# Challenges to increasing Green Energy Share to 70% by 2030

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6th March 2025

## Chamber of Construction Industry Sri Lanka

# Should there be such a challenge ?

- **It is unquestionably the National Policy, that we should reach the target of 70% by 2030**
- As such it is an act of insubordination by any state agency to even cast a doubt on this possibility like we hear from the CEB
- **When Prime Minister Modi declared the target of 100,000 MW of solar PV there were no State Institutions like CEB to say that can't be done**
- How do you read this? Is it just an acceptance of incompetency or lack of self confidence?
- One would even conjecture that there could be other undisclosed reasons

# Our Ambitions were  much higher

- Minister Patali Champika Ranawaka proposed near 100% RE penetration in his Proposal **Sri Lanka  Energy Sector Development Plan for a Knowledge Based Economy 2015 to 2025**
- **President Gotabhaya Rajapakse proposed 80% RE integration by 2030.** But the CEB engineers in a singular  admission of their ineptitude managed to lobby for a reduction of this target to the present 70% by year 2030.
- **In a recent work shop held by the ADB , all the foreign delegates considered reaching this target  a walk in the park considering we are already at 52%**
- **However, the present and past CEB and Ministry dignitaries, chose to display doubts of the ability to reach this national goal by expressing doubts**
- This is the direction for the future energy sector development, not limited to 70%, obvious to anyone, other than the CEB and the Ministry of Power and Energy

# Why is this target important to us?

- Primarily it is a matter of economic reality
- Sri Lanka have been spending $ 5000 Million annually to import fossil fuels. 25% of this is for the generation of electricity
- **All our RE resources are Indigenous and we don't have to pay Dollars for their usage**
- While the present target of 70% RE refers only to the electricity sector, a much larger challenge remains, particularly – The Transport Sector
- So the pot of gold to be gained is even bigger
- In addition we have a loftier target of zero emissions economy by 2050

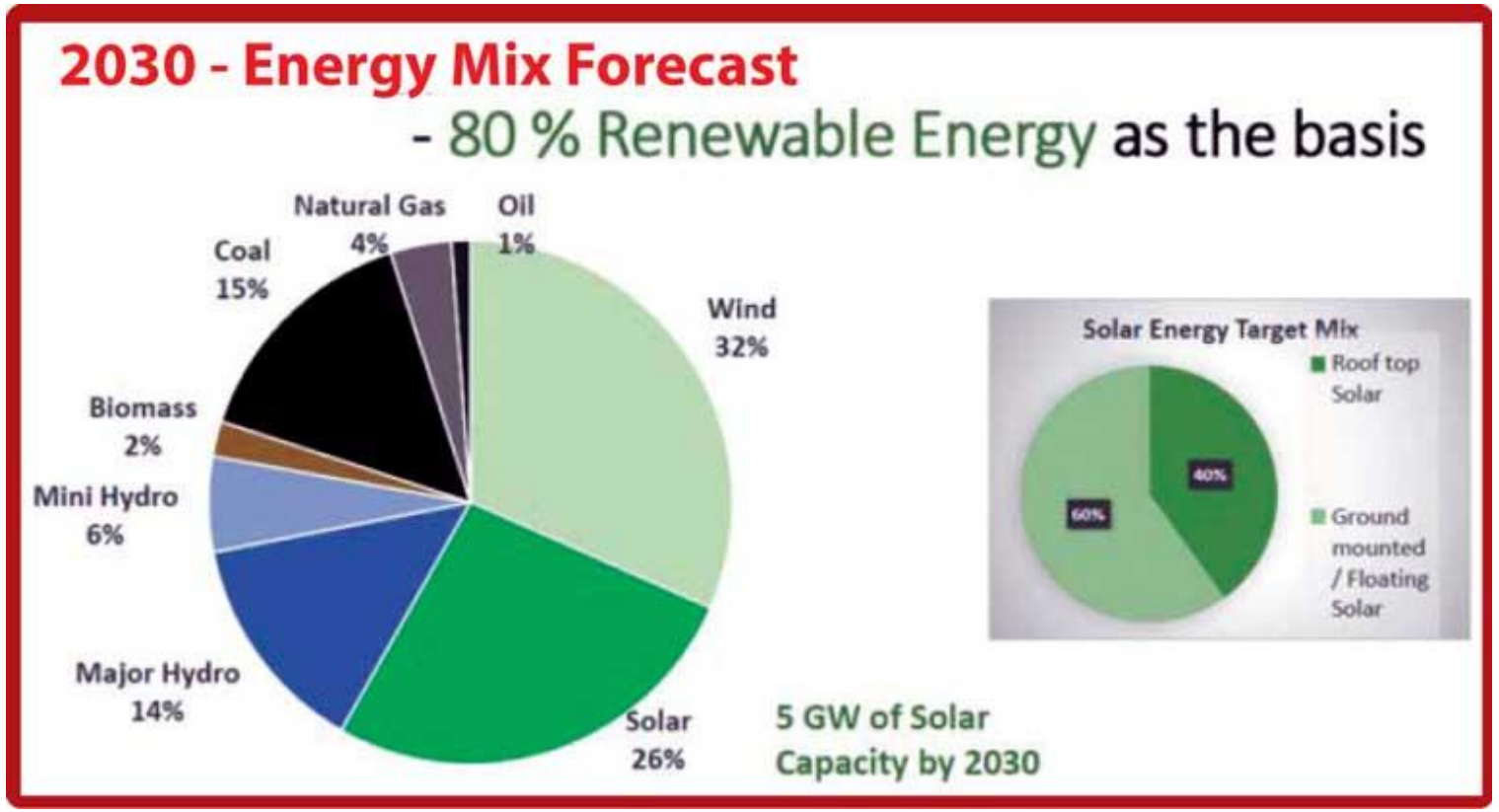
# The Economic and Financial value

| CEB COST OF GENERATION - YEAR 2023 | | | | |
|---|---|---|---|---|
| Description | GWh | % | Cost (Rs. Billion) | Rs./kWh |
| CEB Thermal (Oil) | 2,039 | 13% | 146.00 | 71.60 |
| CEB Coal | 5,151 | 32% | 181.00 | 35.14 |
| IPP Thermal (Oil) | 1,160 | 7% | 80.50 | 69.40 |
| **Sub Total (Thermal)** | **8,350** | **52%** | **407.50** | **48.80** |
| CEB Hydro (Large) | 4,590 | 28% | 11.10 | 2.42 |
| NCRE (Wind, Solar, Small Hydro) | 3,192 | 20% | 52.00 | 16.29 |
| **Sub Total (Renewable)** | **7,782** | **48%** | **63.10** | **8.11** |
| **TOTAL** | **16,132** | | **470.60** | **29.17** |

