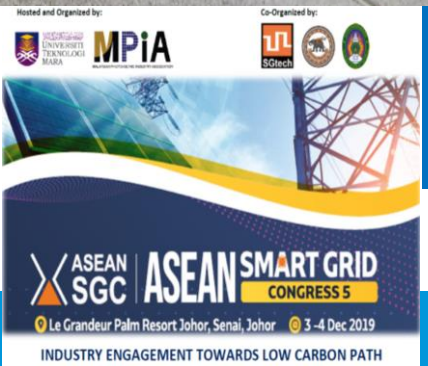
UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

WORLD BANK GROUP

KPKT

MiGHT
Malaysian Industry-Government Group for High Technology



GEF 6 UNIDO SUSTAINABLE CITY DEVELOPMENT (SCD) IN MALAYSIA - *SMART GRID PROJECT*

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4th Dec. 2019

GLOBAL ENVIRONMENTAL FACILITY (GEF6) Project Overview

Global Partners

National & State Partners

Sustainable City As Integrated Approach

Integrates economic, environmental, and social objectives :

ECONOMIC	ENVIRONMENT	SOCIAL
Competitive Cities	**Green & Resilient Cities**	**Liveable & Inclusive Cities**
Fostering economic growth through the benefits of density.	Protecting natural resources and ensuring investments as well as pro-active risk reduction and management	Ensuring access to affordable services for Rakyat

Smart Cities

- High adoption of ICT as Enabler
- To support Integration of City Systems

(Source : World Bank and MIGHT)

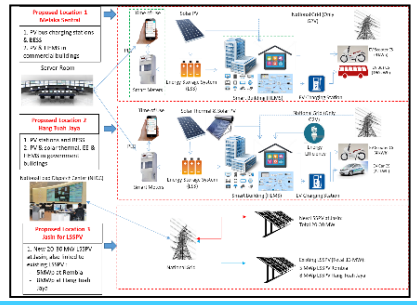
Project Scope – 4 Key Components

Output 1. - National and State Policies on Sustainable Cities (SMART Grid Framework)

Output 2 - Capacity Building (SMART Grid)

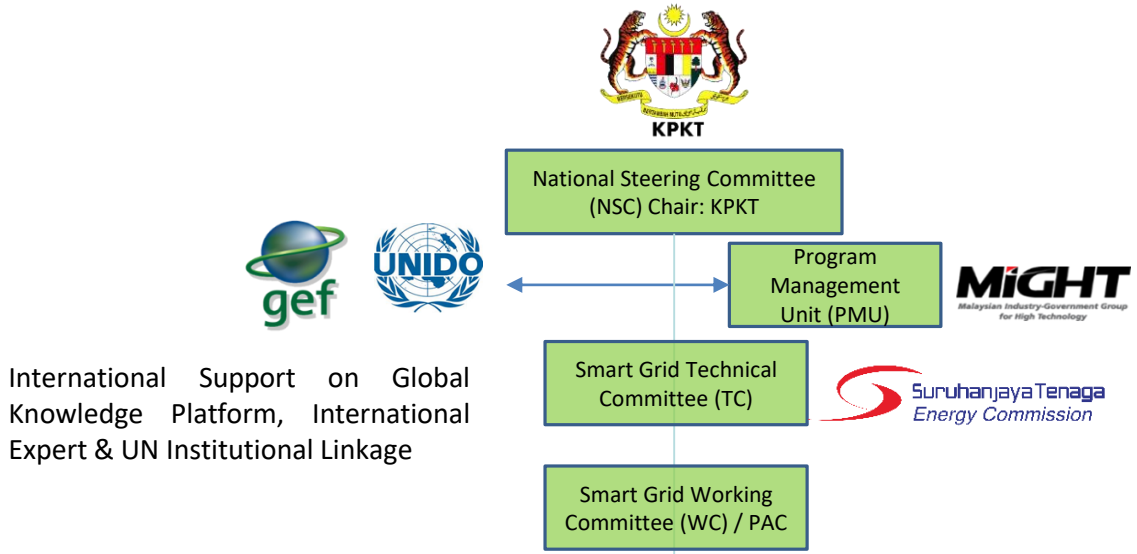
Output 3 – Awareness (SMART Grid)

