Universiti Kebangsaan Malaysia
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LESTARI
UNIVERSITI KEBANGSAAN MALAYSIA

LESTARI Public Lecture

YB YEO BEE YIN

YB Yeo currently is the Minister of Energy, Science, Technology, Environment and Climate Change. She is also the incumbent Member of Parliament (MP) for Bakri in Johor. Previously she was the former Member of the Selangor State Legislative Assembly for the Damansara Utama state seat for one term from 2013 to 2018.

YB Yeo graduated from Universiti Teknologi Petronas (UTP) with First Class Honors in Chemical Engineering under the Petronas Scholarship in 2006. After two years working with Schlumberger, she went on to pursue an MPhil (Masters in Philosophy) in Advanced Chemical Engineering at Corpus Christi College, Cambridge, under the Gates Cambridge Scholarship by the Bill and Melinda Gates Foundation, and completed her degree with a Commendation.

Power Shift towards Sustainability:
Renewable Energy for Climate and Ecosystem Change

2nd December 2019 (Monday) | 9.30 am
Dewan Kuliah Utama, Pusat Siswazah
Universiti Kebangsaan Malaysia (UKM) Bangi

Register at:
https://forms.gle/gNcYE7TcUNLxa3mJA

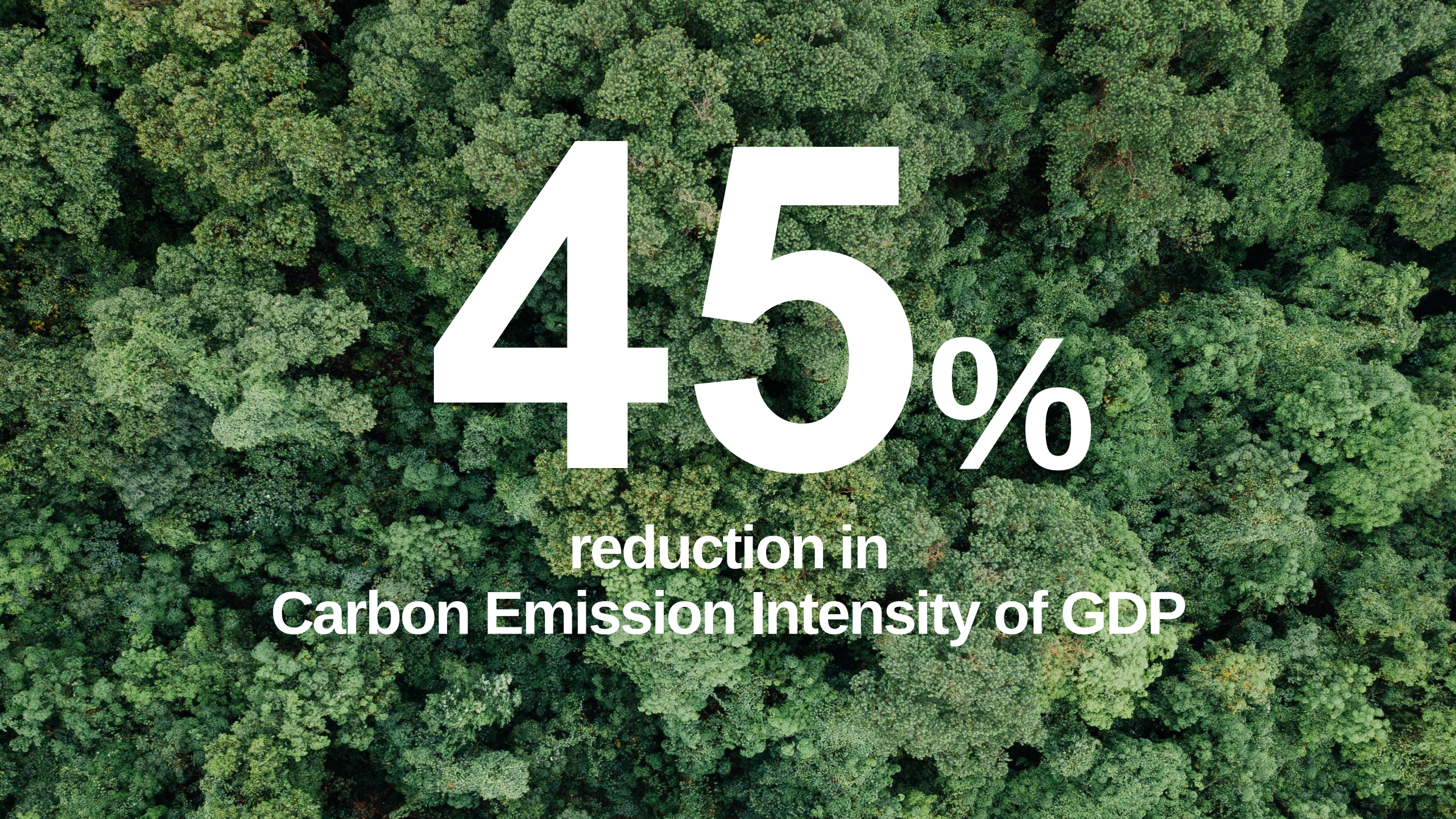
SCAN ME

COP21 · CMP11

PARIS 2015

UN CLIMATE CHANGE CONFERENCE

Credit:Michael Martin


45%
reduction in
Carbon Emission Intensity of GDP

Launching of Malaysia Green Tech & Climate Change Centre

by 2020 is one of our key administrative measures. The new Government would also focus on green technology development and renewable energy. The industry has the potential to grow rapidly, creating more job opportunities and ensuring increased returns.

Renewable energy through renewable resources will be increased from the current 2 per cent to 20 per cent by 2025. We will also reduce the dependence on coal power plants which is one of the power generation methods that has a serious impact on CO2 emissions.

National Coordination Council for Climate Adaptation and Mitigation

not contribute to pollution.

We will set up a "National Coordination Council for Climate Adaptation and Mitigation" that will coordinate the actions of the federal, state and local governments to address the challenges of climate change.