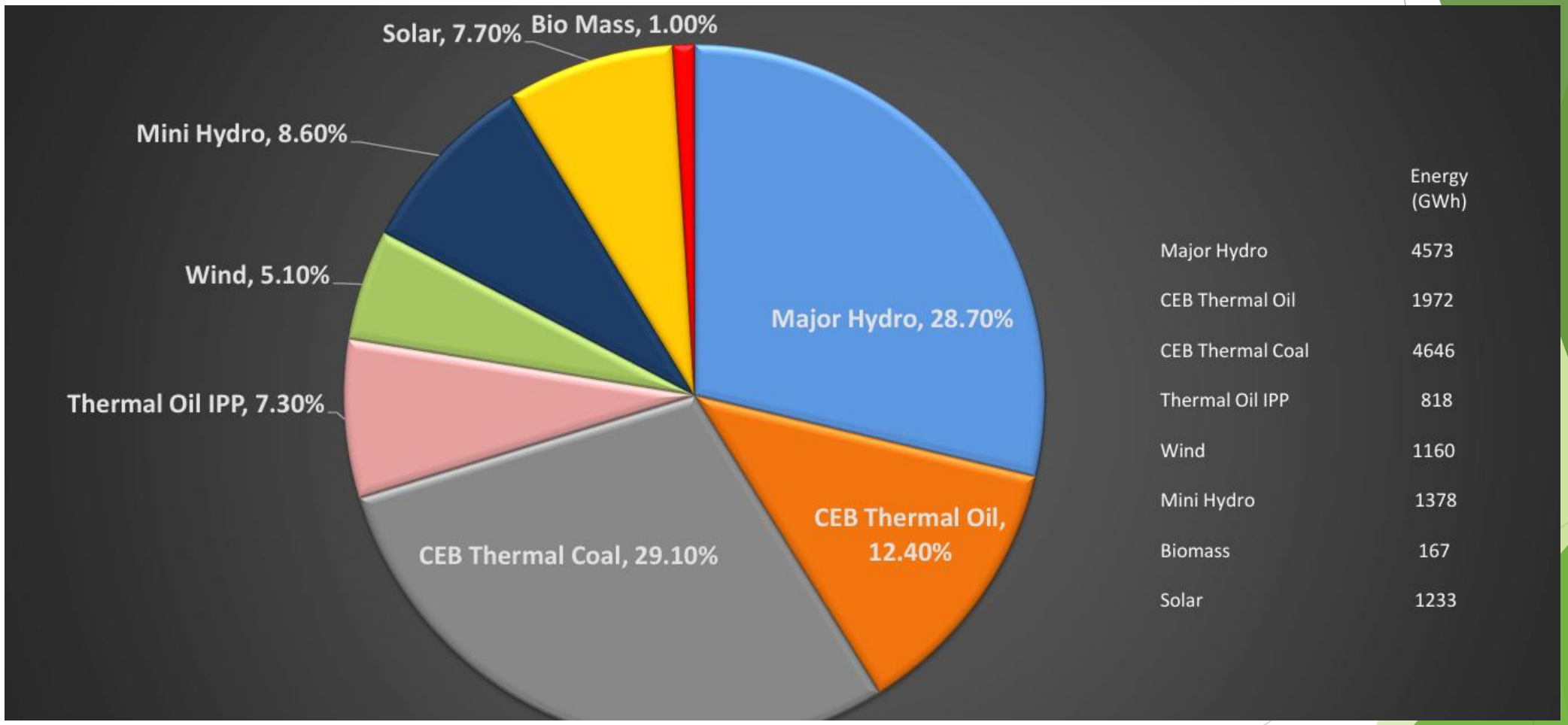
NCRE Cost is 66% lower than Average Thermal Cost in 2023

**87% of the cost is for 52% of Thermal Energy**
**Only 13% of the cost is for 48% of Renewable Energy**

# The Energy Mix for 2030



# Present NCRE Contribution 51%

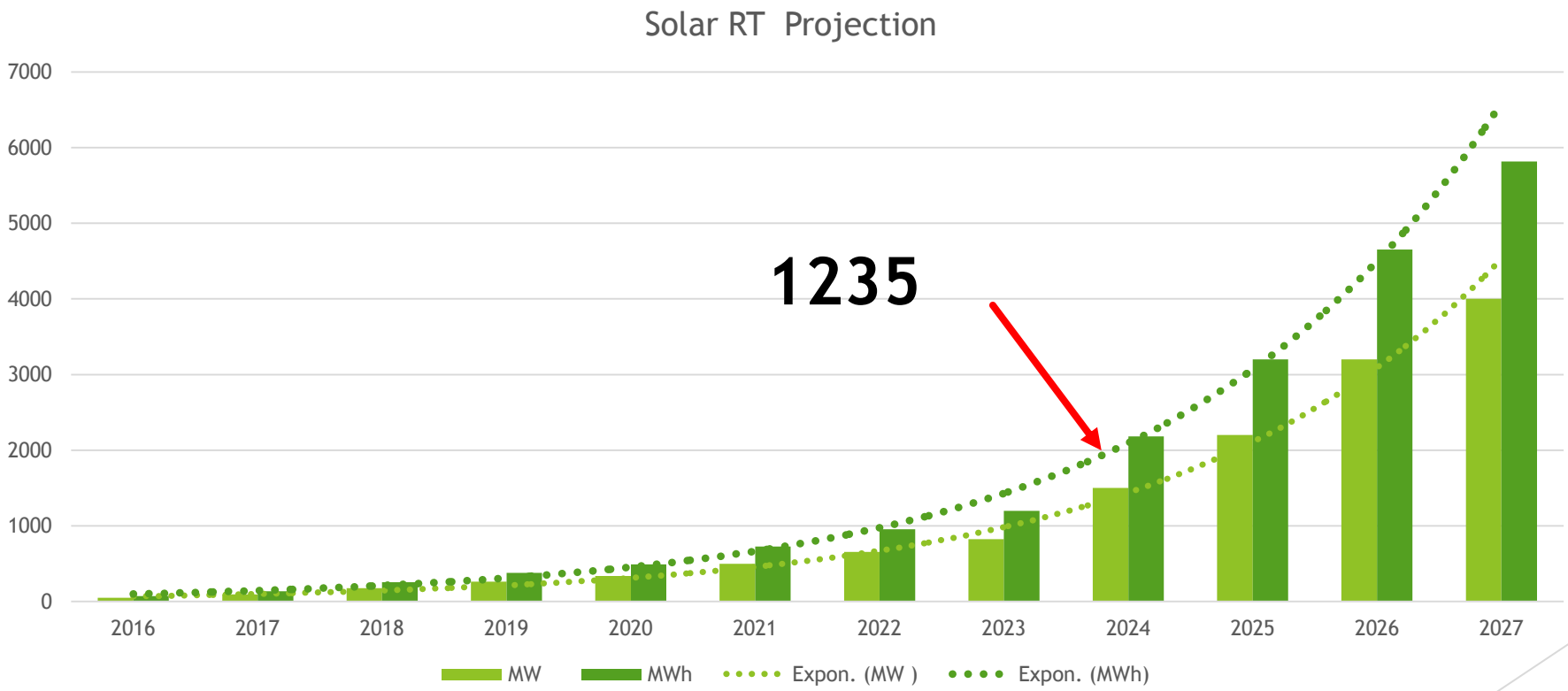



| | Energy (GWh) |
|---|---|
| Major Hydro | 4573 |
| CEB Thermal Oil | 1972 |
| CEB Thermal Coal | 4646 |
| Thermal Oil IPP | 818 |
| Wind | 1160 |
| Mini Hydro | 1378 |
| Biomass | 167 |
| Solar | 1233 |

# What we will enjoy with 70% RE

| Base Case 2024 | | From Presentation by DGM/CEB to Parliament | | | | Impact of Stopping all Oil Based Power Plants and DSM | | |
|---|---|---|---|---|---|---|---|---|
| **2024 Forecast** | | **GWh** | **Rs/kWh** | **Cost Rs Mn** | | **GWh** | **Rs/kWh** | **Cost Rs Mn** |
| Energy Source | | | | | | | | |
| CEB Hydro | | 4,417.70 | 4.5 | 19,879.56 | | 4,417.70 | 4.5 | 19,879.65 |
| Thermal Complex | | 1,994.50 | 63 | 125,653.50 | | 0 | 63 | 0 |
| coal | | 5,254.40 | 32 | 168,140.58 | | 5,254.40 | 32 | 168,140.80 |
| CEB NCRE | | 300 | 4 | 1,200.00 | | 300 | 4 | 1,200.00 |
| Private NCRE | | 2,169.00 | 26 | 56,394.00 | | 3,300.00 | 26 | 85,800.00 |
| Private Thermal | | 1,147.00 | 64 | 73,408.00 | | 0 | 64 | 0 |
| Roof Top Solar | | 750 | 32 | 24,000.00 | | 2,500.00 | 32 | 80,000.00 |
| DSM Measures | | 0 | | 0 | | -300 | 0 | 0 |
| Average Cost /kWh | 29.23 | 16,032.60 | | 468,675.64 | | 15,472.10 | | 355,020.45 |
| Cost of Fin Tra and Distribution | | | | 204,000.00 | | | | 204,000.00 |
| Total | | | | 672,675.64 | | | | **559,020.45** |
| | | | | | | | | **113,650.19** |
| Saving in foreign exchange for import of oil US$ Annually | | | | | | | | **832,120,500** |

