



COORDINATING MINISTRY FOR ECONOMIC AFFAIRS
THE REPUBLIC OF INDONESIA



NATIONAL ECONOMIC COUNCIL
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INCLUSIVE ENERGY TRANSITIONS IN SOUTHEAST ASIA AND BEYOND

Cross-Regional Learning from South Asia

10–12 February 2026 • Jakarta, Indonesia

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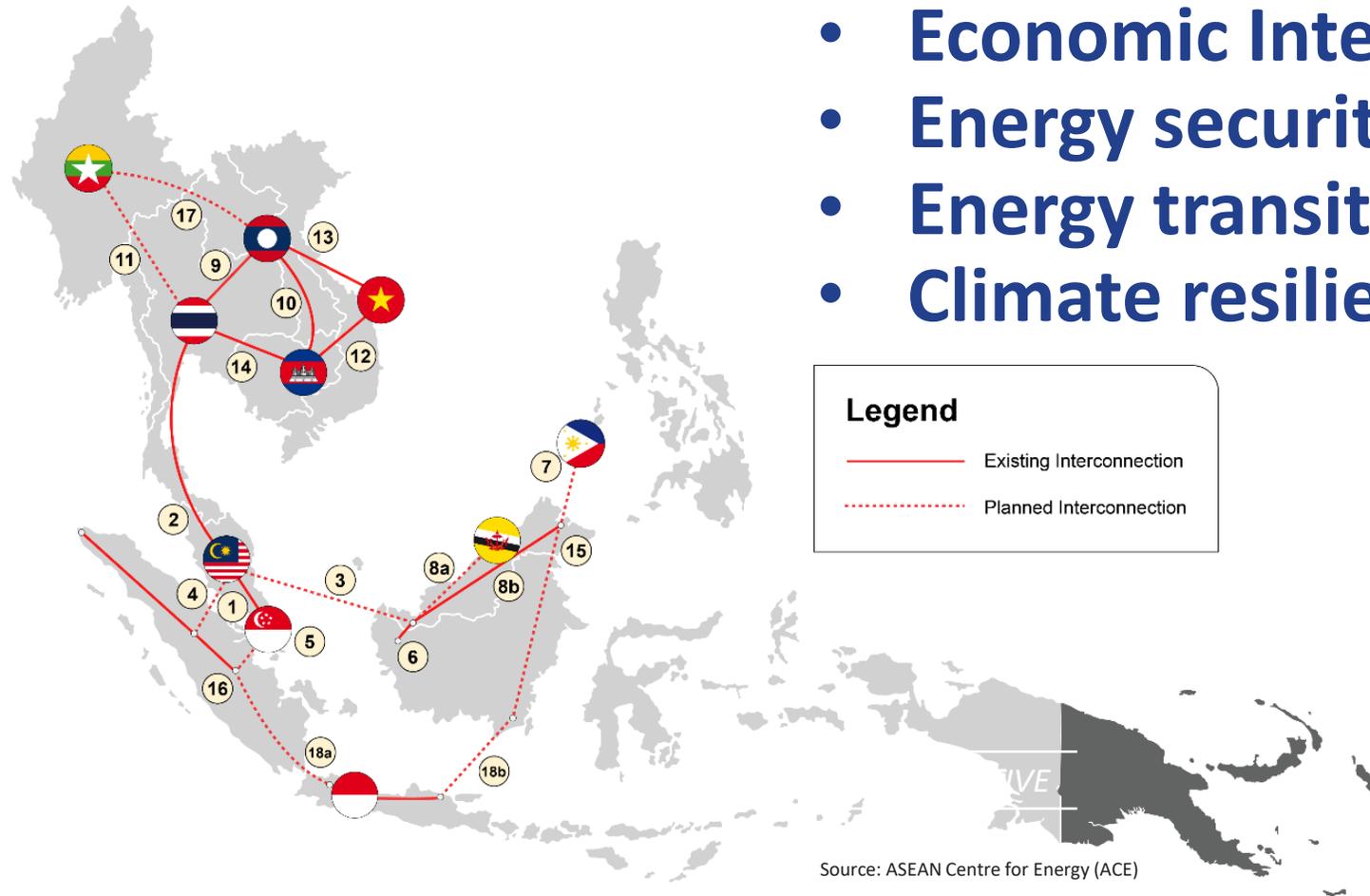
ASEAN Power Grid

Presentation by
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What is the ASEAN Power Grid?

