Multi-stakeholder Workshop on the Low carbon technology Renovation and Climate Technology Centre Network (CTCN) in Sri Lanka

D.G.J.Premakumara, IGES

14 January 2015

Introduction

- Even though, Sri Lanka found a low GHG emitter, as a small Island nation, it is highly vulnerable to adverse impacts of climate change (sea level rise, floods and draughts) and also future scenarios predict higher level of emissions if no firm national actions are taken (TNA study of Sri Lanka, 2014. p.iii)
- Formulation of National Climate Change Policy for Sri Lanka in 2011 demonstrating the Government's commitment in addressing climate change issues within the overall national effort towards achieving sustainable development.
- The country has made some efforts to improve the legal and institutional capacity to facilitate the implementation of obligations under the United Nations Framework Convention on Climate Change (UNFCC) and Kyoto Protocol (ratified of the UNFCCC in 1993, acceded Kyoto Protocol in 2002, submitted the Initial National Communication in 2000 and Second Communication in 2012).
- The Government under the Ministry of Environment and Renewable Energy (Climate Change Secretariat) recognised the importance of exploring nationally appropriate low carbon technologies and best practices with sound monitoring mechanisms to achieve the national commitments and carried out the Technology Need Assessment (TNA) Study during 2011-2013 with technical assistance of UNEP/GEF/AIT

Background:
IGES Study on the low carbon technology renovation in Sri Lanka

- In partnership with the Climate Change Secretariat (CCS) and the Institute of Policy Studies (IPS) aims to achieve the following objectives during the period of Apr, 2014 to Mar 2015:
  - First (Apr-Jun): Review the TNA process, technology prioritisation and identification of key barriers/challenges
  - Second (Jun – Mar):
    - Awareness raising and capacity building on Climate Technology Centre and Network (CTCN) requests for practical application linking TNA/TAPs
    - Identify technology renovations based on Japanese experience

Stakeholder involvement in TNA Study in Sri Lanka

Type of stakeholder	National TNA Committee	Working group: Sector prioritisation	Working group: Energy	Working group: Transport	Working Group: Industry	Total
National agencies	21	11	10	14	11	67
Academic institutions	-	4	3	2	3	12
NGO/civil society	-	2	3	-	3	8
Business/private sector	-	-	5	-	2	7
Financial agencies	-	-	-	-	-	-
Development /international agencies	-	-	1	-	-	1
Total Numbers	21	17	22	16	19	95

- Involvement of National Agencies is high (70%)
- Industrial/business/private sector participation is minimum (7%)
- No and less participation from financial sector and development agencies

Process and criteria for sector prioritisation (Mitigation) technologies

Step 1: Identifying development priorities

- Based on the Development Policy Framework of the Government "Mahinda Chinthana"
- Agriculture, fisheries, livestock, irrigation, water, healthy society, housing, environment, modern education, modern economy, electricity, industry, road network and transport

Step 2: Identify sectors that have high GHG relevance:

- Transport, agriculture, energy, industry
- After some discussions, agriculture was moved to the adaptation group

Step 3: prioritising sectors in terms of development and sustainable mitigation priorities

- Transport, energy and industries

Technology identification and prioritisation

- Multi-criteria decision analysis (MCDA) was used for prioritising technologies (Red are priority technologies. Numbers are increased after consultation with the interviewees)