# We are well on the way with Roof Top Solar



# Is the 70% RE target a bridge too far?

- We have already reached or surpassed it on a number of days in the past several years.
- This was possible mainly due to the high Hydro contribution during those days.
- But don’t we have alternatives to bridge the gap during dry months

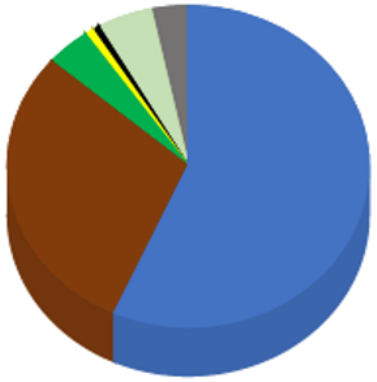
# Road to 70 % RE by 2030 -We already scaled this pinnacle last year and two years before

But no one took notice or had the vision to try to extend this trend

## DAILY ELECTRICITY GENERATION

Date: Monday, October 17, 2022

| | | | |
|---|---|---|---|
| Total Energy | 36.39 GWh | Peak Demand | 1945.0 MW |
| • Renewable | 25.60 GWh (70.36%) | • Renewable | 1407.0 MW (72.3%) |
| • Fossil Fuel | 10.79 GWh (29.64%) | • Fossil Fuel | 538.0 MW (27.7%) |



| | |
|---|---|
| CEB Hydro | 20.62 GWh |
| CEB Thermal Coal | 10.79 GWh |
| CEB Thermal Oil | 0 GWh |
| CEB Wind | 1.46 GWh |
| SPP Solar [1] | 0.28 GWh |
| SPP Biomass [2] | 0.23 GWh |
| SPP Minihydro | 1.8 GWh |
| SPP Wind | 1.22 GWh |
| IPP Thermal Oil | 0 GWh |

## TY GENERATION

| | |
|---|---|
| 34.27 GWh | Peak Demand 2047.1 MW |
| Wh (74.32%) | • Renewable 1475.4 MW (72.1%) |
| Wh (25.68%) | • Fossil Fuel 571.7 MW (27.9%) |

| | |
|---|---|
| EB Hydro | 18.02 GWh |
| CEB Thermal Oil | 0.14 GWh |
| CEB Wind | GWh |
| SPP Solar [1] | 0.3 GWh |
| SPP Biomass | 0.11 GWh |
| SPP Minihydro | GWh |
| SPP Wind | 2.55 GWh |
| IPP Thermal Oil | 0 GWh |

Rooftop solar and 1MW solar units not included.
power plant included.
plants included.

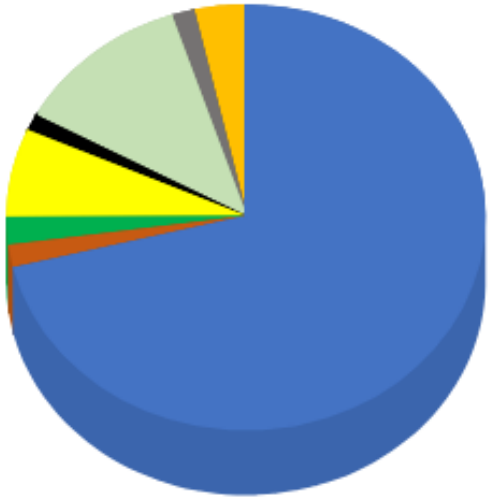
ucers; SPP: small power producers
aily records will be included in annual publications

# Even in Jan2024 we surpassed 81% RE

## DAILY NET ELECTRICITY GENERATION

Date: Saturday, January 13, 2024

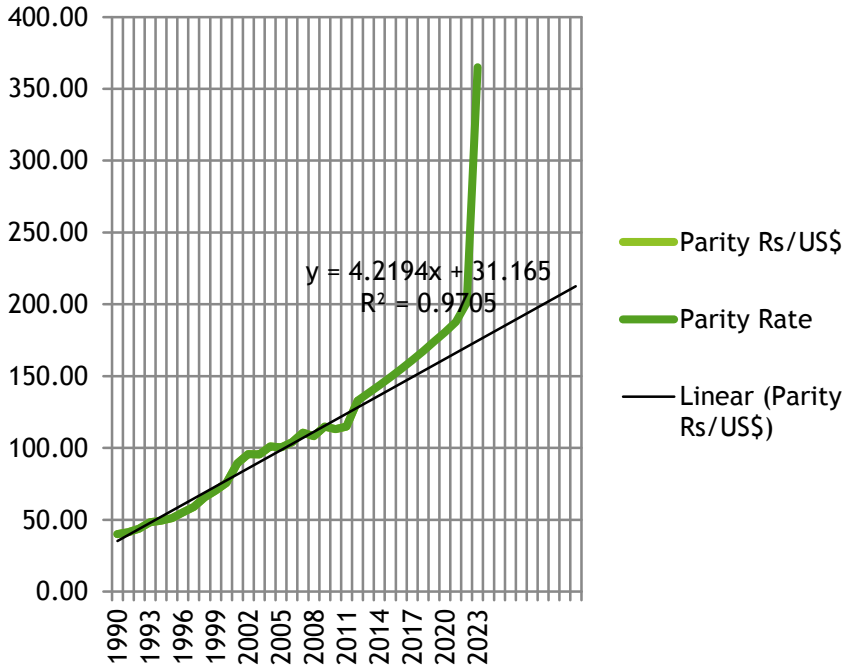
| | | | |
|---|---|---|---|
| Total Net Energy | 40.24 GWh | Peak Demand | 2112.3 MW |
| • Renewable | 32.68 GWh (81.21%) | • Renewable | 1482.8 MW (70.2%) |
| • Fossil Fuel | 7.56 GWh (18.79%) | • Fossil Fuel | 629.4 MW (29.8%) |



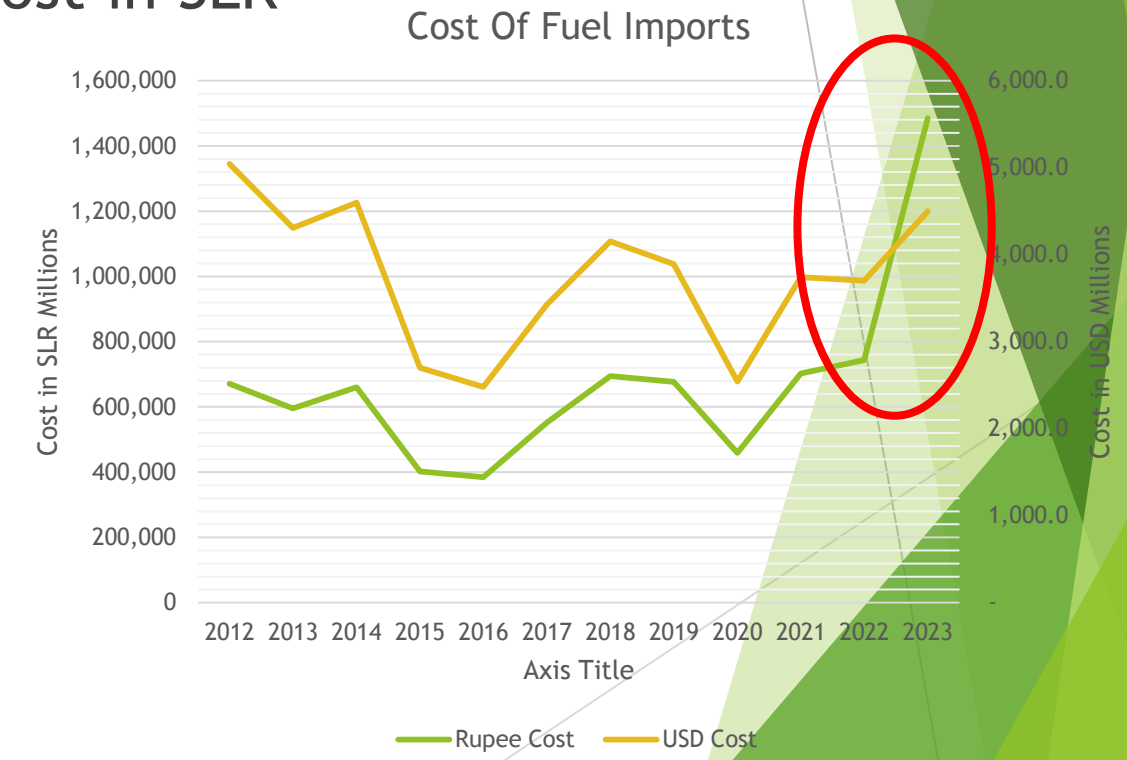
| | |
|---|---|
| CEB Hydro | 24.53 GWh |
| CEB Thermal Coal | 5.75 GWh |
| CEB Thermal Oil | 0.58 GWh |
| CEB Wind | 0.73 GWh |
| SPP Solar [1] | 2.31 GWh |
| SPP Biomass [2] | 0.43 GWh |
| SPP Minihydro | 4.14 GW |
| SPP Wind | 0.53 GW |
| IPP Thermal Oil | 1.23 GWh |