The changing climate has led to the extreme weather phenomena which are unpredictable. Towns and seaside towns are now prone to unprecedented flood risks. While there are international efforts to stabilise the climate by reducing carbon emissions, the Pakatan Harapan Government will

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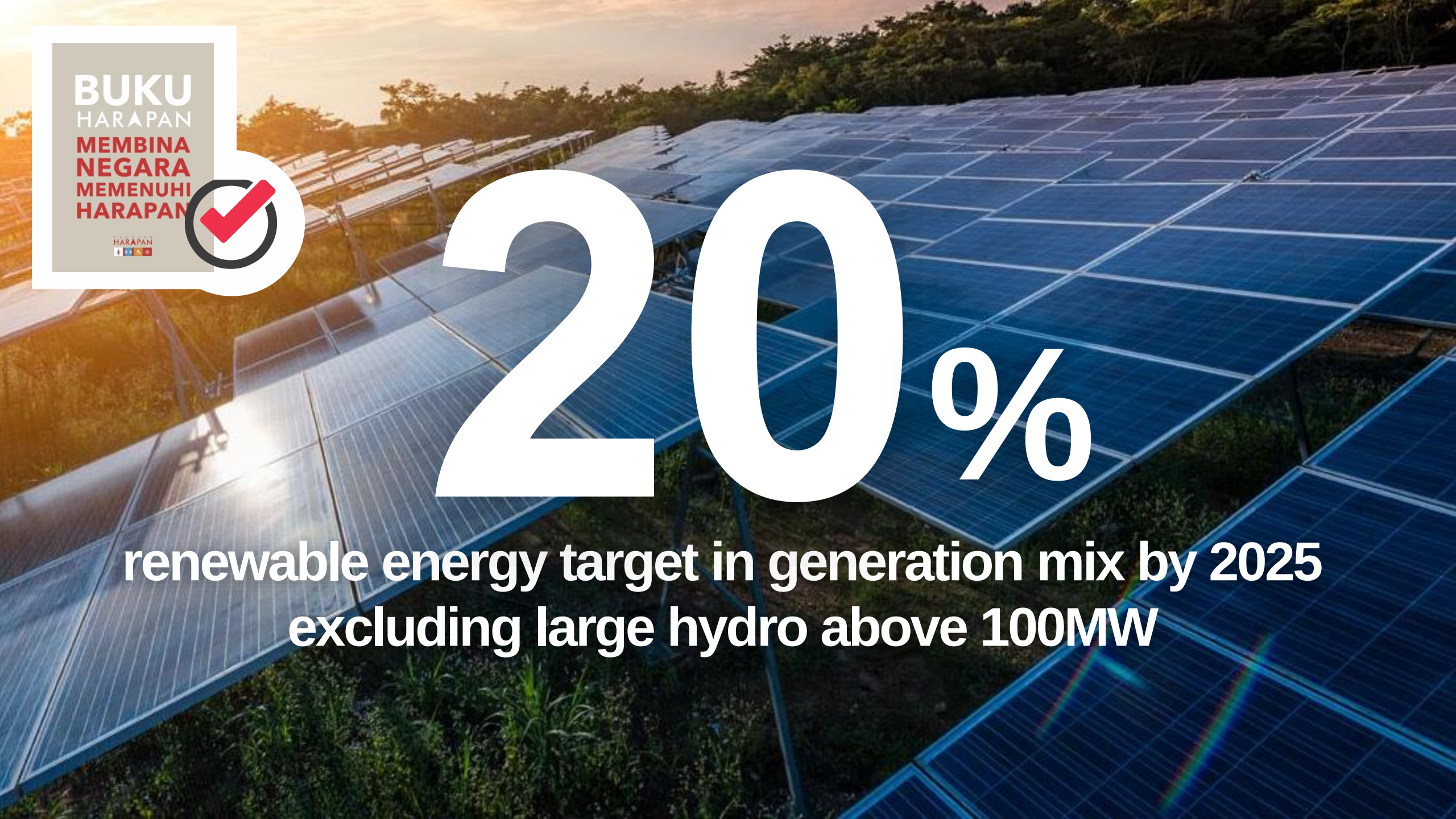
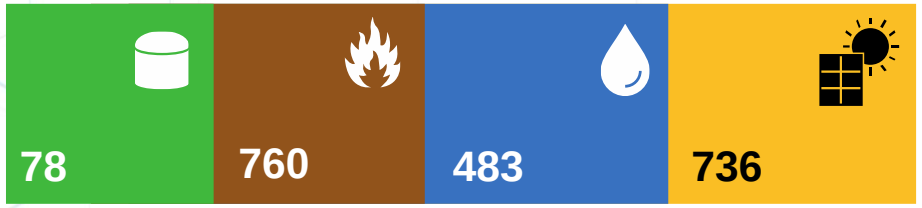
Achievements


BUKU
HARAPAN
MEMBINA
NEGARA
MEMENUHI
HARAPAN
No Nuclear Power


BUKU
HARAPAN
MEMBINA
NEGARA
MEMENUHI
HARAPAN
20%
renewable energy target in generation mix by 2025
excluding large hydro above 100MW

Achieving 20% RE Target



2,057MW

Installed Capacity, 2018 (MW)

6,906MW

Additional Required Capacity

*6,677MW required as of 21 Nov 2019

2,806MW

BAU Additional Capacity, 2025 (MW)

4,100MW

Additional Capacity Required to for 20% RE, 2025 (MW)

