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Technology Trends for Indonesian Energy Landscape Sector Coupling and Decarbonization

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Increasingly ambitious targets from COP21 leave the world ...

... with a significant CO_2 emission gap, already in 2030 ...

... which needs to be closed to achieve the 1.5 – 2°C target...

... and which by 2050 will required a nearly full decarbonization of all sectors in economy

1) Business as usual (BAU), without any emission reduction effort | **2** Intended Nationally Determined Contributions (pre-COP21 commitments) | **3)** BAU & INDC data based on CO_2 equiv., whereas scenarios only provide CO_2 emissions which are ~33% lower than total CO_2 equiv | **4)** Following Climate Action Tracker (~38 Gt CO_2 equiv. in 2030) | **Source:** CD ST SU, PV/Energy Mix Project Team, IEA

Regional and sectoral split of today's global CO_2 emissions

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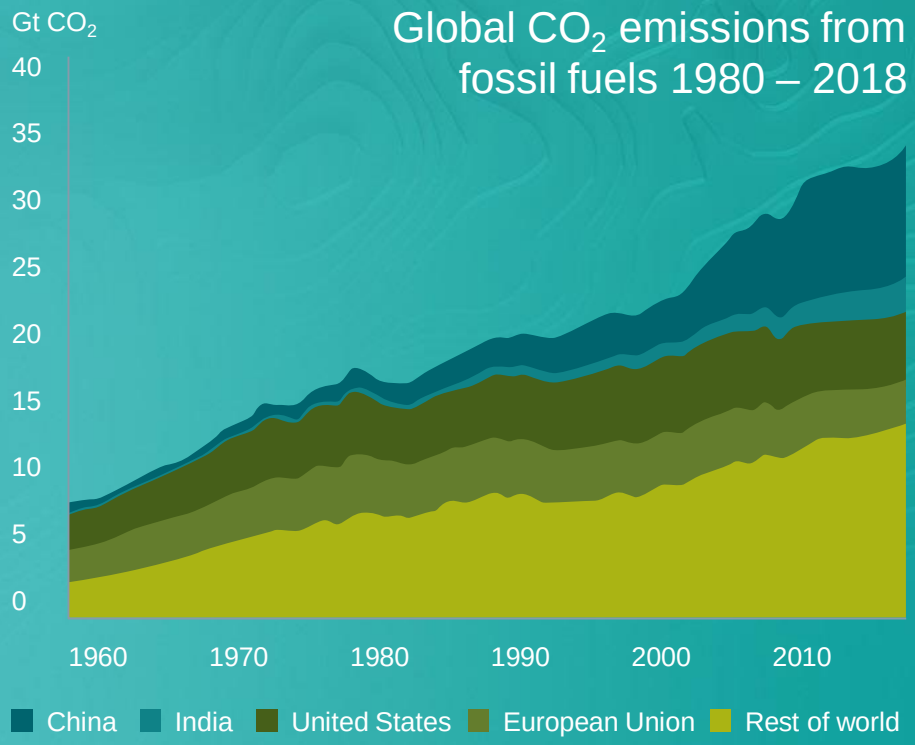
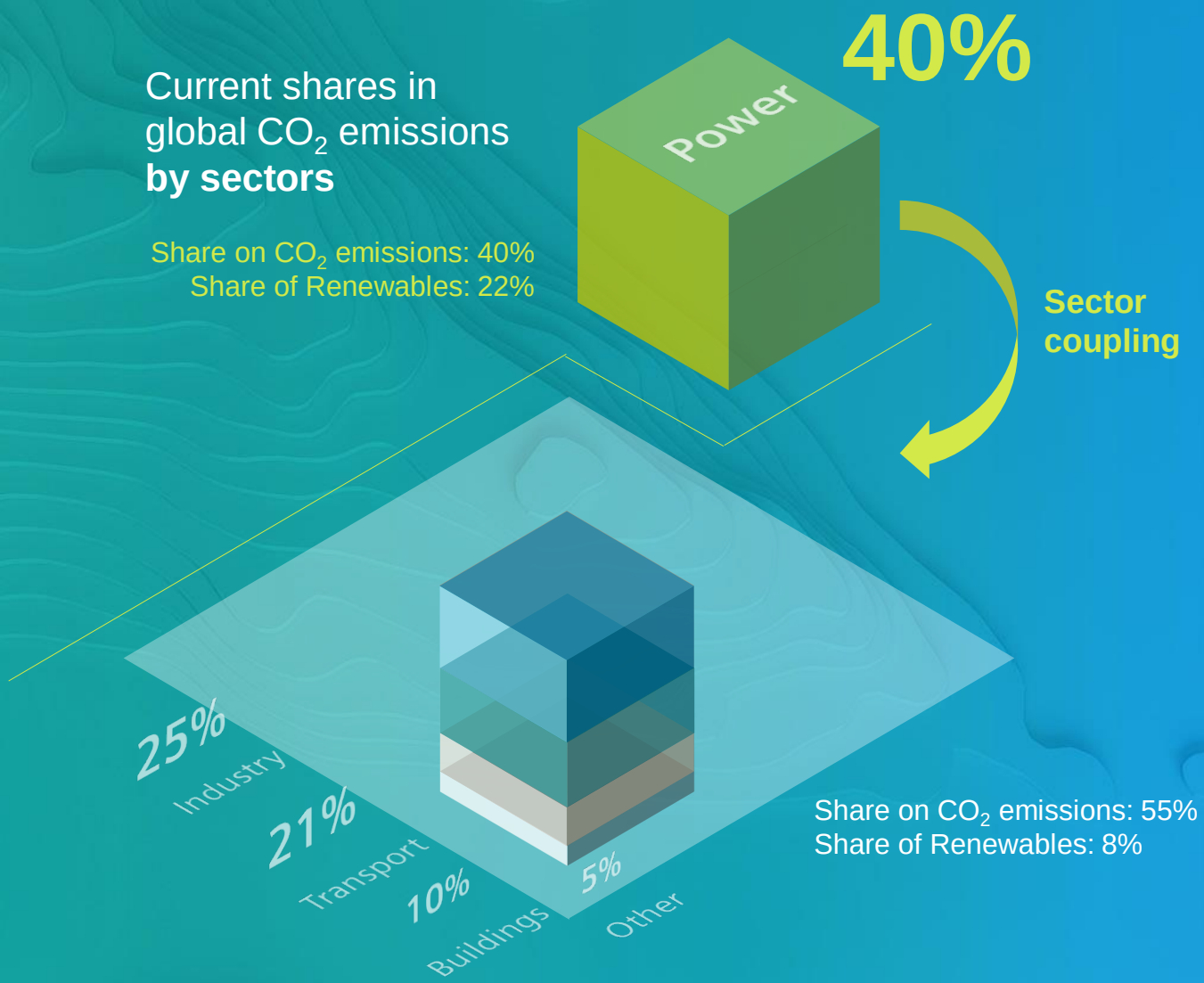
Global CO_2 emissions from fossil fuels 1980 – 2018



