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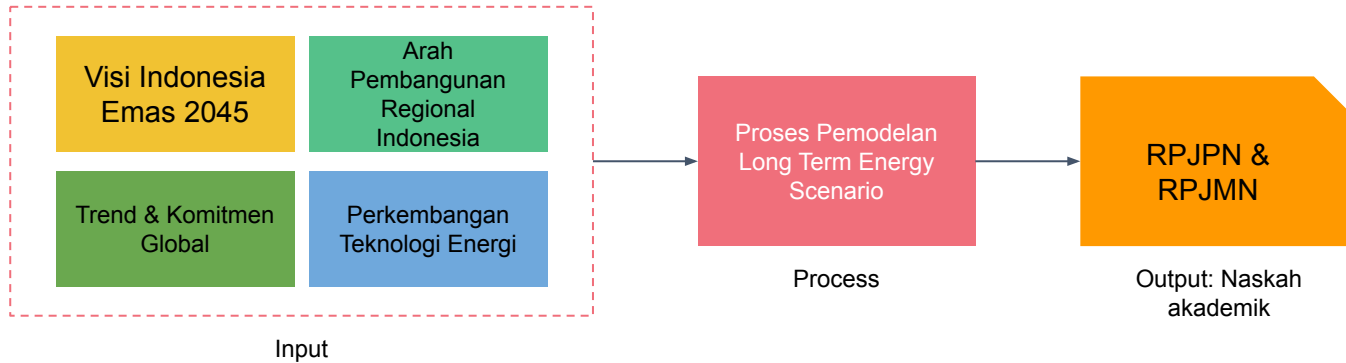
on the basis of a decision  
by the German Bundestag

