Technology-Driven Energy Solutions for the Acceleration of Energy Transition in the Greater Mekong Subregion

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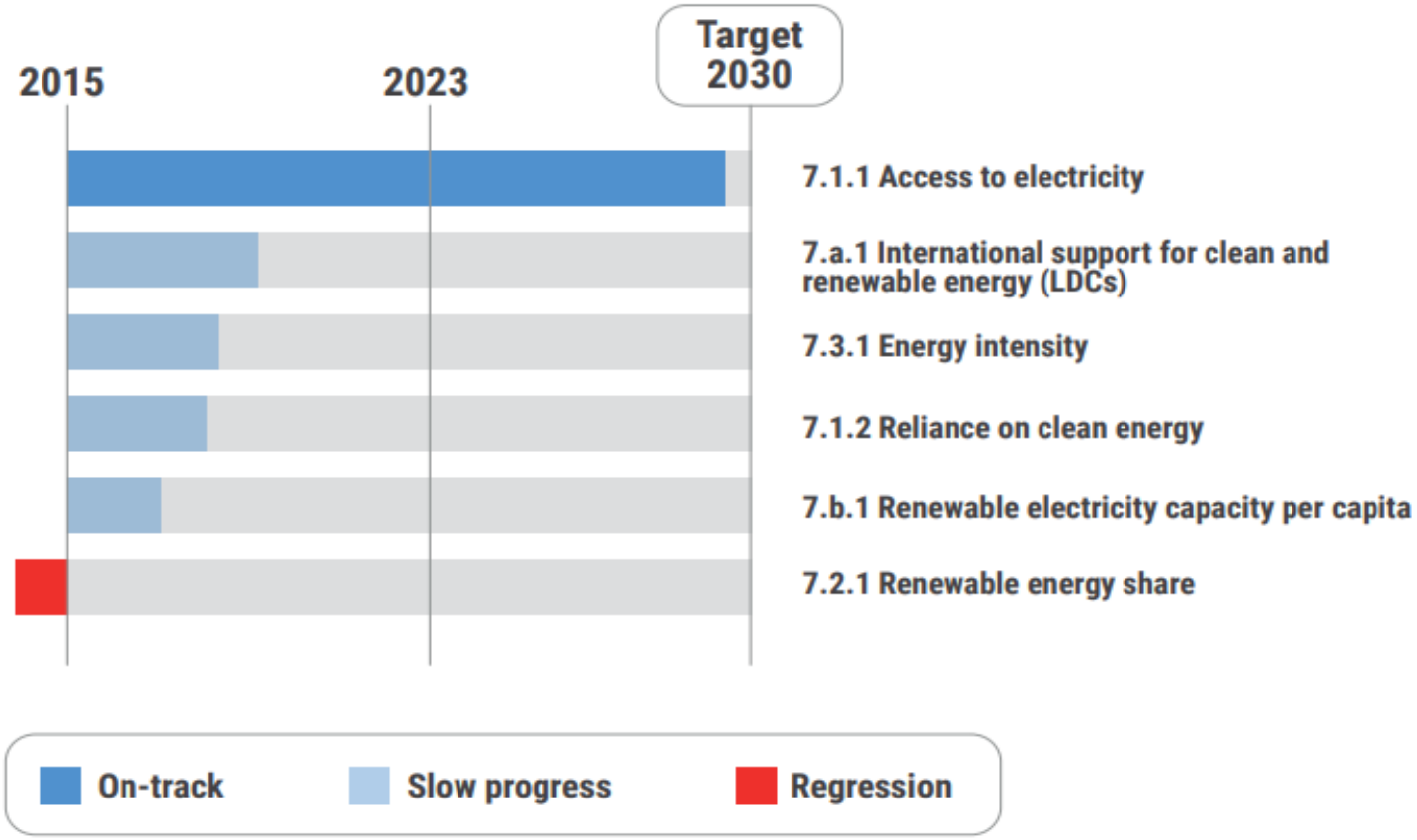
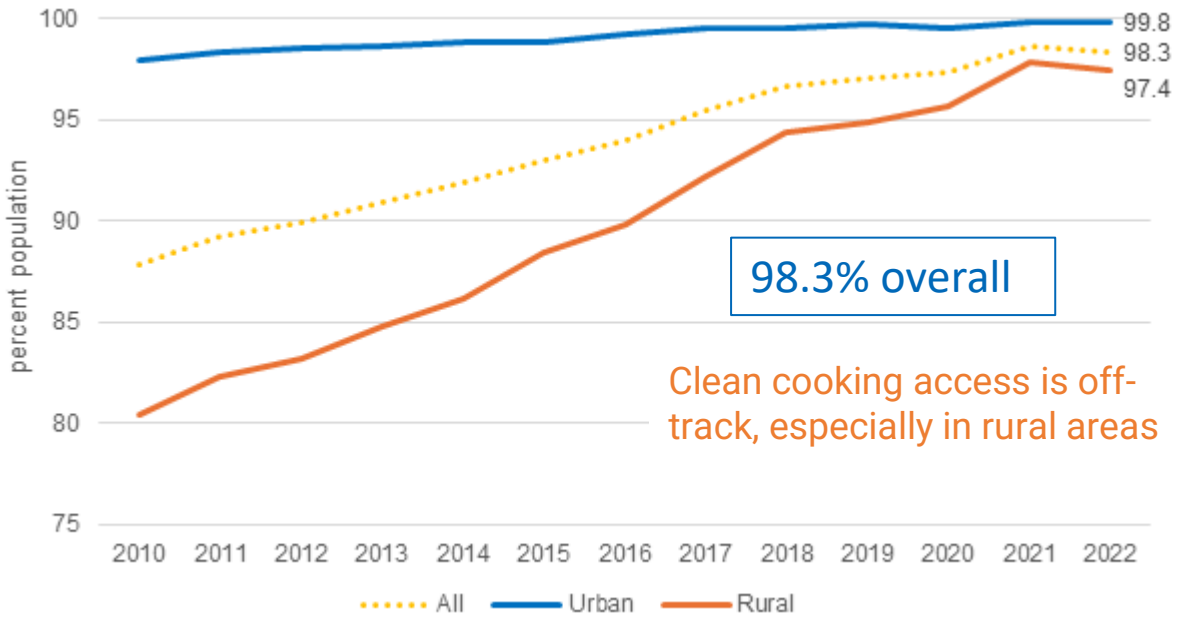
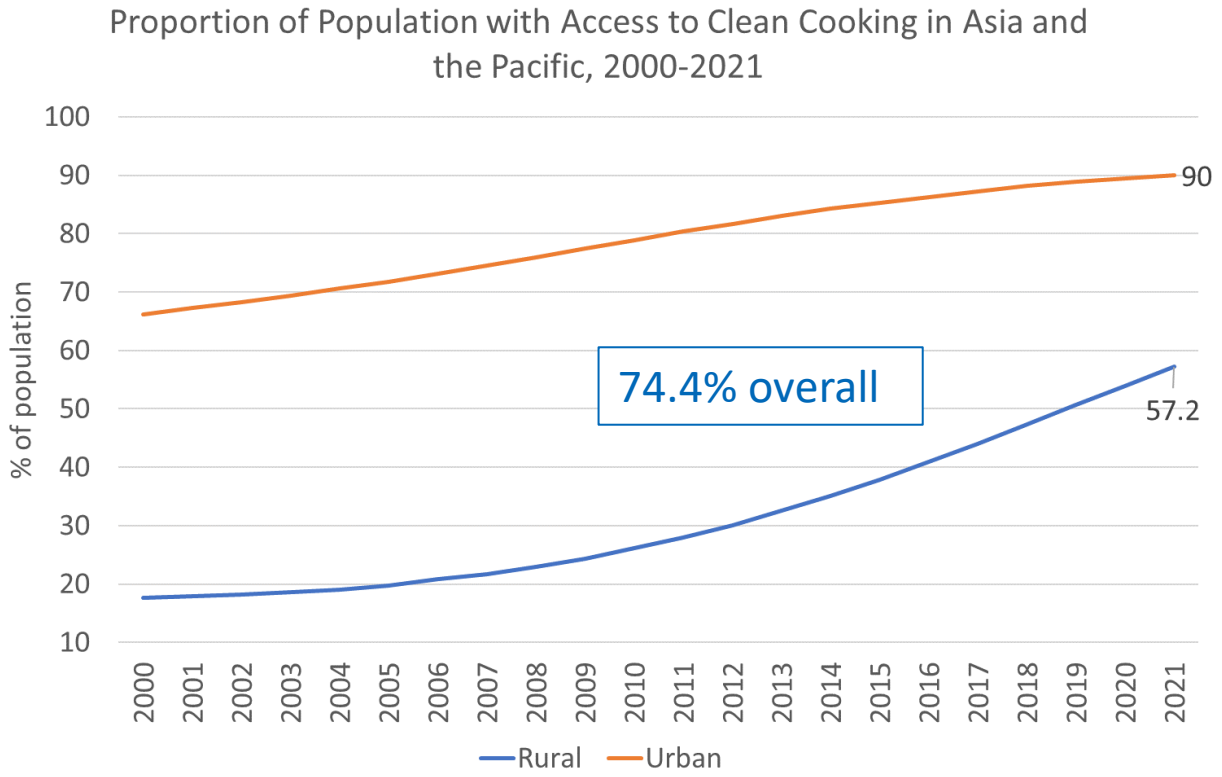
Asia Pacific progress on achieving SDG 7

