SUSTAINABLE CITY DEVELOPMENT IN MALAYSIA 2020-2023

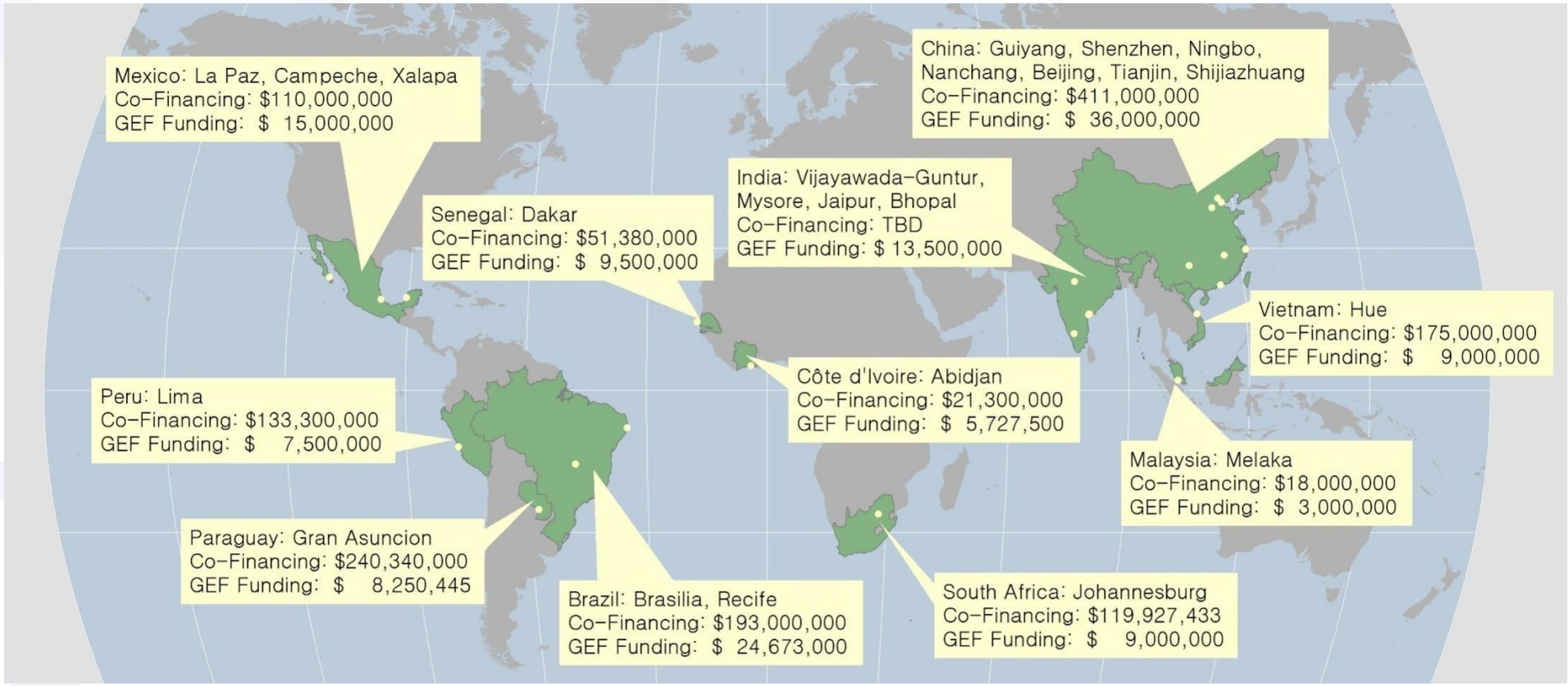
SMART GRID DEMONSTRATION PROJECT IN MELAKA & ITS IMPACT TO TNB

Smart Grid Unit
TNB Research Sdn. Bhd.
STRATEGY AND VENTURES DIVISION
TENAGA NASIONAL BERHAD

GLOBAL INTEGRATED APPROACH PILOT ON SUSTAINABLE CITIES DEVELOPMENT (GEF6)

TNB RESEARCH

- Part of a GEF global project on **Sustainable Cities Integrated Approach Pilot (IAP)**, which is participated by 28 cities in 11 countries around the world;
- Total Global Budget: GEF - $130M; Co-financing - $1.48 B