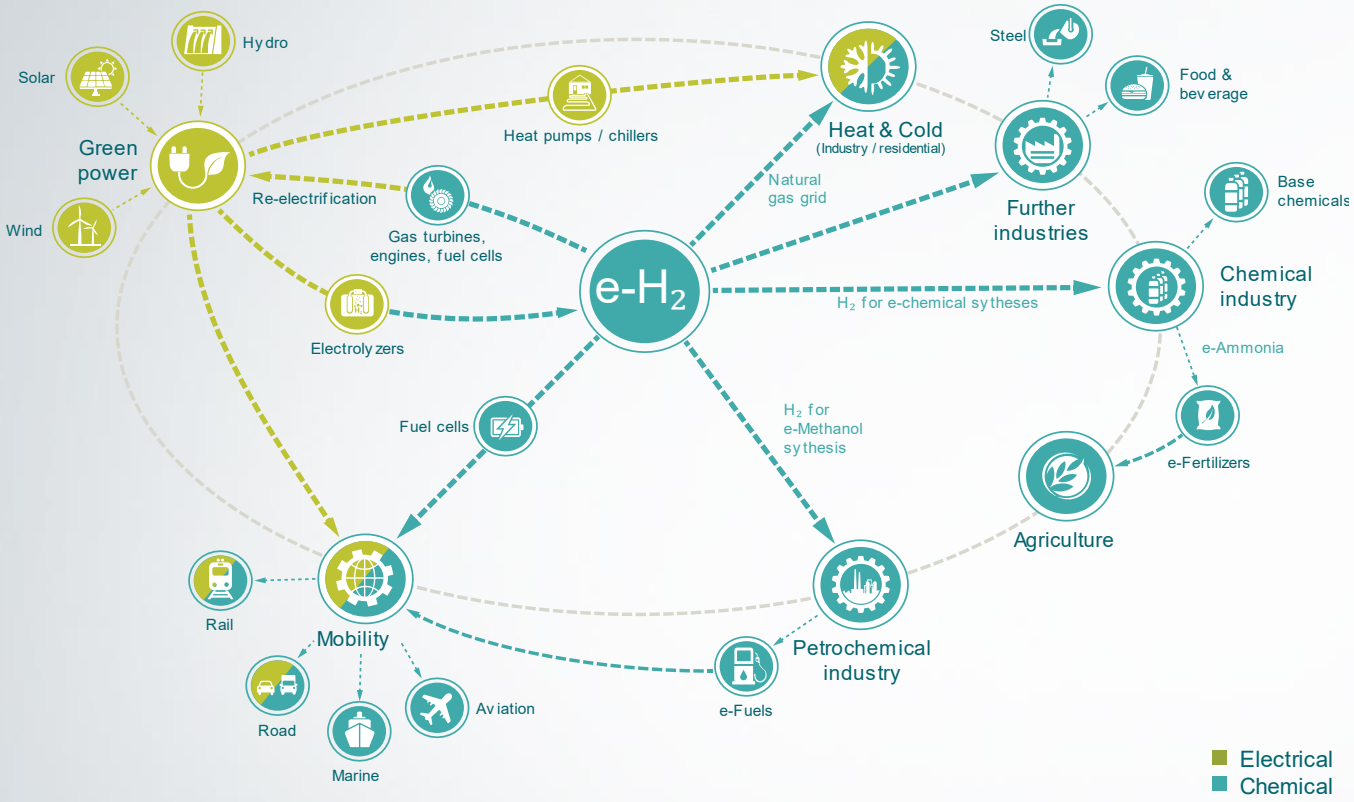
Current shares in global CO_2 emissions **by sectors**

Share on CO_2 emissions: 40%
Share of Renewables: 22%



Share on CO_2 emissions: 55%
Share of Renewables: 8%

‘Sector Coupling’ is the key lever for deep decarbonization of all end-user sectors



Sector Coupling

Definition

- Link between power sector and energy-consuming sectors
- Crucial to reach deep decarbonization of the energy sector (-80 … 95%)

