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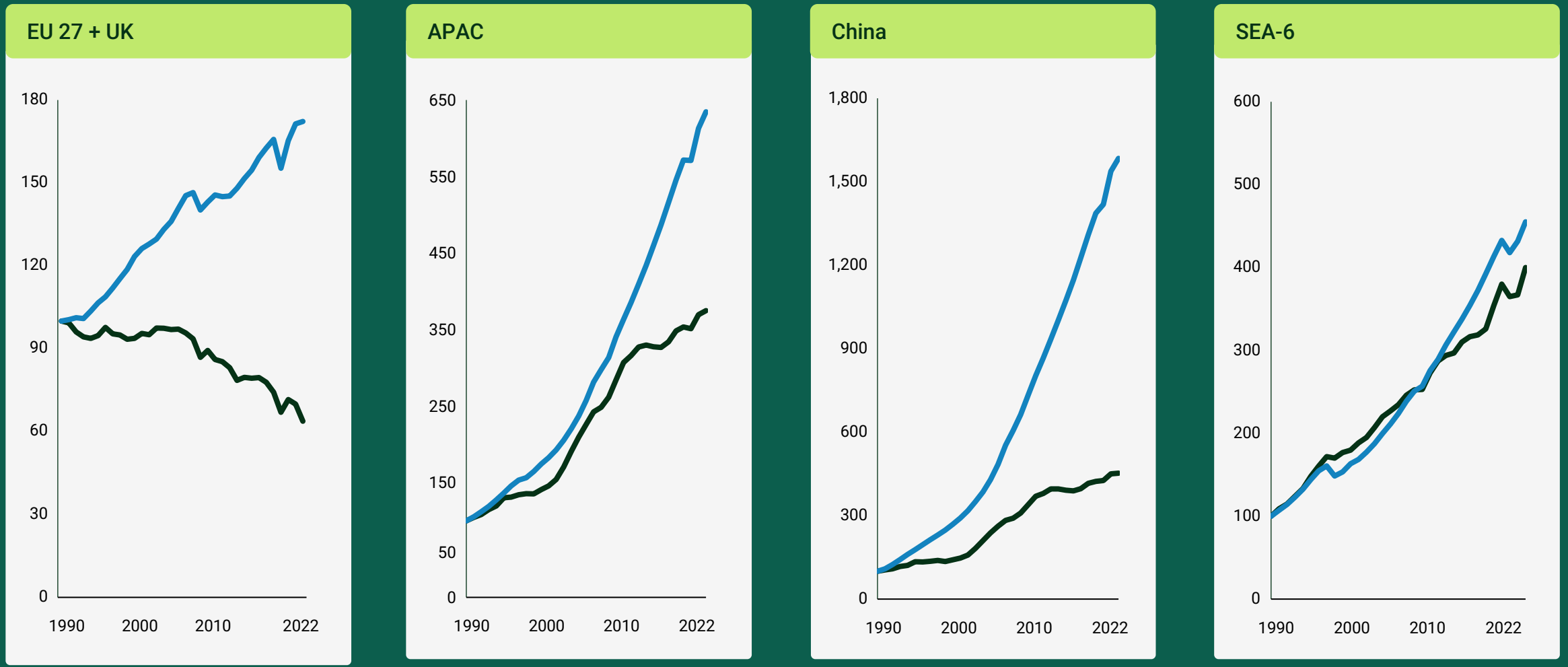
Southeast Asia's Green Economy

