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Asia Pacific Urban Energy Association

Meeting the increasing electricity demand from Electric Vehicles

Energy Talk 14 – EV Charging Ecosystem in Indonesia

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Asia Pacific Urban Energy Association (APUEA)

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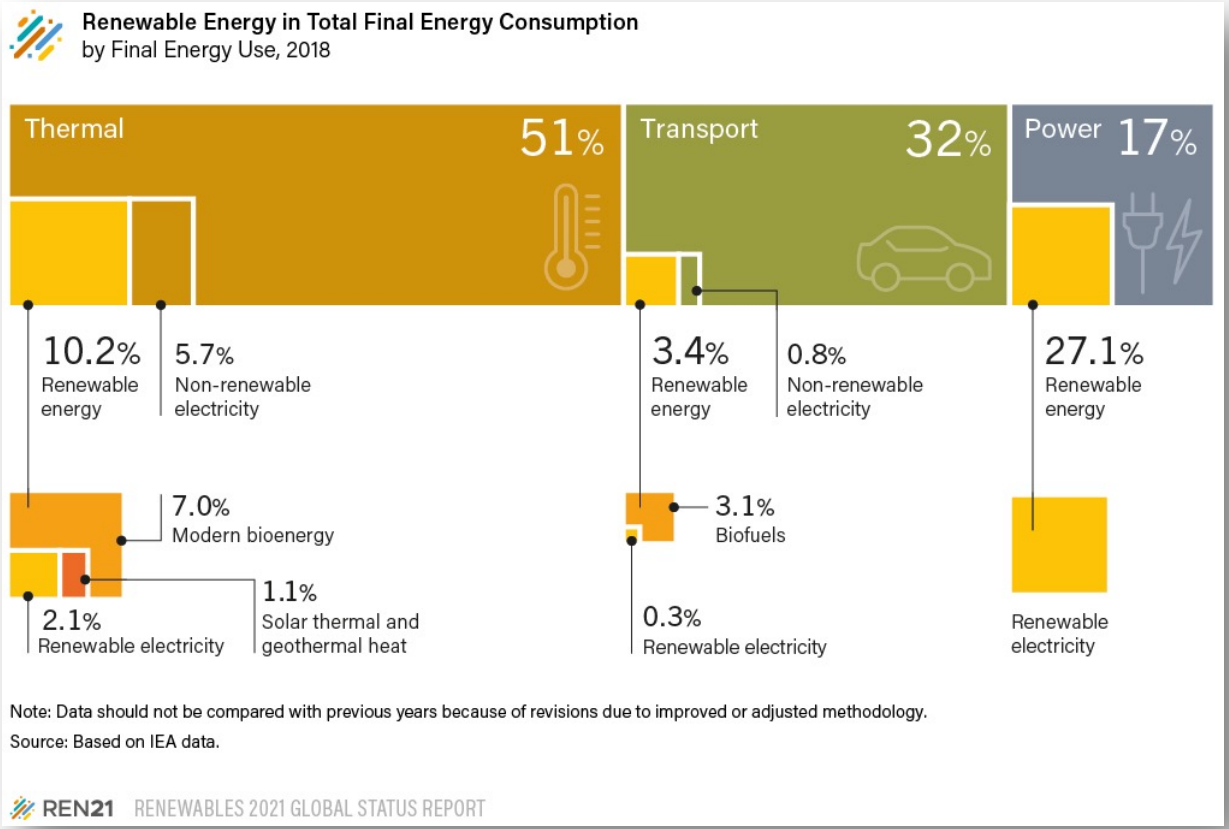
Total Final Energy Consumption