GLOBAL INTEGRATED APPROACH PILOT ON SUSTAINABLE CITIES DEVELOPMENT (GEF6)

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Global Partners

gef

WORLD BANK GROUP

UNIDO

National & State Partners

KPKT

MiGHT

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 Outputs

National and State Policies on Sustainable Cities

Capacity Building

Awareness

Smart Grid Demonstration Project

SCOPES OF GEF6 PROJECT

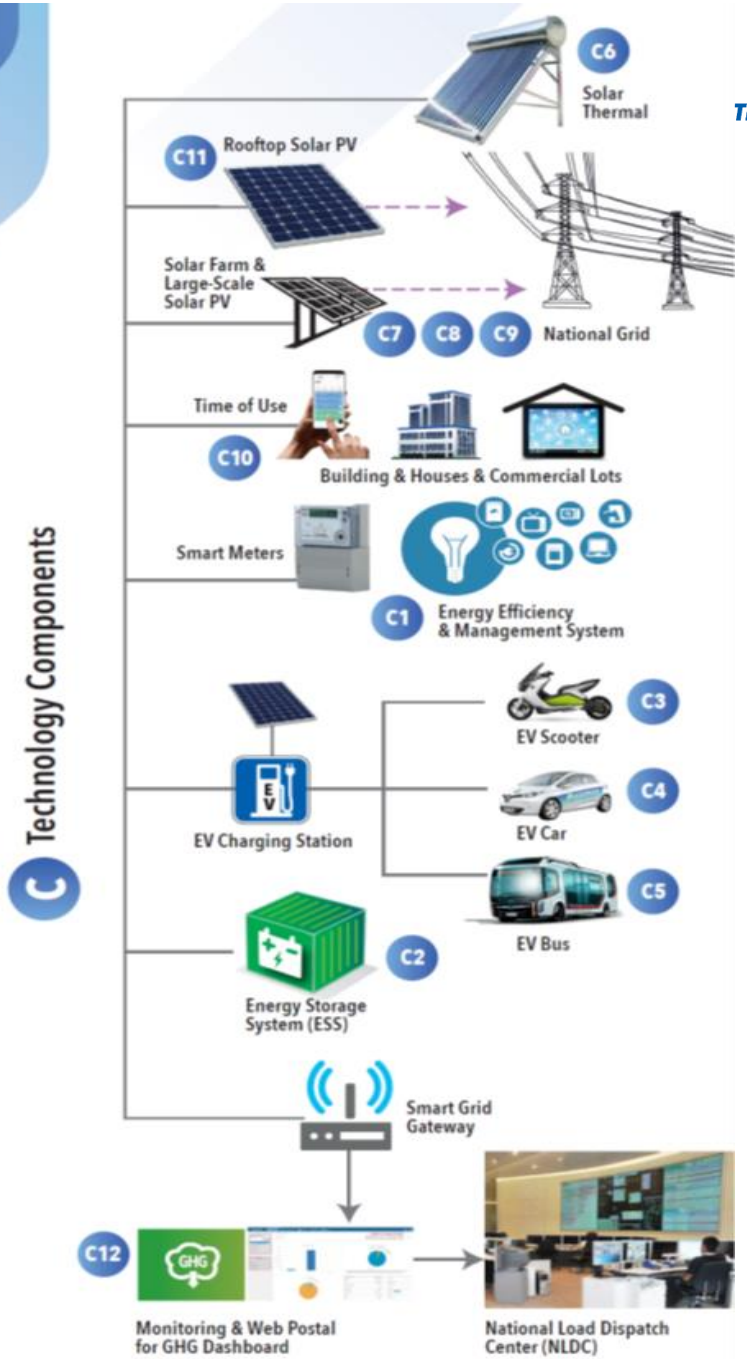
SUSTAINABLE CITIES DEVELOPMENT IN MALAYSIA

The United Nations Industrial Development Organization (UNIDO) together with MIGHT and TNB Research is implementing the Smart Grid Demonstration Project to promote integration of sustainable energy application at Melaka (including solar PV and solar thermal system, electric vehicle and charging facilities, energy storage system, smart meter infrastructure, energy efficient building, etc.) in reducing the GHG emission for sustainable city development.