Government Strategies to Achieve RE Target

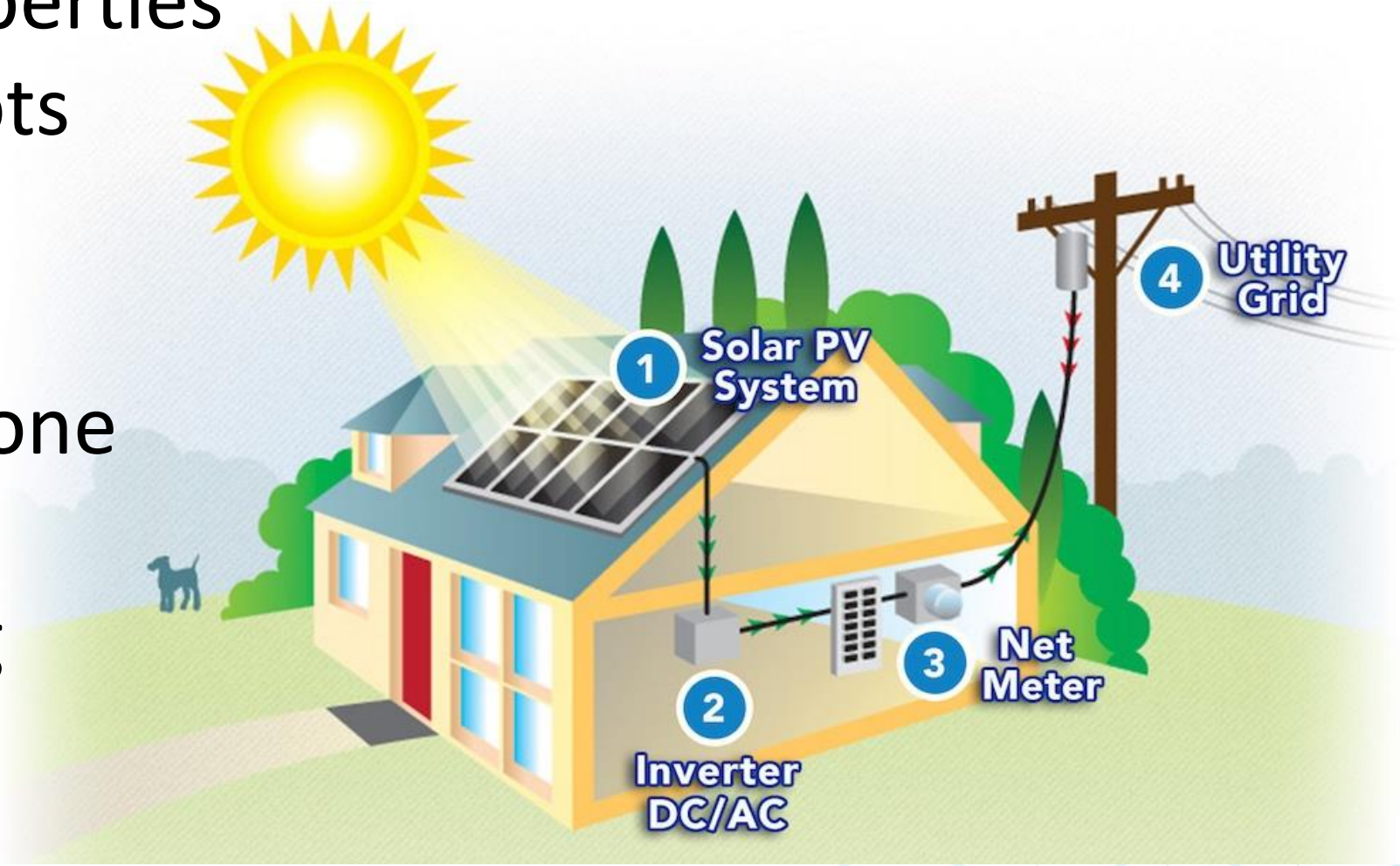
NEM
Net Energy Metering

LSS
Large Scale Solar

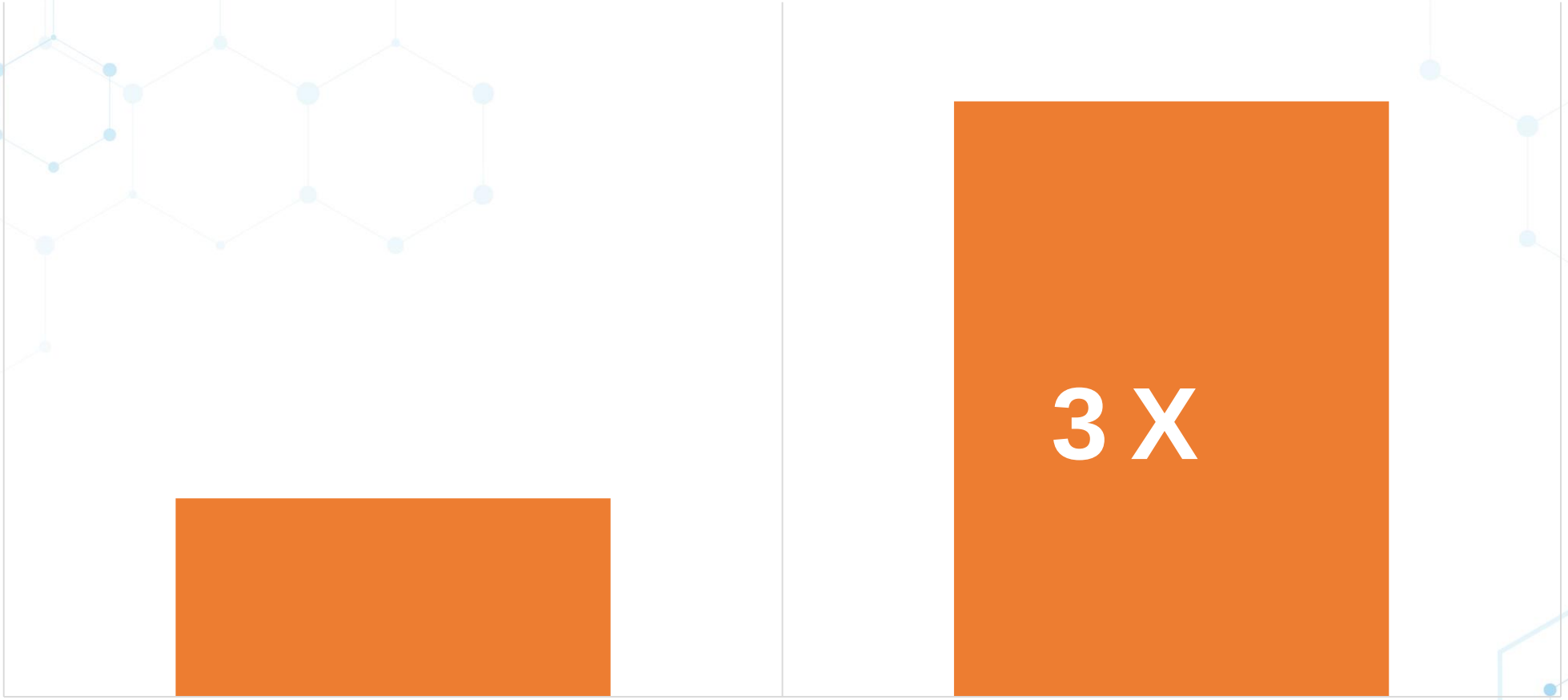
FiT
Feed-in Tariff

Net Energy Metering (NEM)

- **3.2 million** landed residential properties
- **450,000** shoplots
- **90,000** terrace factories
- **21,000** standalone factories
- **1,000** shopping complexes



NEM UPTAKE RATE



2016 – 2018
(3 years)

Jan – Sept 2019
(9 months)

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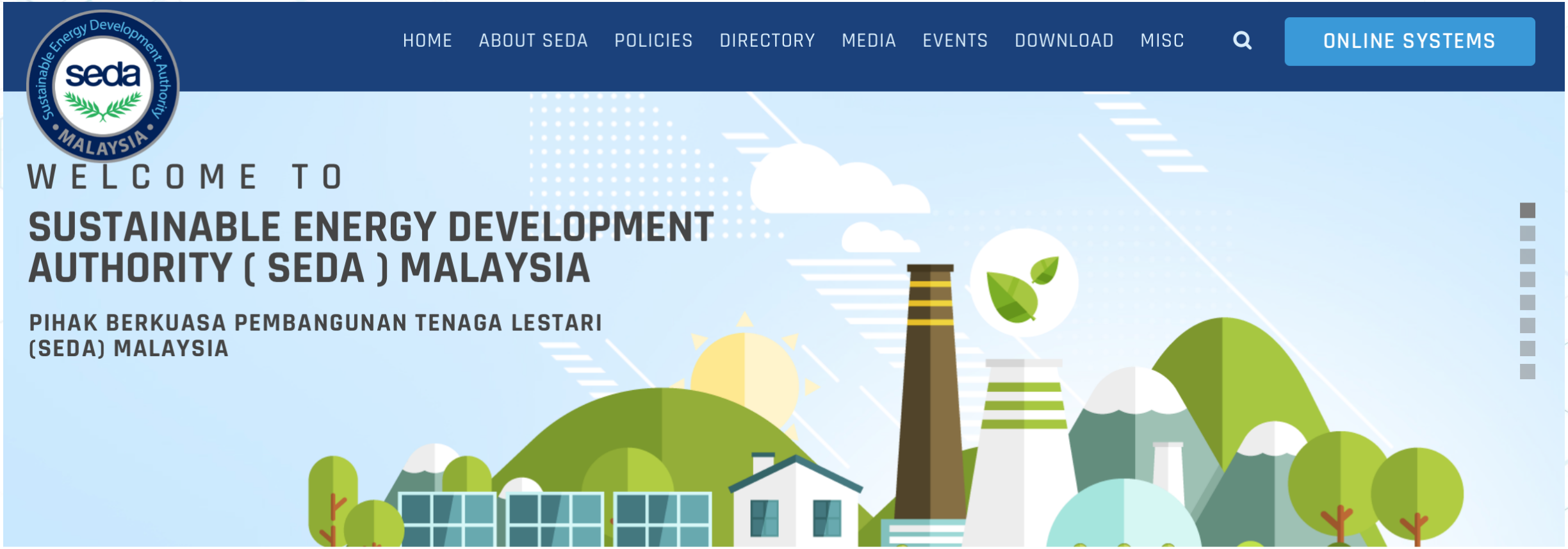
www.seda.gov.my