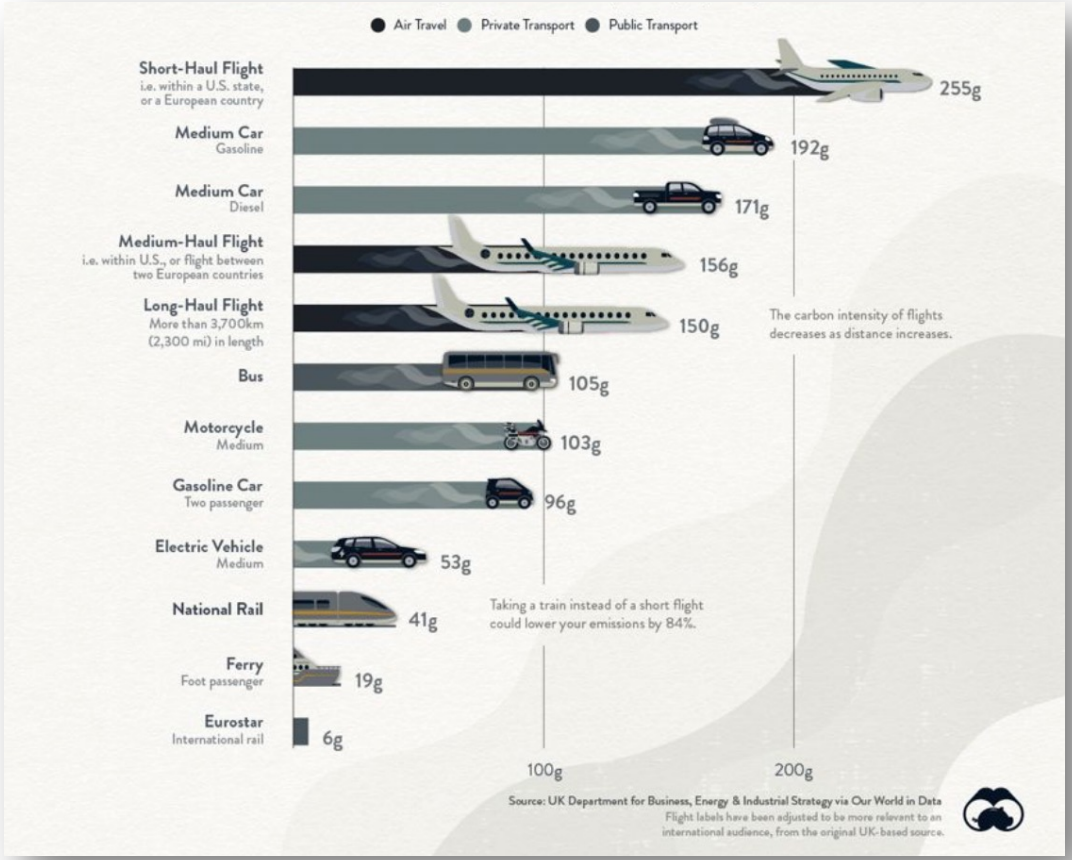


ASEAN Countries' Pledge During COP26 (Glasgow, November 2021)

