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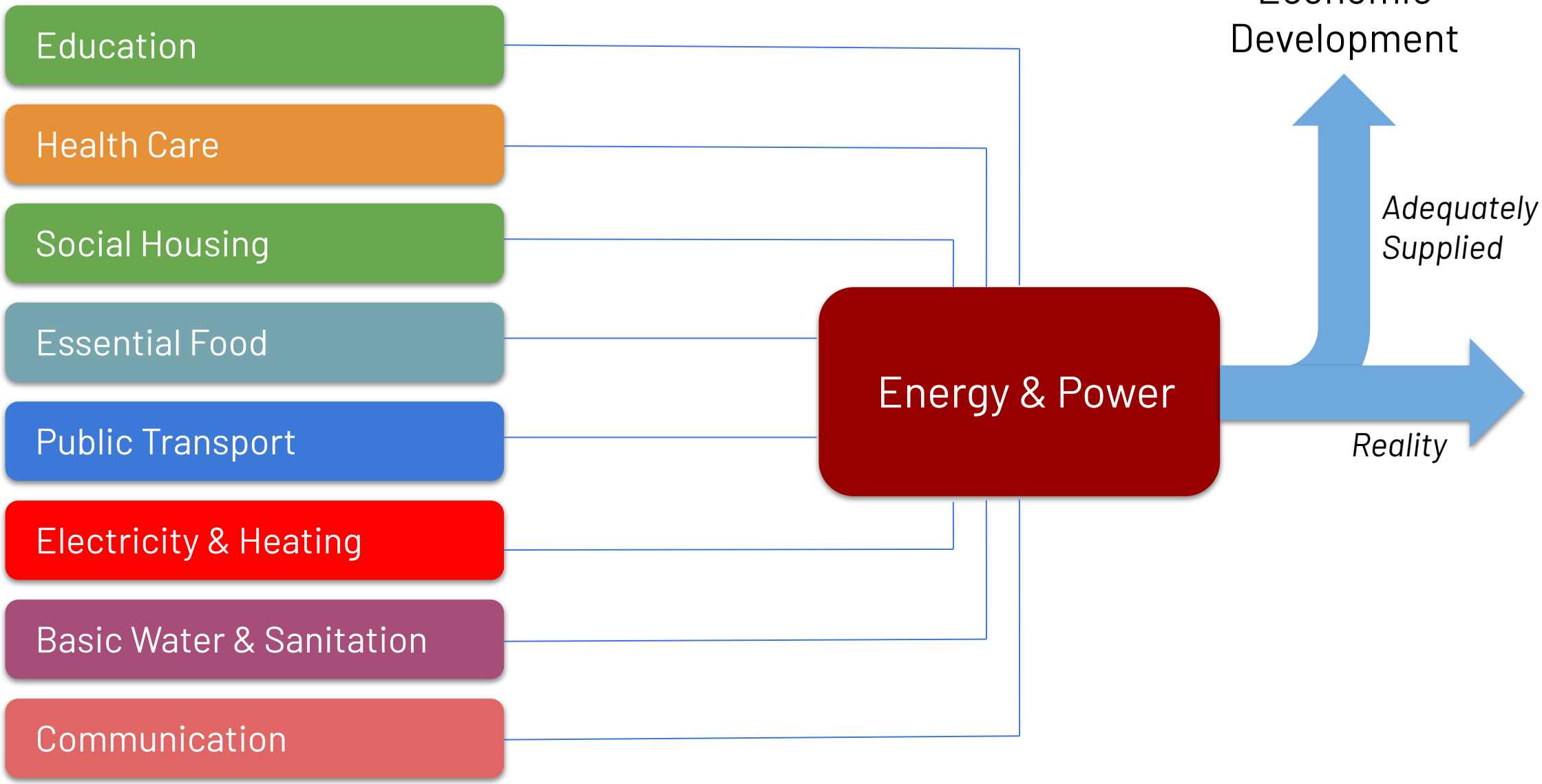
Campaign for
Just & Equitable Transition
In Bangladesh

Just & Equitable Transition

From Family to Society to State

Hasan Mehedi
Coastal Livelihood and Environmental Action Network (CLEAN)