- Economic Integration and growth
- Energy security
- Energy transition
- Climate resilience



Source: ASEAN Centre for Energy (ACE)

The 18 cross-border interconnections are the priority, with other cross-border projects being proposed constantly to be included to the list

No	Interconnection	Grid-to-grid, based on national-level planning				AIMSIII projections
		Existing	Up to 2024	Future	Total	
1	Pen. Malaysia – Singapore	525	525	TBC	1,050	1,050
2	Thailand – Pen. Malaysia	380	-	TBC	380	1,043
3	Sarawak – Pen. Malaysia	-	-	1,600	1,600	695
4	Pen. Malaysia – Sumatra	-	-	600/TBC	600	2,130
5	Batam – Singapore	-	-	3,400	3,400	-
6	Sarawak – W. Kalimantan	230	-	-	230	777
7	Philippines – Sabah	-	-	500	500	196
8a	Sarawak – Brunei	-	TBC	TBC	TBC	TBC
8b	Sarawak – Sabah	-	30 – 50	-	30 – 50	177
9	Thailand – Lao PDR	955	-	TBC	955	700
10	Lao PDR – Vietnam	-	-	TBC	TBC	625
11	Thailand – Myanmar	-	-	365	365	1,262
12	Vietnam – Cambodia	200	-	TBC	200	1,353
13	Lao PDR – Cambodia	300	-	TBC	300	625
14	Thailand – Cambodia	250	-	650	900	1,315
15	E. Sabah – N. Kalimantan	-	-	TBC	TBC	174
16	Singapore – Sumatra	-	-	TBC	TBC	1,133
17	Lao PDR – Myanmar	30	-	100 – 600	130 – 630	624
18a	Kalimantan – Java	-	-	TBC	TBC	4,35
18b	Sumatra – Java	-	-	2,600	2,600	10,000
Total (MW)		2,870	575	10,335	13,780	24,585

 (initiated for FS)

 (initiated for FS)


 (FS on-going)







 (FS on-going)


 (construction, COD 2025)









 (initiated for FS)

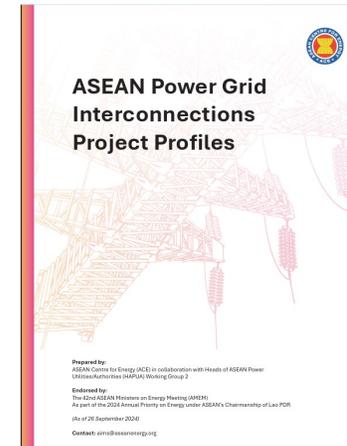


 (FS on-going)