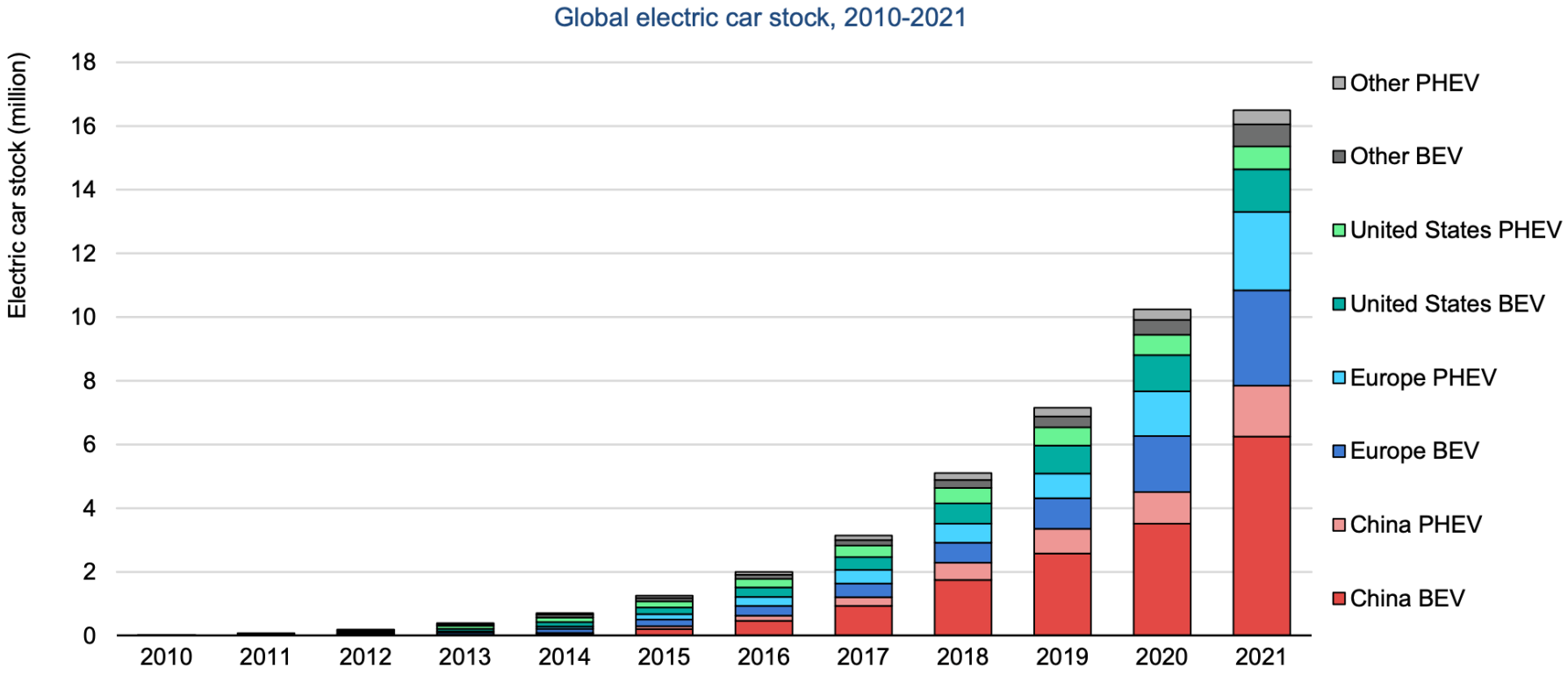
ASEAN Country	Coal Phase out	Methane reduction	Interconnected green grid	Product efficiency	Net zero target
Brunei	Yes	No	No	No	**2050**
Cambodia	No	No	Yes	No	**No target set**
Indonesia	Yes (Partial)	Yes	No	Yes	**2060**
Lao PDR	No	No	No	No	**2050**
Malaysia	No	No	No	No	**2050**
Myanmar	No	No	Yes	No	**2050**
Philippines	Yes (Partial)	Yes	No	No	**No target set**
Singapore	Yes	Yes	No	No	**2nd half of century**
Thailand	No	No	No	No	**2065**
Vietnam	Yes	Yes	No	No	**2050**

