by 2030 and proceed towards 100 % RE soon thereafter. It would be remiss of me not to acknowledge some very progressive initiatives by the Ministry of Power and Energy such as the establishment of the Sustainable Energy Authority and the NCRE scheme and the Surya Bala Sangraamaya which has already proven its worth and potential.

However, the situation regarding the transport sector is lamentable as shown below.

National Energy Resources

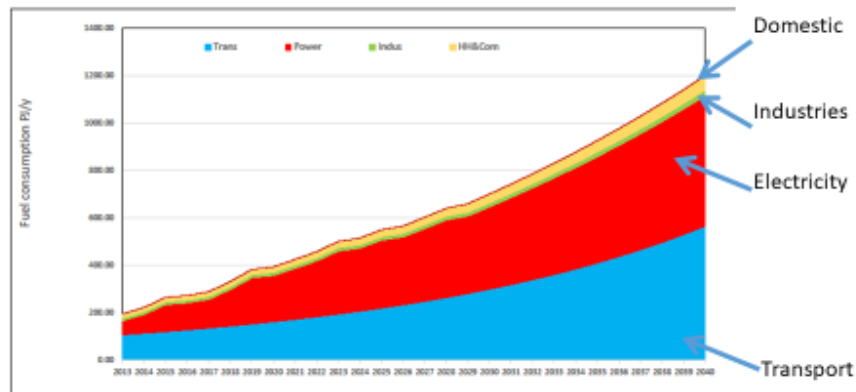


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Energy is Not Electricity Only !!!

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Forecast Demand Growth till 2040

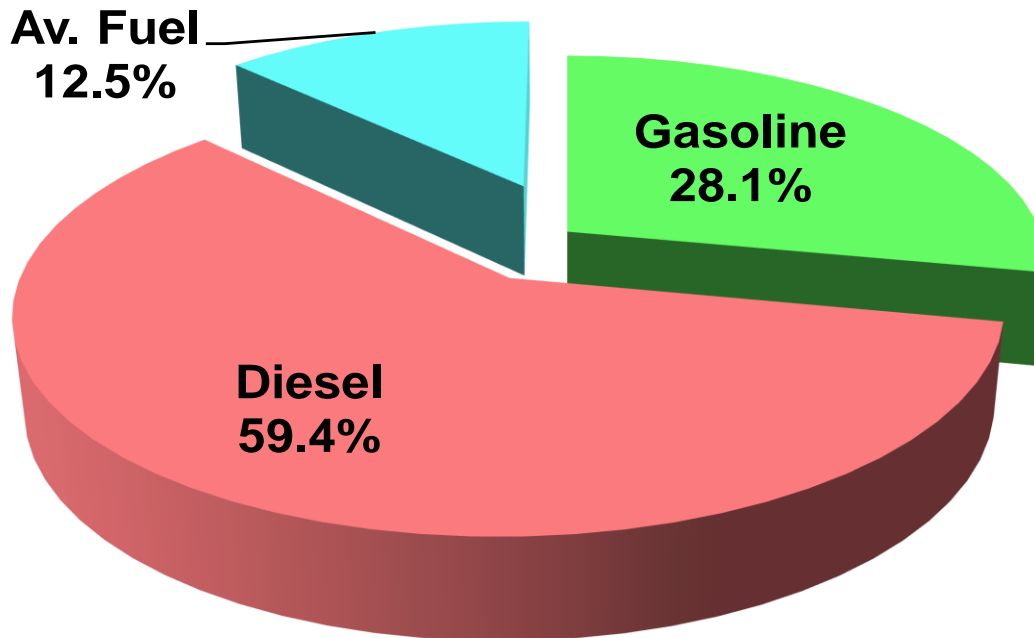


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With the projected growth of energy demand including the transport sector, Sri Lanka needs to take cognizance of the present status of supply, for which we have to pay at whatever prevailing prices in foreign exchange.

Transport Fuels Entirely Imported Oil Based
Annual Foreign Exchange drain US \$ 4 Billion



The electricity sector which contributes a mere 11% of the primary energy supply commands 90% of the government's attention. No doubt electricity is the most desired form of energy which can serve all the sectors which require energy, including transport.

But as we have seen over the years, there is a total lack of vision and strategies of the state monopoly, resulting in the electricity sector contribution stagnating at this level.

Transport Energy – The Elephant in the Room not noticed.