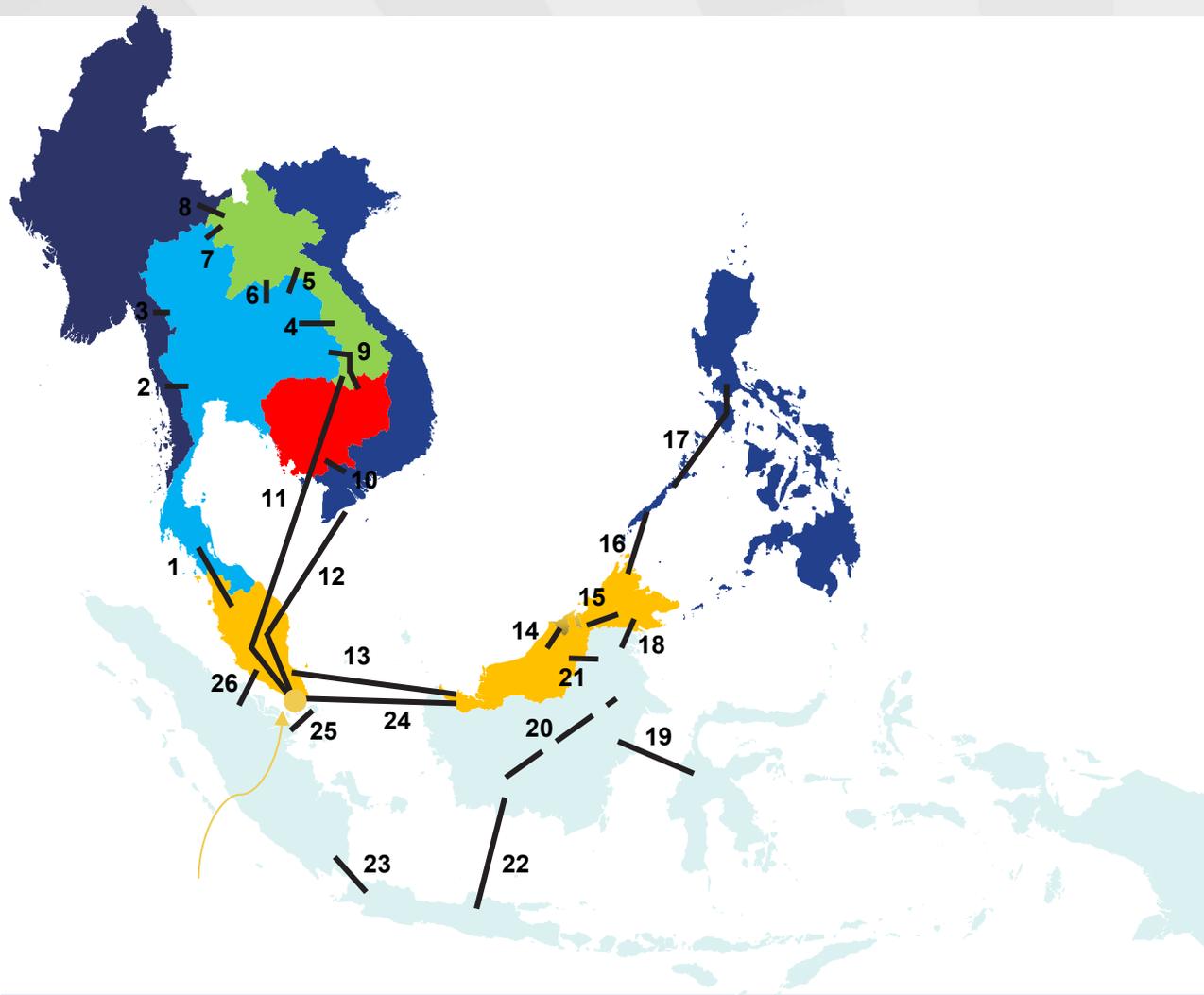
 (FS on-going)



Additional projects, proposed and included in the APG Interconnections Project Profile publication (ACE, 2024):

- 1 **Vietnam – Singapore**
(1,200 MW, submarine HVDC)
- 2 **Cambodia – Singapore**
(1,000 MW, submarine HVDC)

Landscape of planned / under development / under construction projects*



No.	Project Name	From	To
1	Thailand - P. Malaysia	THA	MYS (Peninsular)
2	Thailand – Tanintharyi	THA	MMR (Tanintharyi)
3	Mae Sot - Myawaddy	THA	Myanmar
4	Pakbo – Mukdahan 2	THA	LAO
5	Pakxan – Bungkhan	THA	LAO
6	Dongphosy – Nongkhai	THA	LAO
7	Ton Phueng – Mae Chan	THA	LAO
8	M. Long – Keng Tung	LAO	MMR (Shan)
9	Laos – Thailand - Cambodia	THA	LAO / KMR
10	Cambodia – Vietnam	KMR	VNM
11	Laos, Cambodia, Singapore	(LAO) / KMR	MYS (Peninsular) / SGP
12	Project RISE	VNM	MYS / SGP
13	Sarawak – Semenanjung**	MYS (Sarawak)	MYS (Peninsular)
14	Sarawak - Brunei	MYS (Sarawak)	BRN
15	Sarawak - Sabah	MYS (Sarawak)	MYS (Sabah)
16	Sabah – Palawan	MYS (Sabah)	PHL (Palawan)
17	Palawan – Mindoro – Luzon	PHL (Palawan)	PHL (Mindoro - Luzon)
18	Sabah – Kalimantan	MYS (Sabah)	IDN (Kalimantan)
19	Kalimantan – Sulawesi	IDN (Kalimantan)	IDN (Sulawesi)
20	Kalimantan Internal Grid	IDN (Kalimantan)	IDN (Kalimantan)
21	Sarawak – N. Kalimantan	MYS (Sarawak)	IDN (Kalimantan)
22	Kalimantan – Java	IDN (Kalimantan)	IDN (Java)
23	Java – Sumatra	IDN (Java)	IDN (Sumatra)
24	Sarawak - Singapore	MYS (Sarawak)	MYS (Peninsular)
25	Sumatra – Batam	IDN (Sumatra)	IDN (Batam)
26	Sumatra – Peninsular Malaysia	IDN (Sumatra)	MYS (Peninsular)
27	Pacific Medco Solar Energy	IDN (Batan - Bulan)	SGP
28	Alamtri Resources	IDN (Batan)	SGP
29	Equator Renewables Asia	IDN (Combol - Citlim)	SGP
30	Vanda RE	IDN (Galang)	SGP
31	Keppel Energy	IDN (Durian, Kombol...)	SGP
32	Singa Renewables	IDN (Rangsang)	SGP
33	Shell Eastern Trading	IDN (Rangsang)	SGP
34	P. Malaysia – Singapore	MYS (Peninsular)	SGP
35	Sun Cable	AUS	SGP