# Long-Term Energy Scenario: The Role of Energy Storage for Energy Transition in Indonesia

on behalf of Clean, Affordable and Secure Energy (CASE) for Southeast Asia

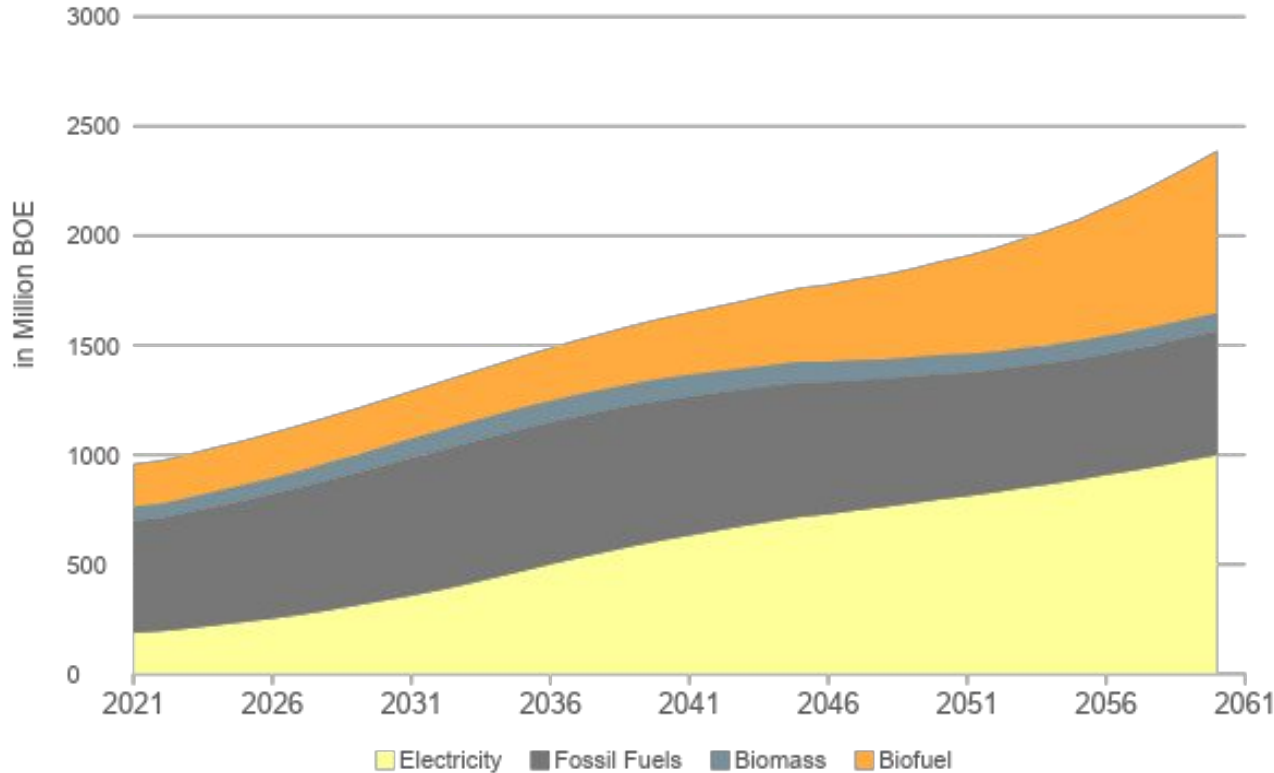


# Mengenai Studi LTES



- Studi Long-Term Energy Scenario (LTES) merupakan sebuah studi pemodelan energi yang sejalan dengan Visi Indonesia Emas 2045 & Arah Pembangunan Regional & Nasional Indonesia. Studi ini juga sejalan dengan trend & komitmen global dan perkembangan teknologi energi.
- Sebagai sebuah luaran, studi LTES ini diharapkan dapat menjadi support naskah akademik yang melatarbelakangi pembuatan RPJPN dan RPJMN.