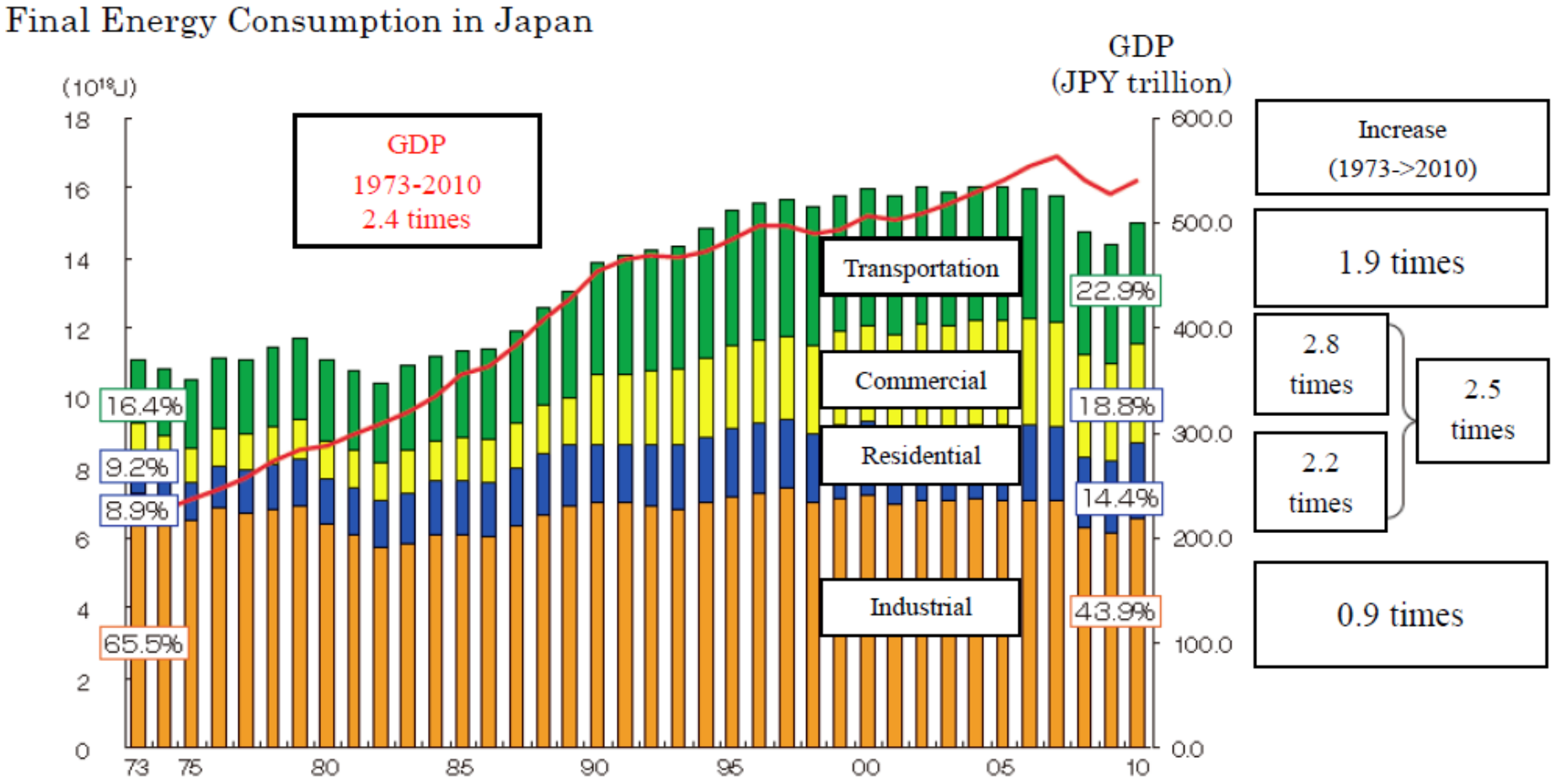
Energy	Transport	Industries

• Building Management
  • LED lighting
  • Solar assisted air-conditioning
• Biomass and waste to energy
  • Co-firing of biomass with coal
  • Compact biogas digester for urban household use
  • Waste to energy
  • Biomass gasifier for high temperature applications
• Smart Grid technology for wind and solar integration with hydro
  • DC motor driven alternator for grid connected solar PV system
  • Tracker cum reflector for solar PV
  • Roof mounted solar PV for net metering
  • Concentrated solar thermal electricity generation
• Pumping water into hydro reservoir
• Bio methane for transport applications
	• Shift of 5% of transportation of freight from roads to rail
	• *Bus Rapid Transit (BRT) in Colombo*
	• Non-motorised transport with regularised public transport in Colombo
	• Improving traffic signal system
	• Promote carpooling and park-and-ride system
	• Improvement of byroads
	• Electrification of existing railway system
	• *Facilitate the import of hybrid vehicles*
	• Increase the use of cleaner fuel (CNG and biofuels)
	• Roadside tree planting
		• Energy efficient motors
		• Variable speed drivers for motors
		• Biomass residue based cogeneration combined heat and power (CHP)
		• *Cook stoves with biomass gasification*
		• Ethanol cook stove
		• Rotary burners for thermal application