NEM Calculator

Category: Tariff C1 - Medium Voltage General Commercial Tariff View Tariff
Building Type: Shop Lot/Office Building
Maximum Demand: 100kWac

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Your Current Monthly Bill	Your Monthly Bill after NEM	Your Monthly Saving
RM5,000	RM1,715	RM3,285

Proposed Installed Capacity (adjustable)	Simple Payback Period	* Estimated Minimum Upfront Cost
90.00kWp	7.5Years	RM297,000

Space Required

Rooftop Area
540.0m²
1 kWp approximately 6m²

Environmental Impact **

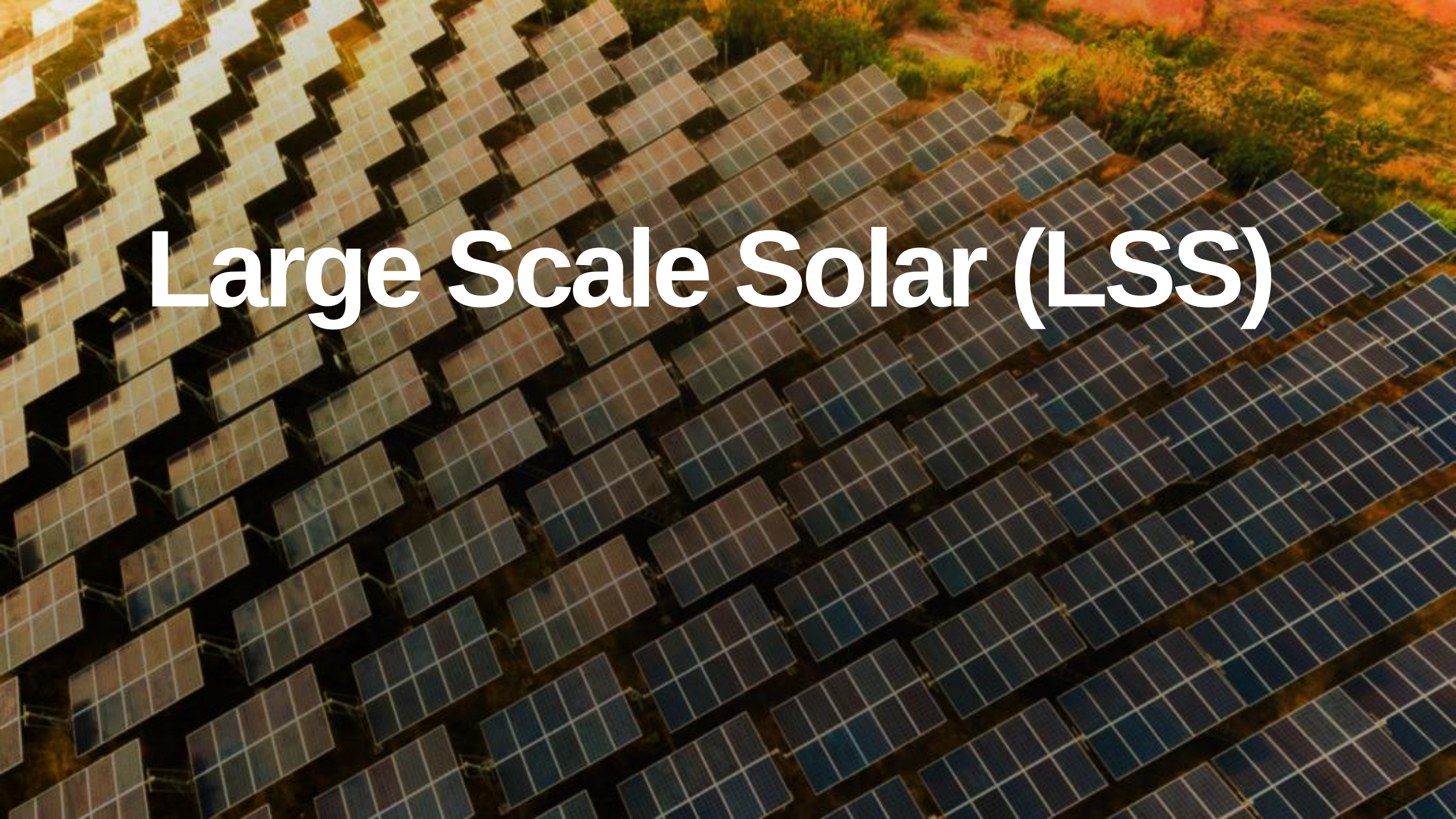
Carbon Dioxide (CO_2) Avoidance
1,874 tonne CO_2

=

Distance travel avoidance by car (petrol)
7.2 million km

=

No. of tree seedlings grown for 10 years to absorb the CO_2
29,700 trees



Large Scale Solar (LSS)

Lowest Bid at LSS3
17.77sen/kwh

Gas Generation Cost
23.22sen/kwh

FEED-IN TARIFF

Biogas

Biomass

Geothermal

Small Hydro


Project Revocation
389 FiT Projects
RM 2.1 bilion

RESULTS OF THE E-BIDDING PROCESS (15TH JULY 2019 TO 29TH JULY 2019) FOR BIOGAS PROJECTS

e-Bidding

26/09/2019 ♥ 19

Putrajaya, 26 September 2019

SEDA Malaysia wishes to announce th
bidders are listed with the basic bid r

NO	BIDDER*	INSTALLED CAPACITY (MW)	BID TARIFF (Basic FiT Rate – RM/kWh)
1	ASIA POLY BIO GAS SDN BHD	0.500	0.2350
2	GLT BP POWER SDN BHD	3.606	0.2499
3	GLT INTAN POWER SDN BHD	1.501	0.2499
4	BETATECHNIC SDN BHD	2.400	0.2500