Context - TNBR perspectives:

A) Deliver and complement TNB on Smart Grid development at small scale.

B) Develop local talents and commercial models.



SCOPES OF GEF6 PROJECT

Different Technology Components and Phases of Implementation

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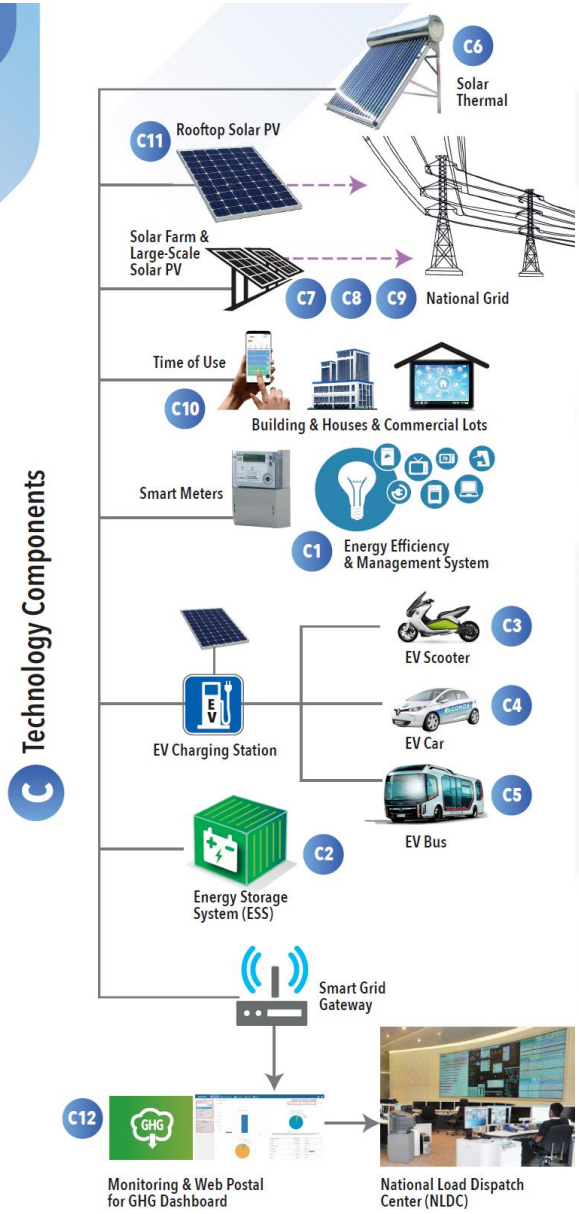


Technology Components (C)

C1: Smart Meter (Houses)

C2: Energy Storage System (ESS)

C3, 4 & 5: EV Charging Station (Green Mobility)

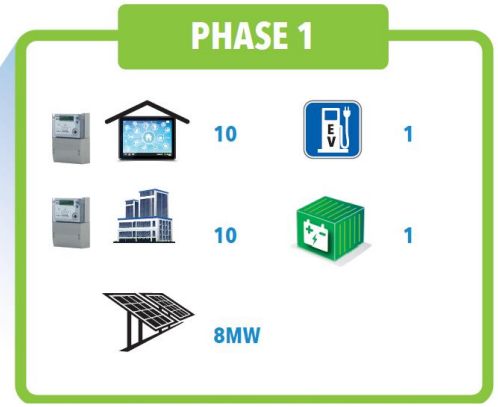
C6: Solar Thermal System

C7, 8 & 9: Large-Scale Solar

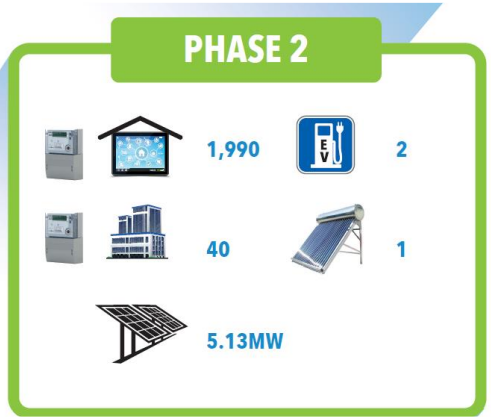
C10 : Buildings

C11: Solar PV System (New under GEF6)