Source: ASEAN Centre for Energy

The Carbon Cost of Transportation

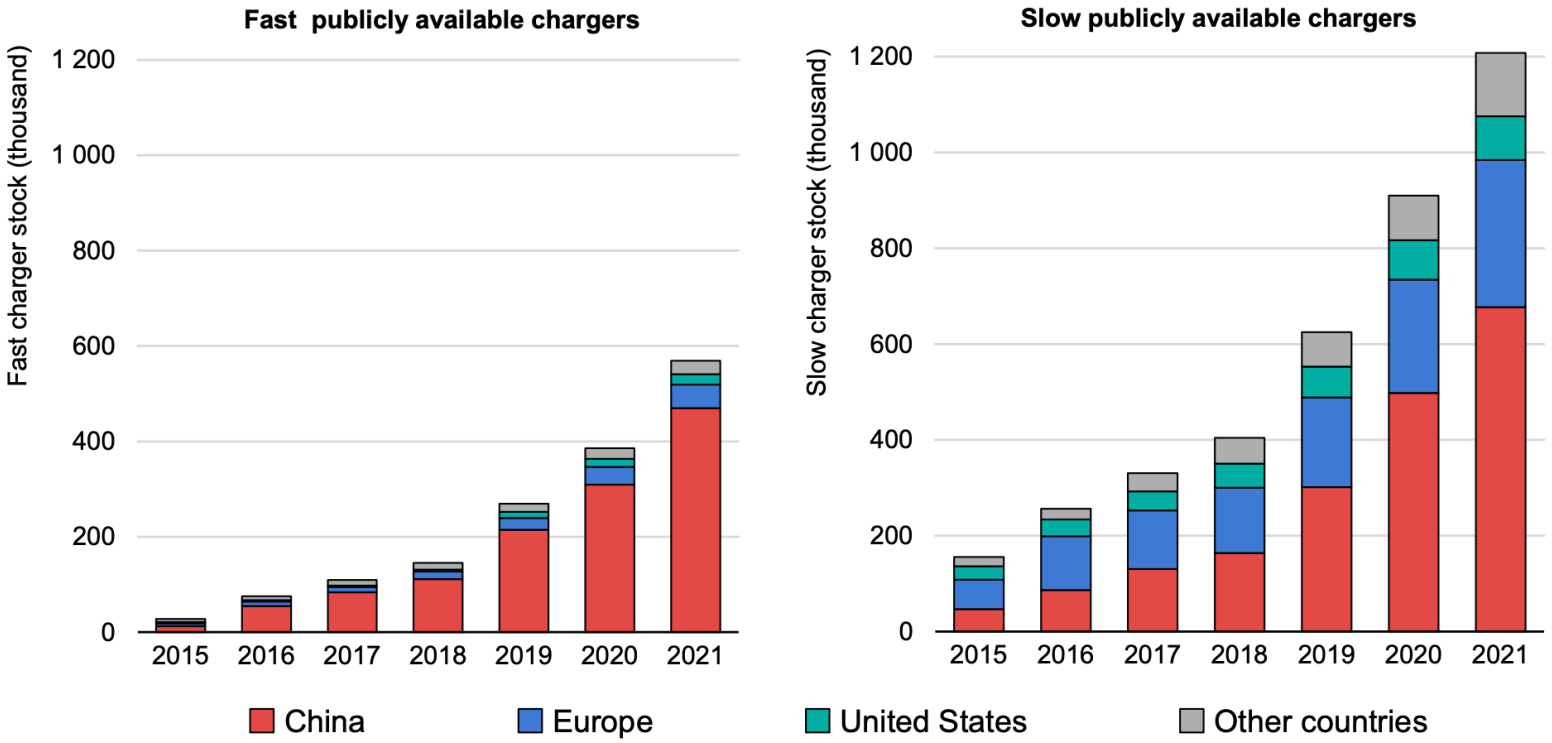


Global Electric Car Stock, 2010-2021 (IEA)