# The Financial Impact

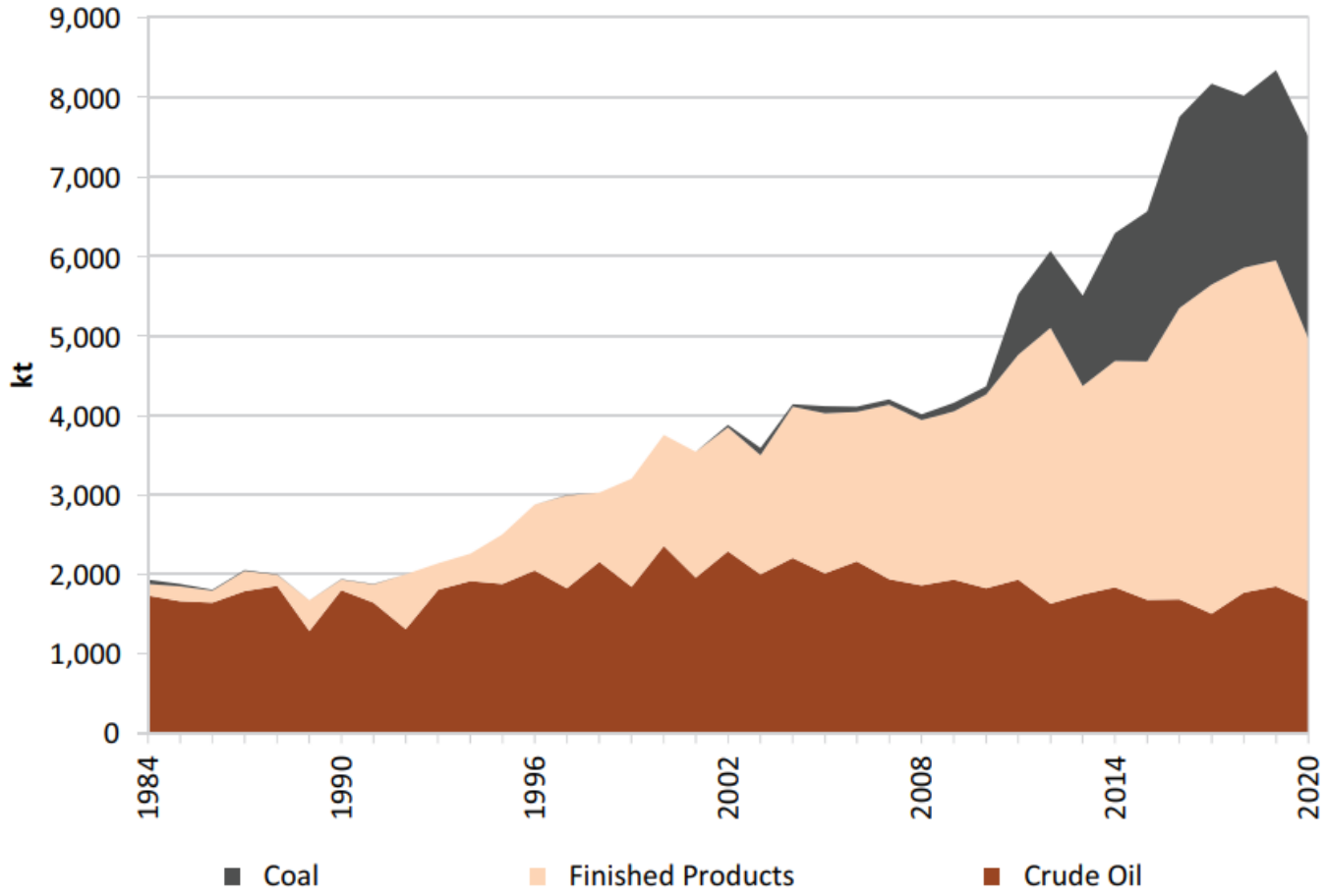
## Change in USD Parity




## Real cost in SLR



# Unacceptable  trend in growth of fossil fuels usage

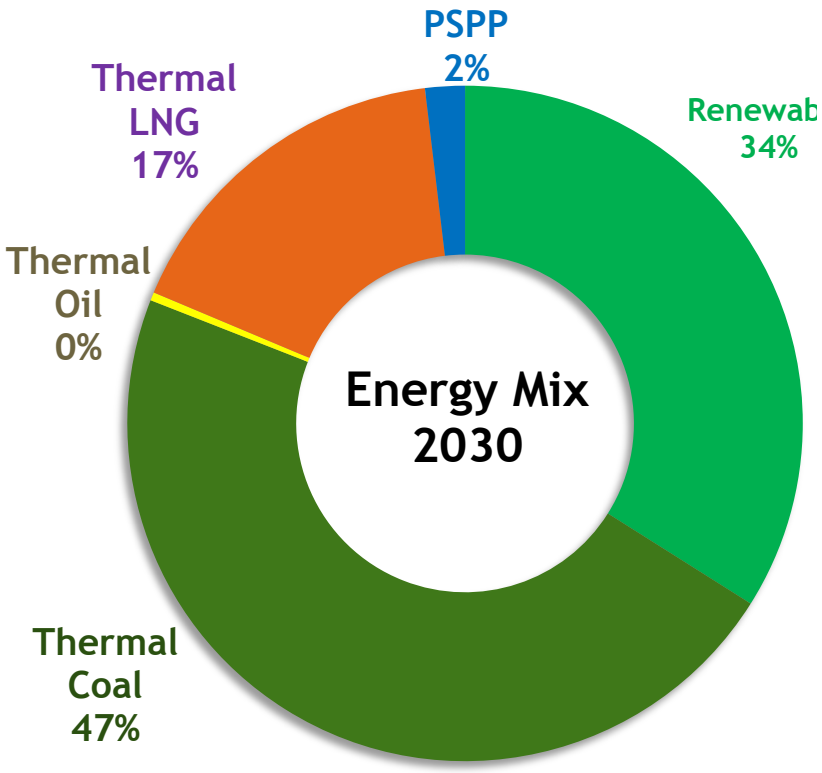



Sri Lanka Energy Balance 2020 - SEA

# LONG TERM GENERATION EXPNASION PLAN 2018-2037

CEYLON ELECTRICITY BOARD Enrich Life through Power

## Base Case Energy Mix by 2030
(Base Case LTGEP 2018-2037)




## Base Case Energy Mix by 2030
(Draft Base Case LTGEP 2024-2044

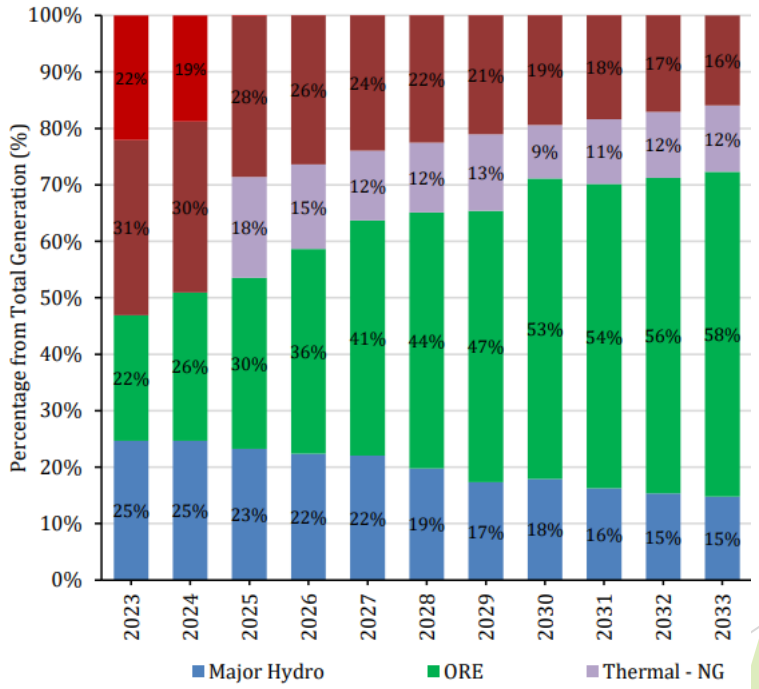



*Figure 8.6 – Percentage Share of Energy Mix ov*

The RE % 34% Only

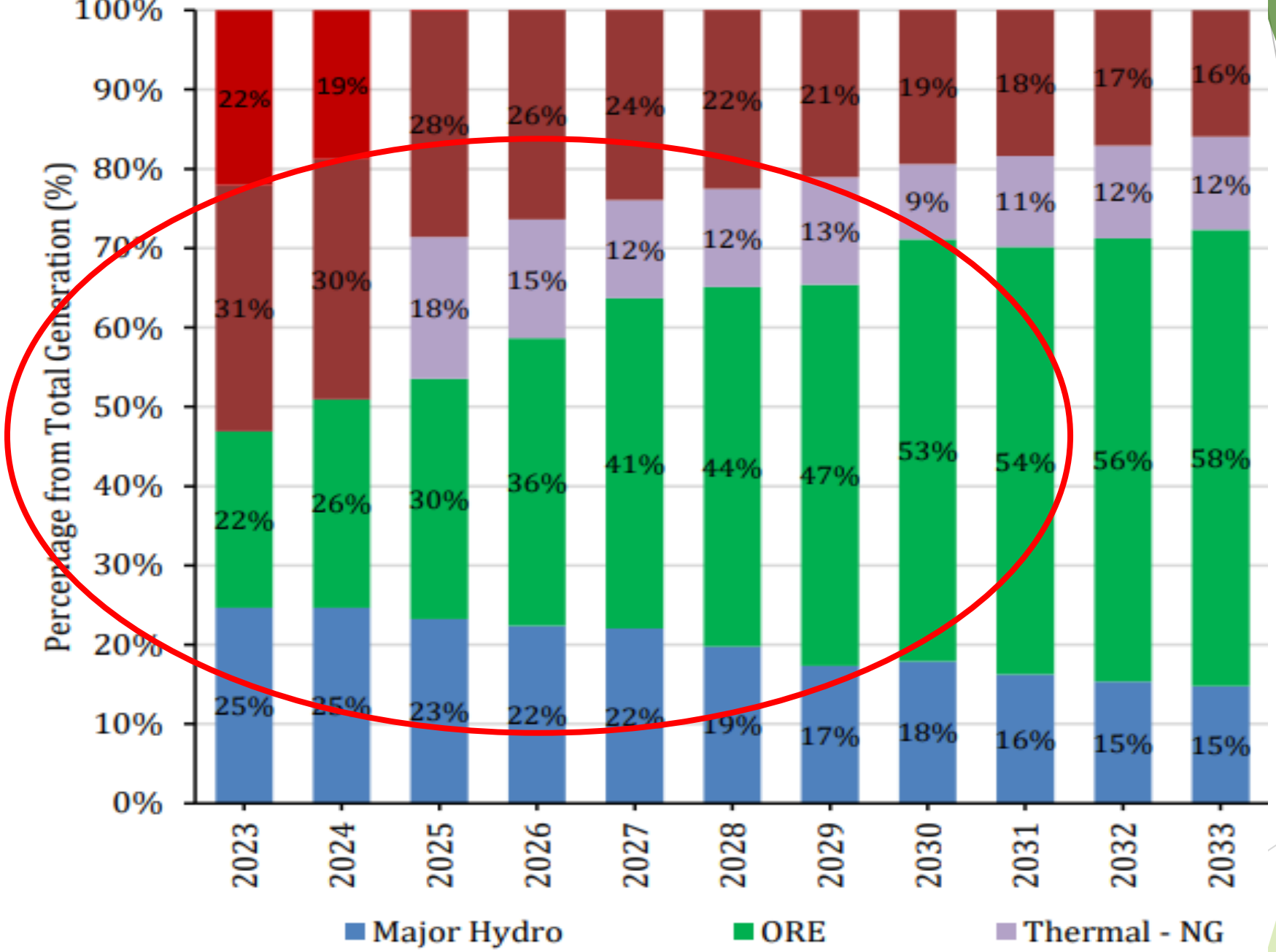