Output 4 - Smart Grid Demonstration Project



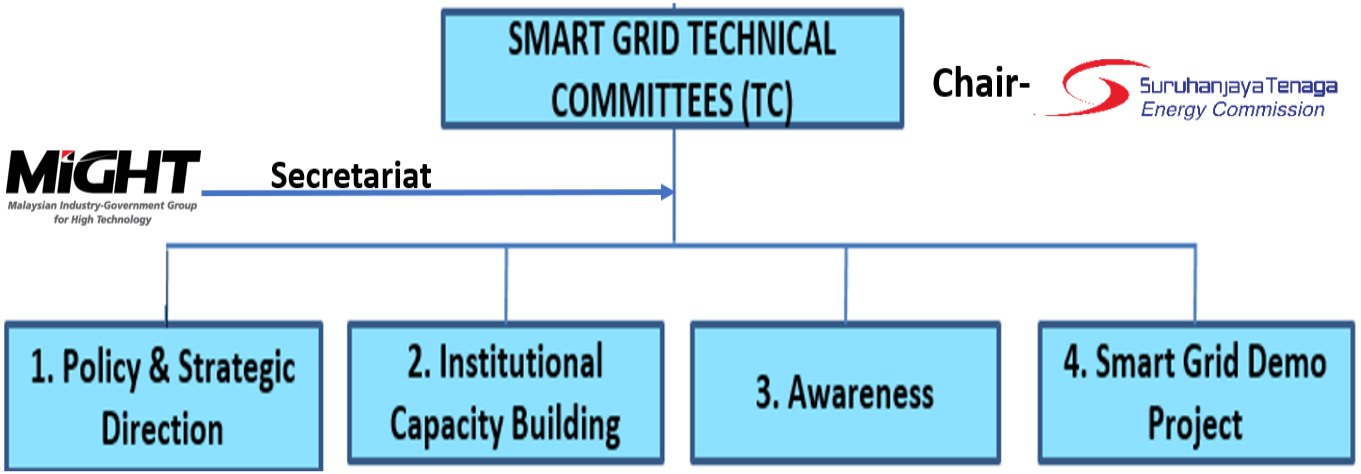
Integrated Approach in Urban Planning in both Strategic Contents and Federal-State Level Linkages

GEF6 Project Governance on SMART Grid Project



PROJECT DELIVERABLES	1. Policy & Strategic Direction	2. Institutional Capacity Building	3. Awareness	4. Integrated Smart Grid Demo Project
PROJECT DELIVERY PARTNERS	UNITEN	UNITEN	UNITEN	TNBR
PROJECT DURATION IN THREE PHASES	**THREE YEARS PROJECT DURATION IN THREE PHASES (36 months)**			

SMART GRID TECHNICAL COMMITTEE (TC)



MEMBERS

KEMENTERIAN TENAGA, SAINS, TEKNOLOGI, ALAM SEKITAR DAN PERUBAHAN IKLIM
KPKT
TENAGA NASIONAL Better. Brighter.
Green Tech MALAYSIA
PERBADANAN TEKNOLOGI HIJAU MELAKA
Sustainable Energy Development Authority seda MALAYSIA
SIRIM
SKMM MCMC
STANDARDS MALAYSIA ACCREDITED CERTIFICATION BODY

DELIVERY PARTNERS

UNIVERSITI TENAGA NASIONAL
TNB RESEARCH

SMART Grid Key Deliverables

COMPONENT 1
POLICY FRAMEWORK

- Develop policy and regulatory framework, roadmap and implementation guidelines for Smart Grid;
- Develop scale-up and replication plans for smart grid, allowing other cities to rapidly adopt them.

COMPONENT 2
CAPACITY BUILDING

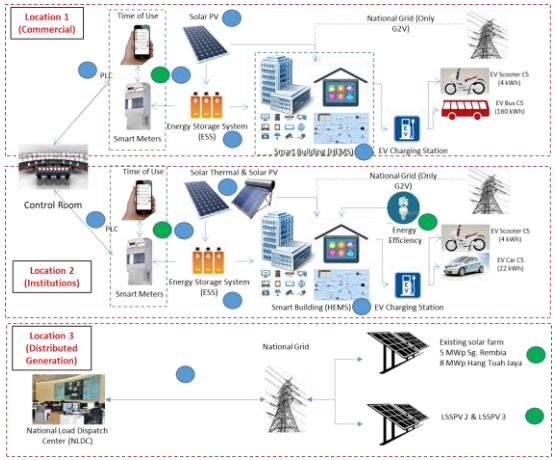
- Training courses on RE-integrated smart grid, solar powered EV charging stations, EE and RE applications in buildings; costs and benefits analysis on smart grid-related investment
- Training courses (2-3) on data analysis and management smart grid.