BASIC & ESSENTIAL SERVICES



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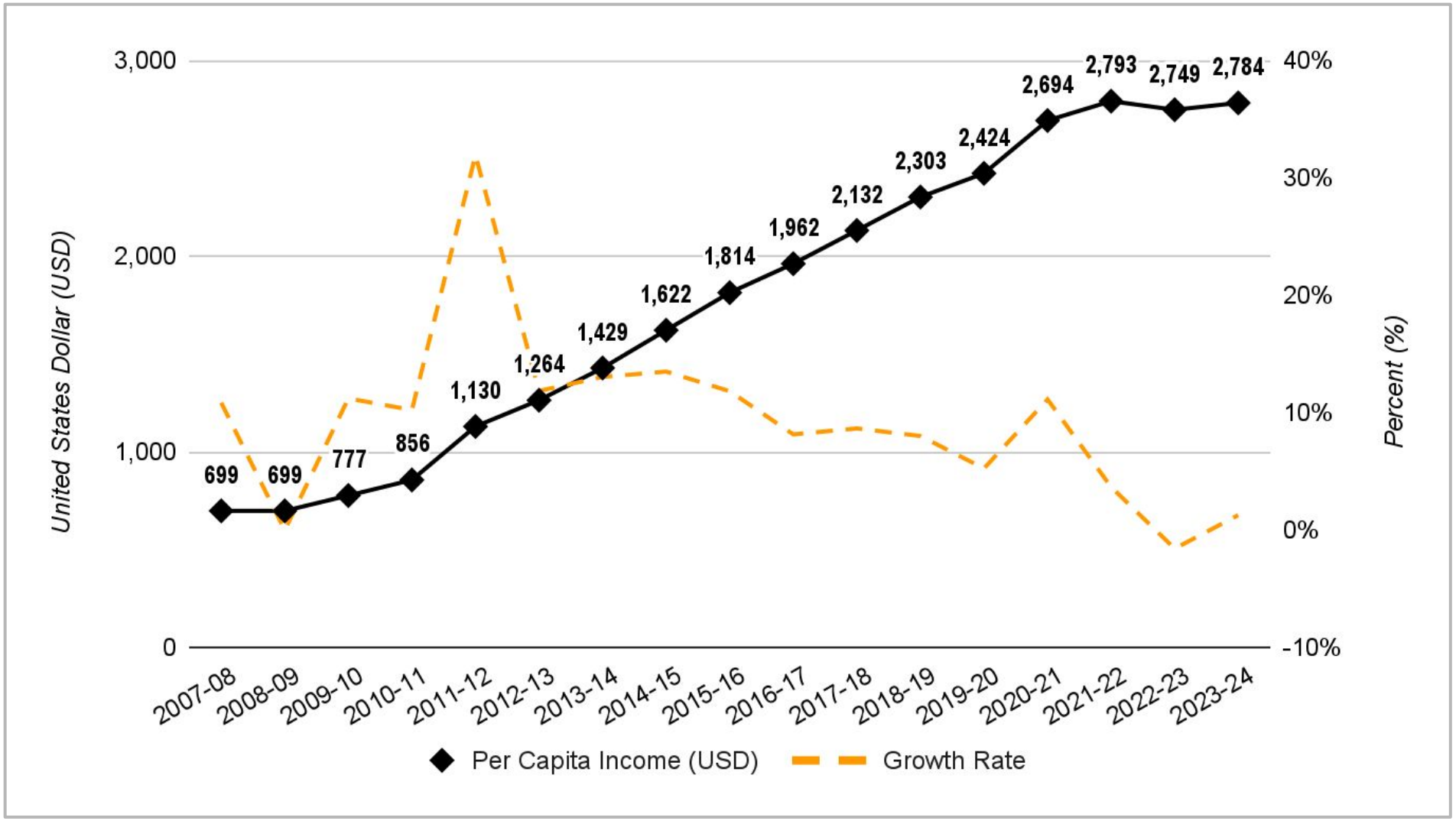
CURRENT TREND

PER CAPITA INCOME



The per capita income (nominal) was USD 699 in 2007-08 which has been increased to USD 2,784 in 2023-24, which means 4 times increased in last 16 years, or 9.4% per year.