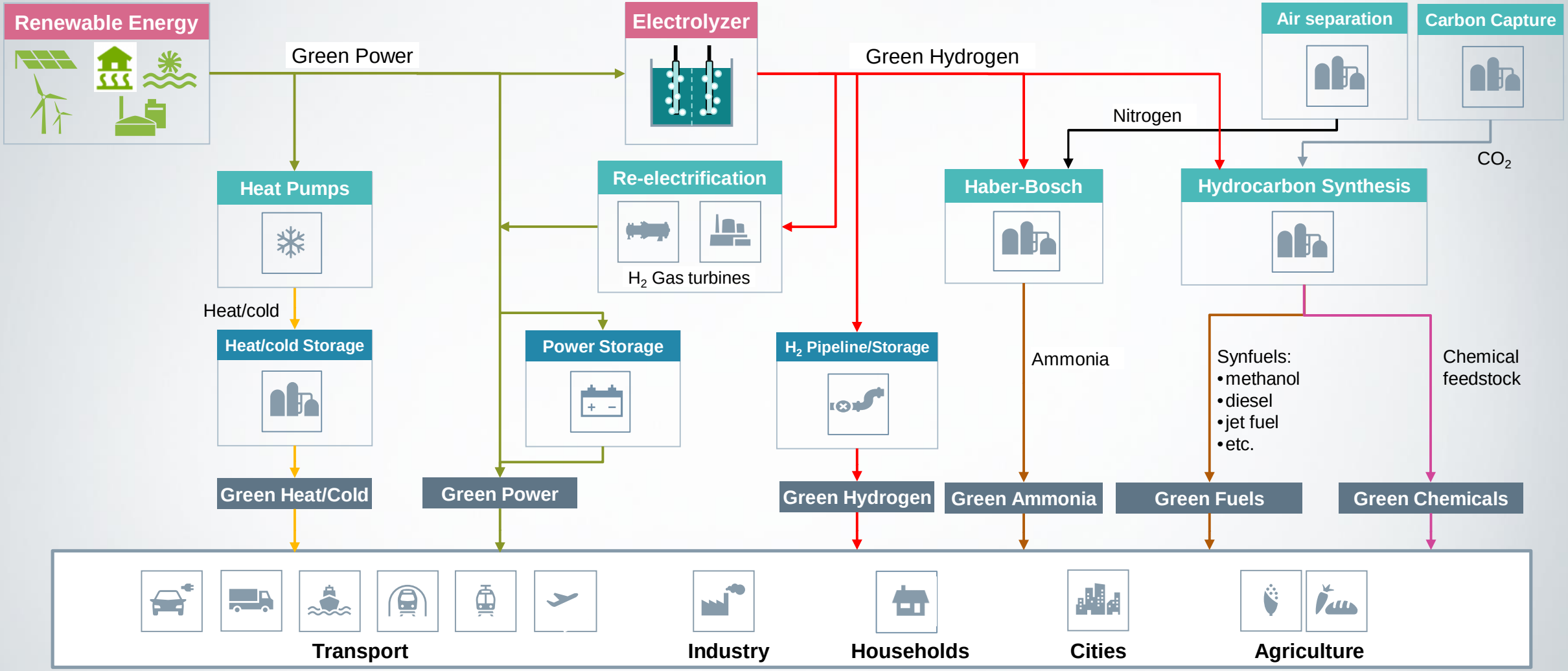
Value Proposition

- Higher overall energy efficiency
- Supports supply/load balancing in case of high share of intermittent renewable generation
- More diverse and interdependent energy supply

Drivers

- Reduction of GHG emissions
- Energy efficiency improvement
- Reduction of energy import dependency
- Integration of volatile Renewables
- Technology development (e.g. e-mobility, battery, electrolyzer, synthetic fuels)

Power-to-Hydrogen is a key technology for sector coupling and for deep decarbonization of economy



Future of Energy is about Decarbonization through Sector Coupling and a new Market Design

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Cornerstones of a Future Energy System

Decarbonization of Energy

Transforming the conventional generation capacity into low-carbon assets

Sector Coupling

Leveraging renewables in power sector to decarbonize heat, mobility, industry

Power-to-X

Key technology for sector coupling and fuel for decarboni-zation of energy

Gas turbines

Sustainable investment into security of supply – operating with natural gas and green gases such as hydrogen or synthetic fuels at lowest CAPEX Investment

Regulatory Framework

Set decarbonization targets, technology-open, the end of the energy-only market

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Contact page

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