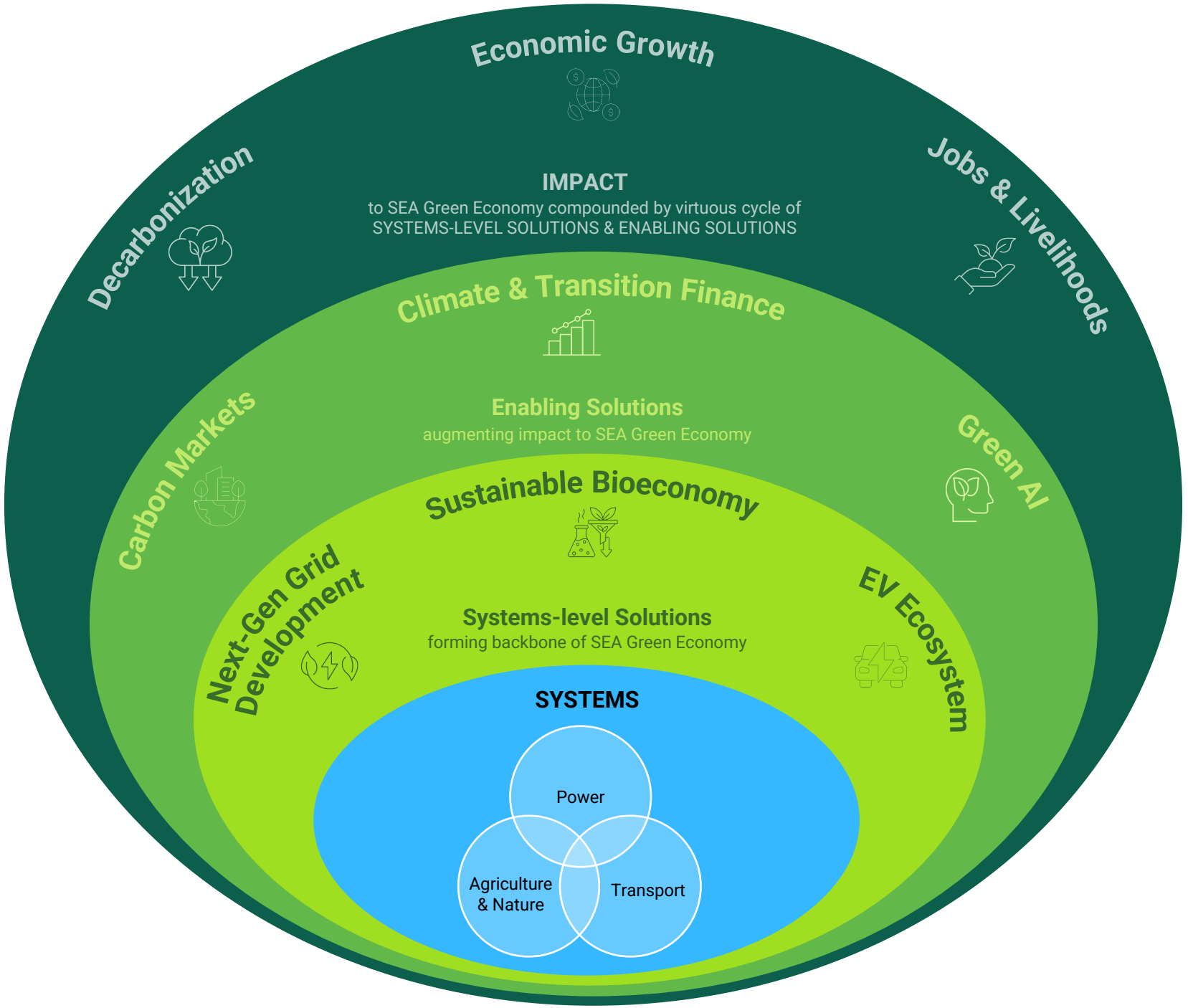
Unlocking Systems for Growth and Impact

SEA-6 have yet to start bending the emissions curve, unlike China or the EU

GDP[1] and GHG emissions[2] (1990–2022, indexed to 1990)



Notes: (1) GDP expressed in year-2015 dollars in purchasing power parity terms; (2) GHG emissions include emissions from energy related sectors, including emissions from fuel combustion; these emissions do not include LULUCF emissions | Source: IEA



+2%

Prioritized solutions worth uplift in SEA-6 nominal 2030 GDP (~$120B/year)…

+900K

…and increase green economy jobs created in SEA-6 by 2030

-50%

Actions would reduce gap to 2030 climate pledges (~300 MtCO2e)