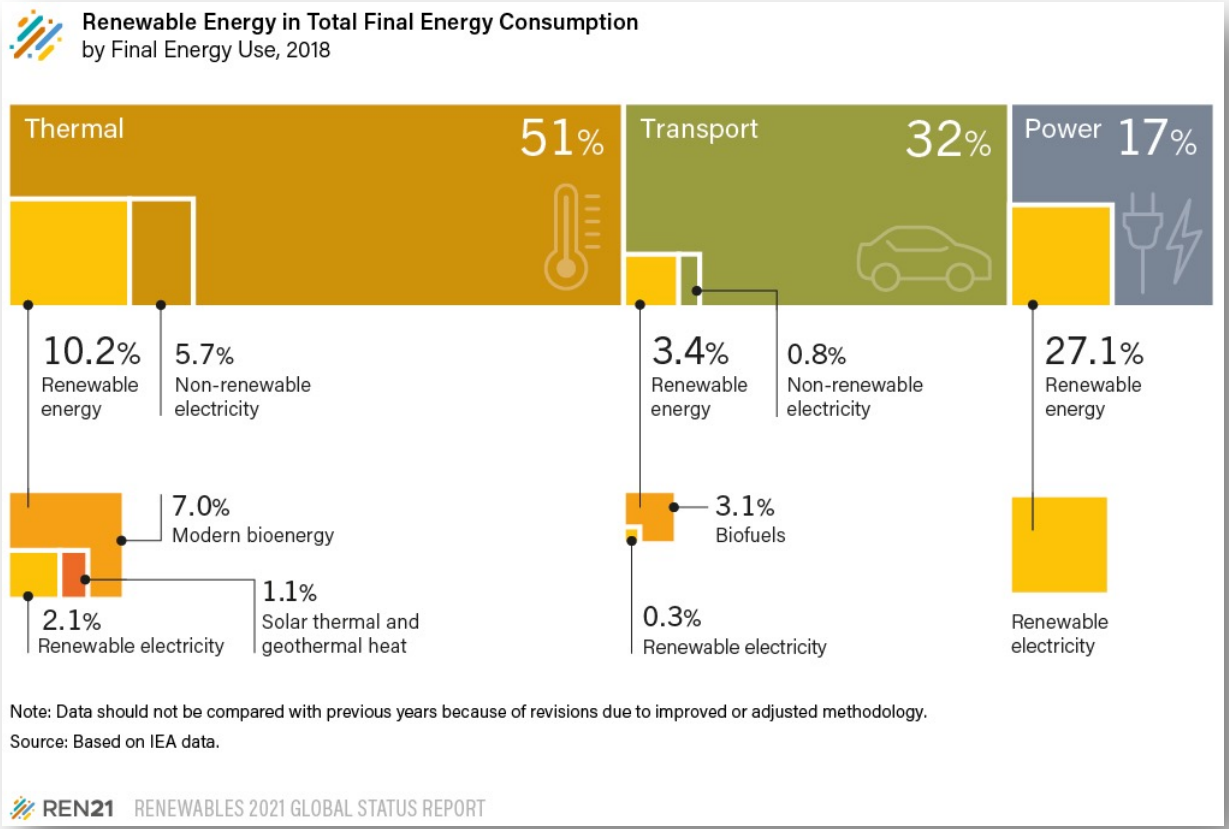


Charging infrastructure developments

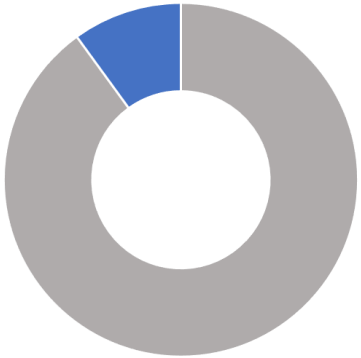
Publicly accessible LDV charging points by power rating and region, 2015-2021



Final Energy Consumption

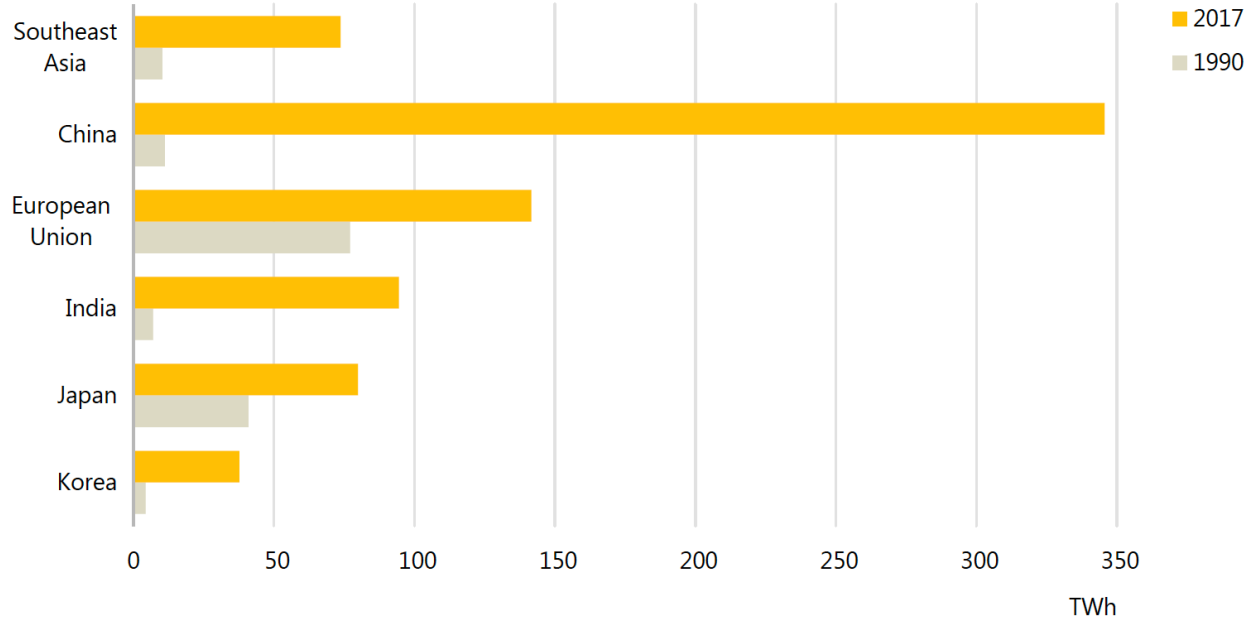


The rising cooling demand



Cooling produces approx. **10%** of the worlds greenhouse gas emissions.

Electricity consumption of air conditioning systems in residential and commercial buildings by country and region.