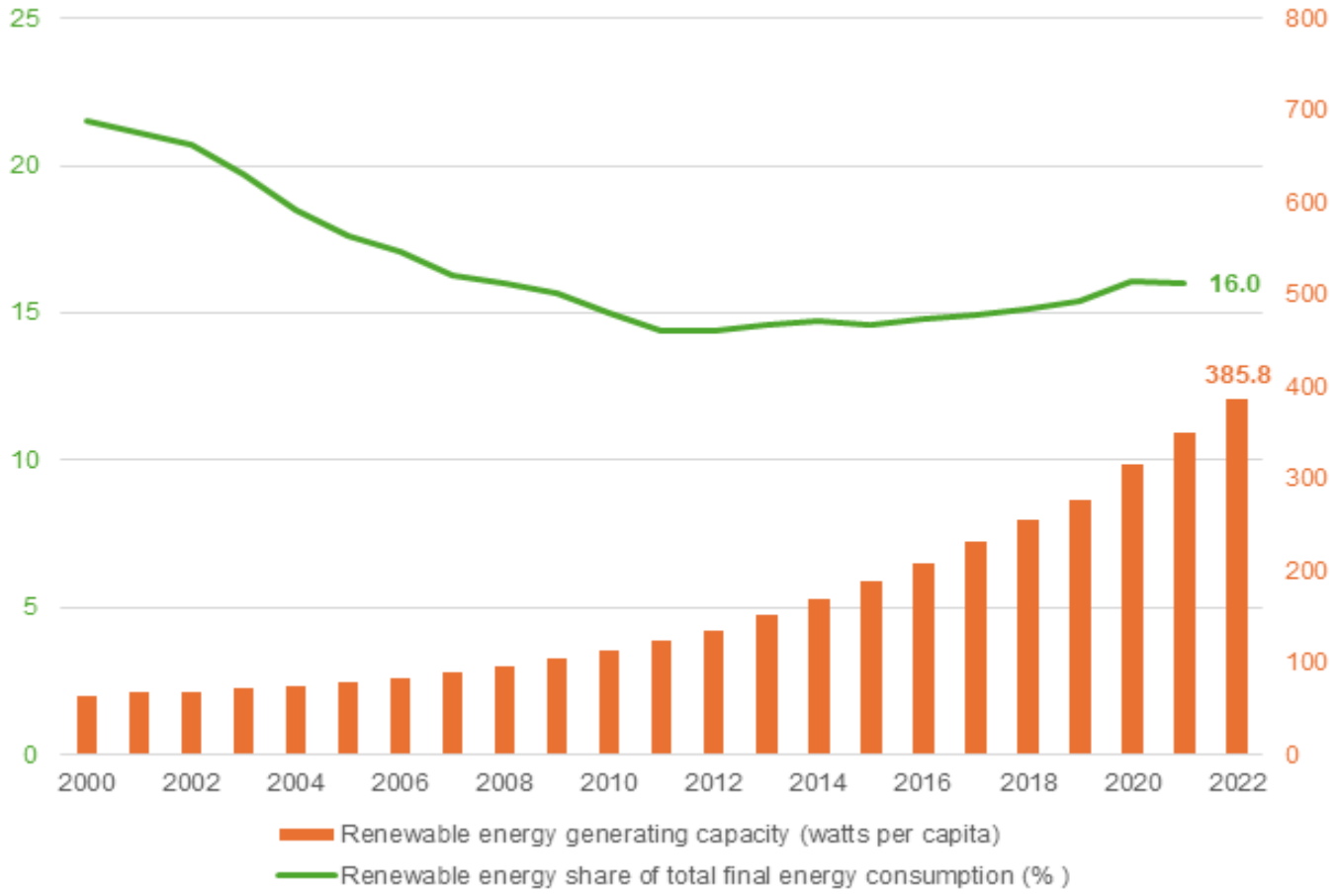


Energy Access – electricity progressing but clean cooking is lagging



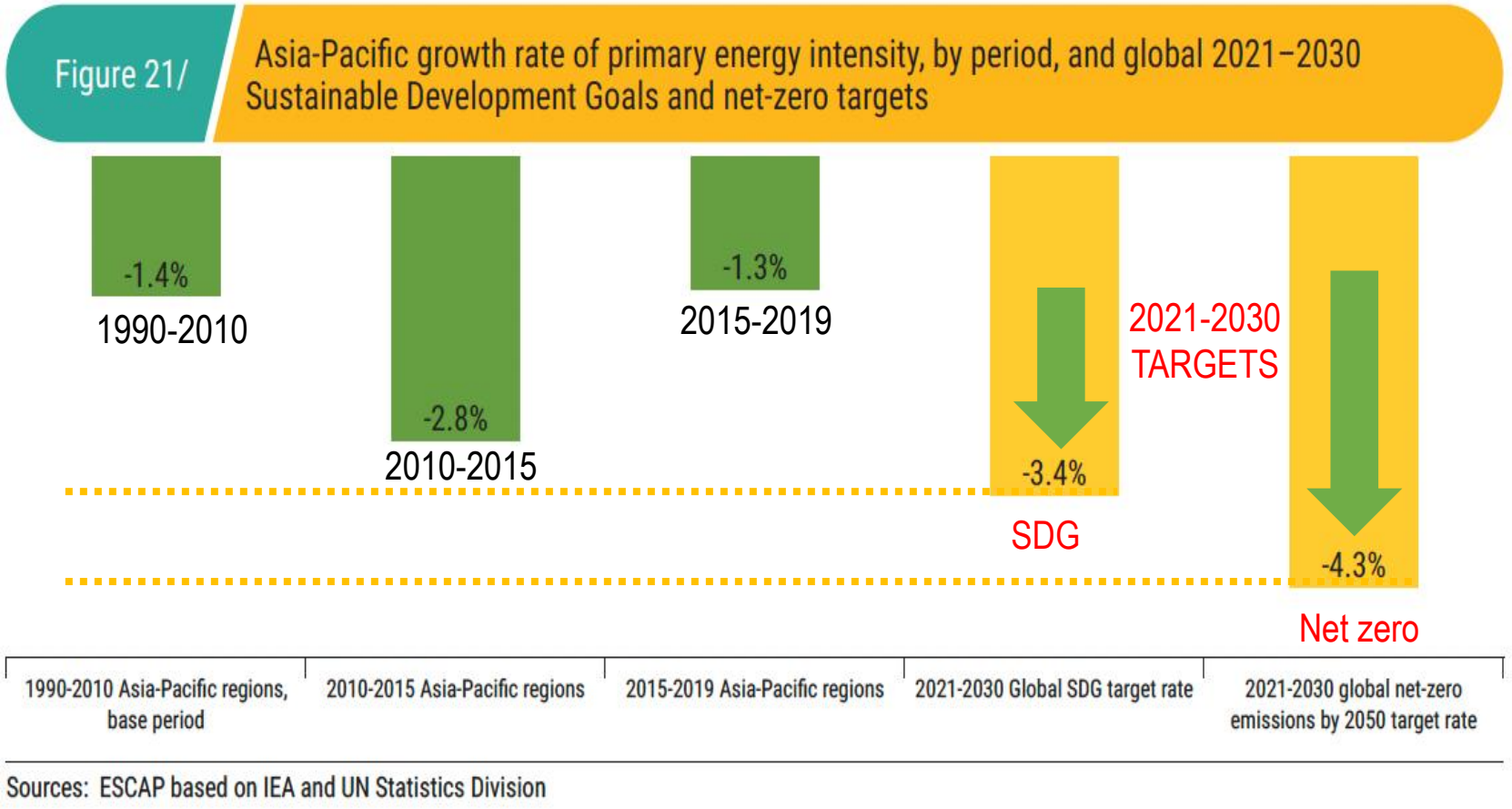


Renewable Energy – capacity gaining in some countries but share of renewables stagnant



Rapid rise in energy demand and large disparities across countries on renewable capacity growth