RECENT ANNOUNCEMENTS

Jobs@SEDA – Assistant Director, Technical Development And Facilitation
08/10/2019

e-Bidding for Small Hydro- List of bidders that have successfully made payment and qualified for the bid evaluation stage
27/09/2019

Successful Submitted Small Hydro Application
24/09/2019

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20% RE Enablers

GTFS
Green Technology Financing Scheme

GITA
Green Investment Tax Allowance

GITE
Green Income Tax Exemption

Green Tariff

RECs
Renewable Energy Certificate

RE Trading

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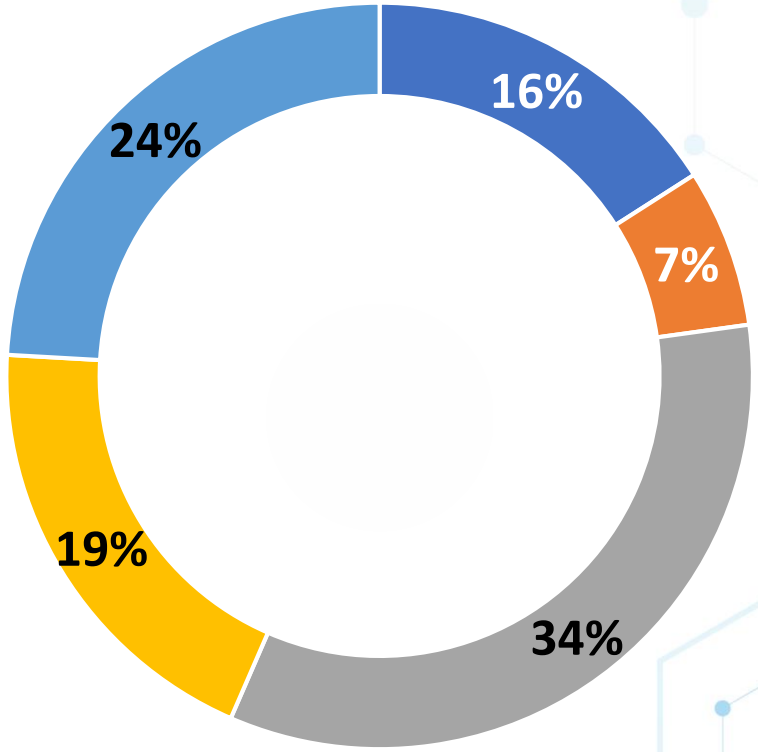
RM33.25 Billion

of Private Investment

Cumulative investment by technology – RE transition scenario at 2025: RM33.25B



Mini Hydro ■ Biogas ■ Solar LSS ■ Biomass ■ Rooftop Solar

More than 100,000 Employment

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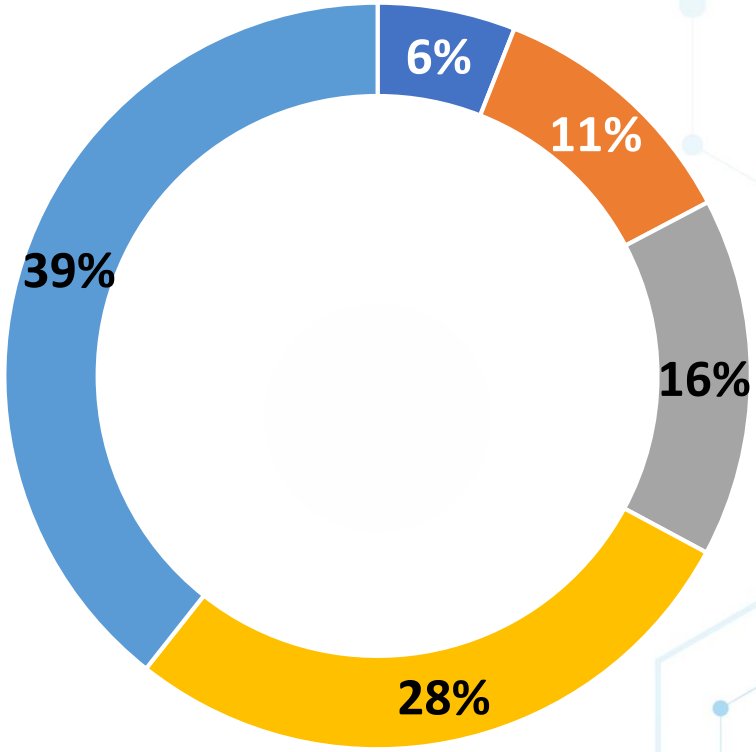
Total employment of the RE transition scenario excluding manufacturing at 2025: 47,153 Jobs



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Jobs Created per Gigawatt-Hour of Energy Generated, 2016

Solar — 6.65jobs created per GWh

Coal — 0.07jobs created per GWh

Natural Gas — 0.06jobs created per GWh

Source: U.S. Energy and Employment Report, U.S. Department of Energy. January 2017


Green Industries
the new frontier of growth

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Increasing Efficiency in the Electricity Industry

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Reimagining Malaysian Electricity Supply Industry (MESI 2.0)

MESI 1.0

	Sound Fundamentals	Current Challenges
 **Fuel**	▪ **Secure** supply of coal and gas	▪ **Lack of incentive** to procure lower cost fuel for generation due to pass-through nature; hence no price risk to IPP
 **Generation**	▪ **Low risk-investment**, attractive to private investors ▪ **Strong counterparty**	▪ Higher base-tariff due to surplus capacity i.e. 35% vs ~25%[1] optimal reserve margin ▪ PPAs framework outdated; risk-free for players with long term tenure (21–25 years); all risks pass through to consumers ▪ Lack of renewable energy
 **Grid**	▪ **Reliable and secure** Grid	▪ Incentives-based-regulation (IBR) results in no incentive for efficiency in CAPEX spending ▪ Ownership of Single Buyer and System Operator by TNB makes it bias to (or perceived as) TNB compared to other players
 **Retail**	▪ Regionally **competitive prices** ▪ Lowest domestic tariff in SE Asia ▪ Malaysia ranked 4th in ease of 'Getting Electricity'[2]	▪ Consumers have **no options** in selecting provider & service packages ▪ Commercial and Industry tariffs are not as competitive as Singapore and Vietnam ▪ Pricing mechanism is non-cost reflective resulting in probable inefficient use

Source:
1. JPPPET 2018
2. Doing Business 2019, Training for Reform, A World Bank Group Flagship Report (2019)

Future Challenges

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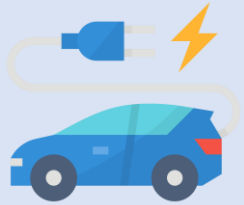
3 Emerging Technologies Disrupting The Industry



Electrification

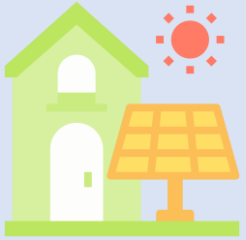
New technologies resulted increase in demand of electricity. We have to prepare early to ensure this demand is met.