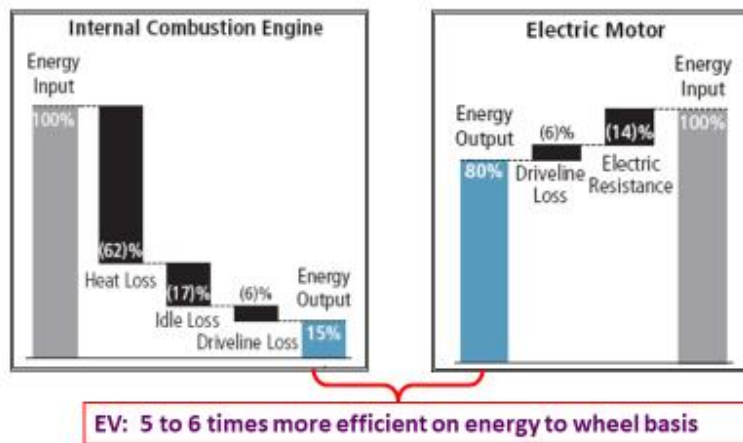
While electricity sector continues to blunder along imposing more and more burdens on the citizens, the **Elephant in the Room – energy for transport** is never given even a passing mention. As shown in the chart above, the transport sector energy demand has been over 43 % for some years and continues to grow. (*Sri Lanka Energy Balance 2017*) This is entirely serviced by imported fossil fuels and thus contributes greatly to the import expenditure, causing severe pressure on the balance of payments and the parity rate. The expenditure for the import of fuels is about US\$ 4,000 Million or Rs. 678 Billion in the year 2018 and accounts for over 29 % of the total foreign exchange earnings.

There does not seem to be any attempt to address this continuing problem at National Policy level or at Ministerial level. The recent Gazette published by the former Ministry of Power and Energy dated 9th August 2019, on National Energy Policy, projects a target of electrification of 20% of the light vehicles by year 2022. It is not clear if this policy would be accepted by the present administration.

However, this is the opportune time for a paradigm shift. This change is obviously dictated also by the very nature of the technology used in all transport vehicles, big or small in Sri Lanka, dependent on the use of the Internal Combustion Engines (ICE), for both diesel and petrol driven vehicles. (Hardly any vehicles use LPG now)

It is an inherent feature of these ICE engines that a considerable fraction of the energy available in the fuel used is wasted as heat in the exhaust. Thereby the overall efficiency of energy usage for useful work remains at a very low level below 20%. In contrast this efficiency could be as high as 80% in a battery powered electric vehicle as shown in the chart below. (source: Dr. Thusitha Sugathapala)

Comparison of ICE Vs EV



One could argue that the efficiency of generation of electricity used for charging the batteries should also be factored in. This is unfortunately true at present in Sri Lanka as a major percentage of our electricity generation is fuel based, over 50% till 2019. But this need not remain so, and if the President's Target of 80% is taken seriously we will be overcoming this problem very quickly.

But in the meanwhile there are other options. If Sri Lanka has the right policies which are made mandatory rather than mere wish lists, for the electrification of the transport sector, these other options can be instituted immediately by developing the necessary infra structure at no cost to the government. It is evident that majority of the personal vehicles are parked in sun scorched carparks during most of the day time. It would be a simple matter to provide solar powered charging stations in all such carparks including fast charging as necessary.

These are not new technologies or innovations, but are already in practice in many forward looking countries. For example, tiny Singapore already has 200 charging stations and are planning to increase to 1000 stations.

While none of these can or need to be implemented overnight, the major positive changes that can be achieved in many sectors of the economy, environment and health are self-evident. While the country is fully aware of the environmental and health disaster ongoing at Norochcholai, the impact of the vehicular emissions, particularly in the urban areas is less known or publicized. The detailed article by Dr L C Jayasinghe in the Island on the 15th March 2020 addresses this issue.

http://island.lk/index.php?page_cat=article-details&page=article-details&code_title=220395

The present crisis created by the Covid-19 virus and the long term impacts, behooves Sri Lanka to be more visionary in its policies and strategies for future development.

An immediate target for 100% electrification of transport

While the world price of oil may not rise sharply for some time, it is prudent to assume that there would not be any further downward movement in spite of the reduced demand caused by the Corona Pandemic. Even if does, it would be short lived till the world get over the crisis. On the other hand, any benefits or savings that Sri Lanka could have expected by the drop in price of crude oil is already eroded by the sharp devaluation of the Sri Lankan Rupee which is now near Rs 190.00 per US\$.