***Figure 8.6 – Percentage Share of Energy Mix ov***

# For Sri Lanka Renewable Energy is no longer a Choice but an unavoidable imperative !

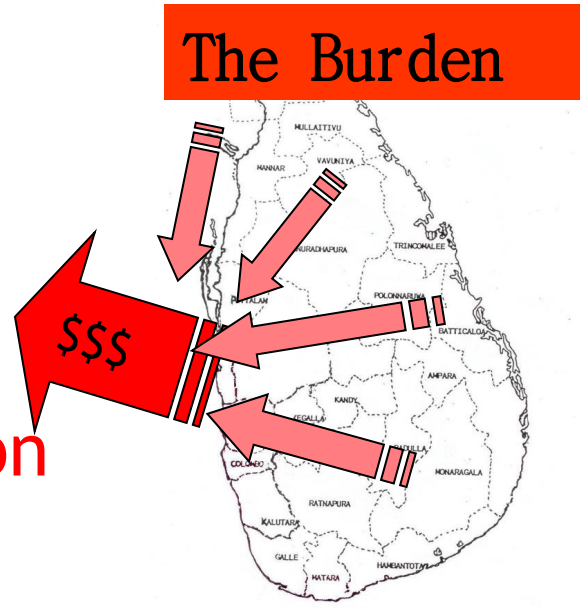
- **We have no proven fossil fuels oil or coal or NG**
- **We have more than enough indigenous renewable energy resources**
- **The technologies are proven and available in commercial scale**
- The Promise of NG from Mannar is yet to be commercialized and monetized
- We will continue to spend $ 5000 million annually for import of fossil fuels
- Import substitution is far easier than gaining export earnings to ease the pressure on the SL Rupee

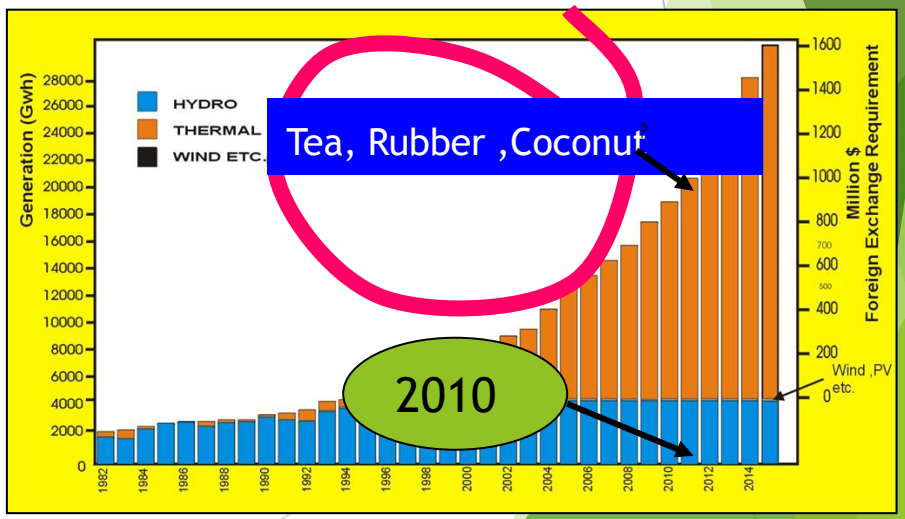
We have already proven our capacity for change

