GDP in Trillion / Billion USD	Country	Power Generation Mix: Fossil Fuels vs Sustainable Energy				
		Electricity produced by coal fired plants	Electricity produced by gas fired plants	Electricity produced by Oil	Total Electricity Production (TWh)	% Share of power generation by sustainable energy sources
18.53 t	China	5754	298	865	9,456	27
3.88 t	India	1471	53	4	1,958	22
1.47 t	Indonesia	217	62	7	351	19
1.76 t	South Korea	205	169	8	618	38
465.8 b	Vietnam	130	26	2	276	43
803.0 b	Taiwan	122	114	4	282	15
1.3 t	Turkey	118	66	0.9	320	42
445.5 b	Malaysia	69	32	1	188	46
471.5 b	Philippines	66	18	3	112	22
548.9 b	Thailand	30	129	0.9	190	16
530.6 b	Israel	13	53	0.3	74	10
451.16 b	Bangladesh	11	72	22	106	1
525.2 b	Singapore	0.6	53	1	57	4
1.11 t	Saudi Arabia	0	265	152	423	1
527.8 b	United Arab Emirates	0	119	0	165	28

Figures & Picture Credit: Wiki

A Carbon Free Asia: Transition Path to Sustainable Energy

As the global community struggles to curb the excessive release of carbon into the atmosphere, most Asian countries remain heavily dependent on carbon-intensive thermal power plants for electricity generation. Despite increasing awareness of climate change and international pressure to cut emissions, the region's electricity production continues to be dominated by fossil fuels—primarily coal and natural gas.

Home to approximately 52% of the global population and contributing around 40% of the world's nominal GDP, Asia accounts for more than 39% of global electricity consumption. However, the energy mix in the region remains alarmingly skewed toward carbon-based sources. On average, Asia's electricity generation is 20% more emission-intensive compared to the global norm, making its transition to cleaner energy all the more urgent.

China and India, the world's largest and third-largest electricity producers respectively, are at the forefront of this challenge. Both countries rely heavily on coal to meet their enormous energy demands. Yet, mounting environmental concerns and international climate commitments have spurred efforts to reduce carbon dependence.

India, for instance, has pledged to reduce its carbon emissions by 50% by 2030 and achieve net-zero status by 2070. To meet these ambitious targets, the country is increasingly investing in nuclear power. With a relatively well-developed infrastructure and public sector expertise in nuclear technology, India is now opening the sector to private investment and foreign partnerships, particularly with technologically advanced nations like the United States. As of

2023, India generated 48.2 TWh of electricity from nuclear sources—approximately 2.5% of its total electricity output. The government aims to triple this figure by 2032.

China has made similar strides. In 2023, it produced 417.8 TWh of electricity from nuclear energy, representing about 4.42% of its total production. The Chinese government plans to increase this share to at least 15% by 2050, marking a significant shift away from its current reliance on coal-fired power plants.

Other Asian countries are also beginning to follow suit, though the pace of change varies widely. Across the region, nuclear energy currently accounts for only about 2% of total electricity production. However, nuclear is not the only alternative being considered. Asia is richly endowed with renewable energy potential—particularly in solar and hydroelectric resources. Governments are formulating strategies to harness this potential more effectively.

Presently, 5.4% of electricity produced in the region comes from renewable sources such as solar, wind, and hydroelectric power. Despite the promise these alternatives hold, the high initial investment costs for solar farms, wind turbines, and hydroelectric facilities remain a major obstacle. In comparison, thermal and gas-fired power plants are considerably cheaper and quicker to set up, making them a more attractive option in the short term for many countries.

Nonetheless, if Asia is to contribute meaningfully to the global fight against climate change, it must accelerate its transition to non-conventional sources of energy. This requires not only financial investment but also strong policy frameworks, international collaboration, and technological innovation. The region's future energy security—and its environmental legacy—depend on how effectively and swiftly this transition can be achieved.