Source: IEA

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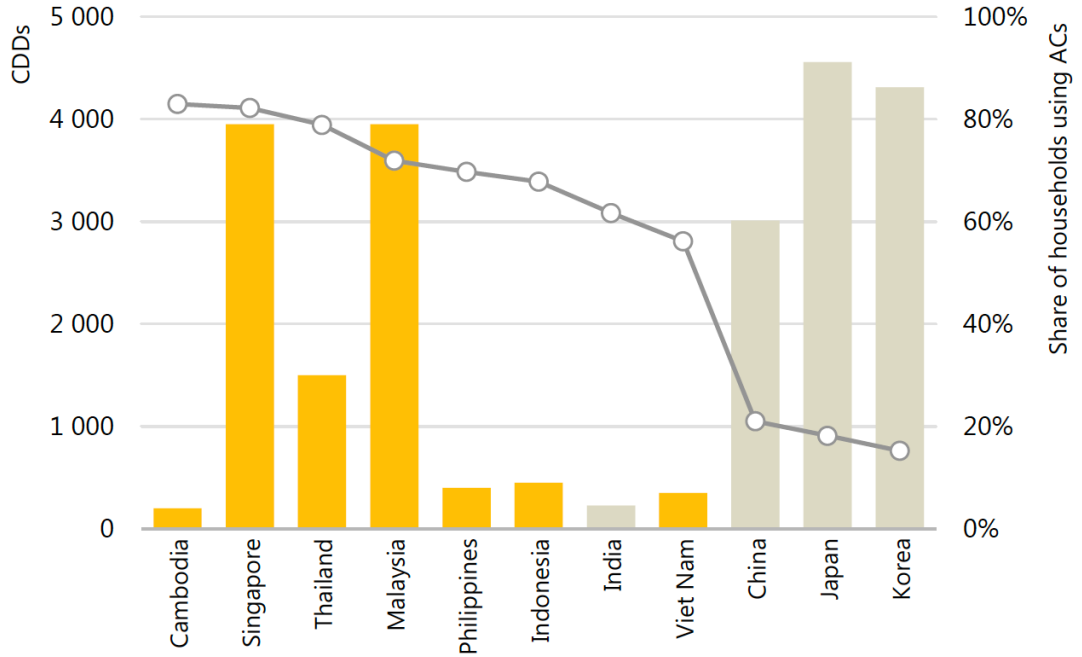
The rising cooling demand

- CDD's in the Indonesia is around 3,500.
- AC utilization rate in the Indonesia is below 10%.
- Cooling demand in the Philippines will grow and follow economic and population development/growth

Cooling Degree Days and share of households using air conditioning systems by country, 2017



Source: IEA

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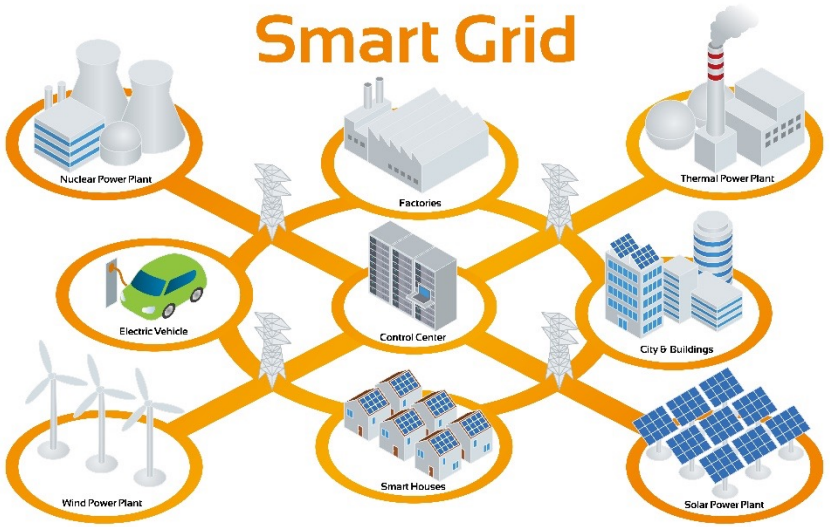
Smart Grids

Smart Grids offers:

- **Increased Grid Flexibility**
  - Allows the integration of more Renewable Energy without Energy Storage
  - Allows bidirectional energy flow from e.g. solar PVs, batteries etc.
  - New Market platform
- **Increased Efficiency**
  - Demand Side Management
  - Improved Load Balancing
- **Smart Charging (Optimized Charging)**
  - **V1G –** Price Incentive to shift charging time (User Managed Charging)
  - **V2G** – Possibility to discharge to grid (Supplier Managed Charging)

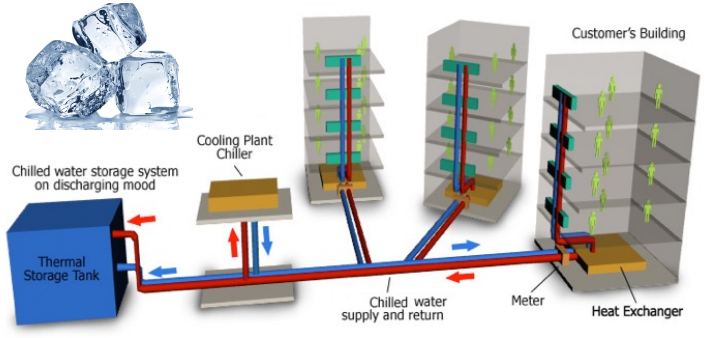


District Energy

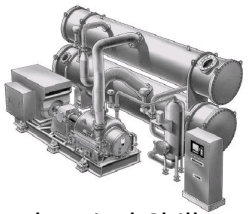
District Cooling Systems offers:

- Reduced energy demand, DC systems are **up to 50% more efficient** than conventional cooling systems.
- More efficient capacity use, **DC systems use approx. 15% less capacity** than individual cooling systems.
- **Integration** of multi energy sources, such as intermittent **renewable electricity, waste energy and natural cold sources**
- Thermal Energy Storages (TES) enables **the potential to reduce peak loads.**
- A vital role to **mitigate global warming 0,5-1°C** (High Efficiency & phasing out HFC-refrigerants).
- **Reduced heat urban island effect**
- **Long lifespan, up to 50 years**
- **Huge market potential**, (Not least for CBD/TOD areas, Industries and Industry zones, Airports, Hospitals and Data Centers)

Thermal Energy Storage



District Cooling System



Electrical Chiller

Absorption Chiller- (Heat Driven)

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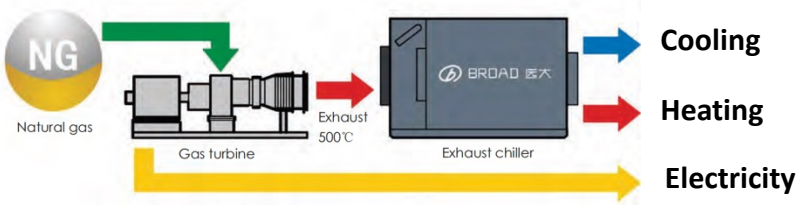
Distributed Energy

Distributed Energy Systems offers:

- **High Efficiency**, more than to **80% of the fuel input** is converted to useful energy (electricity/heat/cooling)
- **Decentralized Energy Production**, local power production = reduced stress on power grids
- **Low pollution** (Depending on fuel type)
- **Integration** of renewable energy (Depending on fuel type)
- A wide range of suitable technologies for projects with different pre-conditions
- Suitable applications include: **Airports**, **Hospitals** Central Business District Areas, Industry Zones.

Gas Turbine

Absorption Chiller (Heat Driven)



