

Solar power can save Sri Lanka

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Many ancient civilisations have had a heritage of connecting to the universe in diverse ways and in particular to the sun. Historically the sun has been worshipped in Lanka and to date the traditional new year in April (referred to under several names across South Asia) is the harvest festival that revolves around the sun. Without the benevolence of this star that takes centre stage within the solar system our survival on planet earth would end. The energy of the sun we need within our body in the form of vitamin D, the deficiency of which weakens our immunity.

It is known that every second, the sun's core fuses about 600 million tons of hydrogen into helium and converts 4 million tonnes of matter into energy. In many spiritual traditions to date; most prominently in Hinduism the sun is worshipped and its power hailed by those who know multifarious ways of harnessing it. One way is through diverse mantras routed through the binary of sound and resonance which is known to impact the energy of the universe and influence reality in mysterious and mystic ways.

The sun plays a key role in the subject of astrology and ancient agrarian technology revolved around the knowledge of the ebb and flow of the energy of the sun and the moon. Some of the above mentioned knowledge would be amply available in our Ola leaf manuscripts.

Hence from spirituality to astrology and agriculture this brightest of stars said to have formed some 4.5 billion years ago, has been an active participant in the lives of humans across planet earth and subject to diverse description in folklore.

In modern times we tend to ignore or are ignorant of the cultural role the sun played in multiple aspects of the lives of our ancestors and our civilisation as a whole. Strangely we have also ignored how the sun could be a major asset to us through the use of modern technology.

If there was a single natural resource that could save our economy by providing us unlimited energy as compared to what we have been obtaining from other nations in the form of fossil fuel and thus lead us to a whole new economic sphere by transforming our entire country into a developed nation, it is the sun.

There are many persons and organisations, including the Ceylon Electricity Board (CEB) which had studied as far back as twenty years ago, the Sri Lankan potential of renewable energy, in particular solar.

Macro plan

Among the many persons who in their individual capacity had tried to promote solar energy in Sri Lanka through a macro plan of transforming the economy is engineer Harsha Kumar Suriyarachchi and investment promoter Mohamed Fahim.

A macro national solar energy development plan that could have completely changed the economic status quo of Sri Lanka was drawn up by Eng. Suriyarachchi conceptualised around 2019. Structured upon an integrated vision to launch Sri Lanka on its journey of energy independence by 2025 it was planned so that from roof top (houses alone) 30,000 - 60,000 MW capacity would be available for solar generation.

Among the host of untapped natural resources in Sri Lanka is Silica which is needed for the manufacturing of the solar cells which are currently imported. Eng. Suriyarachchi cites that the local production of the initially needed 1.0 million inverters per year would bring down the cost of a 5 kw inverter to around 125,000 and that the 5 kw rooftop solar system costing as per the scale of the production is 1.0 million systems per year encompassing Cabling, Switches, Meters, Earthing, Connections and Structure. The labour cost of enabling the 5 kw system is around Rs. 250,000 and the target price of 5 kw system is Rs. 400,000.

What would have been needed for a national renewable energy based economic transition policy would have been a parallel national investment policy.

"The complete transition to 100% renewable energy that will revolutionize the transport system and create new industries will need 5 years. Despite the changes from 2020 to now, the project is feasible and its necessity directly felt now by every citizen," said Eng. Suriyarachchi.

What had been proposed therefore is to utilise the solar power fall on each household and collectively

utilise for the full energy requirement of the country including transport. Conversion of the transport sector to being electric centric is cited as doubly important as about 10 - 25 percent of batteries would be used to supply the night time power demand. It seems like a fairytale story to us Lankans languishing in serpentine fuel queues but this is the price we pay for seven decades of inertia for which not only politicians but professionals also have to share the blame.

The concept of this islandwide rooftop solar project will revolutionarily distribute the income earned among all the citizens of the country, instead of diverting the entire income to a few foreign and local tycoons, explains Eng. Suriyarachchi who had made a comprehensive presentation and submitted a comprehensive report to related officials. He had presented this to several officials in diverse capacity around three years ago.

He said that the initial cost per house owner is Rs. 400,000 as per installation on loan by Government/ investors and the gradual saving per household is Rs. 5,500 per month according to the overall costing done in 2020. The investment requirement at a minimum level is not vast as per foreign currency calculation as per global perspectives," he said.

Solar power

Suriyarachchi said that the costing was done on a reasonable analysis considering ongoing global pricing and that the cost analysis was based on setting up high scale manufacturing plants in Sri Lanka. To remind the size of scale, setting up solar power systems on 5 million house holds capacity of 3000 - 5000 mw per year.

Mohamed Fahim, who has worked overseas for over twenty years and thereafter has continued to associate with diverse foreign principals engaged in finance and infrastructure project development has attempted to promote renewable energy projects in Sri Lanka.

Having worked in housing development, in Dendro power development, municipality waste to energy development, solar power development, roof top solar power projects as well as hybrid power development, he had given up dejectedly although he has had many international investors willing to invest.

"In many of these projects we ended up unsuccessfully because of many reasons such as political instability, the long drawn terrorism linked wasted years the nation had to undergo and lengthy approval procedures where new comers were treated adversely and discriminated," he said, adding that the country has been a victim of short sighted policies that did not allow projects beyond 10MW power generation capacity.

"Foreign investors were not willing to invest for small projects. If you want to describe these small scale 10 MW power projects, we can say that it is like limiting the national solar power potential to a 'tea kiosk' or 'petti kade' parametres. As a country we have to learn to handle foreign investment through a far thinking foreign investment policy where global investment can be attracted in a manner enabling Sri Lanka to have a solid hold on national interests", he said.