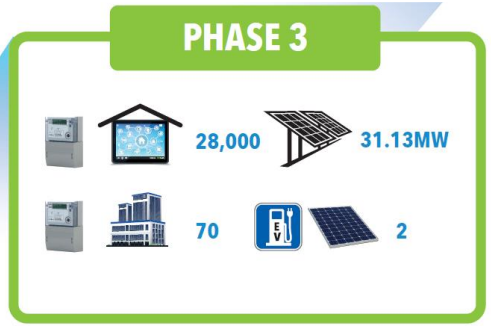
C12: Monitoring Room



Jan 2020
- June 2021
[Completed]

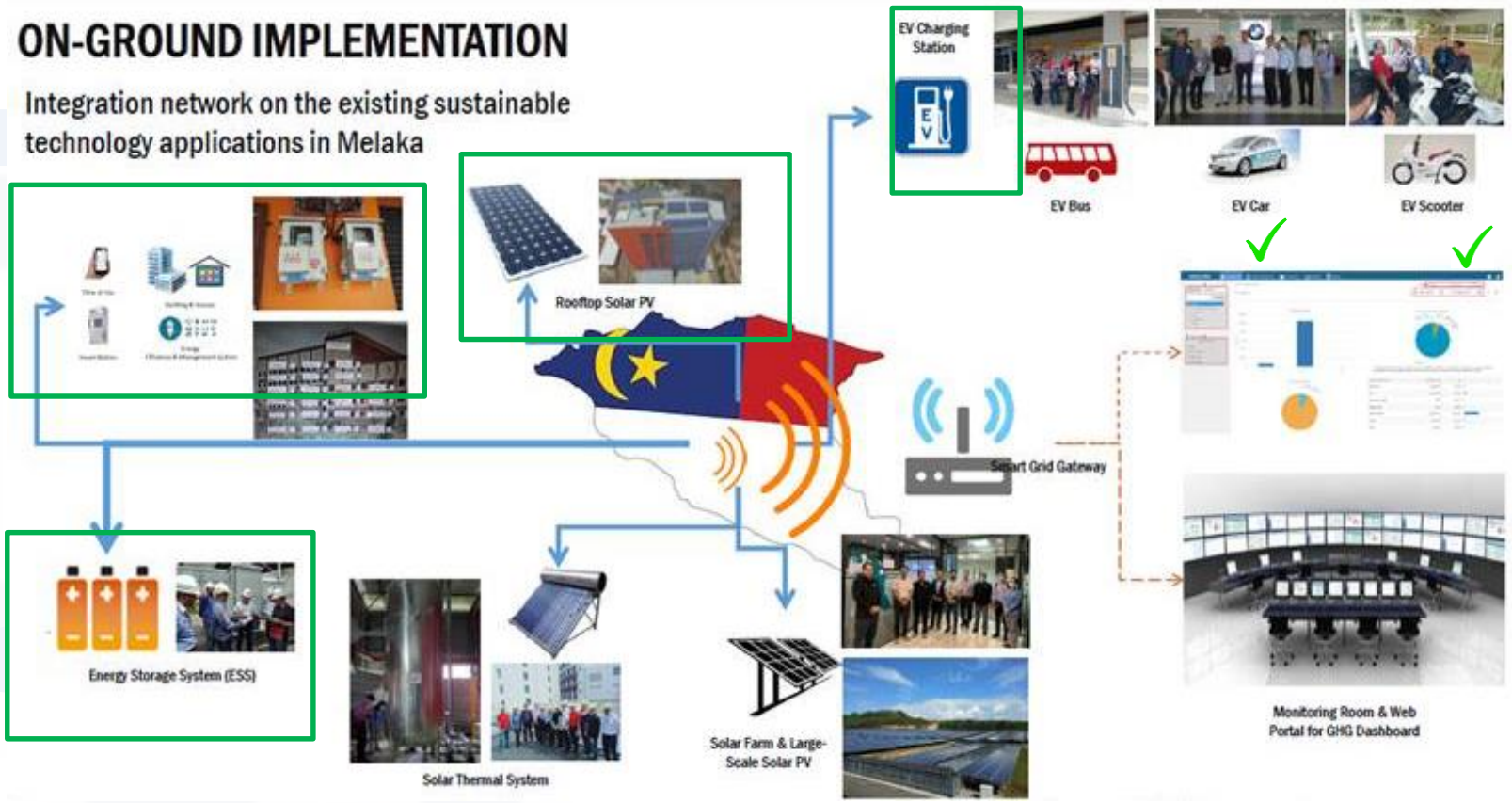


Jul 2021
- June 2022



Jul 2022
- June 2023

CURRENT STATUS OF GEF6 PROJECT



POTENTIAL JOINT INVESTMENT & COLLABORATION FOR GEF6 PROJECT

EV smart charging – *slow, fast, rapid and V2G chargers*

Smart DC supply system in substation– *utility-scale energy storage system, management*

Smart Energy Management System – for next gen SCADA and smart meters (resilient network)
– for energy efficiency accounting (low carbon network)