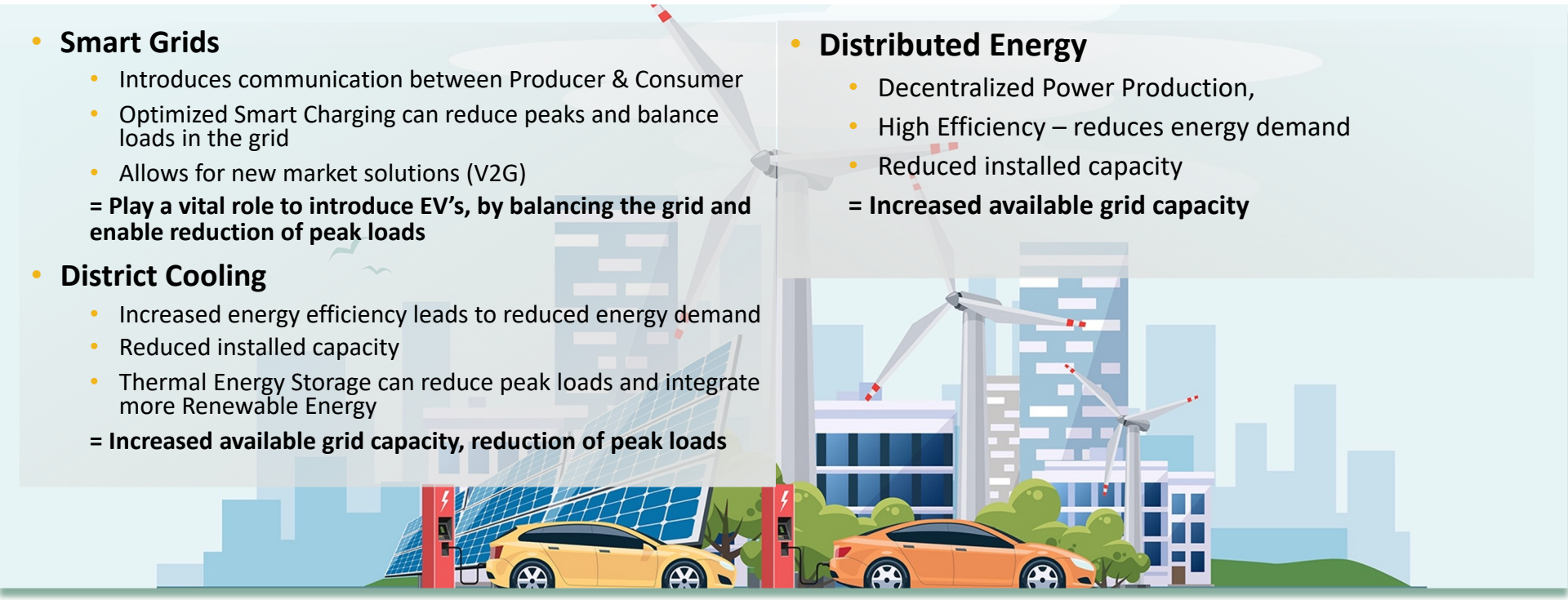
Integration of Electric Vehicles

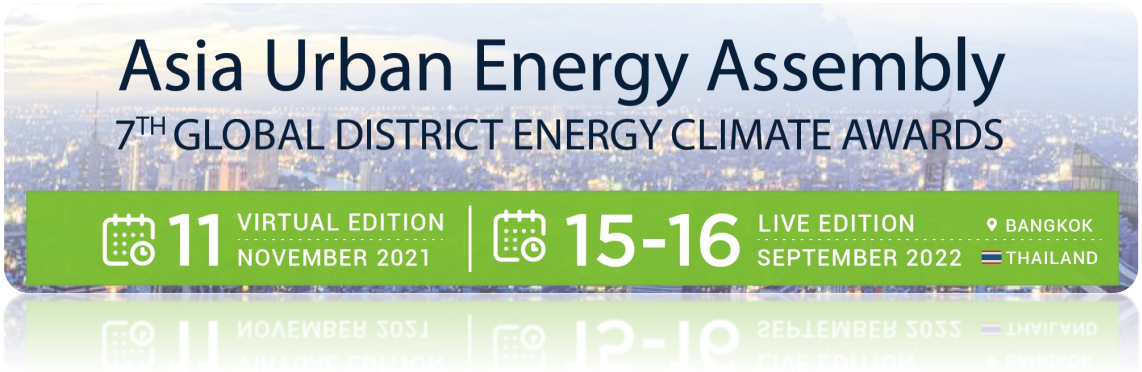
- **Smart Grids**
  - Introduces communication between Producer & Consumer
  - Optimized Smart Charging can reduce peaks and balance loads in the grid
  - Allows for new market solutions (V2G)

  = Play a vital role to introduce EV's, by balancing the grid and enable reduction of peak loads
- **District Cooling**
  - Increased energy efficiency leads to reduced energy demand
  - Reduced installed capacity
  - Thermal Energy Storage can reduce peak loads and integrate more Renewable Energy

  = Increased available grid capacity, reduction of peak loads
- **Distributed Energy**
  - Decentralized Power Production,
  - High Efficiency – reduces energy demand
  - Reduced installed capacity

  = Increased available grid capacity





Thank you!

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