COMPONENT 3
AWARENESS

- Outreach programmes for stakeholders and consumers on smart grid with RE-powered EV charging stations, EE and RE applications buildings and ICT system

COMPONENT 4
DEMO PROJECT

TNB RESEARCH (259519-A)



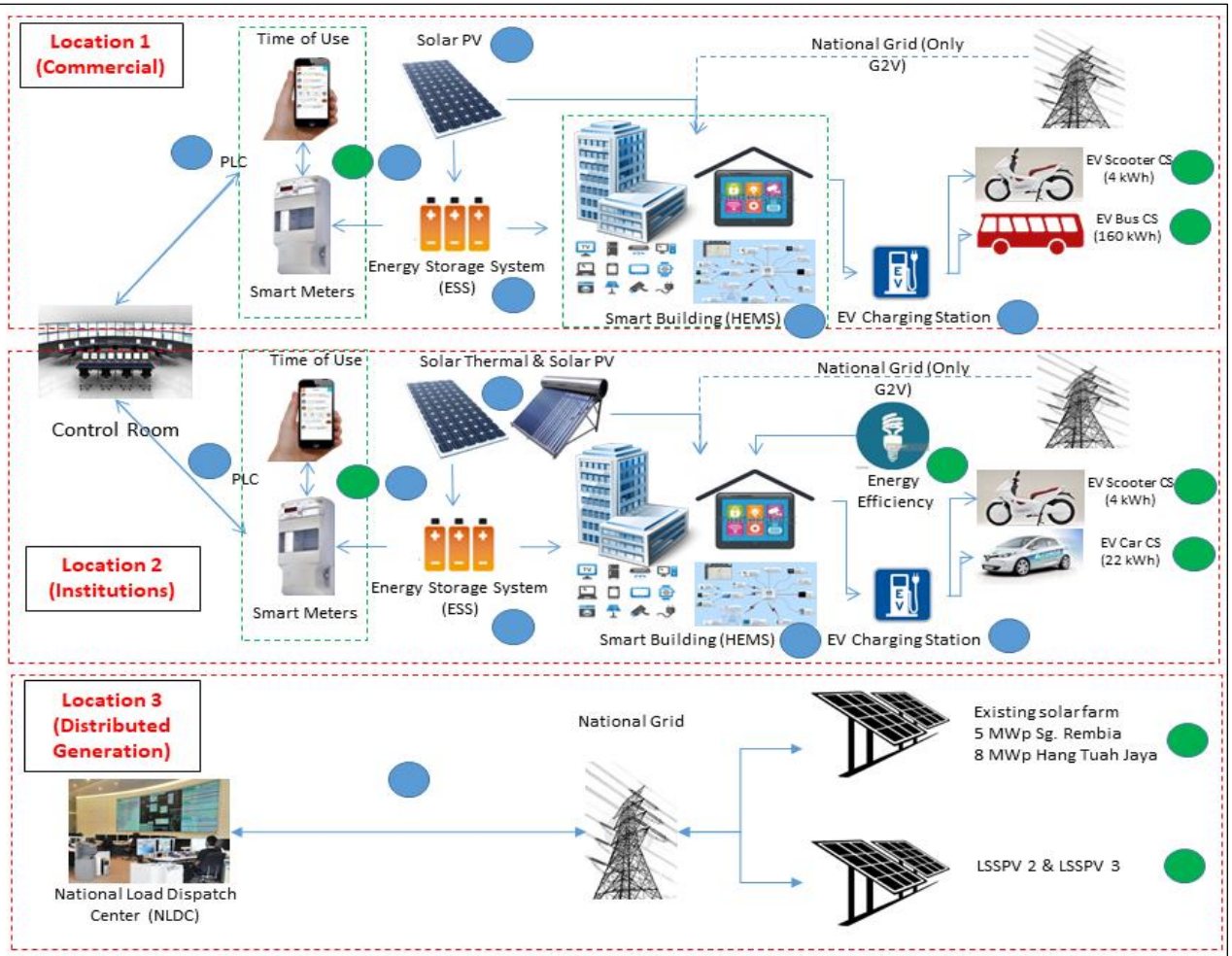
COMPONENT 4 : SMART GRID DEMO PROJECT

Smart Grid Demo Project at Melaka {Lead by TNBR}

Phase 1
Preliminary Data Integration & Reporting of Selected Energy Projects in Melaka