# Why is missing this a problem ?

- Danger of imminent Power Shortages avoided with expensive oil
- Intolerable pressure on balance of payments driving down the Rupee due to extensive i of fossil fuels currently consuming over 30% total FE earnings
- The export income from TEA RUBBER and COCONUTs are inadequate to pay for oil and coal, Since 2010

Cost of Fuel Imports for Electricity and Transport -
> US $ 5000 Million in 2023 and will




The Sun -
The Source of All Energy Forms-
and it is free
Let us harness this Bounty of
nature effectively
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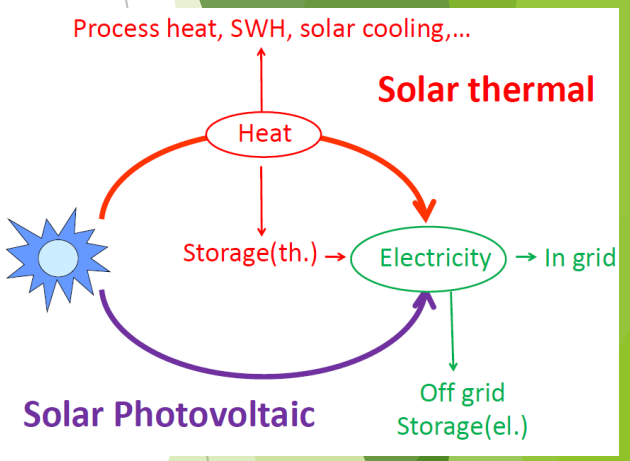
# What About Sri Lanka ?

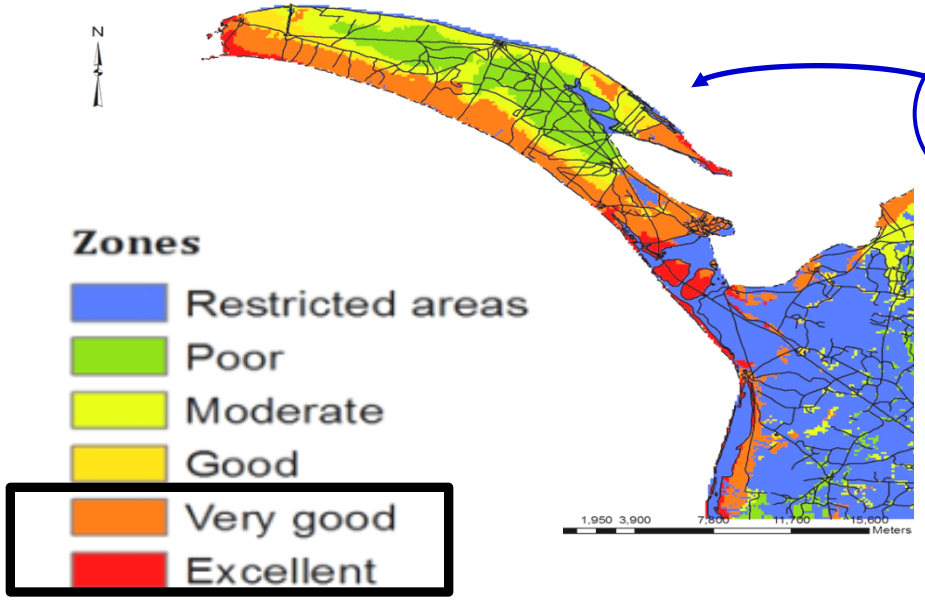
- Annual Electricity Demand 2020 15,000 GWh
- Solar Insolation @4.5 kWh/m2/day 106,762,500 GWh
- We have at least 7000 times our need to play with

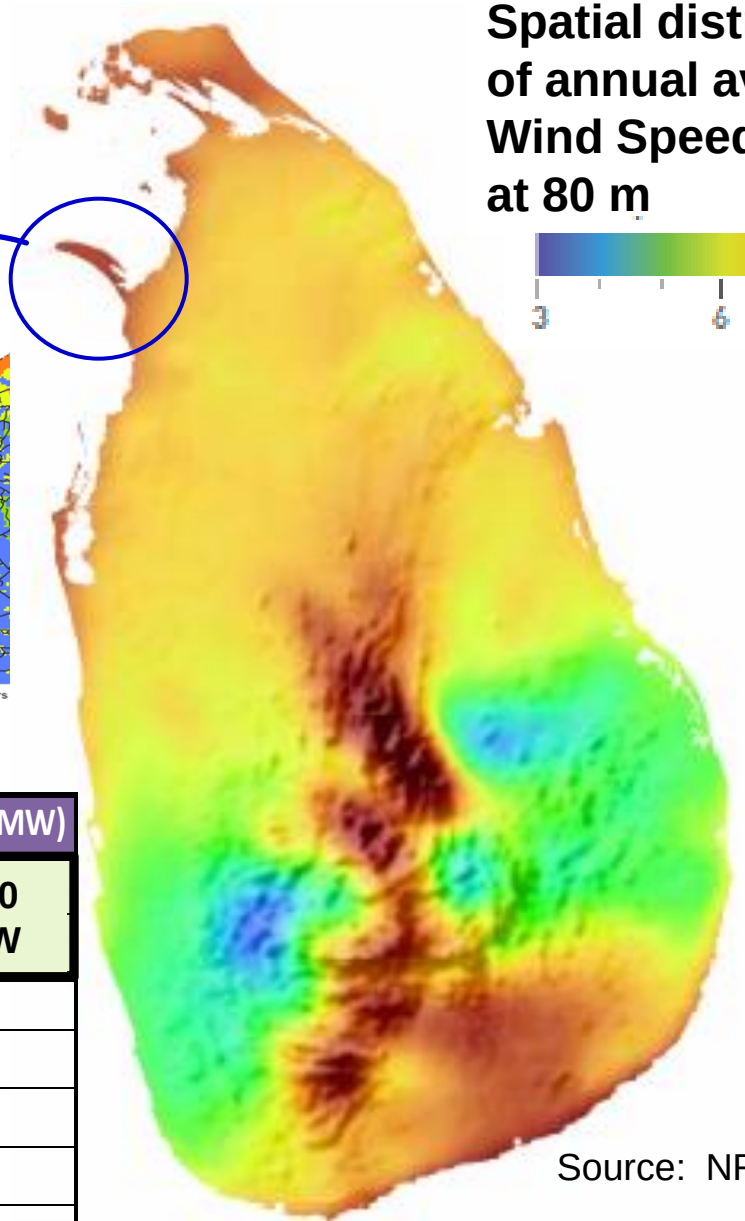



# WIND ENERGY RESOURCE

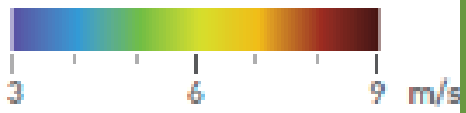
- Resource Maps

**Mannar Region**



**Spatial distribution of annual average Wind Speeds (m/s) at 80 m**




Conservative potential 100,000 MW

| Classification | Extent ( $km^2$ ) | Wind power potential ( MW) | |
|---|---|---|---|
| **Excellent** | 13 | 65 | **360 MW** |
| **Very good** | 59 | 295 | |
| Good | 13 | 65 | |
| Moderate | 41 | 205 | |
| Poor | 42 | 210 | |
| Restricted | 152 | 760 | |

Source: NREL 1997

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# Gliricidia to Electricity The Role of Dendro