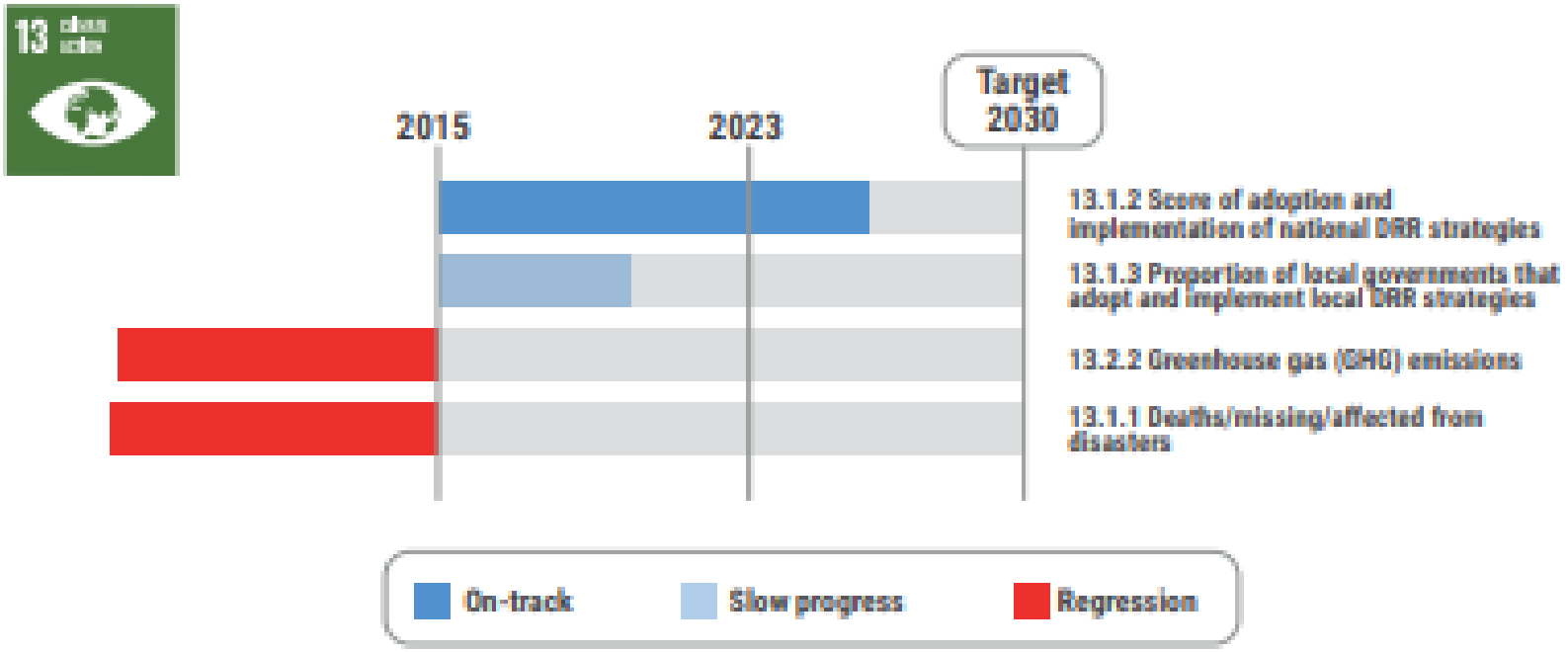
Energy Efficiency



Failing to keep pace… and slowing…

Other global regions demonstrate lower and improving energy intensity levels

SDG 7 impacts on climate change



Slow progress on SDG 7 resulting in large regression in SDG 13: GHG emissions

Source: ESCAP Asia-Pacific SDG Gateway, SDG Progress Snapshot. Available at https://data.unescap.org.
Note: 4 indicators measured out of 8 official SDG indicators

COP28 Outcomes

A decision including a call on governments to:

- **transition away from fossil fuels**
- **triple renewable energy capacity by 2030**
- **double energy efficiency by 2030**

- Global greenhouse gas emissions need to be cut 43% by 2030, compared to 2019 levels