Phase 2
Data Integration & Analytics for Selected Energy Projects in Melaka, Future Large Scale Solar (LSS) & Rooftop Solar PV Projects via Net Energy Metering (NEM), Feed in Tariff (FiT) and setting-up of Integrated Server Room in Melaka which is also ready for NLDC Connection

Phase 3
Data Integration & Visualization of Selected Energy Projects in Melaka, Future Large Scale Solar (LSS) PV & Rooftop Solar PV Projects via Net Energy Metering (NEM), Feed in Tariff (FiT) and Future Green Mobility Project connected to National Load Dispatch Center (NLDC)



Co-Financing Direct Financing

SMART GRID DEMO PROJECT GREEN HOUSE GASES (GHG) COMMITMENT

In total, the project is expected to give result in terms of:

a) Direct annual energy savings of 244,169 GJ in the last year of the project (2021).
b) A total 20-year reduction of 4,590,386 GJ (assuming a 20-year lifetime of investments).
c) Annual reductions of 45,089 tonnes CO2eq per year as direct GHG reductions in the last year of the project (2021)
d) A total 20-year reduction of 847,675 tonnes CO2eq as direct GHG reductions & indirect GHG emissions avoided of 3,607,129 tonnes CO2eq.

Annual reductions of 45,089 tonnes CO2eq

20-year reduction of 4,590,386 GJ

PROJECT GOVERNANCE: NATIONAL STEERING COMMITTEE (NSC) MEETING

NSC Meeting was held on 28 May 2019 at Ministry of Housing & Local Govt. Office Putrajaya and was attended by participants including NSC members, ex-officious and observers.

INTERNATIONAL WORKSHOP ON ENERGY TRANSITION THROUGH SMART GRID REALIZATION FOR ASEAN & BIMSTEC, 29TH -30th OCTOBER 2019

- Hosted by Department of Alternative Energy Development and Efficiency (DEDE), Ministry of Energy, Thailand;
- To create a networking platform and foster collaboration between government, utilities and private sectors from ASEAN and BIMSTEC for the realization of energy transition through smart grid development
- Sharing best practices in ASEAN & BIMSTEC
- Highlight the policy and regulatory framework, technological innovation and disruption, opportunities and way-forward

Key Highlight Activities

Smart Grid Workshop

Brainstorming session attended by 20 participants for the formulation of Term of Reference (TOR) with the key stakeholders including SEDA, UNIDO rep, TNBR, GSPARX, UNITEN etc. on the smart grid deliverables under GEF6.

Key Highlight Activities

Meeting Session with Key Stakeholders

Meeting session with Melaka state government including PTHM & PKNM for Large Scale Solar 3 (LSS3).