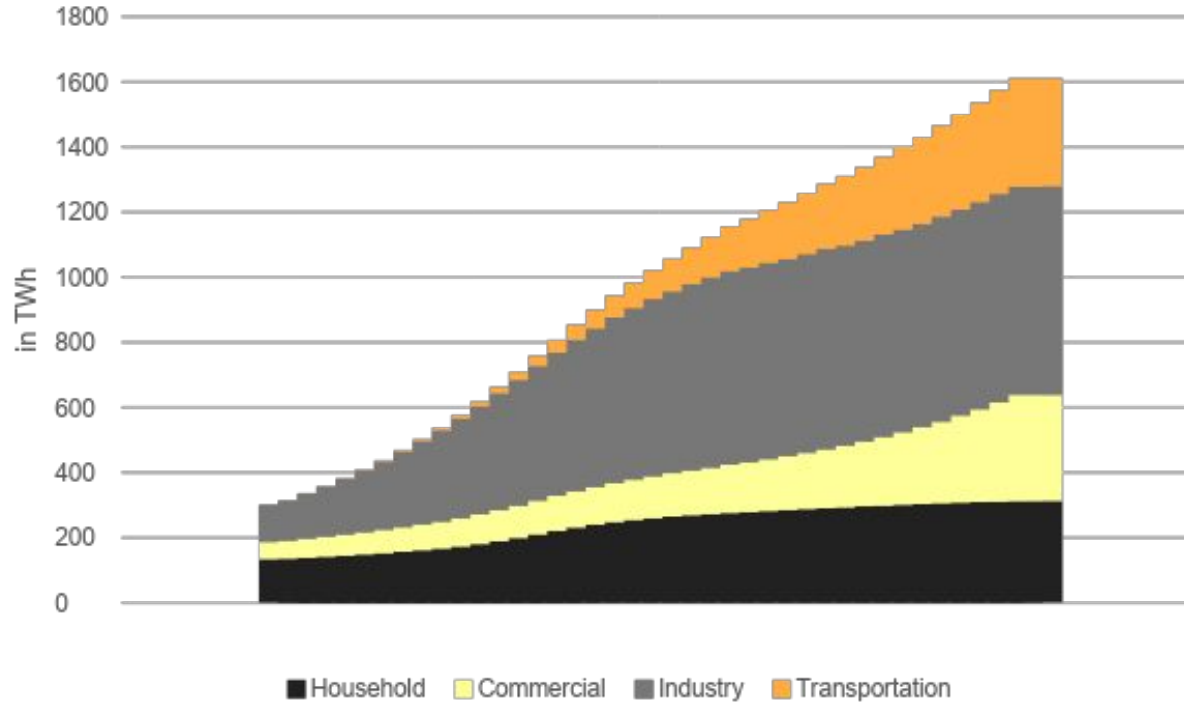
# The Growth of Energy Demand



- Electricity is vastly growing to support Indonesia’s NZE ambition.
- Despite the growth, Biofuel and Fossil Fuels usage are still significant.

%	2021	2045	2060
Elec	20	40	42
FFs	54	35	23
Bio	26	35	35

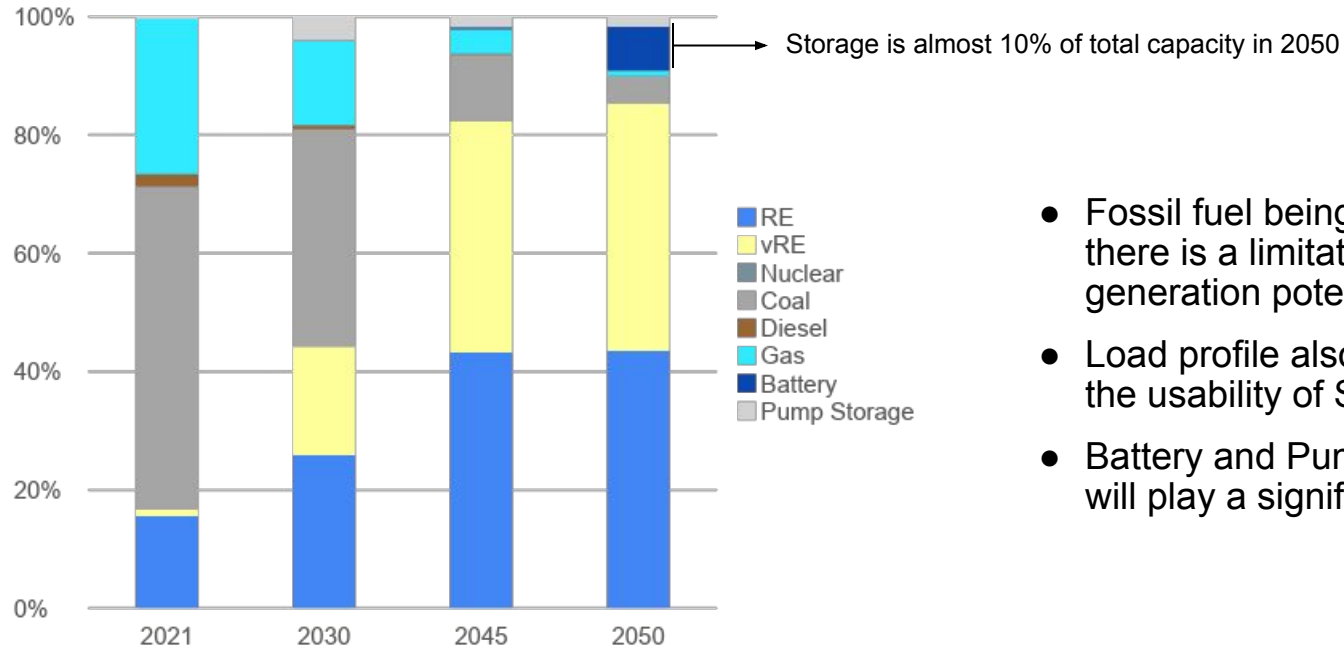
# Electricity Demand Across Sectors



- Massive fuel shift and electrification on all sectors.
- Growth of EVs.
- Possible electrification potential on industry.