– for demand response mechanism (flexible network)

PARTNERSHIP ARE REQUIRED..

Recruit and Enrol Customers in Smarter & Greener Grid Enabling Programs

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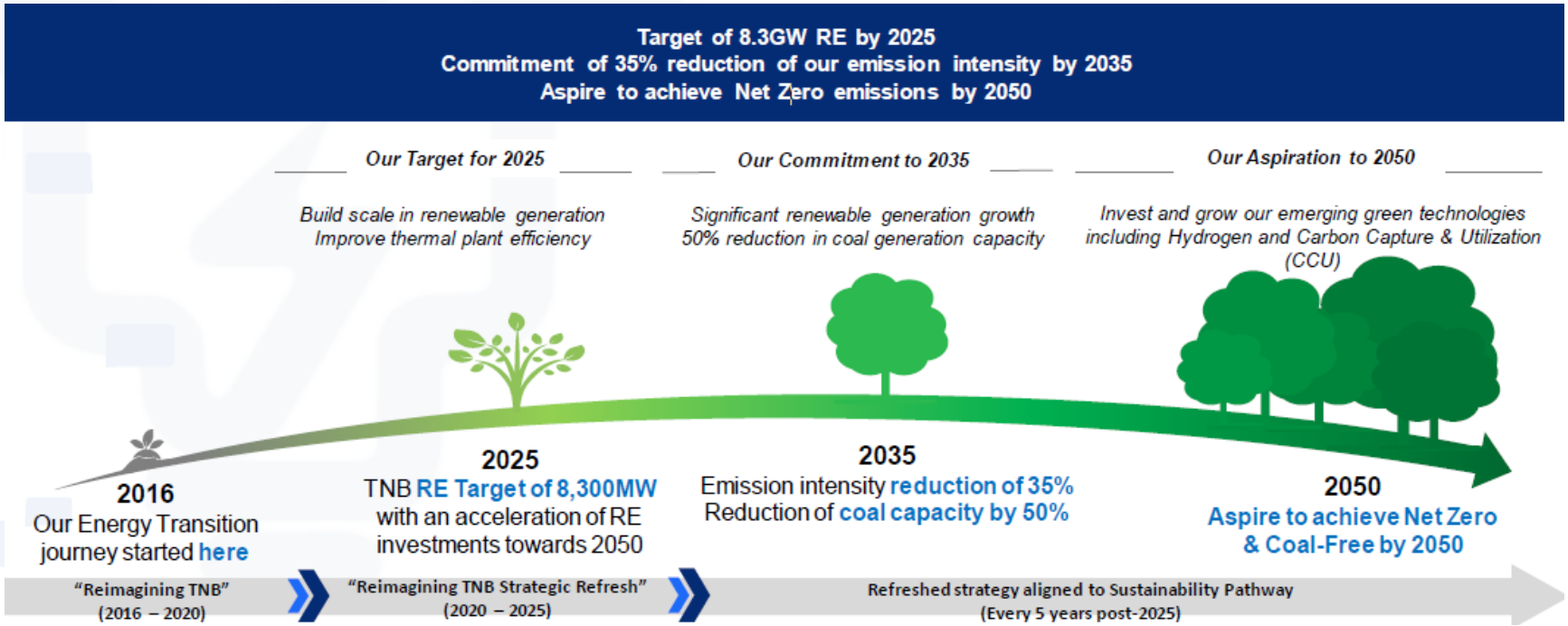
- Industry leaders driving electrification of transportation
- Partnership between utilities and retailers is emerging
  - Use of online marketplaces to generate new revenue streams selling energy efficiency products
- Sustainability, resilience and cross-industry investments driving TNB Sustainability Pathway