Key technologies: Electric vehicles, smart charging, appliances, heat pumps

Digitalisation

Allowing better control and connectivity for consumers. Also enables dynamic and innovative energy products.

Key technologies: Smart meters/ Smart grid, automation systems, Internet of Things and Industry Revolution 4.0



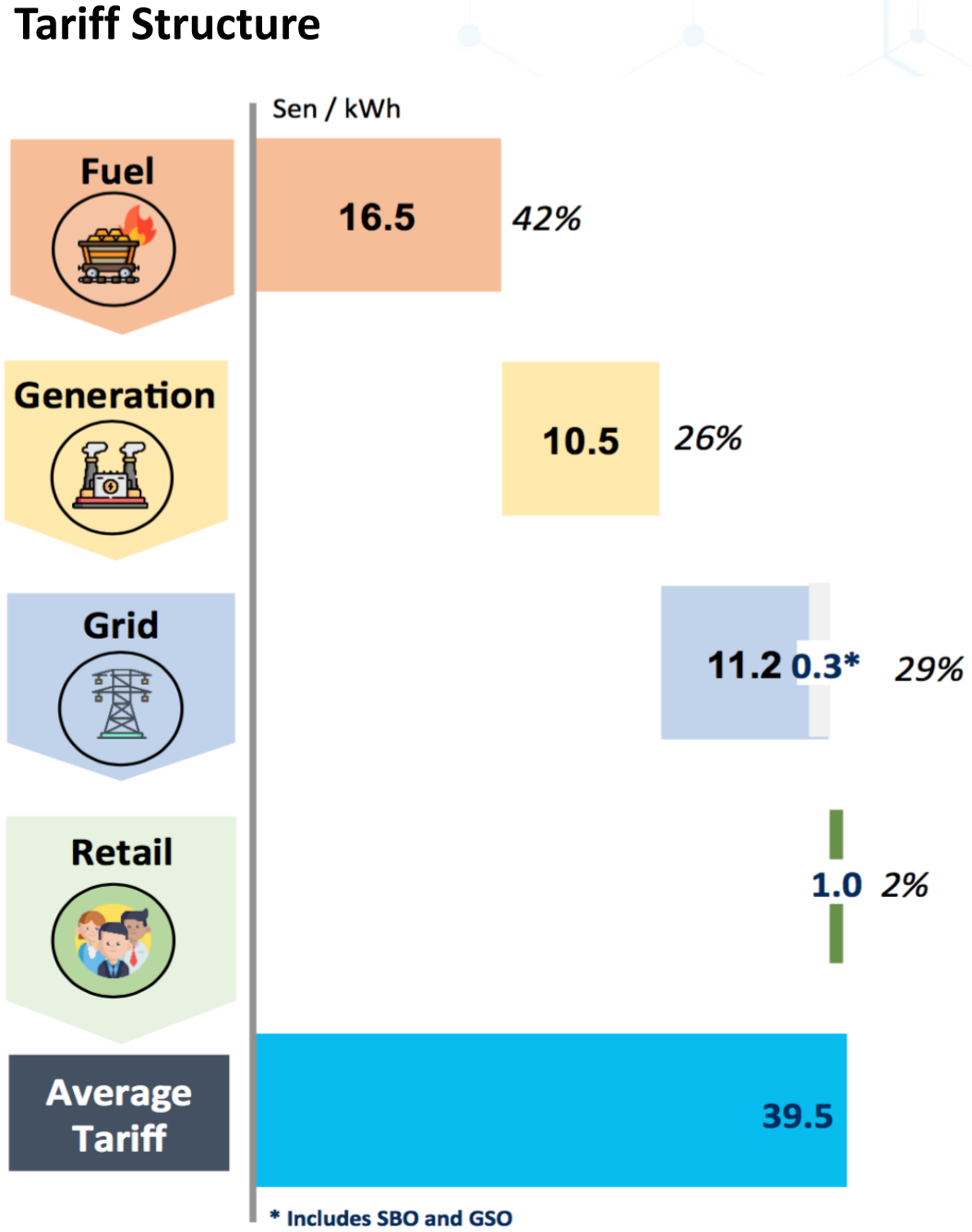
Decentralisation

Empowering consumers to actively participate in electricity supply industry.

Key technologies: Energy Efficiency, Solar PV, Distributed Storage, Batteries, Microgrids, Demand Response, Peer-to-Peer


Cancelled SIX Power Projects
4 gas-fired power plant
2 hydro projects
Savings: RM 11.4 billion
Pursuing RM 250 million
from IPPs to AAIBE
(for tariff cushion)

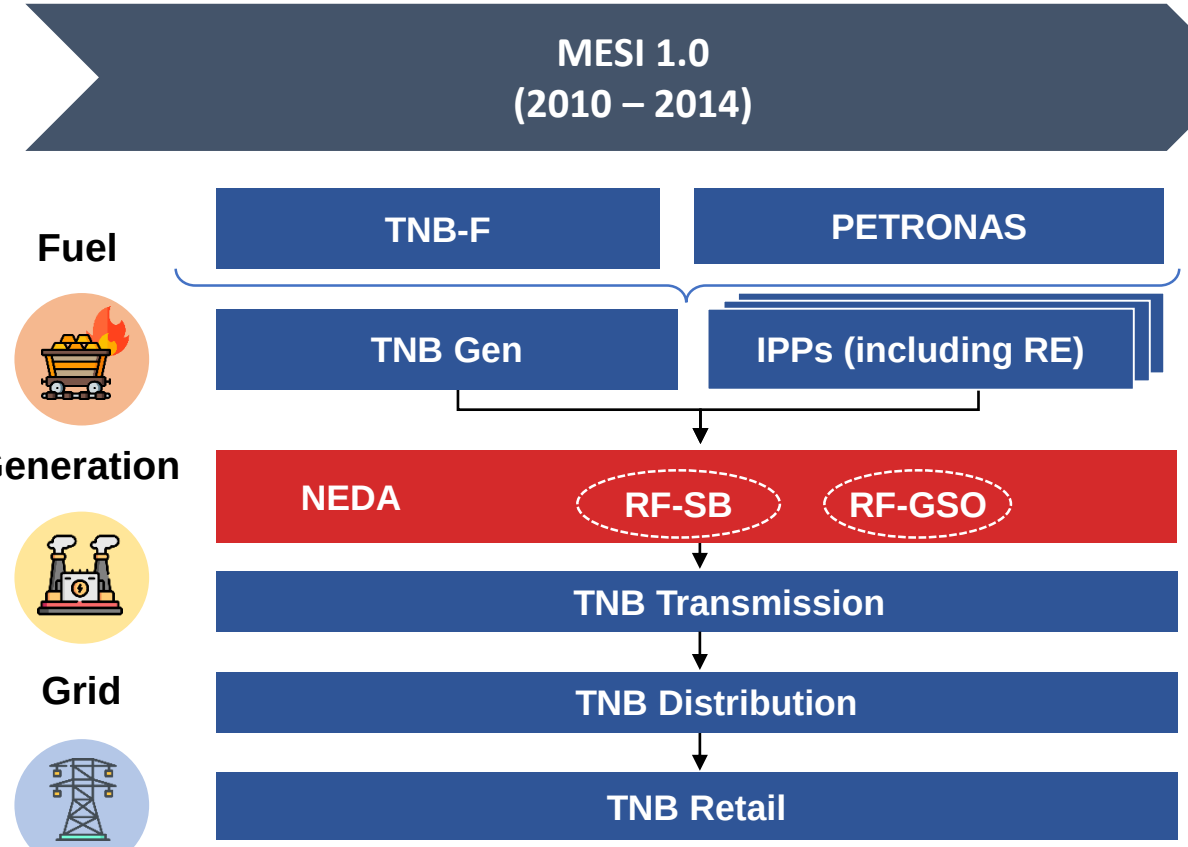
MESI 2.0: Driving Efficiency Across Value Chain