		• *Gas absorption heat pumps*
		• Heating technology for recycling used tyres
		• Composite cans with paper bottoms
		• Super boiler

The key lessons learned

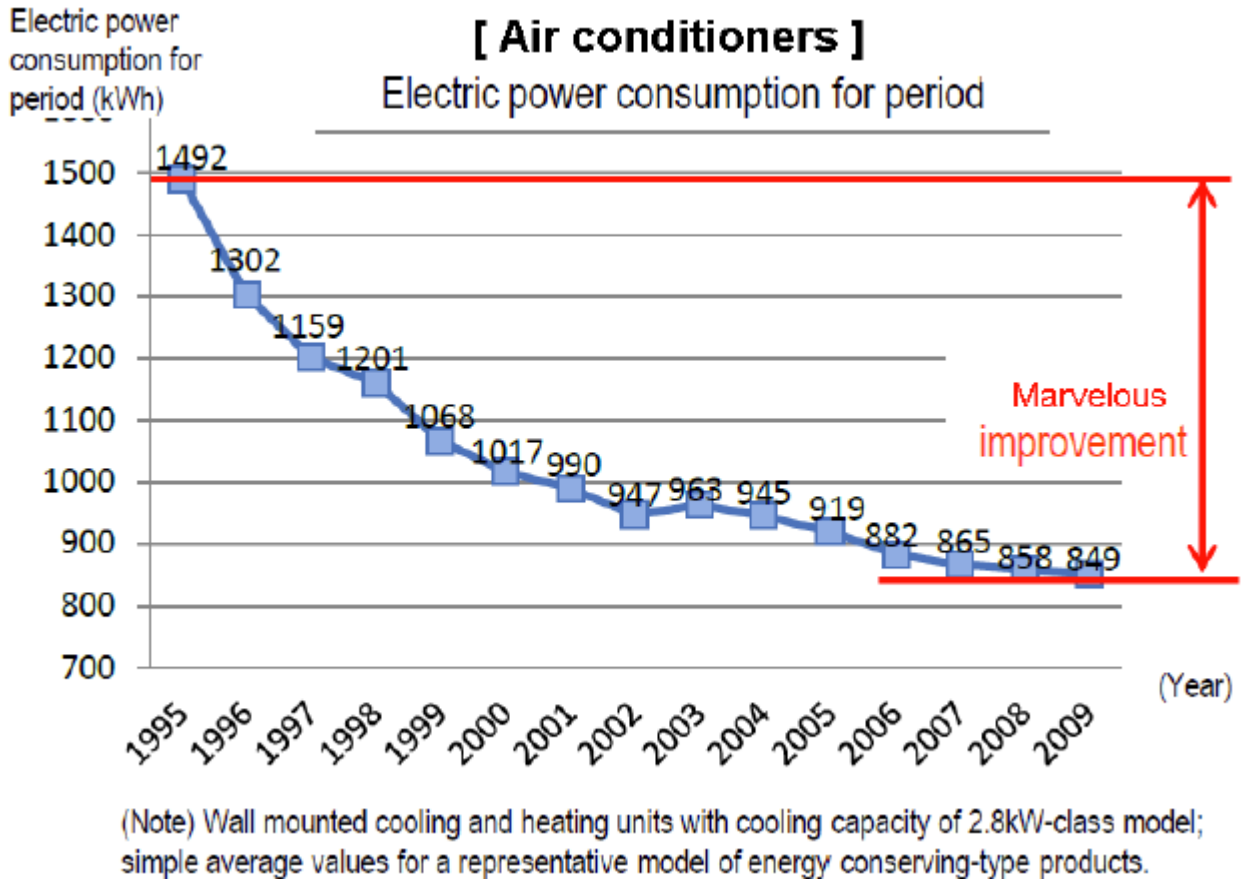
- The Ministry of Environment (Climate Change Secretariat) played a leading role showing national ownership and interest about the project. The key sectors are selected and prioritised in line with national priorities and climate change impacts in the country. All interviewees are agreed on the sectors.
- The process of technology identification strictly followed the UNEP/AIT guidelines and methodologies. Considered UNEP methodology was effective to evaluate issues and trade-off multiple objectives. However, identified some practical challenges in applying due to measurement and lack of capacity.
- Stakeholder participants raised the importance of taking follow-up actions to implement the identified technology interventions in the country rather finishing the exercise after publishing the reports.
- IGES therefore identifies the second stage support for:
  - Short-listed some low carbon technologies (specially energy sector) and identify necessary renovations based on the experience of Japanese industries
  - Awareness raising and building institutional capacity (CCS) to apply for CTCN proposals for further assistance in applying relevant technologies suited to national requirements