Therefore, this is the ideal time for the government to declare a firm mandatory policy with time bound targets, for eventual 100% electrification of the transport sector with challenging intermediate targets. This has already been done in many countries too numerous to be listed here. (https://webstore.iea.org/download/direct/2807?filename=global_ev_outlook_2019.pdf) However it is to be noted that Norway, awash with their own oil, will ban the sale of vehicles other than Electric or Hydrogen driven by 2025. At the other end of the spectrum, Bhutan with their abundant hydro resources have opted for 100% EV by 2025. Shouldn't Sri Lanka with solar energy adequate to meet 5000 times our energy needs, also plan for 100% EVs by 2030 at least? The target mentioned in the National Energy Policy Gazette of 20% electrification of the light vehicles by 2022 is a suitable and achievable first target. (4.5 *Enhancing Self Reliance Section 5f*) This also calls for CEB/LECO to install 25 fast charging stations by 2020 and for the SEA to provide incentives for the private sector also to install charging stations.

The Way Forward.

Even the positive moves made such as the Surya Bala Sangramaya and the wish list in the National Energy Policy mentioned above are of no value, if certain very negative policies and regulations in practice at present are not removed. The starting point is of course is a firm national policy made mandatory for compliance. Even the institutions under line Ministries often ignore such policies in their day to day programs. The case in point is the policy to install 25 Nos Charging Stations by 2020 by CEB/LECO.



Therefore, the following urgent action is recommended, if Sri Lanka is to convert this Crisis to an Opportunity.