Source:

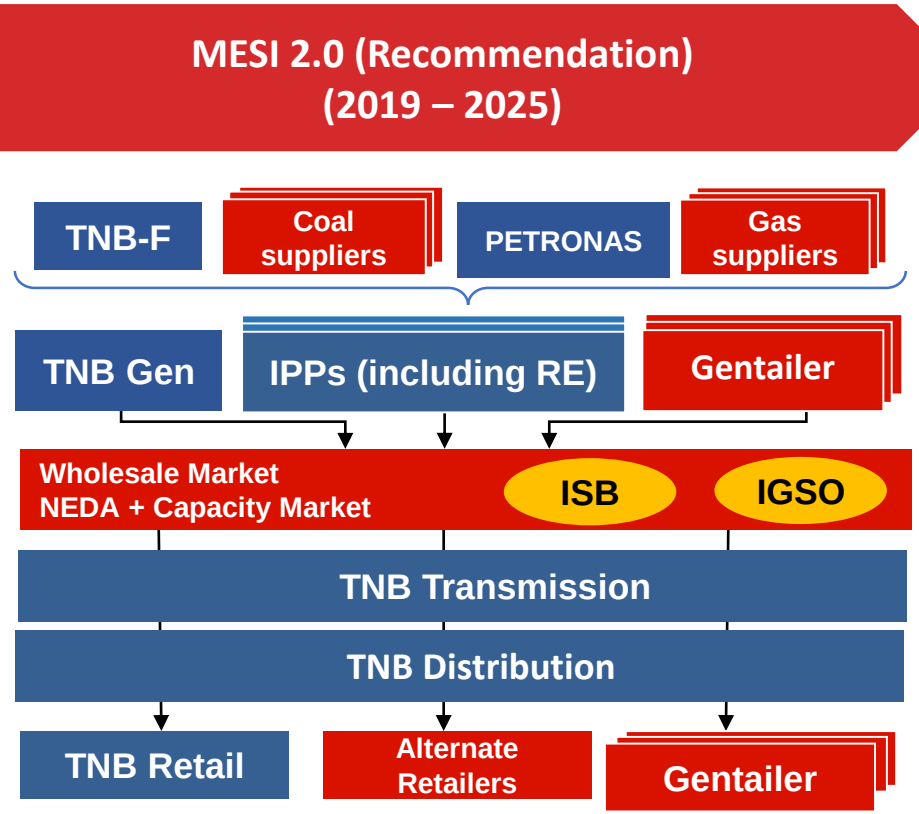
1. JPPPET 2018
2. TNB, Cost of Service Study 2018

MESI 2.0: Driving Efficiency Across Value Chain



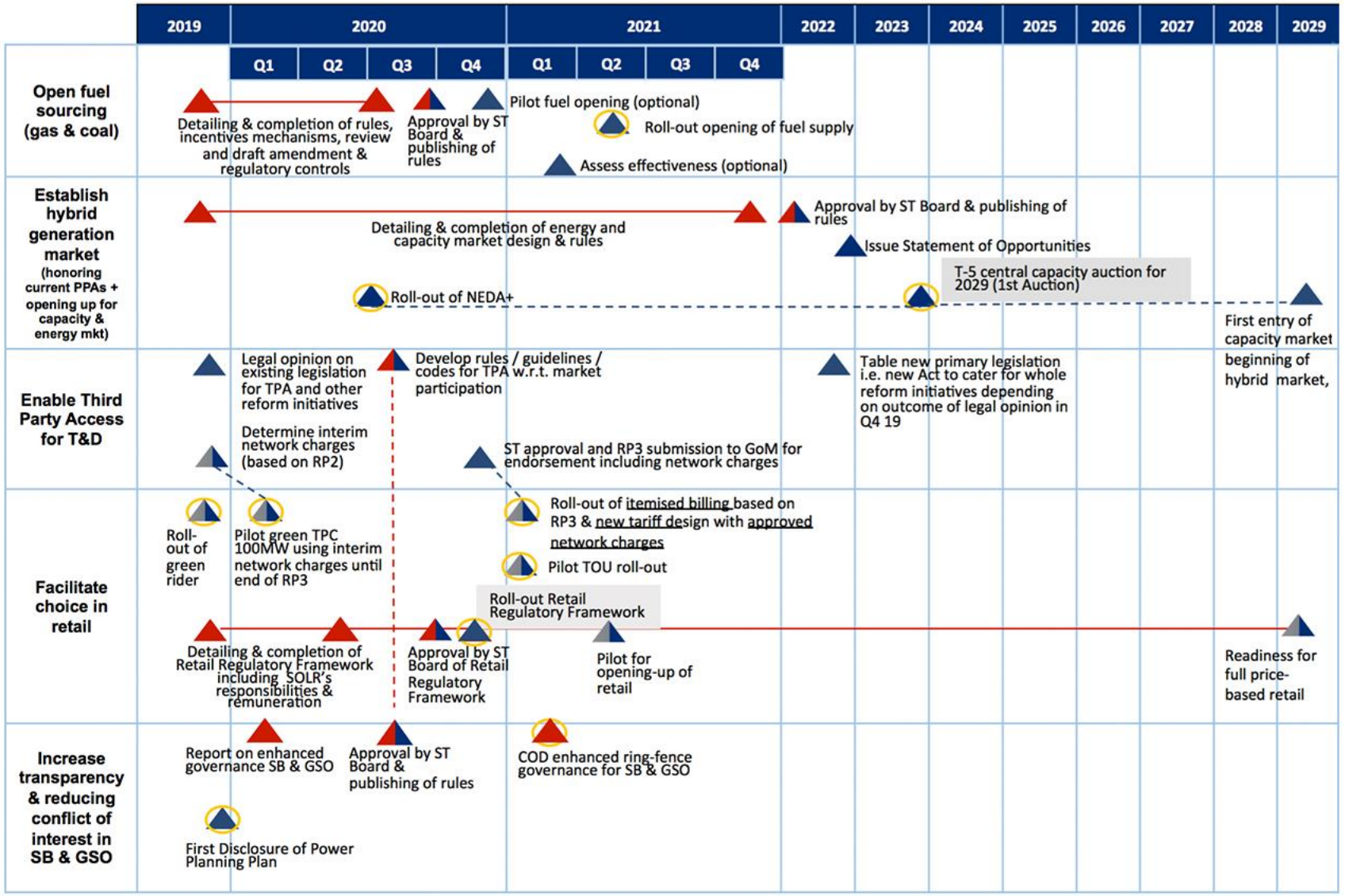
- Single Buyer and GSO ring-fenced within TNB
- Transmission and Distribution owned by TNB