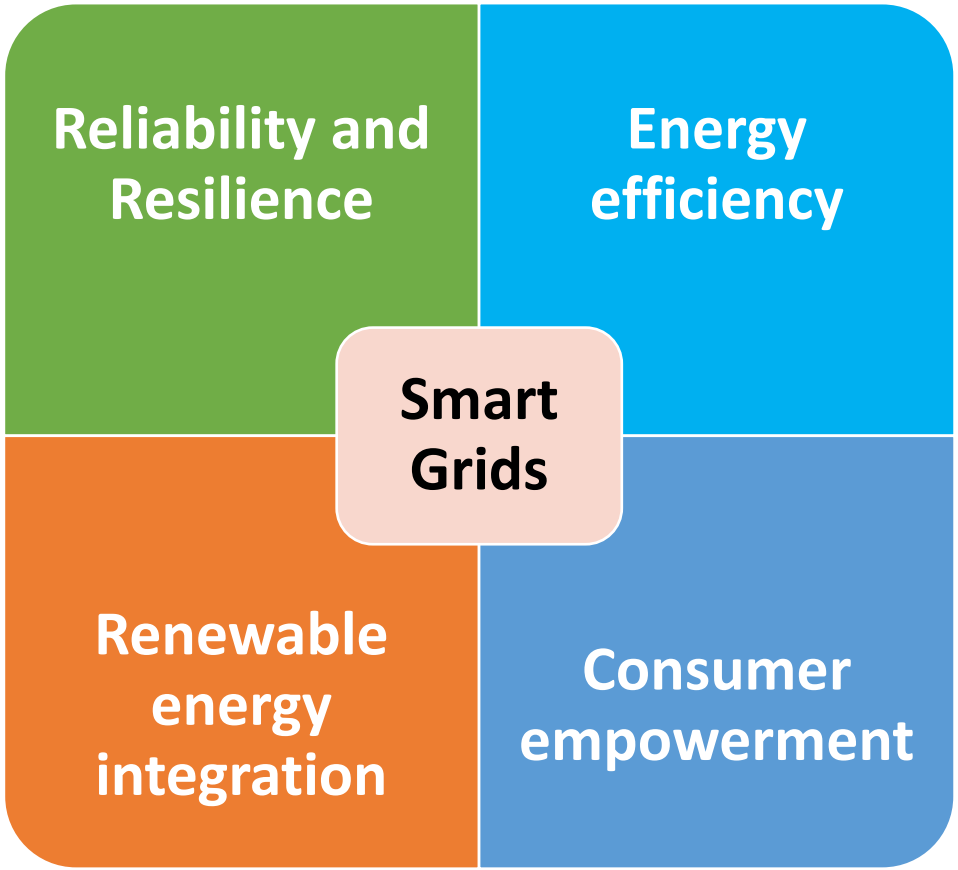
Accelerating energy transition through technological innovations

Technological innovations in the energy sector is transforming how energy is produced, distributed and consumed and with huge impact on accelerating the energy transition

Examples of Key Technologies:

- **Smart grids**
- **Energy storage systems**
- **Blockchain**
- **AI and machine learning**