Energy efficiency in Japan



- Since 1970s, when the Japan has experienced its first oil crises, the country has continuously taken efforts to improve technology for energy efficiency.
- As a result, its GDP has grown and is currently 2.3 times larger than that of 1973. Nevertheless, the energy consumption levels have been restrained and the current level remains 1.3 times larger than that of 1973 (Source: Comprehensive Energy Statistics and Annual Report on National Accounts)

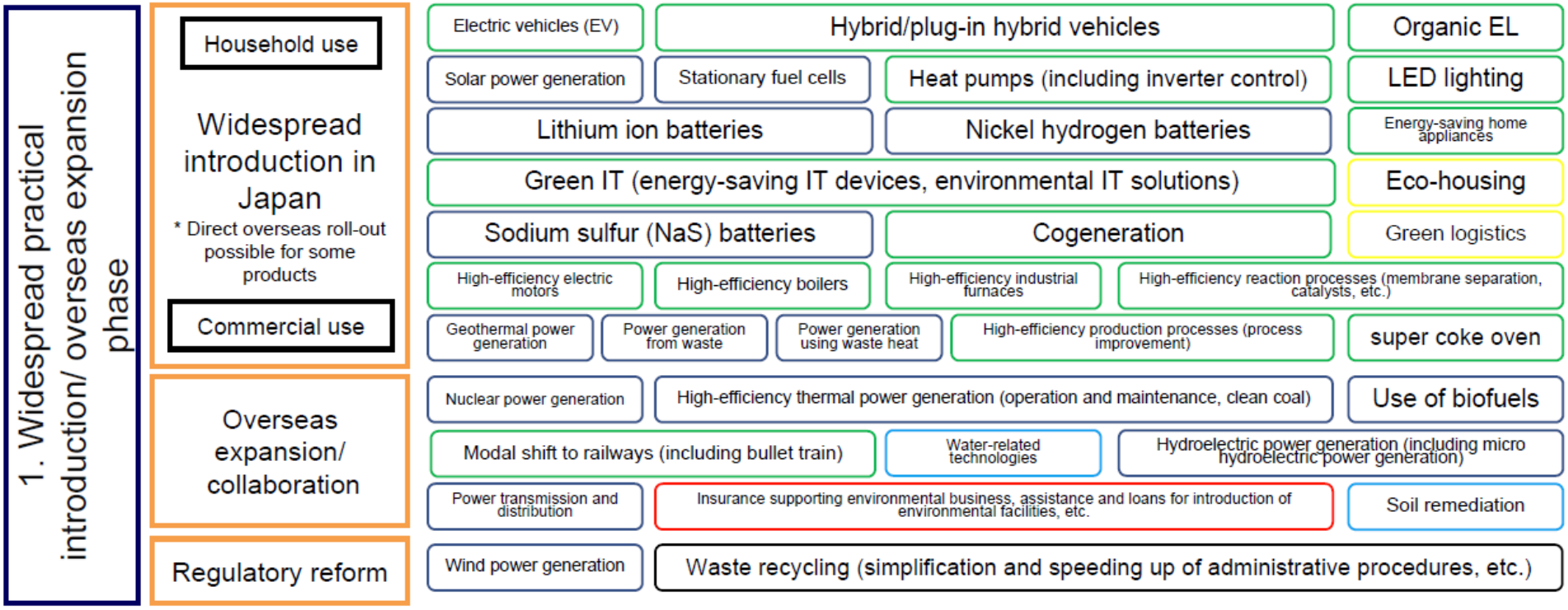
Energy efficiency technology for commercial and residential