What would success look like if ASEAN gets ASEAN Power Grid right?

Economic Benefits

- Larger integrated market
- Higher **competition between sellers**
- Access to a **large pool of consumers**
- **Stronger RE investment climate**
- Improved **allocative efficiency**

Supply Security

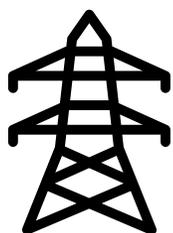
- **Diversification** of energy supply
- **Decrease exposure** to the volatile international gas market
- Edging closer to ASEAN-level energy **self-sufficiency**
- Reserve/back-up capacity sharing
- Higher level of ASEAN economy/energy **market integration**

Sustainability

- **Resource optimisation**
- **Grid stability** (intermittency, less curtailment, alternative for BESS)
- Facilitate the **Integration of RE** into the energy system
- **Higher share of RE** integration

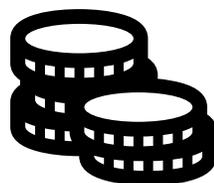
ASEAN Power Grid Financing Initiative

- **ASEAN's vision** is to achieve **fully integrated grid operations by 2045**
 - to ensure a reliable energy supply, maximize the use of renewables, and support affordable electricity.



17.6 GW

Target transmission capacity by 2040



Over \$100 billion

Needed in transmission infrastructure investments from both public and private sectors



Over 680 million

People with more affordable electricity

- **ADB is advancing the ASEAN Power Grid** by providing a mix of financial and technical support at ASEAN's request.
 - ADB, World Bank, ASEAN Secretariat and ASEAN Centre for Energy (ACE)
 - Develop a strong pipeline
 - ~~ADB has committed up to \$10 billion for the APG over the next 10 years~~

Climate Resilience

How energy systems anticipate and withstand floods, storms, heat, and drought, and recover quickly with limited social and economic disruption



Why Climate Resilience Matters in ASEAN

1. Southeast Asia is one of the world's most exposed regions to climate hazards

	Extreme Heat	Warming	River flood	Drought	Sea level rise	Coastal flood	Tropical cyclones
Brunei Darussalam	1	0.0274	4.8	2.6	80	3.3	0.0
Cambodia	44	0.0229	8.6	4.2	117	3.7	1.8
Indonesia	0	0.0313	8.4	3.4	100	8.1	1.6
Lao PDR	7	0.0455	8.2	1.4	N/A	0.0	1.4
Malaysia	0	0.0295	6.8	3.1	94	6.4	0.0
Myanmar	27	0.0345	8.8	0.9	No Data	8.0	5.8
Philippines	1	0.0285	6.7	3.8	71	8.9	9.2
Singapore	0	0.0244	0.0	0.0	112	2.0	0.0
Thailand	37	0.0312	9.8	5.5	143	5.6	1.6
Timor-Leste	0	0.0274	0.0	2.0	108	3.3	0.5
Viet Nam	5	0.035	9.9	4.5	82	9.6	5.9
ASEAN Average	11	0.031	6.5	2.9	101	5.4	2.5
World Average	11	0.037-0.041	4.5	3.4	59	3.5	1.6