Smart Grids

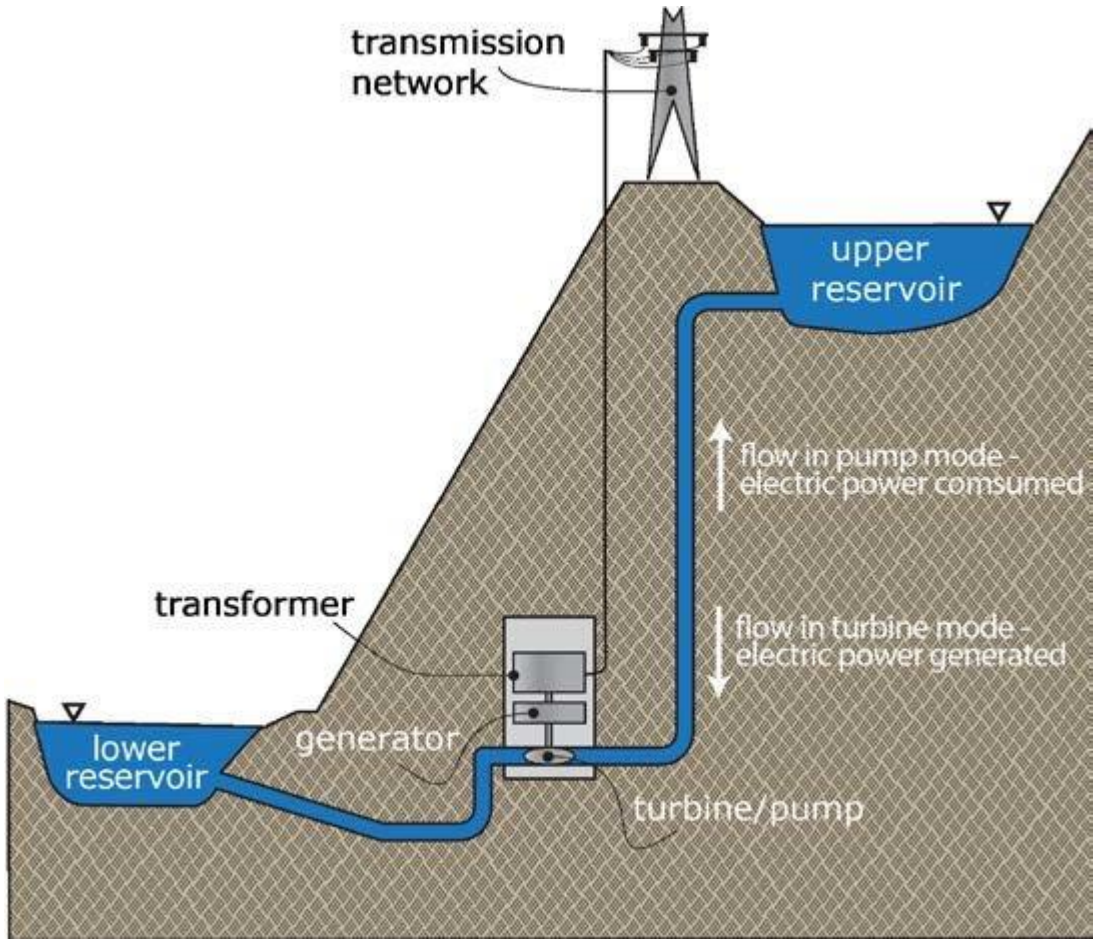


In GMS

- **China is a global leader in smart grid technologies**
- Emphasis on smart grids included in 12th Five-Year Plan (2011-2015) onwards with development of smart grid roadmaps and smart meter deployment programmes by State Grid Corporation of China

Energy Storage Systems

Pumped hydro storage system



- **Storage systems are critical for increasing integration of renewable energy by enhancing the reliability and efficiency of power grids**
- **Innovations in green hydrogen, ammonia storage and pumped hydro**
- **In GMS, Lao PDR has huge potential for pumped hydro (a recent study identified 5822 sites)**

Blockchain

- Blockchain enables P2P energy trading and Renewable Energy Certificates/ carbon credits verification and trading
- In GMS, Thailand has successfully piloted a P2P energy trading platform using rooftop solar