RF: Ring-fenced
ISB: Independent Single Buyer
IGSO: Independent Grid System Operator



- Fuel supplies, generation segment and retail services may evolve to be under competitive environment
- New SB and GSO act as independent functions as part of level-playing field objective
- Transmission and distribution wires remain natural monopoly (and regulated
- Green choices

Aggregated timeline for MESI initiatives



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Potential Outcome

Better Consumer Experience

- **Choice, options and control**
- **Improved service levels**

Reasonable Electricity Prices

- **Regionally competitive**
- **Transparency across the value chain**

Generating Additional Economy Activity

- **Increased capital investments and new job opportunities (2020-2030)**
- **New Small Medium Enterprise (SME's) businesses**

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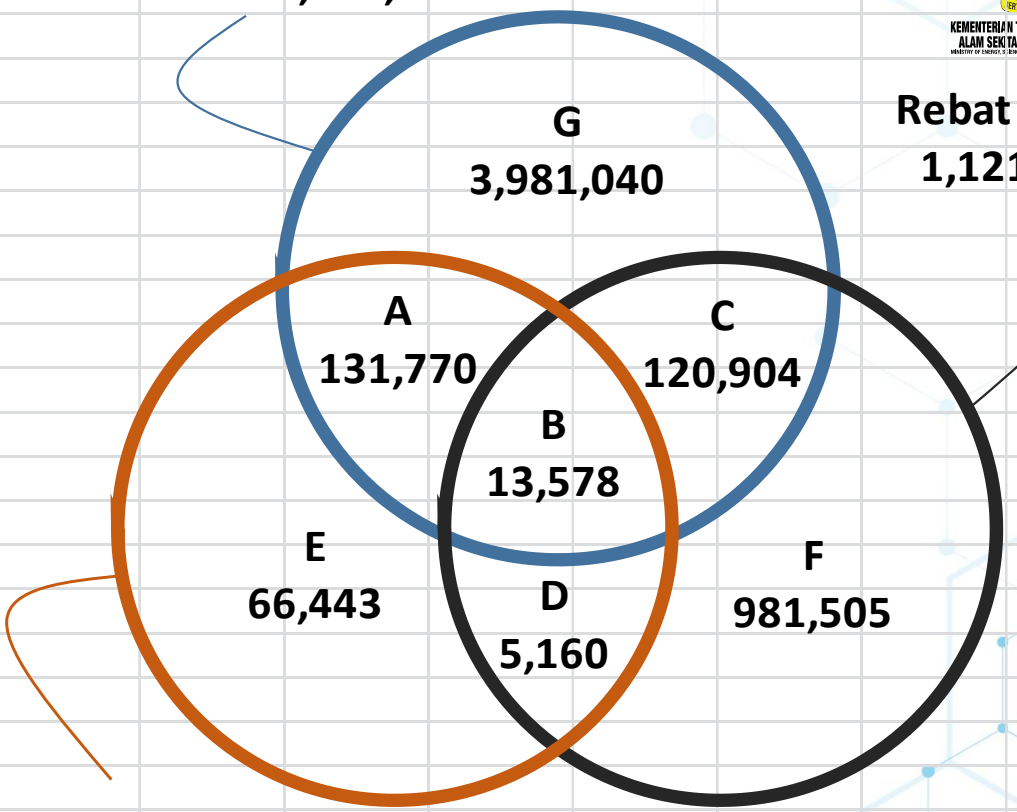
Other Initiatives

Program Rebat Bil Elektrik

RM 40

BSH ≤ RM1,500
4,247,292

Rebat RM20
1,121,147



e-Kasih (Rebat RM40)
216,951

e-Kasih KIR who received electric bill subsidies increased **6 times** from 18,738 to **120,000 recipients**

Pemberian Diskaun Bil Elektrik daripda MESTECC bagi Program Galakan Pendaftaran Taman Asuhan Kanak-Kanak (TASKA)

Daftarkan TASKA anda sekarang dengan JKM & nikmati

20%

diskaun bil elektrik!

(1 November 2019 - 31 Disember 2020)

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50 Set Panel Solar akan Dipasang di Sekolah dan Pihak Berkuasa Tempatan (PBT) Terpilih

45 sekolah **&** **5** PBT

akan dipasang dengan panel solar bernilai RM25,000,000

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KEMENTERIAN PEMBANGUNAN LUAR BANDAR

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MESTECC Meluluskan Pemasangan Lampu Jalan Kampung LED dari Peruntukan *Incentive Based Regulation* (IBR) Tahun 2019/2020

25,000

lampu LED akan dipasang di jalan-jalan kampung

di bawah Program Pemasangan Lampu Jalan Kampung oleh Kementerian Pembangunan Luar Bandar secara berperingkat melalui syarikat utiliti Tenaga Nasional Berhad (TNB)

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MESTECC Melaksanakan 13 Projek Bekalan Elektrik di Perkampungan Orang Asli

Lebih

300

keluarga di 13 kampung menikmati bekalan elektrik tahun depan

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Malaysia's Roadmap Towards Zero Single-Use Plastics 2018 -2030

Introduction | Roadmap Implementation | Infographic | Malaysia Plastic Pact

Plastic pollution is a global problem that needs to be addressed in a sustainable manner. Malaysia has always promoted sustainable development by balancing economic growth with environmental protection in line with the United Nation's Sustainable Development Goals. Malaysia plans to address single-use plastics by encouraging the plastic industry to transition to eco-friendly products. This will ensure the industry thrives by adapting green technologies while the environment is safeguarded. As such, this Roadmap is prepared to be used as a guide towards zero single-use plastics in Malaysia in a holistic manner.

Dokumen:

1. Roadmap
2. Surat Pekeliling Am Bil. 2/2019: Pelaksanaan Kempen Hindari Penggunaan Plastik Sekali Guna di Kementerian, Agensi Kerajaan Persekutuan dan Negeri

www.mestecc.gov.my/web/plastik/

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Thank You