Chartered Mechanical Engineer by profession, graduated from University of Moratuwa with a BScEng (Hons.) and earned an MBA from University of Colombo.

Focus

Energy policy, energy efficiency, renewable energy development and project financing
Operational efficiency of industries and processes and Enterprise Resource Planning

Roles

President, Sri Lanka Energy Managers Association
Convener, National Energy Policy Committee
Consultant to several agencies in India, national electricity utility of Kenya and the Maldives Energy Authority
Integrator, National Energy Efficiency Improvement Programme - Operation DSM

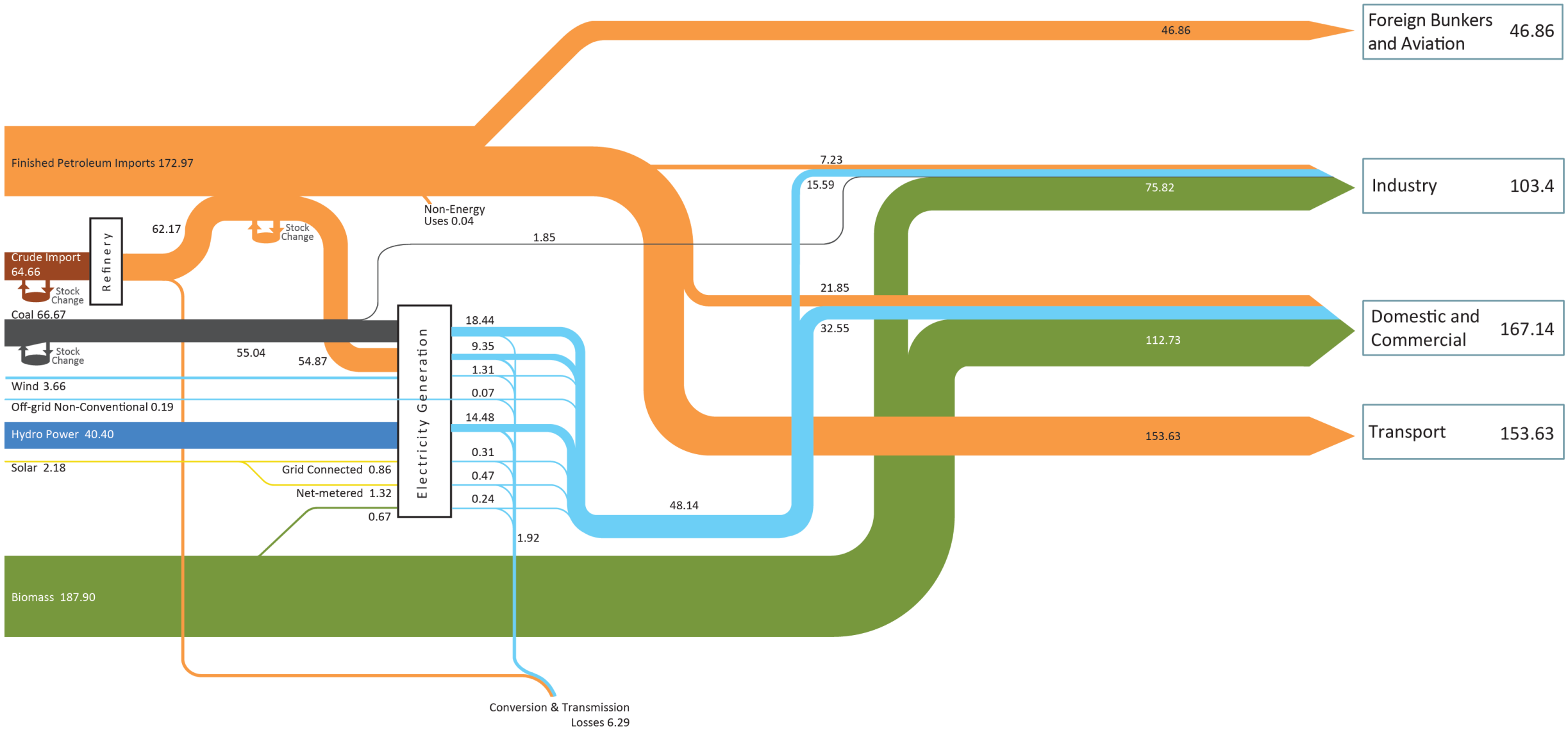
National Energy Roadmap

Harsha Wickramasinghe

Deputy Director General
(Demand Side Management)

Sri Lanka
Sustainable Energy
Authority

Energy Flow Diagram - 2017 (PJ)



We are in happier times since August 2019..!