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Three core and three enabling solutions to drive impact by 2030

Sustainable bioeconomy

Leveraging SEA's natural capital and assets for economic benefit and carbon reduction by promoting sustainable agriculture, expanding nature-based solutions and scaling biowaste utilization

Next-gen grid development

Invest in grid infrastructure to eliminate a critical bottleneck to scale renewable power generation, with long-term positive impacts on regional energy security and affordability

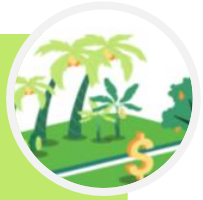
EV ecosystem

Accelerating 2W/4W EV production and adoption by implementing buyer incentives, triggering enabling infra development and developing regional EV supply chains

Climate & Transition Finance

Expanding access to capital for decarbonization through innovative financing models, regional financing frameworks, strengthened policies and enhanced risk-sharing mechanisms

Carbon markets



Further establishing domestic & regional connected carbon markets, driving demand through stronger carbon policies, increasing supply of large-scale verifiable credit projects and strengthening enabling infra

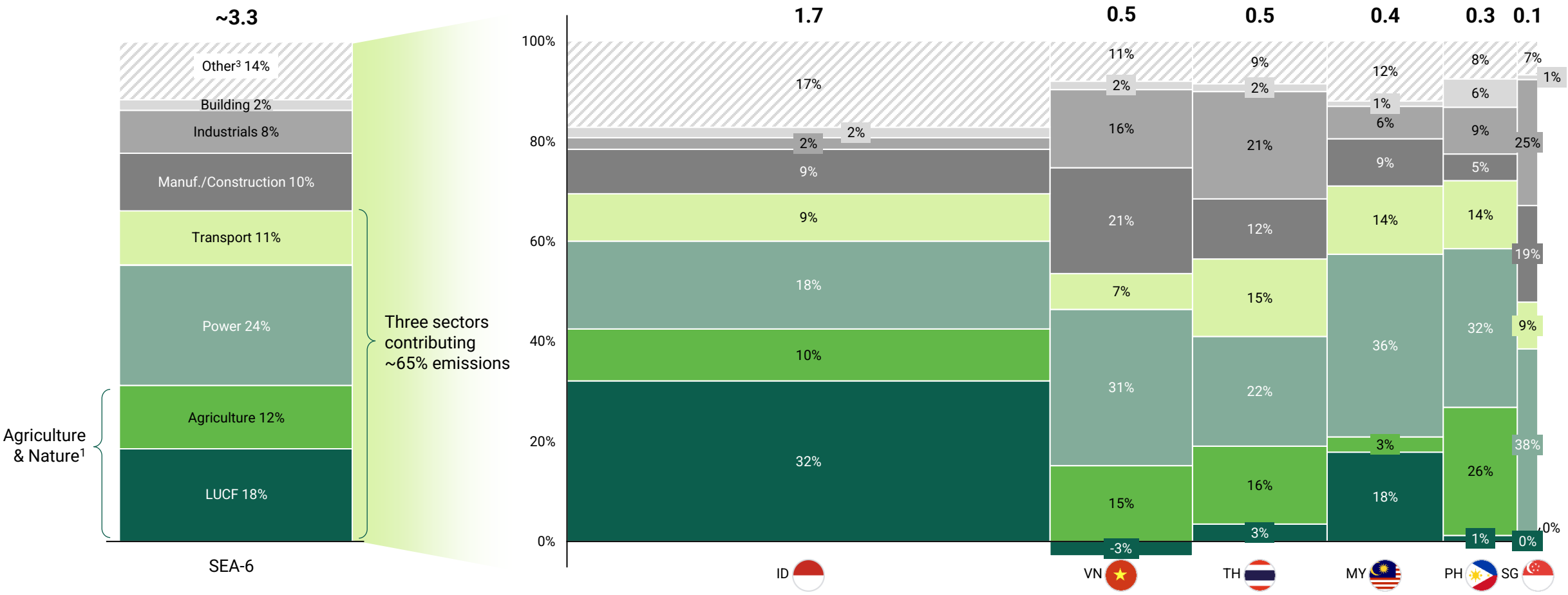
Green AI

Advancing AI-driven sustainability solutions while ensuring sustainable DC growth through domestic & regional mechanisms (e.g., regional clean energy trading)