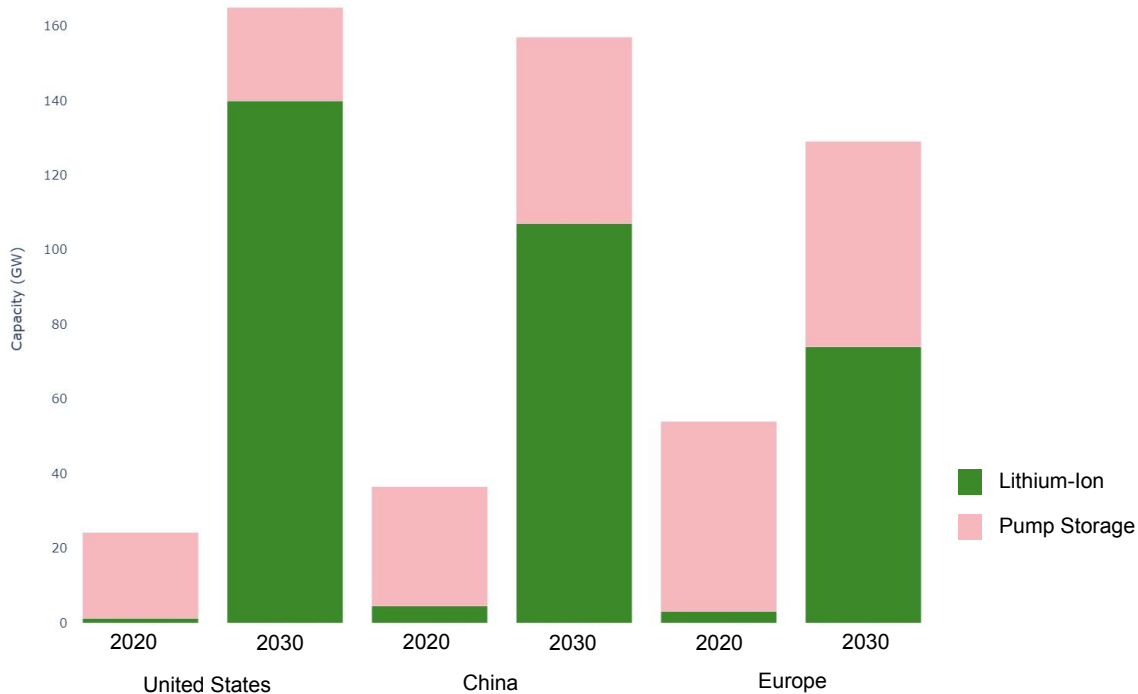
Massive needs of electricity can only align with NZE target **if generated from a clean and sustainable sources**

# The Power Capacity Mix



- Fossil fuel being phaseout, there is a limitation in other generation potential.
- Load profile also dictates the usability of Solar PV.
- Battery and Pump Storage will play a significant role.

# Global Projection of Storages



- Projected globally to grow within the next 10 years.
- Signs of the global market and tech development trend.

Sources: IEA (2022) and IRENA (2020)

# Challenges, Risks, and Barriers



- **Manufacturing Capability:**

Developing capital-intensive local battery production facilities could be challenging due to technical complexities and workforce requirements.

- **Supply Chain**

Ensuring an efficient and responsible supply chain for battery production, from mining to assembly, can be a significant hurdle.

- **Technology Diversification**

Identifying and adopting suitable energy storage technologies beyond lithium-ion batteries could present obstacles.

- **Regulatory Framework**

The absence of a clear, supportive regulatory and policy environment for energy storage and responsible mining could impede growth in the sector.

- **Grid Integration and Storage Safety**

Accommodating energy storage within existing grid infrastructure presents technical and safety challenges. It requires careful management of grid stability and load balancing, alongside implementing stringent safety standards.



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