Note: Each cell color indicates the level of climate hazard and exposure by country. Extreme heat was calculated based on the number of hot days (with daily maximum temperature above 35°C of 1995-2014). The levels of climate hazard and exposure of river flood, coastal flood, drought and tropical cyclones are assessed based on the indicators of INFORM Risk Index 2025. Sea level rise was calculated based on the difference between the mean sea level of 1993-2002 and 2013-2022.
Source: Adapted from INFORM Risk Index 2025; World Bank Climate Change Knowledge Portal; NOAA Climate at a Glance Global Time Series.

Why Climate Resilience Matters in ASEAN

2. Power systems are among the most affected critical infrastructures.

		Extreme Heat	Warming	River flood	Drought	Sea level rise	Coastal flood	Tropical cyclones	
Generation	Thermal	Modest reduction in generation efficiency and cooling efficiency		Partial output reduction or complete shutdown due to insufficient cooling water		Physical risks to generation assets in coastal areas, limited availability of appropriate sites for new assets		Physical risks to generation assets	
	Hydro	Changing hydropower potential with increased evaporation losses and shift in hydrological flows		Changing hydropower potential and increasing variations in seasonal peaks of generation					
	Solar PV	Modest reduction in generation efficiency							
	Wind	Suspended operation under extreme heat (over 45°C)							Suspended operation
	Others	Changes in bioenergy crop yields		Changes in bioenergy crop yields					Changes in generation output with a faster tidal current
Transmission		Reduced network efficiency		Physical damage to T&D due to direct or indirect impacts		Physical damage and limited availability of appropriate sites		Physical damage to T&D	
Consumption		Increasing air-conditioning and refrigeration requirements		Increasing air-conditioning load; higher electricity demand for potable water supply and irrigation		Increasing cases of adopting more energy-intensive methods against saltwater intrusion			

Source: Adapted from IEA. 2021. Climate Resilience

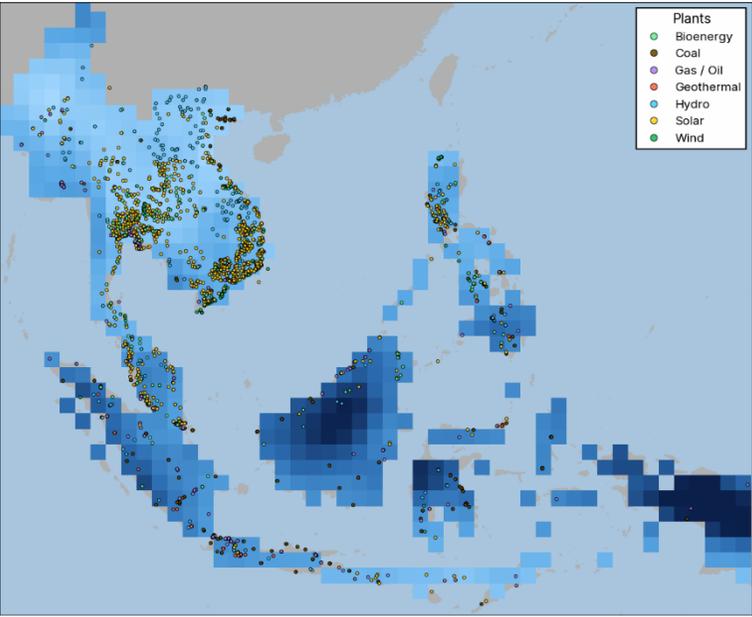
Why Climate Resilience Matters in ASEAN

3. Climate risks to power systems are no longer future threats, but they are already visible

ASEAN power plants exposed to climate hazards (1991-2020)