LET'S VENTURE INTO SOCIAL INNOVATION BUSINESS OF SMART GRID

Medium-term Opportunities for New Investment and Ownership for Dynamic Energy Market

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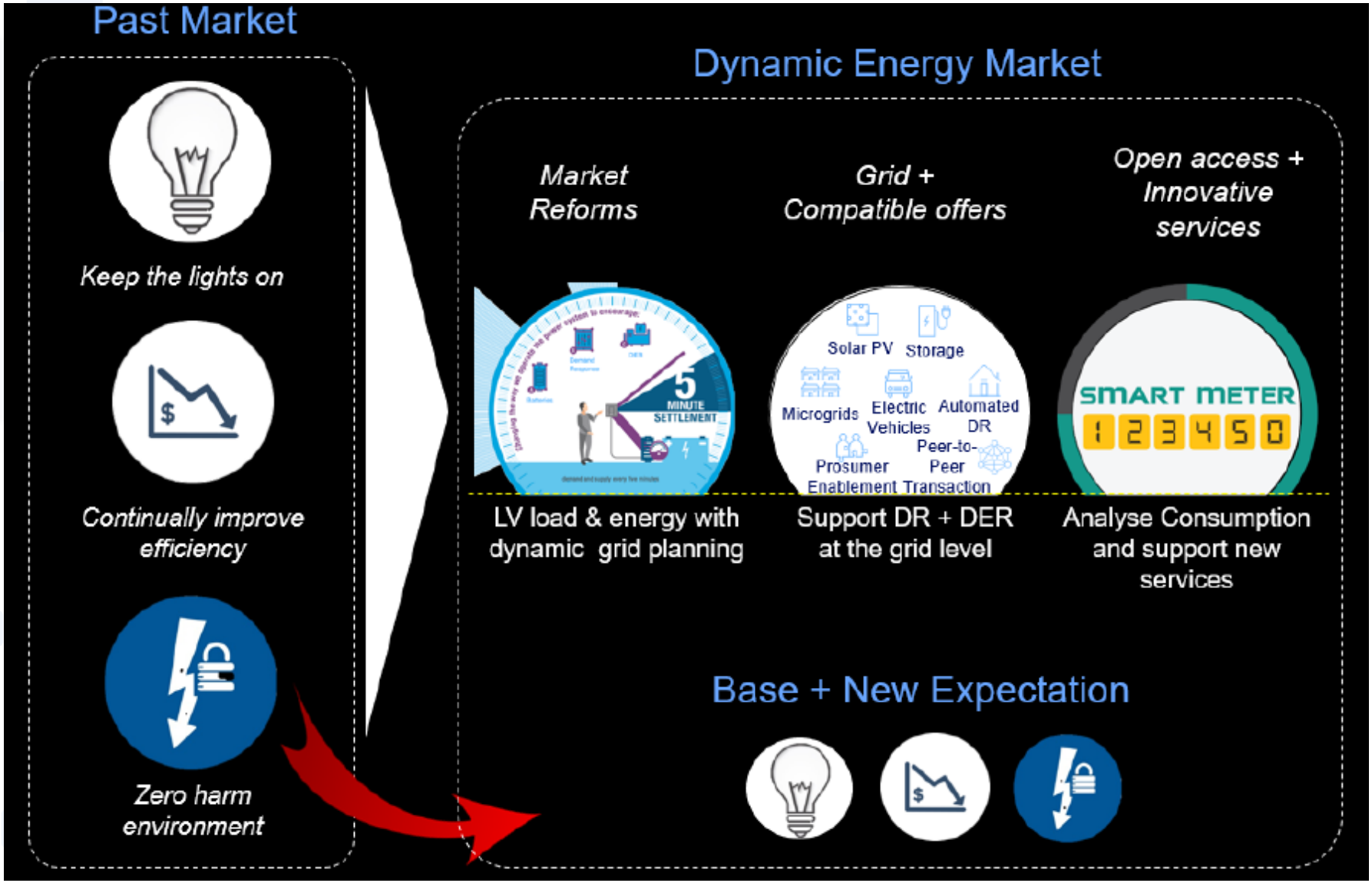