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අංක 2135/61 - 2019 අගෝස්තු මස 09 වැනි සිකුරාදා - 2019.08.09

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2019 අගෝස්තු මස 08 වැනි දින.

Presidential Election 2019

- Both main contenders have aligned their manifestos with the stated policy….
- The winner says…

Renewable Energy

Renewable energy has now become a widely discussed subject and is needed as part of the overall energy mix of a country, which consists of Hydro, Thermal, Coal and alternative renewable energies. It will ensure that the country has access to low cost energy needed for rapid economic acceleration.

Water

Water resource management has become an important discussion point, and is vital for economic development. Only 45% of the population has access to the water supply. Water ways have also been polluted thereby compounding the problem of providing safe drinking water to all. It is our intention to meet this challenge and thereby ensure 100% of the population is provided with clean, safe pipe borne water.

- Achieving Energy Security and self-sufficiency will be one of our primary policy and strategic objectives and we will put our best effort to ensure that the country has adequate capacity to meet the future demand.
- We will also expedite the exploration of natural gas identified in the three zones of the geological survey, to ensure that the people of this country would reap the benefits in the next three years.
- The oil refinery located in Kolonnawa, which is 40 years old will be modernized while the oil storage tanks in Trincomalee will also be re-constructed and developed so that they can be used for the economic development of the country.
- According to the current plan, we will take actions to add 230MW of power to the national grid by installing the Broadland hydropower station by 2020, Uma Oya by 2021, Moragolla by 2023, Talapitigala and Seethwaka by 2024.
- Immediate actions will be taken to convert the Kelanitissa plant to a natural gas turbine plant, where similar two plants will be implemented in Kerawalapitiya and Hambantota before 2023. As part of the environmental-friendly policy, we will convert the fuel-powered plants located around the Colombo area to natural gas turbine plants within the next year.
- We will develop a Smart Grid to ensure maximum efficiency and utilization is obtained from all power plants.

Transformation Toward Renewable energy

- We will add 100MW of wind energy in Mannar by 2021. Additionally, we expect to add 800MW of solar energy to the national grid by executing a wind and solar power project with a public-private partnership in potential locations around the country including Mannar, Poonareyn and Monaragala.
- Roof top solar systems will be encouraged so that households and small businesses would have access to low cost energy, which will be done in the course of the next five years. The total cost of such investments would be made available through bank loans with low/concessional interest rates. The government will also introduce a new method to release excess power generation to the national grid in improving solar energy utilization.
- We will remove all impediments and incentivize the private sector and entrepreneurs interested in setting up renewable energy projects i.e. solar and wind, and to this end, the government will provide assistance.
- We will also introduce an efficient energy generation programme using industrial waste in each city.
- We will introduce new policies and legislation to ensure the efficient use of energy in construction sector.

Status quo

- Drain of national wealth
- Energy crisis
- Solid-liquid-gaseous fuels
- Fossil fuels
- Finite resources