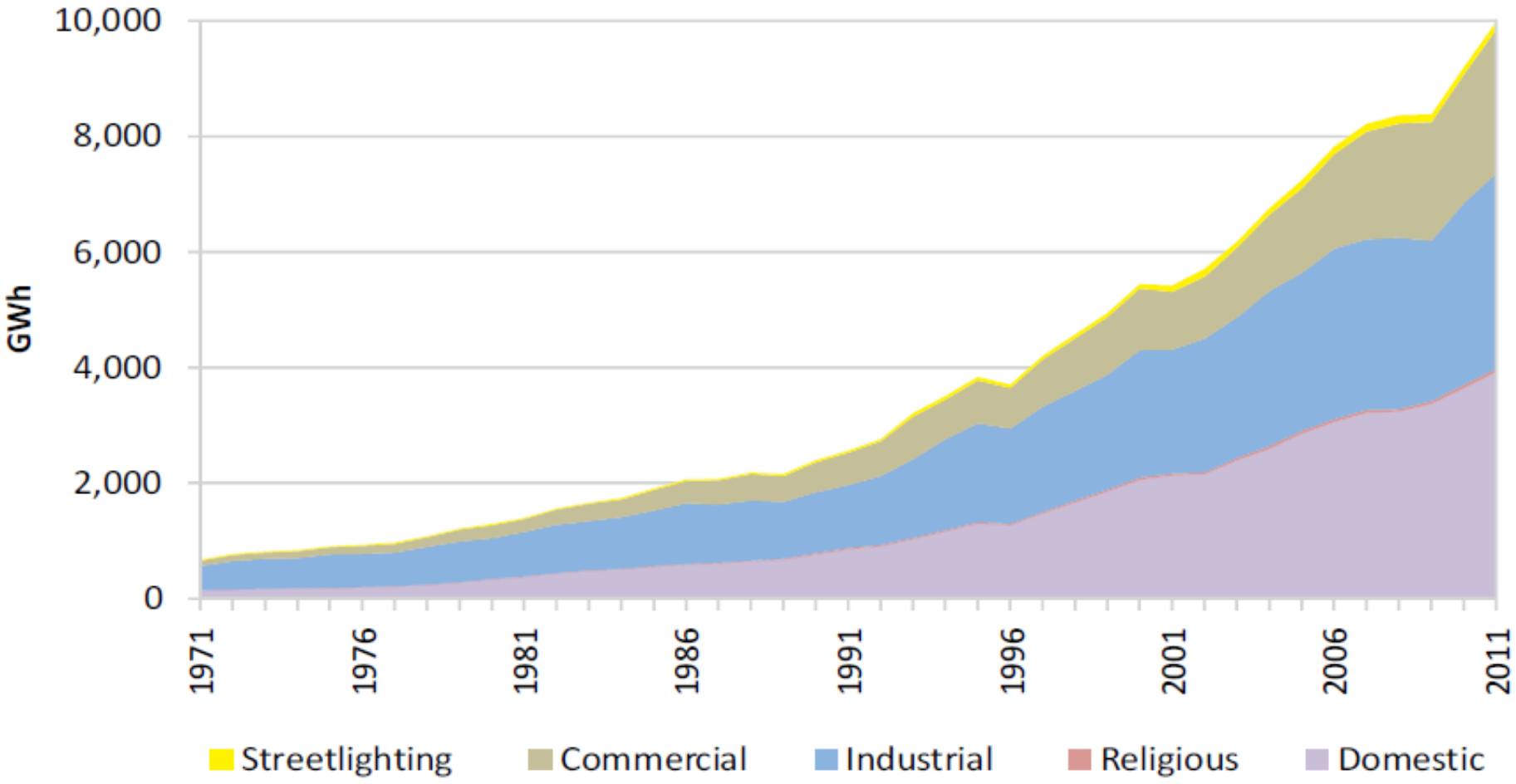
(Note) Wall mounted cooling and heating units with cooling capacity of 2.8kW-class model; simple average values for a representative model of energy conserving-type products.