Energy is major part of the emission in SEA

SEA-6 GHG emissions by sectors (GtCO2e, 2023)

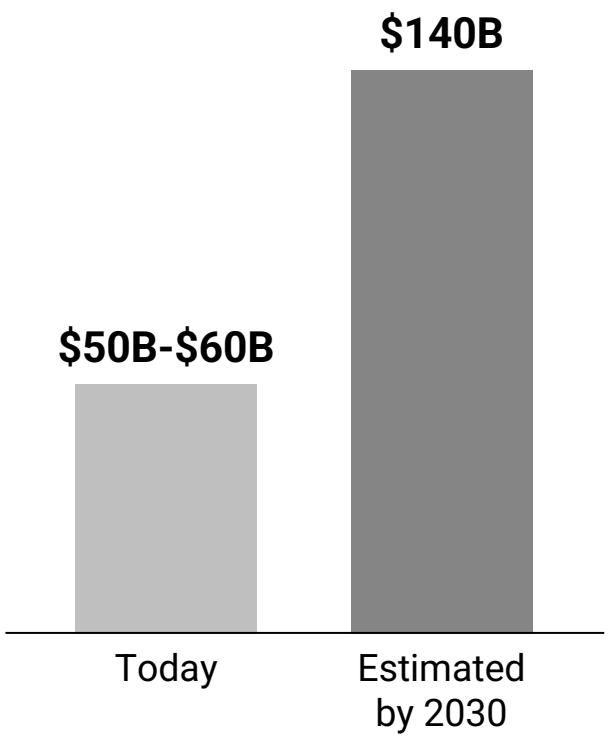
Total = **~3.3GtCO2e**



Renewables are critical for long-term energy security in SEA

Fossil Fuel dependence perpetuates vulnerability

Annual cost to import fossil fuels ($B)