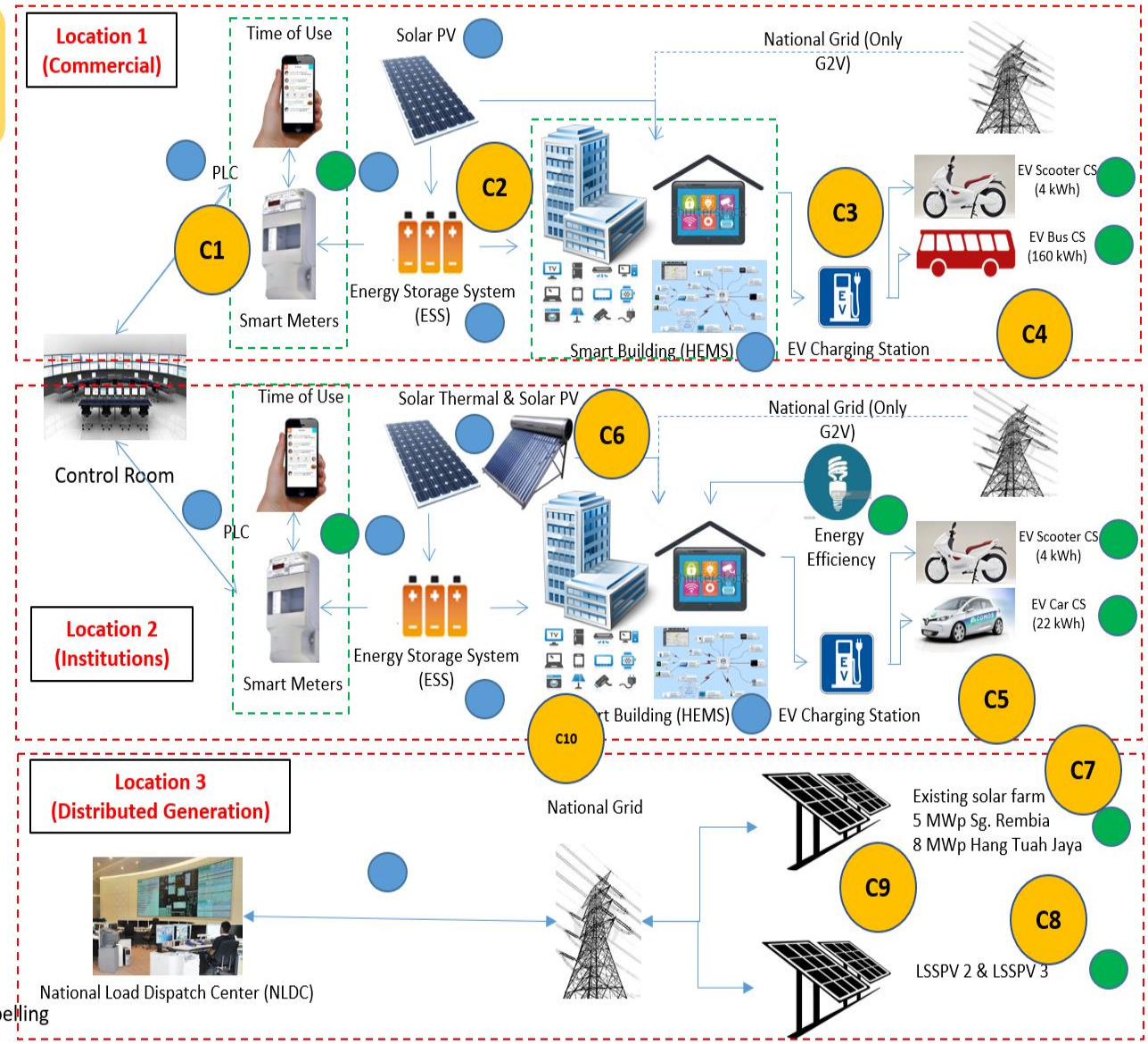
Series of Meeting session with TNB Research & UNITEN.

SUMMARY REPORT OF FIELD VISIT

Objective 2: To conduct stock take on the current landscape for smart gird components including grid infrastructure, green technology applications etc at Melaka state for smart grid project implementation

Components Labelling **CX**

Component 1: Smart Meter, PLC & TOU
Component 2: Energy Storage System
Component 3: EV Charging Station & Bus
Component 4: EV Charging Station & Scooter
Component 5: EV Charging Station & Car
Component 6: Solar Thermal System
Component 7: Solar Farm Rembia 5 MW
Component 8: Solar Farm Bemban 50 MW
Component 9: Solar Farm Hang Tuah Jaya 8 MW
Component 10: Home Energy Management System (HEMS) & EE Building