Future

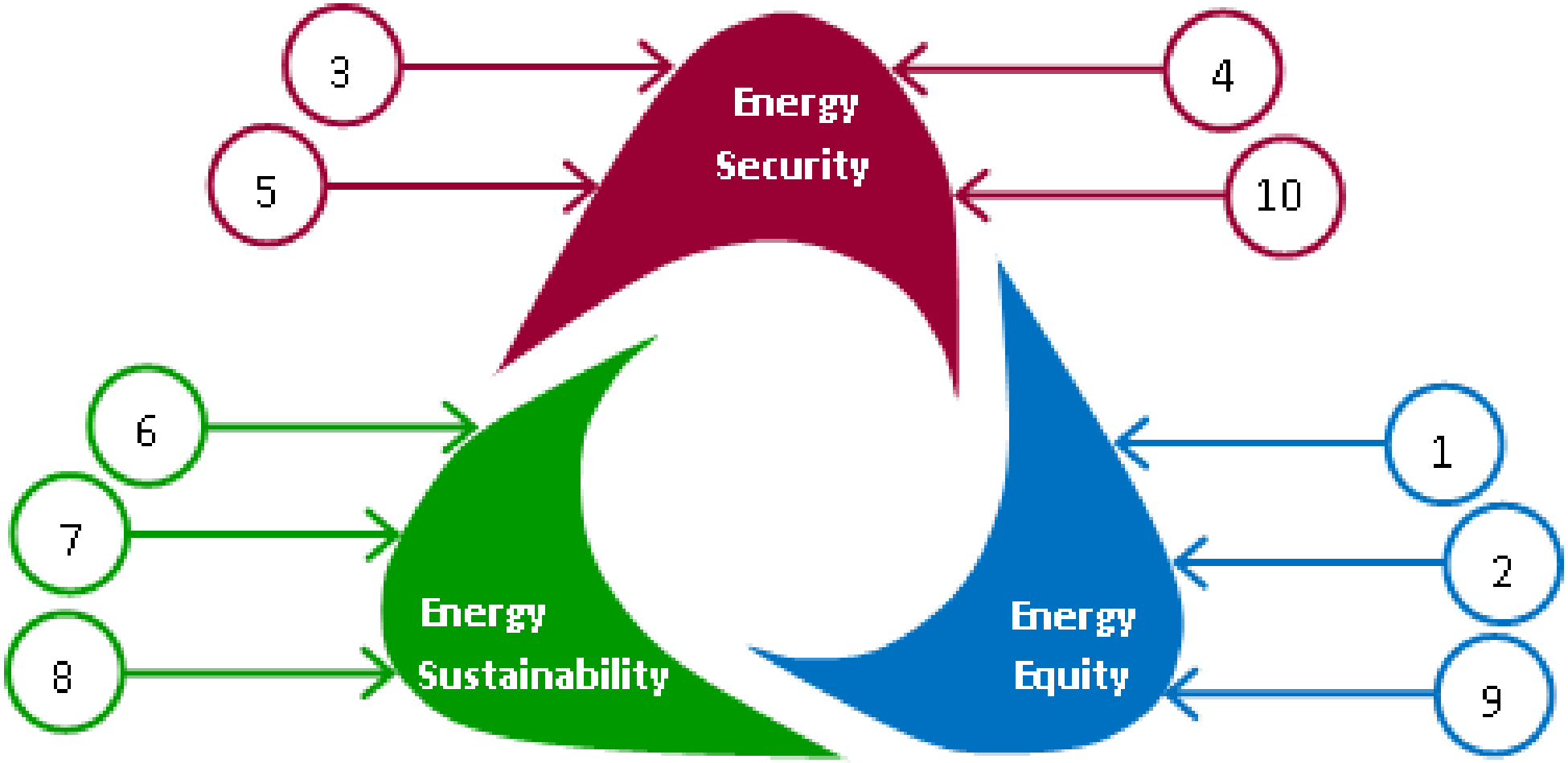
- Economic opportunity
- Energy taken for granted
- Electricity
- Renewable energy
- Renewable resources

Energy Transition

Energy Sector in this decade…

- Likely to be shaped by the manifesto of the new President
- In perfect alignment with the new National Energy Policy & Strategies of Sri Lanka
- In a troubled state at the moment due to pricing related cashflow issues
- Attempt to face the energy transition boldly
- Regain the delicate balance of energy trilemma

1. Assuring Energy Security
2. Providing Access to Energy Services
3. Providing Energy Services at the Optimum Cost to the National Economy
4. Improving Energy Efficiency and Conservation
5. Enhancing Self Reliance
6. Caring for the Environment
7. Enhancing the Share of Renewable Energy
8. Strengthening the Good Governance in the Energy Sector
9. Securing Land for Future Energy Infrastructure
10. Providing Opportunities for Innovation and Entrepreneurship