ADB and JAICA Projections
2500 MW
BEASL Estimate 4000 MW
CEB Plans only 105 MW by 2030

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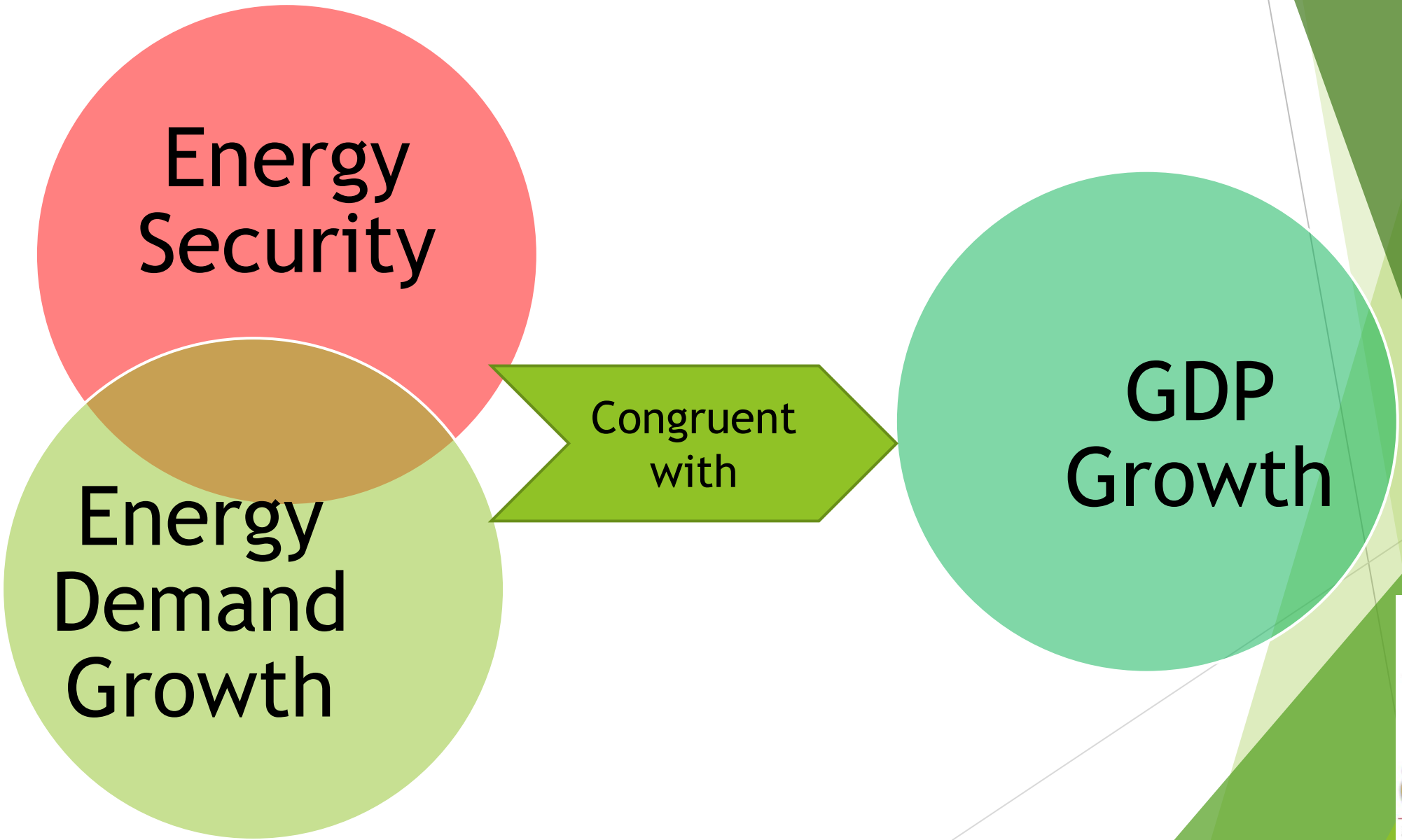
# How can Sri Lanka benefit from this bounty of nature ?

- A National Consciousness of this gift of nature
- Recognize that Sri Lanka no longer needs to depend on imported fossil fuels
- We are an energy rich nation with massive resources which can be developed with already commercially proven technologies
- A holistic National Energy Policy mandated to be abided by all , both public sector and private sector including individual citizens
- Proper Governance of the CEB

- A paradigm shift on our view of Energy

# The Conventional Wisdom !!



# A New Paradigm !!
# The Energy Sector to be a Sri Lankan Industry

Power Generation with indigenous resources By Sri Lankans

Enhances and supports GDP Growth

## Every Roof Top a Power Plant
## Every Garden an Energy Plantation
## The Consumer to be a “ Prosumer”



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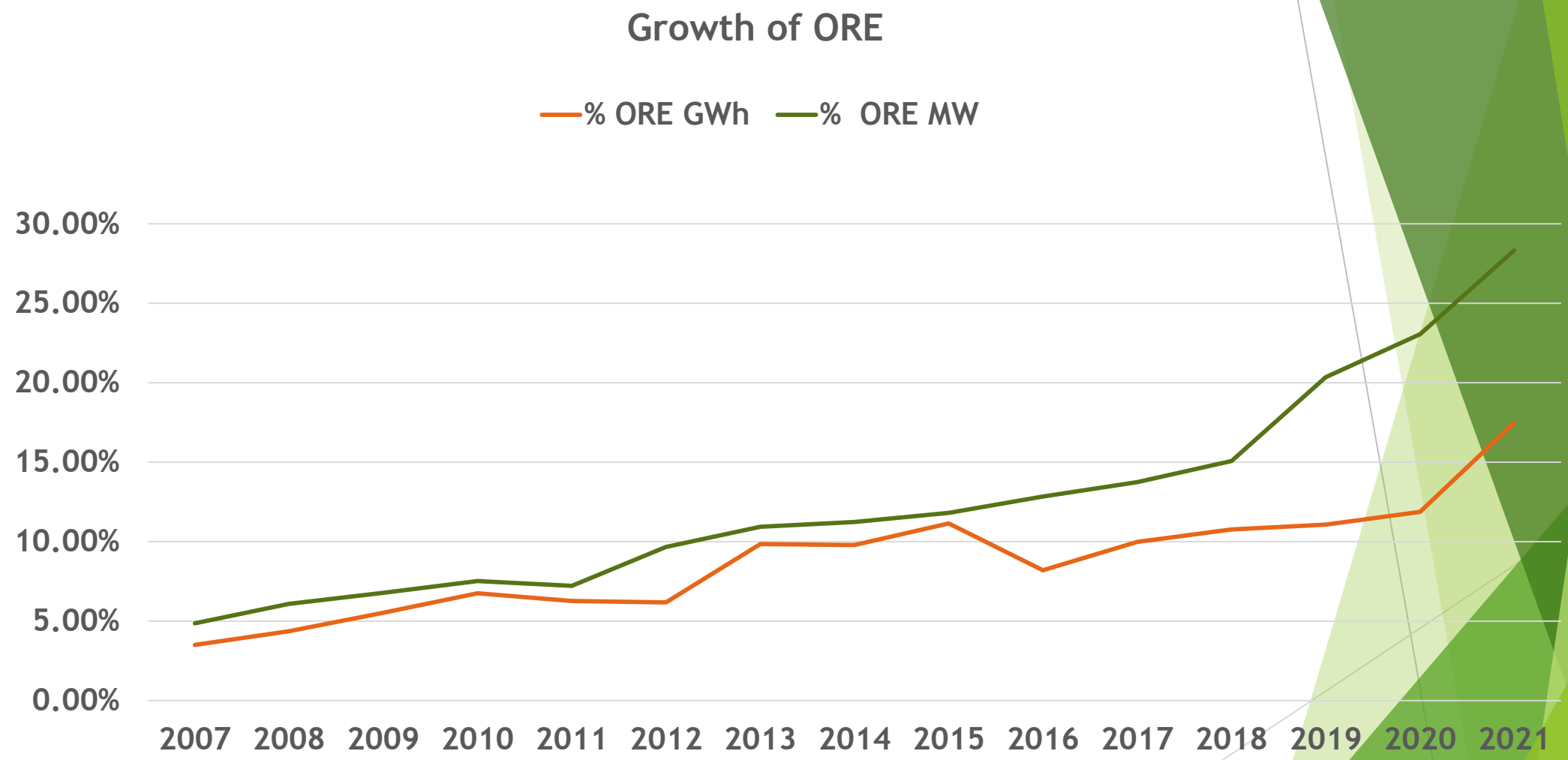
# Essential features to achieve this change