Co-Financing Direct Financing Components Labelling

SUMMARY REPORT OF WORKING VISIT

C1

Component 1:
Smart Meter

C2

Component 2:
Energy Storage
System

SUMMARY REPORT OF WORKING VISIT

C7

Component 7:
5 MW KMB
Solar Farm

C4 **C5**

Component 4 &
Component 5:
EV Scooter & EV Car

SUMMARY REPORT OF WORKING VISIT

C6

Component 6: Solar Thermal System

C3

Component 3: EV Bus

SUMMARY REPORT OF WORKING VISIT

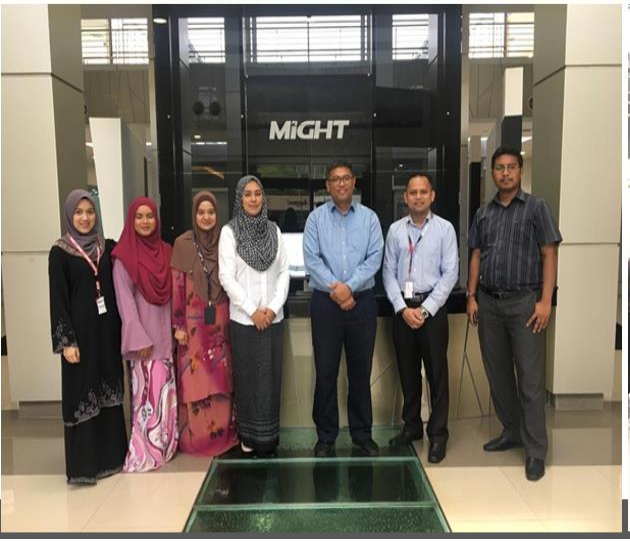
C8

Component 8:
50 MW Quantum
Solar Farm

C9

Component 9:
8 MW Solar Farm

ENGAGEMENT WITH TNB RESEARCH AND UNITEN FOR GEF6 SMART GRID DEMO PROJECT



Tenagawan Daily

TERAJU MINDA KITA

EDARAN DALAMAN SAHAJA 20 Jun 2019 BIL. 109/2019

TNB TURUT HIJAUKAN MELAKA

AYER KEROH – TNB bekerjasama rapat dengan pelbagai pihak khususnya Kerajaan Negeri Melaka dalam merealisasikan program Global Environment Facility (GEF-6) Sustainability City dan Smart Grid Project di negeri ini.

Inisiatif TNB memasang meter pintar di seluruh Melaka telah menarik perhatian pihak pelaksana GEF-6 berikutan ia sejajar dengan programnya serta selaras matlamat menjadikan Melaka peneraju pembangunan teknologi hijau.

Baru-baru ini, satu sesi lawatan tapak telah dianjurkan oleh projek Advanced Metering Infrastructure (AMI) melibatkan Malaysian Industry-Government Group for High Technology (MiGHT), Perbadanan Teknologi Hijau Melaka (PTHM) dan TNB Research (TNBR).

MiGHT yang berada di bawah bidang kuasa Jabatan Perdana Menteri, telah memperolehi dana daripada United Nations Industrial Development Organization (UNIDO) untuk melaksanakan inisiatif GEF-6 tersebut.

Sempena lawatan itu, pihak terlibat membincangkAn status terkini, cabaran dan perancangan masa depan AMI (Smart Meter), taklimat kajian tarif Time of Use (ToU) serta pemahaman tentang teknologi projek AMI itu sendiri.

Selain itu, mereka diberi taklimat mengenai projek grid pintar dan perancangan bagi tempoh tiga tahun akan datang yang mana TNB menaik taraf gridnya bagi membolehkan langkah memberi lebih nilai kepada pelanggan, termasuk aspek rumah pintar, penjimatan tenaga dan penyelesaian kecekapan tenaga.

Lapor: Adib Fathil/SA | Foto: Adib Fathil | Layout: Aizir Aziz

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UNIDO UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

gef

KPKT MiGHT Malaysian Industry-Government Group for High Technology

MIGHT – MPIA Ties Partnership on Challenges and Opportunities

While future opportunity abounds, the global solar PV industry landscape is expected to face major industry booms

MiGHT MPiA MALAYSIAN PHOTOVOLTAIC INDUSTRY ASSOCIATION

1

FIVE YEARS

The global solar PV market is poised for exponential growth in the next five years for all segments of the PV value chain, with projected CAGR between

15% - 20%

2 Asia pacific region will account more than 50% of global installations in 2015.

50% in 2015

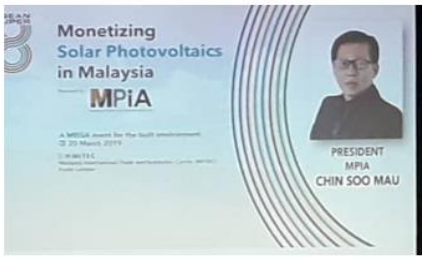
3 Projected to increase ten fold to 10% of solar's share of electricity production by 2030, and attract global funding of about USD3.7 Trillion in the next 25 years.