3
5
4
10
Energy Security
6
7
8
Energy Sustainability
1
2
9
Energy Equity

10 pillars

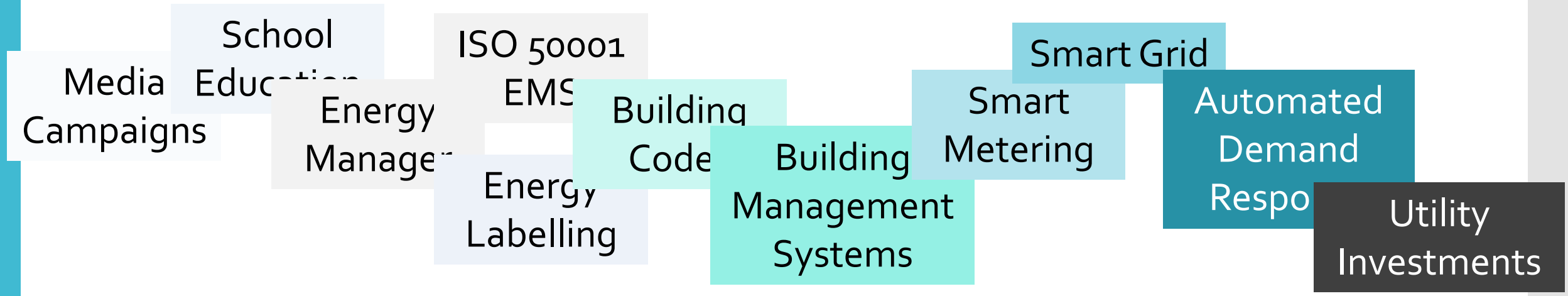
95 strategic interventions

75 key results

Sustainable Energy… combining the first and the last

- Energy Efficiency – the first fuel
  - Changing the way we use energy
  - Transforming many markets (painful changes)
    - Appliances
    - Systems
- Renewable Energy may be the last resort
  - Again a painful conversion
    - Yet, widely available to the human kind

Energy Efficiency Improvement & Conservation



Easy to implement
Low cost
Low response
Low returns

Difficult to implement
High cost
Certain response
Predictable returns

Focus on Regulatory Interventions

- Decades of promotion of EEI&C produced modest results
- Deeper impact EEI&C is now required to curtail exponential demand growth
- Mandatory requirements on many end user aspects
  - Appliance labelling of all popular appliances
  - EEBC2020 mandatory on new buildings
  - Energy reporting of scheduled entities on mandatory basis
  - Energy Manager and Energy Auditor programmes to capacitate these efforts

KT:59x59x111mm

DSM

දුරකථන / தொலைபேசி இலக்கம்: 011 287 7434-5
දුරස්ථ / தொலைநகல் இலக்கம்: 011 269 9255
විද්‍යුත් / மின்னஞ்சல் முகவரி: dsm@energy.gov.lk
වෙබ් අඩවිය / இணையத்தள முகவரி: www.save.energy.gov.lk

Rated Power	9W	Power Factor	>0.9
Rated Voltage	230V	Supply Freq.	50Hz

9W
COOL WHITE

ශක්ති
LED
சக்தி

HIGHER EFFICACY MEANS HIGHER PERFORMANCE

EFFICACY
95 Lumen/W

9.0 WATTS AVERAGE MEASURED POWER

1.1 kWh/Month Considering 4 hours/day operation

Permission Granted to use this label only on Rang Dong Brand LED Lamp of Model A60 9W-5000K Light output 858 Lumen

Sri Lanka Standards Institution

Sri Lanka Sustainable Energy Authority

Rated luminous flux	:	810 lm
Centre beam intensity	:	120 cd
Beam angle	:	175 degree
Lamp photometric code	:	850/778
Rated life (h) and the related lumen maintenance (x)	:	15,000hrs, L80
Failure fraction (F_y), corresponding to the rated life	:	F50, 15,000hrs
Rated colour including initial and maintained colour variation category	:	5,000K
Rated colour rendering index	:	81

Rang Dong

Rang Dong Light Source and Vacuum Flask JSC
No. 87- 89 Ha Dinh Street, Thanh Xuan Trung Ward, Thanh Xuan District, Hanoi, Vietnam.
Made in Vietnam

LED පහන්

ආයු කාලය දිගුකල් පවතී
පැය 10,000 කට වඩා වැඩිවේ.
සූත්‍රිකා බල්බ වලට වඩා
85% ක් පමණ විදුලිය ඉතිරි කරයි.
CFL වලට වඩා 31% ක් පමණ විදුලිය ඉතිරි කරයි.
රසදිය රහිත නිසා පරිසරයට වඩා හිතකර වේ.