He said, "What I tried to assist in was not to get an investing company that will exploit our resources and take the benefit by having us buy back the service from them at a high price but where Sri Lanka will solidly benefit.

Fossil fuel

From a foreign investment perspective it is very easy to get big time investment for solar for a country such as Sri Lanka. We certainly do not have to languish the way we are doing now by depending on fossil fuel resources of other countries," he said.

The stumbling block is when any country develops a culture of expecting commissions or indulging in encouraging a network of unnecessary red tape. "There are many regions in the world where systems have been put in place where it is easy to implement such projects and hence there is high investor competition. I remain positive that Sri Lanka can move forwards from this point and make a turnaround in its economic sphere especially through the route of renewable energy. All Sri Lankans should support this. This is the time we should start re-working for the country with utmost commitment," Fahim said.

He said that renewable energy needs a separate dedicated Government ministry and a Minister who knows the subject. He said that particular locations such as Kurunegala and Jaffna could be special solar zones.

In researching the efforts of di-



ONE OF THE 'ISSUES' THAT COME UP WHEN PROPOSALS OF SHIFTING TO RENEWABLE ENERGY IS THE DIFFICULTY OF ADAPTATION AND GRID TRANSITION TO SOLAR ENERGY. THIS IS SEEN BY THE RELEVANT EXPERTS ON SOLAR ENERGY AS A BASIC REALITY THAT ANY SUCH PROJECT WILL HAVE TO PRACTICALLY ACCOMMODATE

verse persons to steer Sri Lanka towards renewable energy in the past years this writer also spoke to those such as engineer Kamal Perera who is part of the helm at the Renewable Energy Development Branch of the Ceylon Electricity Board (CEB), Engineer Ajith Alwis who currently heads phase 03 of the Mannar, Mullikulam wind power project of the CEB and Prof. (Eng.) G. Senarathne, President of the Graduate Institute of Science and Management who had previously taught telecommunication and electronics related subjects at the Massey University in New Zealand.

Engineer Kamal Perera of the Renewable Energy Development Branch of the CEB stated that in 2020, following several phases of different evaluations over the past years on shifting Sri Lanka to renewable energy, a proposal had been submitted by the CEB, based on their research, looking at strategic adaptation to solar, wind and hydro based energy.

The main stumbling block in this regard had been the Cabinet non-approval when the tender related documents were submitted. Subsequently the Covid-19 virus situation had thwarted any active follow up on the matter. He called upon all policy makers and authorities concerned to become familiar with Sri Lanka's diverse efforts to prioritise alternatives to fossil energy and make a detailed study of why these plans did not take off.

Engineer Ajith Alwis said that the CEB had undertaken, in the year 1992, among the first local feasibility studies on renewable energy.

He said the need for Sri Lanka to introduce a viable national renewable energy transition policy framework that could be put into practice.

He said how a national shift to solar energy would change the entire energy and economic system of the country, scrapping imported fossil fuel dependency and transforming transport and domestic energy requirements. A solar energy policy coupled with a strategic investment plan would have transformed Sri Lanka and freed the nation from the shackles of poverty decades ago.

"Needless to say Sri Lanka would have been a certain paradise if we had such a plan soon after independence but at least seven or eight years ago if this was done through a clear policy decision, with equally clear understanding by policy makers concerned, Sri Lanka would not be in the current state it is in," says Eng. Alwis.

A policy is not just about having a document with elaborate sentences but rather a writ of clarity of what a country wants to achieve and with a clear timeline, plan and knowledge of how to reach that goal.

Economic revolution

Engineer Alwis is one of the CEB officials familiar with the detailed macro document/ presentation of Eng. Harsha Suriyarachchi (an engineer non connected to CEB) linking job creation, environment protection, pollution minimisation, industrialisation and the overall economic revolution that would occur through a national plan to use renewable energy focusing primarily on solar.

Prof. (Eng.) G. Senarathne of the Graduate Institute of Science and Management who this writer also spoke to, said that a key reason Sri Lanka has not developed over the past decades is because national projects are seen as routes to earn through commissions.

"If Sri Lanka has a mechanism where national policy making was linked to the professional sphere there are many who would have contributed," he said.

Alongside would be the manufacturing of batteries, manufacturing of cables and the creation of jobs associated with transport, security and training. The installation would be targeting 1.5 million households per year. For the installing of 1 million rooftop systems a year the need would be overall for 44000 skilled labourers, 5000 technical supervisors, 200 engineering assistants and 25 engineers.

Overall 500,00 new employment for installation is needed and another total of 17,500 employees which includes engineers, technicians and labourers.

Harsha Suriyarachchi said: "We are not talking about a 100 percent solar run grid (other renewables), but, say, a 500 percent solar run system as transportation and new industries too, to be running fully supported by solar energy."

"The grid, therefore, will mainly depend on switching and not on sys-

tem inertia and spinning reserve to control the frequency change."

In addition to switching, there will be 1500 mw of major hydro available to serve as spinning reserve and system inertia during the day time. Since the solar generation is scattered all over the country, sudden fluctuations due to cloud cover and climatic conditions will be minimal."

NOTE: This article is part of a solar awareness campaign to educate investors, the public and local policy makers on the need to transfer to renewable energy in Sri Lanka. The author, Frances Bulathsinghala is part of a team of professionals promoting renewable energy as part of integrated, sustainable and holistic economic, social and earth focused wellbeing and carrying out an integrated initiative to introduce solar energy to rural schools.