Town T-77, Bangkok

Artificial Intelligence and Machine Learning

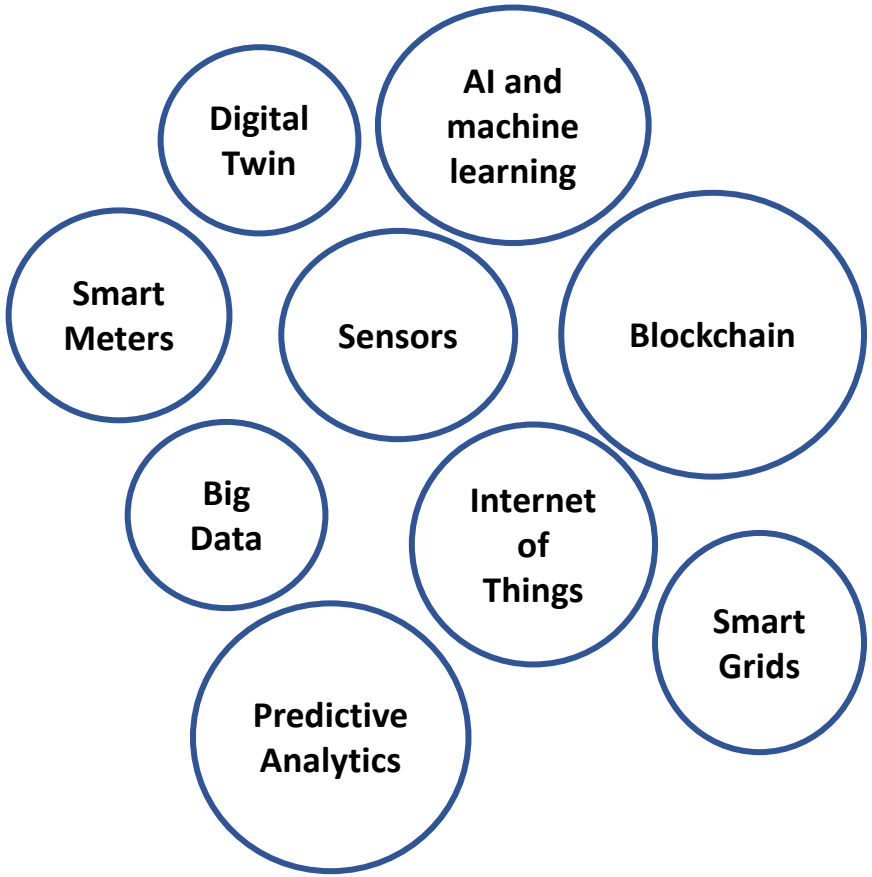
AI and machine learning use case

- Energy forecasting: forecast renewable energy production and consumption
- Remote inspections: analyze and detect anomalies remotely through satellite data
- Predictive maintenance: predict equipment failure based on anomalies
- Demand response: allow consumers to optimize use and reduce costs

In GMS

- Vietnam Electricity has innovative projects on employing AI and machine learning to forecast solar and wind power generation

Enablers of Tech-driven Solutions for Energy Transition



- Enabling policies and regulations
- Forward planning
- Capacity building
- Green investment / financing
- Technology transfer

Energy Transition/ SDG 7

Technologies also support cross-border power system connectivity – a key strategy to strengthen country efforts to meet sustainability goals

Regional cooperation needs to play a role

- Asia Pacific region hub to many emerging technologies for energy transition
- Regional and subregional cooperation (e.g. GMS cooperation) required, particularly to enable connectivity across borders using tech-driven energy solutions for large-scale renewables deployment
- Power system interconnection requires regulatory harmonization, grid code harmonization and infrastructure development

In GMS

- Discussions underway to implement multilateral power trading (simulated "shadow" trading platform) and other initiatives
- More efforts required on knowledge sharing, technology transfer and investment support

ESCAP Support for SDG 7 and the Energy Transition in GMS

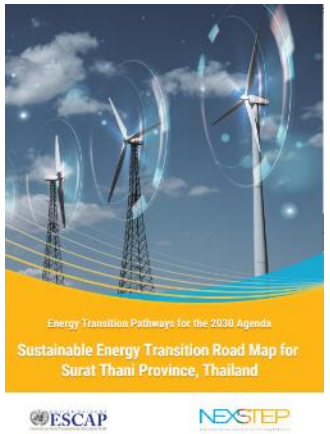
SDG 7 roadmaps developed

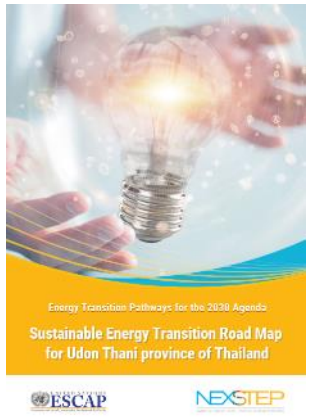
Countries

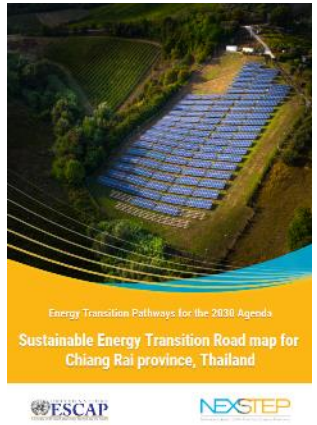
- Lao PDR
- Viet Nam
- Thailand

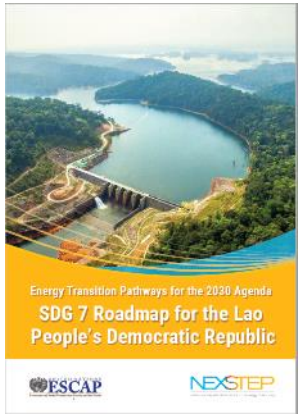
Cities

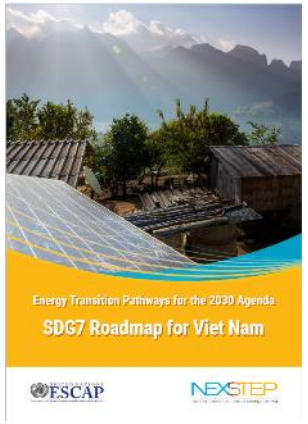
- Provinces of Thailand - Surat Thani, Udon Thani and Chiang Rai











Regional Roadmap on Power System Connectivity

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Vision, principles and **nine strategies** to enable sustainable connectivity

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