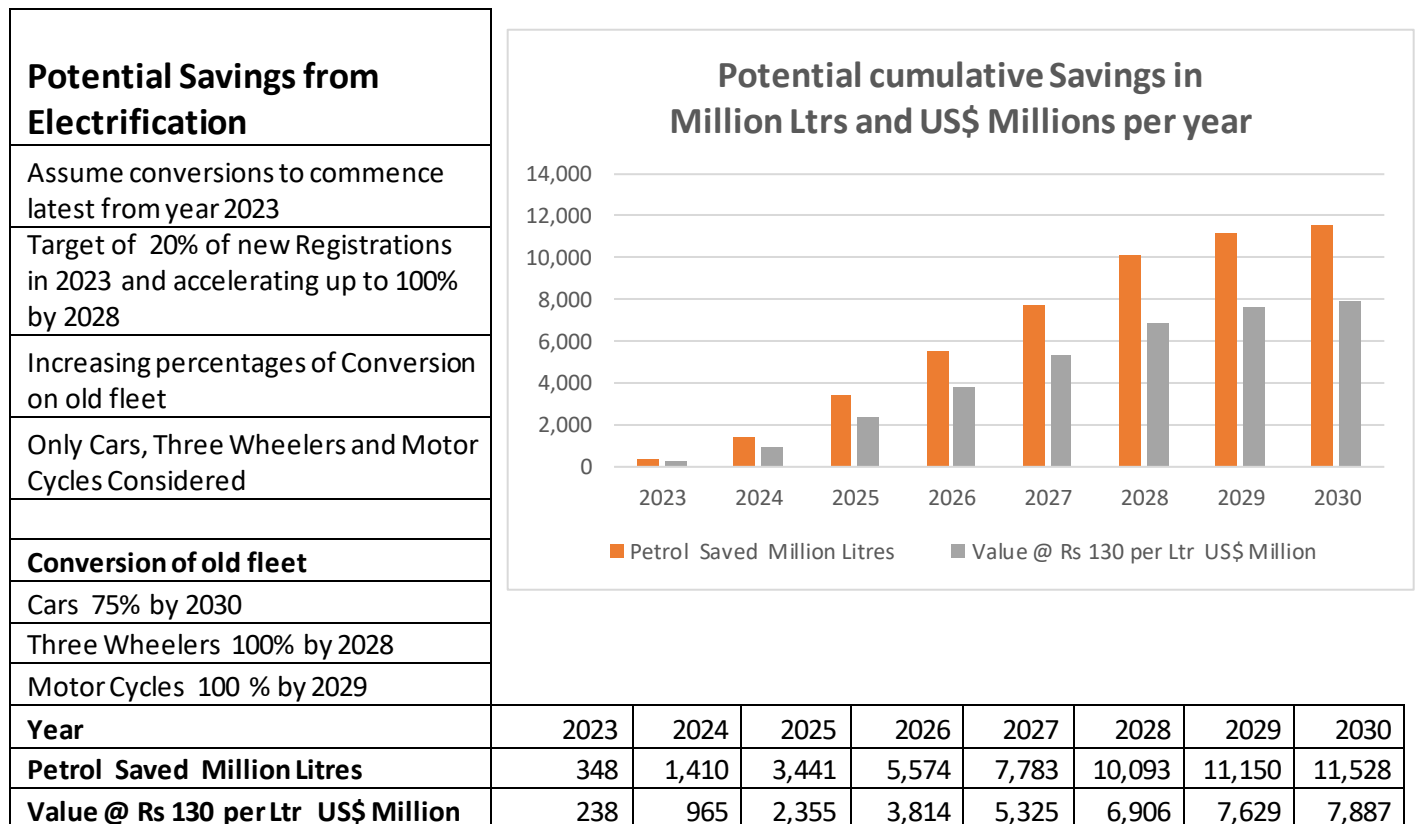
1. Declare a policy and time targets to reach 100% electrification of transport sector with intermediate target levels and time frame. Make it a mandatory requirement for all state agencies to abide by and to provide facilitation to achieve same.
2. Set a date by which all imports of ICE driven vehicles by the public sector is to be banned as an example.
3. Accept the policy statement “**4.5 Enhancing Self Reliance Section 5f**” in the National Energy Policy Gazette No 2135/61 of 9th August 2019, as a national target and assign responsibilities of achieving this target to the relevant agencies. CEB/LECO to set up Charging Stations and RMV to limit registration of ICE driven light vehicles
4. Remove the punitive duty rates imposed on the import of Electric Vehicles which came in to force on the 1st April 2019. These nearly doubled the price of the EVs coming into the country destroying the small growth seen
5. Remove the punitive duties and taxes on the import of deep cycle batteries, imposed on the notion of protecting local battery industry, which does not manufacture any deep cycle batteries, suitable for EVs or for Solar Energy storage
6. Set up the incentive scheme proposed under “**4.5 Enhancing Self Reliance Section 5f**” in the Energy Policy Document to encourage the private sector to set up charging stations.
7. Provide a reasonable tariff for charging batteries using the National Grid to encourage private sector to set up charging stations.
8. Permit the Private Sector to levy a charge to customers to charge batteries, either using the CEB grid or using their own solar PV systems. The PUCSL to declare the applicable tariff.
9. Levy a charge on all imports of fossil fuels at point of import and use this fund to offset the loss of income to the treasury by action items 4 and 5 above, and to assist the private sector to install charging stations
10. Initiate R & D to manufacture deep cycle batteries and Super Capacitors in Sri Lanka with the emerging technologies, for which our high quality graphite is an excellent ingredient. The SLINTECH institute has already commenced such R & D and must be funded to conclude same speedily.
11. Initiate action to convert all three wheelers to be electricity driven by 2025 and ban import of ICE driven three wheelers by 2022.

12. Facilitate the R&D necessary and facilities to convert existing ICE driven light vehicles to electricity in tandem with the plan for 100 % electrification

Conclusion

The private vehicle owners have shown their willingness to contribute to this paradigm shift a few years ago. But this movement was destroyed by parties with vested interests, who lobbied with the government to impose the punitive duties and levies mentioned above. The writer has already demonstrated the viability of the **Prosumer Concept** for energy over the last 12 months by generating more than adequate electricity from roof top Solar PV, to cater for the entire electricity needs as well as to charge an electric vehicle. During this time absolutely no petrol or diesel has been used. The estimated saving in petrol usage is over 2000 liters per year. There is no reason why this concept cannot be adopted by hundreds of thousands of vehicle owners, if the policy initiatives and the regulations mentioned above are enacted.

Consider the huge savings that can be achieved by at least converting the Three Wheelers amounting to near 1,200,000 and over 3 million two wheelers at present. There are viable proposals available for this even now.



These are approximate values based on assumed rates of registrations extrapolating historical data.

Visit www.bioenergysrilanka.lk for details of calculation.

The many ways that this change could benefit the Sri Lankan economy, environment and health is far too many to be included here. But even without such detailed analysis anyone with common sense can readily understand the timeliness and the value of embarking on this change without any further delay.

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