LET'S VENTURE INTO SOCIAL INNOVATION BUSINESS OF SMART GRID

Providing Solutions of Smart Utility for TNB

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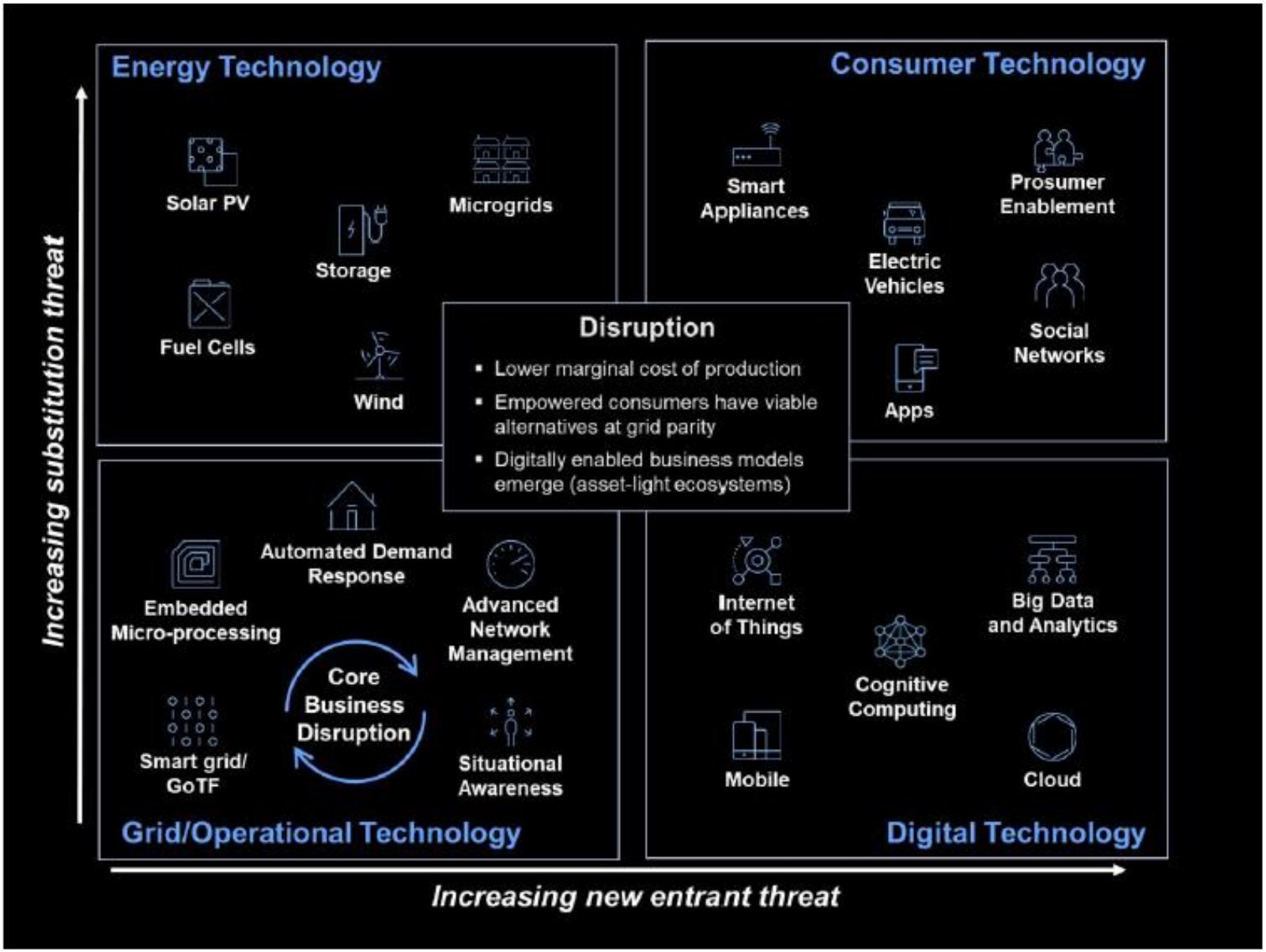

Thank You

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