- None dependence on external inputs - Get rid of oil double quick
- Maximization of utilization of indigenous resources
- Energy generation in addition to transmission and distribution to be a National Industry in control of Sri Lanka, not necessarily state alone
- Maximizing the benefits to all stakeholders – spin off benefits and Prosumer Concept- using Bio Energy and Solar Roof Top PV
- Gliricidia offers the best and immediate opportunity for commence this revolution of rural upliftment with Rs 50 Million per MW flwoing to the rural economy every year.
- Roof Top Solar PV has already shown its potential and vibrancy

# Growth of ORE - We were on track



# What do we need to add ?

- 1400 GWh of Roof Top Solar PV from 1000 MW addition
- 3015 GWh NCRE –
  - Wind , 1380 GWh from 450 MW addition
  - Solar Parks 350 GWH from 250 MW addition
  - Bio Mass, 375 GWh from 50 MW addition
  - Mini Hydro 275 GWh from 70 MW addition
- DSM 300 GWh ( The unexplored low or zero cost resource )
  - Replace 20 Million CFL bulbs with LEDS
  - Replace old motors with Energy Efficient motors

# The potential windfall possible

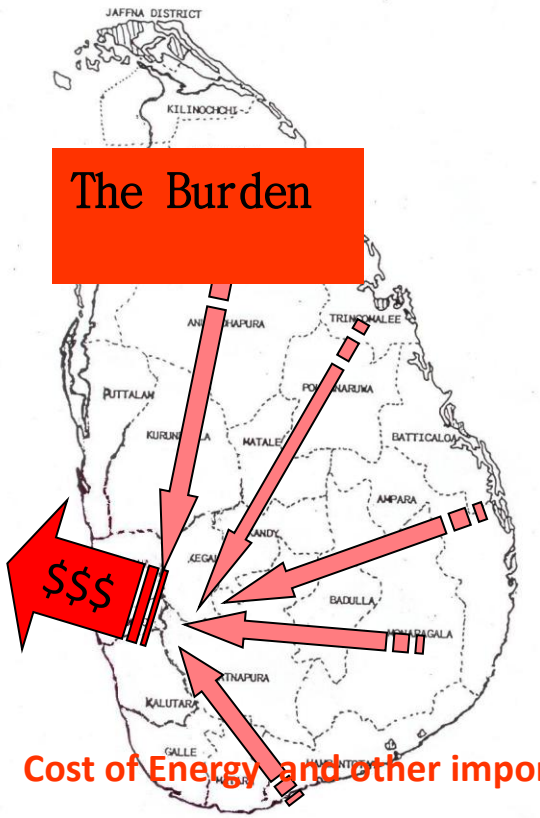
"According to a study by the Sustainable Energy Authority,

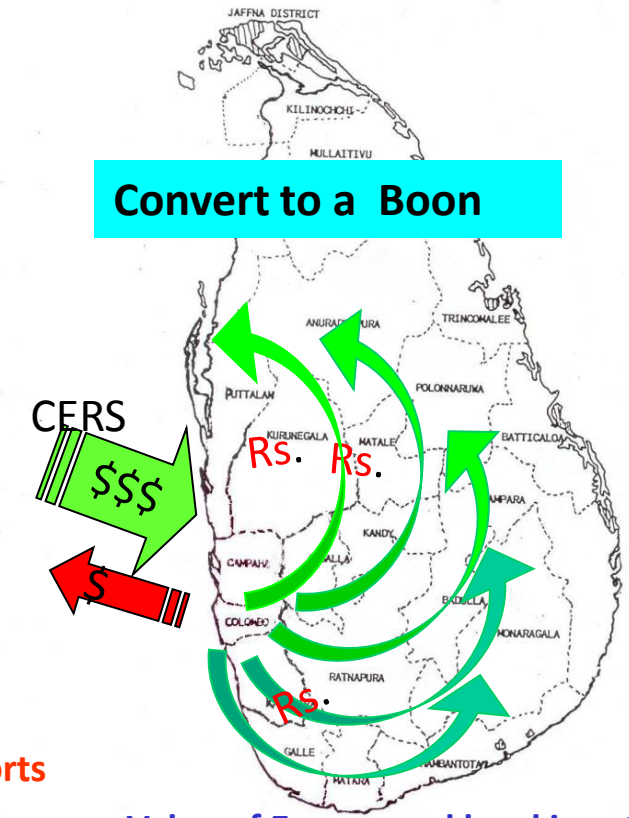
Sri Lanka has a bounty of nature

- The On Shore and Off Shore wind Potential – 102,000 MW
- The Solar Potential - 106,000 MW
- We need only 10,000 MW to meet the domestic needs
- Let us target monetizing of only 25% of the excess

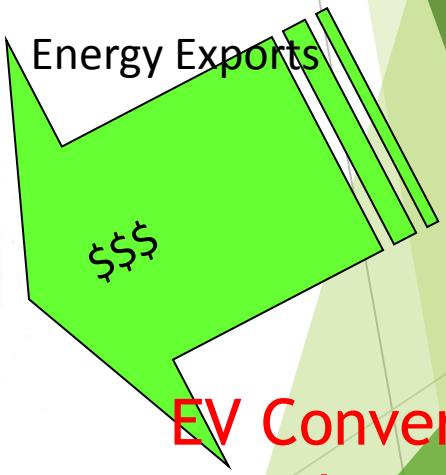
# Converting the Drain to a 'Spin'

Cost of Fuel Imports for Electricity and Transport
US $ 5000 Million and will continue to increase




Export Potential Minimum $ 7.8 Billion Annually




EV Conversion $ saved Annually replacing petrol and diesel

# Who could make this change?

- Sri Lankan Entrepreneurs big and small can do this
- The State policies should be aligned to facilitate this
- But the Prosumers can provide the initial impetus as already done
- The Banking Sector has a major role to play, by at least allocating a fair share of their loan portfolio to support the renewable energy

# Is there a challenge in achieving 70% RE?

- **There certainly is** with the present attitude of the CEB and the lack of governance by the Ministry.
- The task of achieving this target should be officially placed on the CEB Management and annual milestone targets should be demanded
- **None compliance cannot be tolerated as this is national issue**
- In contrast the CEB and the Ministry are striving daily to disincentivize the local developers who have demonstrated their prowess

1. The already commences curtailment of Solar, Wind and Mini Hydro
2. The infamous Amendments to the Electricity Act to reduce the scope of NCRE projects to just 1 MW, which the CEB well knows are unviable
3. Process to reduce the FIT tariff to match a preconceived value plucked out of thin air
4. Many other moves surreptitiously being done

# The Events of 9th February

- I think the Monkey did a great favour to the Electricity Sector
- The CEB is now talking about many initiatives that could have avoided the many issues
  - Allowing behind the meter batteries for solar PV systems
  - Measures to improve the system inertia by using idling turbines both thermal and Hydro, as Synchronous Generators
  - Adding grid level batteries for frequency control and spinning reserve
  - Upgrading the System Control Center to monitor solar and wind generation
- What is still not addressed is the adequate development of Dendro Electricity which will add to both inertia and spinning reserve

# Energy Resources belong to the people !!

- The energy polices, development strategies and administration is presently in the hands of a few officials and large energy companies
- This must change to ensure adequate public consultation
- There has to be clear evidence of the benefits flowing to the people
- The concept of Prosumers is clear way

Let him too participate and benefit from the energy economy

**Power for the People by the People**

make Energy a Consumers business