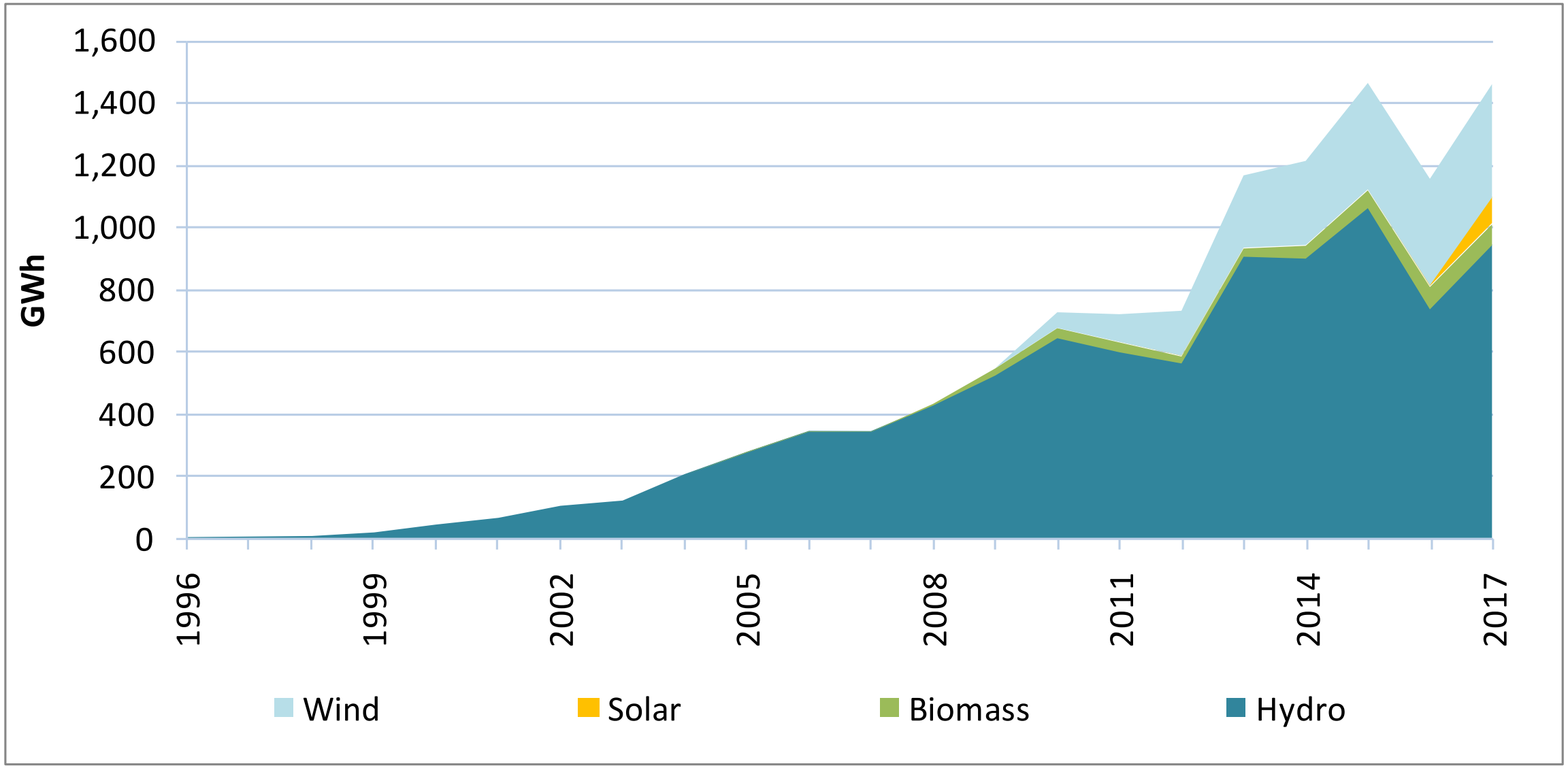
LED மின்குமிழ்கள்

நீண்டகாலம் பாவிக்கக்கூடியது.
பாவனை காலம் 10,000 மணித்தியாலங்களுக்கும் அதிகம்
சூத்திரிக்கா மின்குமிழை விடவும் 85%
மின்சாரத்தை சேமிக்கக்கூடியது
ஊகுடு மின்குமிழ்களை விடவும்
31% மின்சாரத்தை சேமிக்கக்கூடியது
இரசாயனங்கள் சேர்க்காதது என்பதால் சூழலுக்கு உகந்தது

LECO

Renewable Energy Development

- Two decades of robust development, now in disarray due to a legal issue
  - Competitive bidding replacing speedier 'first come first served' approach
  - Rooftop solar programme as a key contributor (23,707 installations, 249MW capacity, 350GWh-2.3% of national demand)
- A larger scale national programme taking shape
  - Resolve issues in small hydropower sector
  - Energy park concept to expand solar and wind sectors