10% SOLAR SHARE

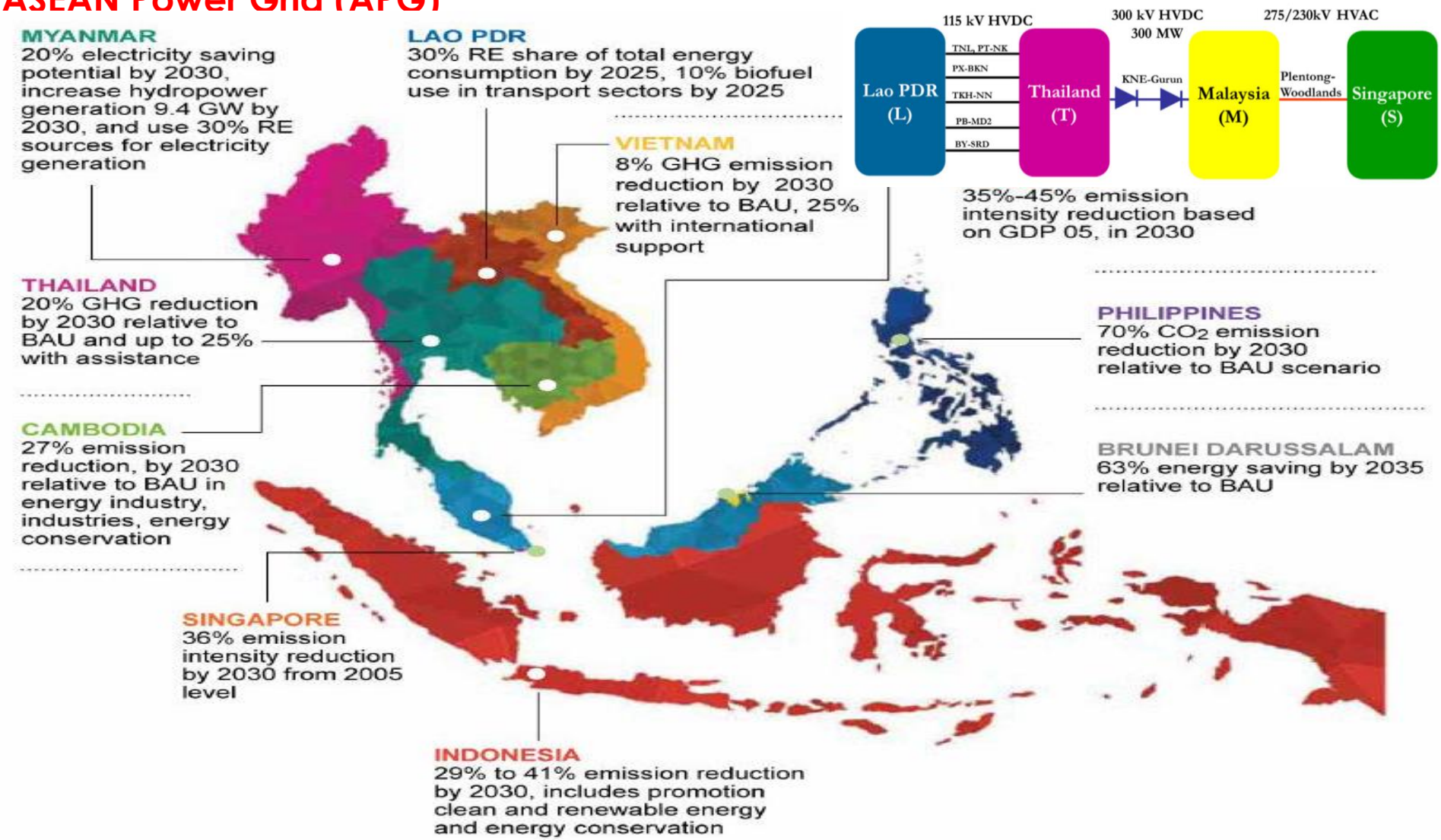
Global Funding USD3.7 TRILLION Next 25 Years

Challenges that are expected to continue:

- Rapidly evolving regulatory and economic landscape
- China factor - continuously puts a downward pressure on price.
- Intense market competition
- Anti-dumping and countervailing policy
- Oil prices
- Game changing technology - battery storage, grid integration, and other disruptive technologies.



OVERALL SUMMARY: Smart Grid Projects to support GHG Reduction via RE, EE & ASEAN Power Grid (APG)



THANK YOU

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