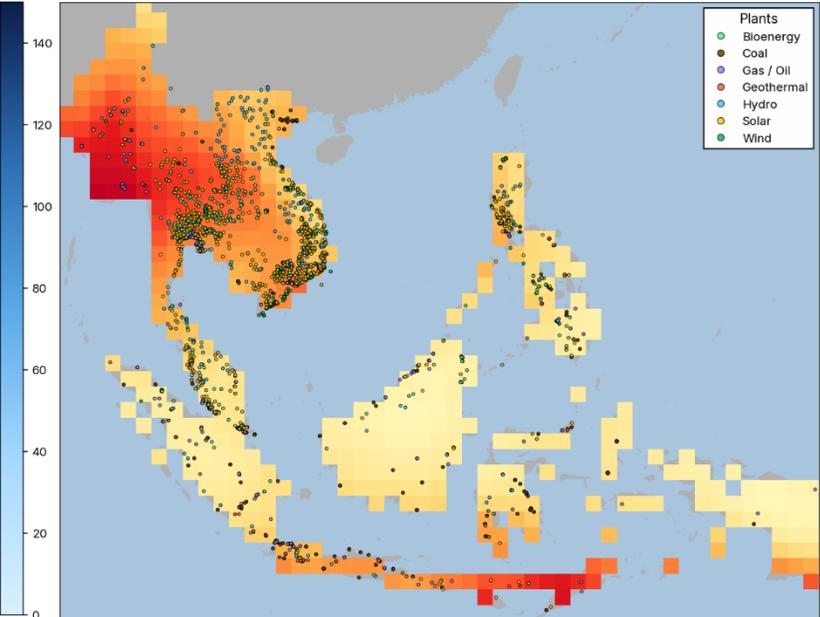
Heavy rainfalls

Number of days of heavy precipitation (above 10mm)



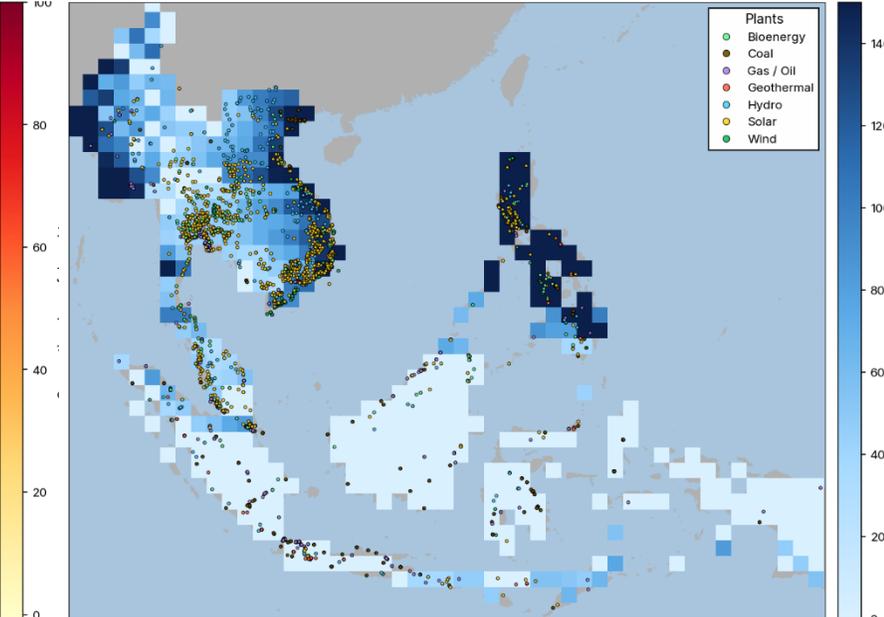
Droughts

Number of consecutive dry days



Storms

Maximum historical wind speeds (km/h)



Source: ADB analysis based on Copernicus and IBTrACS.

Benefits of Climate-Resilient Power System

Climate-resilient power system is essential for energy security, economic growth and social welfare

Multiple benefits of climate-resilient energy system



National authorities



Energy suppliers



Energy consumers

STAKEHOLDERS

KEY BENEFITS

Multiple Benefits of Climate-Resilient Energy System



- Strengthened energy security and reduced reliance on imported fuels
- Accelerated energy transition
- Enhanced disaster risk management and rapid recovery

- Reduced lifetime costs for maintenance and repair
- Increased stability and reliability of supply chains

- Reliable energy access
- Stable electricity prices
- Improved economic growth, productivity and job creation
- Protection of essential social services



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