1,600
1,400
1,200
1,000
800
600
400
200
0
GWh
1996
1999
2002
2005
2008
2011
2014
2017
Wind
Solar
Biomass
Hydro

Renewable Energy – We are Endowed

Biomass

- Gross potential 1,497MW
- Operating 43.53MW
- Under Construction 54.9MW

Small Hydro

- Gross potential 1,126MW
- Operating 417.26MW
- Under Construction 94.55

Solar

- Gross potential ?
- Operating 57.36MW
- Under Construction 91MW

Wind

- Gross potential 5,653MW
- Operating 128.15MW
- Under Construction 120MW

Responding to Climate Change Challenge

- NDC (Nationally Determined Contributions) targets pose formidable challenge
- NDCs covering five major sectors
  - Energy
    - 4% Voluntary Action and 16% Supported Actions
  - Agriculture
  - Forestry
  - Waste
  - Transport

Responding to Climate Change Challenge

- Large number of climate initiatives already taken
  - Availability of Proper MRV system is of paramount importance
- Reporting Emission Reduction
  - Elaborate MRV System required (Energy Reporting Regulation to help overcome this)
- Related Agencies, Department of Census & Statistics must work hard to realise a good reporting framework
- Speed of implementation really matters
- Data Deficiency
  - Energy sector is having nearly half century of good records
  - Most other sectors without baseline data

Some Important Landmarks in the Roadmap

- Increased diversity of resources
- Committed struggle to secure land resources
- Indigenous fossil fuel
- Electricity as the main energy vector
- Digitalisation and smart grid
- Mandatory EEI&C
- Diversification of transport energy
- Biomass energy development
- Environmental concerns in focus
- Deeper penetration of renewables in the national grid
- Energy storage as a means of transcending time and space
- Energy sector as an innovation driver and a thrust industry

Waste heat recovery

Pot with water from rice-wash, doubled up as a lid

Round bottom of the pot, where evaporating water condenses
And the heat dissipated in the process heats the water inside the lid

Evaporation

Water level

Grain (rice)

Reduce, Reuse Recycle..?

- It symbolises a monastic life, a life of detachment
- Robes of Buddhist monks & nuns are part of a tradition going back to the time of the Buddha, 25 centuries ago
- The Buddha taught the first monks to make their robes of "pure" cloth (cloth that no one wanted)

- Pure cloth – cloth chewed by rats or oxen, scorched by fire, soiled by childbirth or used as mortician's linen to wrap the dead before cremation. Monks would scavenge cloth from graveyards.
- Unusable parts of the cloth was trimmed, then washed, stitched together and dyed.
- Dye – boiling with vegetable matter – tubers, bark, flowers, leaves and spices such as turmeric or saffron (origin of the term 'saffron robe')
- In Sri Lanka – the robe was used to the maximum, even after it starts wearing off. Parts are trimmed off and the remainder is reused

Final destination of the robe…

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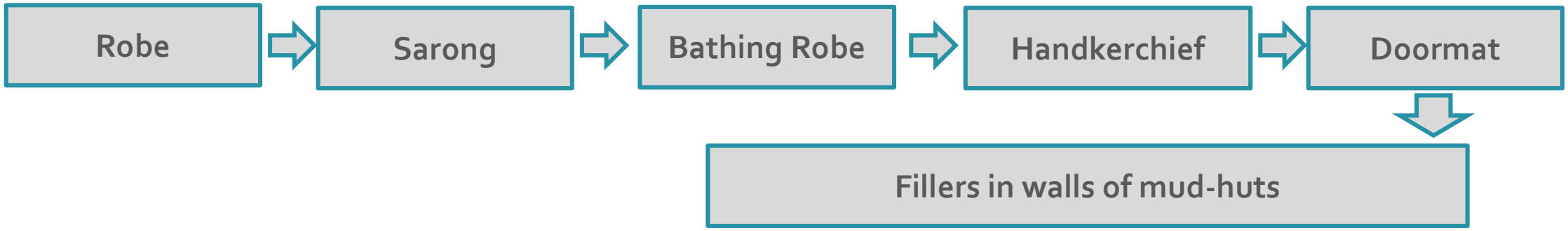
- In Sri Lanka – the robe was used to the maximum, even after it starts wearing off. Parts are trimmed off and the remainder is re-used in the following sequence.



International Conference on Resource Efficiency and Circular Economy

Resource efficiency? It is our way of life...

Thank You...!