Renewables are the path to energy security

28 GW

Installed Renewables capacity in SEA

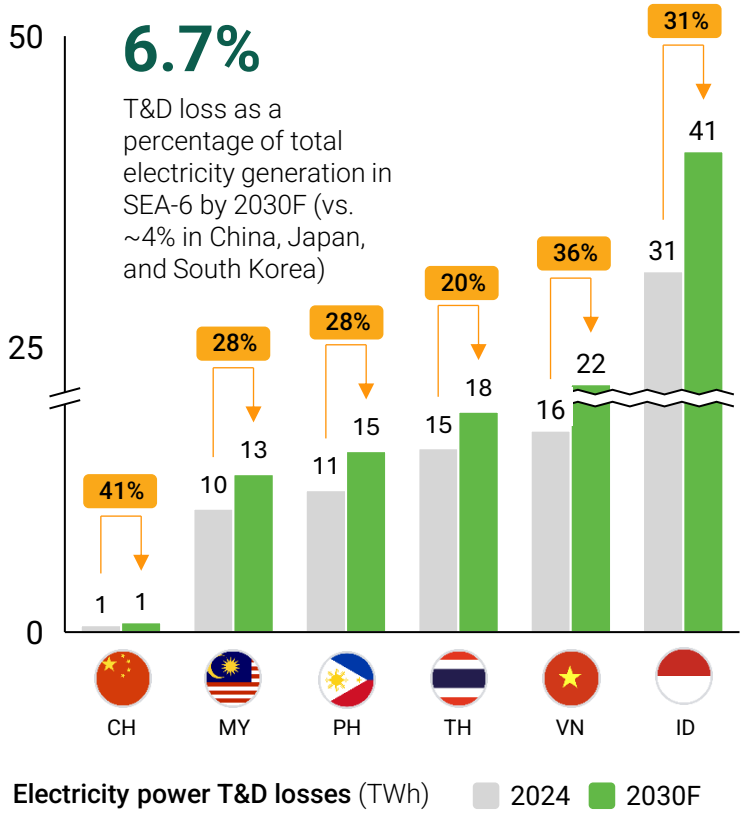
30K+ GW

Renewable energy potential in Southeast Asia

<1%

Overall renewable potential is currently tapped

Next-gen Grid today will unlock a renewable future



A next-gen grid with cross-border connections would lower SEA's decarbonization costs and accelerate the green energy transition

Key initiatives include (non-exhaustive)

Grid planning	Plan for reliable, economical and green outcome with **longer term**	**Multi year** UK has taken 2+ years for grid planning
Grid upgrade	**Upgrade existing asset for higher capacity** though new technologies (e.g., superconducting)	**X5** improvement in AC transmission capacity when using superconducting
Battery energy storage systems	**Strategic use of large-scale batteries** to store excess RE and balance supply/demand	**30%** improvement in RE penetration (reduction in RE curtailment rate) using battery systems
Dynamic load balancing	Optimization of power flow in real time **using AI, sensors, and automation**, preventing overloads	**20%–40%** improvement in RE utilization by adjusting power distribution to match output
Roof top financing	**Offering financing options for roof top solar** could accelerate adaption	**5-7 years** Payback for PH consumers once roof top solar is installed
Microgrids	Installation of **small grids** that **operate independently** from the main grid, ensuring 24/7 power during blackouts and better RE integration	**18M** people with lack of electricity in SEA could be powered by renewables-based microgrids

Notes: (1) Net present cost includes values for renewables, storage, electrolyzer, interconnector, hydrogen network; (2) Regional cooperation allows for full resource sharing between countries without constraints; (3) Under individual approach, each country tries to fully decarbonize solely and independently from its own available resources | Sources: IEA; DNV; Lit. search

Investable ideas | SEA offers diverse investment opportunities in grid development, gross profit margin of 10%–30%

	Overall grid transmission infrastructure		
	Grid expansion (e.g., power cables, towers)	**Grid modernization** (e.g., microgrids)	**Energy storage solutions** (e.g., BESS)
Market size[1] ($ billion, 2030F)	**$4–$6B**	**$2–$3B**	**$0.3–$0.5B**
Indicative profit margins (gross profit)	**10%–15%**	**20%–30%**	**20%–30%**
Recent investments activity (M&A, JV, greenfield investments)	**Japan's Hitachi Ltd.** and **Thailand's EGAT collab** to limit transmission losses by developing voltage control systems in Thailand	**TotalEnergies, BP, Shell,** and **Equinor** committed $500 million in regions including SEA to develop solar systems and microgrids[1]	**Japan's Marubeni Corp.** and **Vietnam's VinES collab,** where Japan is helping Vietnam develop battery energy storage solutions for better demand response and grid stabilization

Notes: (1) Microgrids are self-sufficient energy systems that integrate RE, storage, and smart grid technology, operating independently or in the main grid | Sources: Company websites; Reuters; Enerdata; Lit search; Expert interviews

Recommendations | Key steps to accelerate grid modernization and expansion

Policymakers and regulators (govt.)

- Robust planning and consistent communication
- Embrace new technologies (open for test)
- Faster approval process
- Collaboration with private sector

Power users

- Dual goal—sustainability and financial return
- Invest in energy efficiency gains
- Be creative—push for high-impact instrument like corporate PPAs to drive demand for energy

Financial institutions

- Practical approach assessing green financing opportunities—lower admin cost
- More collaboration across philosophy/MDBs/ sustainability funds
- Continue to push financing innovations (e.g. roof top, micro-grid)

Power ecosystem players

- Drive new project cost down—better project planning, better sourcing strategy
- Push the authority with clear demand to accelerate process
- Embrace new technologies

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