- 4, energy consumption levels have rapidly increased since the latter half of 1980s in the commercial and residential sectors due to the people's improved lives as well as commercial activities deployed in new sectors.
- A policy called "**Top Runner Program**" was introduced and energy efficient home electric appliances and office devices have been developed and supplied to the domestic market.
- One of most important technologies in these sectors, is the thermal transfer for heating, cooling and refrigerating. It is sometimes called "heat-pump" because it transfers heat energy. It has applied it to air conditioners, refrigerators, water heaters, and others devices. (Source: Energy Conservation Policies of Japan, METI/ANRE)

Key Japanese technologies for achieving low carbon societies



Energy consumption in Sri Lanka



(Source: Thusitha Sugathapala, Sri Lanka Sustainable Energy Authority, Ministry of Environment and Renewable Energy, 2nd September 2013)

New renewable energy road map of Sri Lanka

Technology / Status	Small Hydro		Wind		Biomass		Solar		Total	
	No.	MW	No.	MW	No.	MW	No.	MW	No.	MW
Commissioned	118	243.2	9	73.0	4	16.5	3	1.4	134	334.0
Energy Permits	95	191.0	5	32.3	18	99.75	1	10.0	119	332.0
Provisional Approvals	75	98.0	2	20.0	8	45.0	8	72.0	94	235.0




Progress as at 15th August 2013 (334 MW, 7% Grid-electricity generation)

(Source: Thusitha Sugathapala, Sri Lanka Sustainable Energy Authority, Ministry of Environment and Renewable Energy, 2nd September 2013)

Energy efficiency target in Sri Lanka for 2020

Technology / Process	Annual Saving Potential - GWh
Energy Labeling Program	
Ceiling Fans	35
Tubular Fluorescent Lamps	65
Ballasts	80
Refrigerators	16
Efficient lighting	173
Air Conditioning	250
ISO 50001	375
Efficient motors	185
Building Management System (BMS)	20
Efficient office equipments	16
Solar water heaters	5
Telecomunication	10
Efficient air compressors	11
Eliminating Incandescent Lamps	205
Green Buildings	550
Total	1,990

Technology/Process-wise (Total Saving ~ 2,000 GWh)

(Source: Thusitha Sugathapala, Sri Lanka Sustainable Energy Authority, Ministry of Environment and Renewable Energy, 2nd September 2013)

Multi-stakeholder Workshop on the Low carbon technology Renovation and Climate Technology Centre Network (CTCN) in Sri Lanka
14 Jan 2015

- Aims to:
  - Identify short-listed low carbon technologies for efficient energy savings and management
  - Awareness raising and building institutional capacity (CCS) to apply for CTCN proposals for further assistance in applying those identified technologies suited to national requirements
  - Identify any specific technical assistance for necessary renovations for Japanese technologies to Sri Lanka