PER CAPITA ELECTRICITY CONSUMPTION

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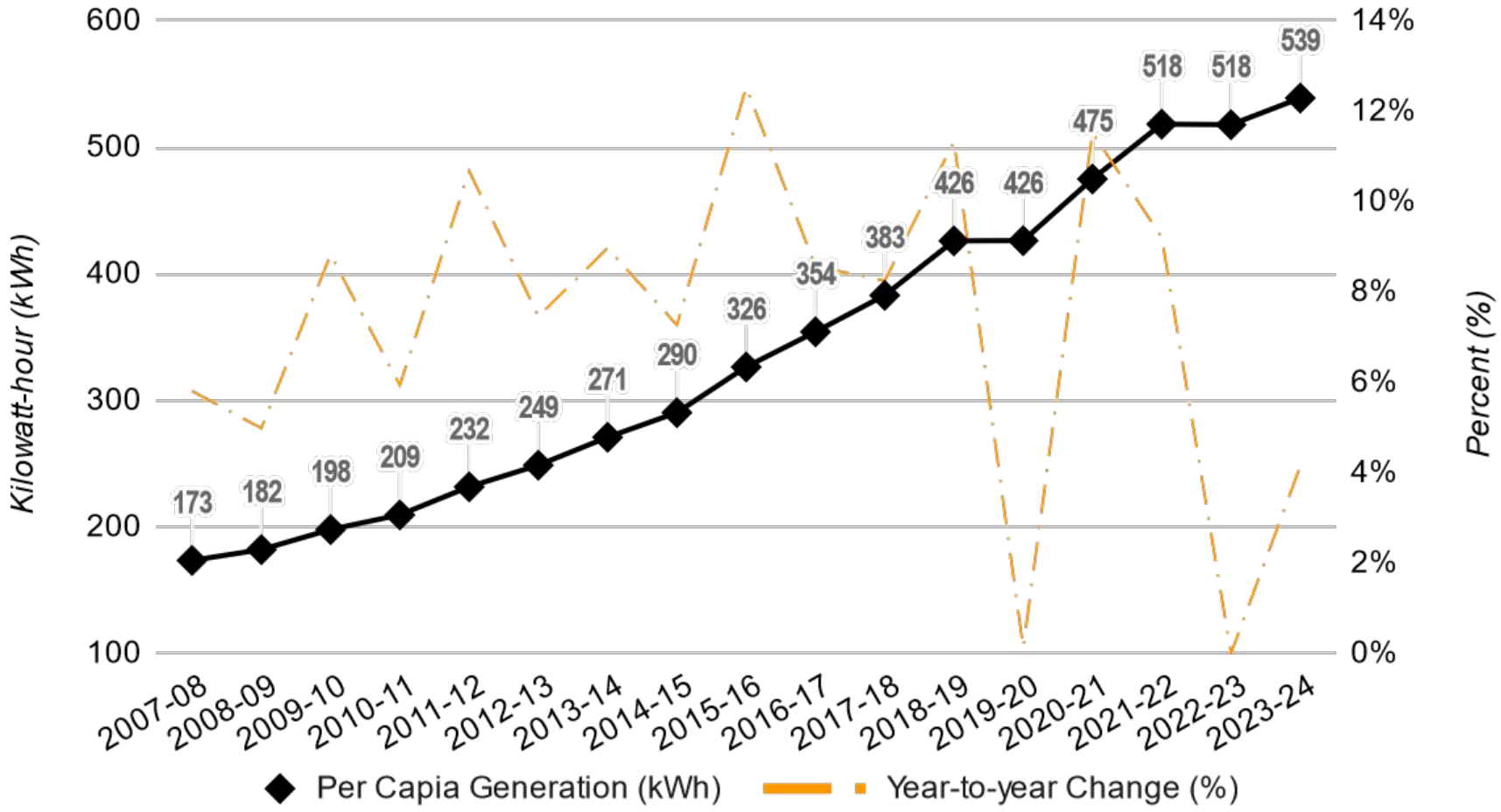
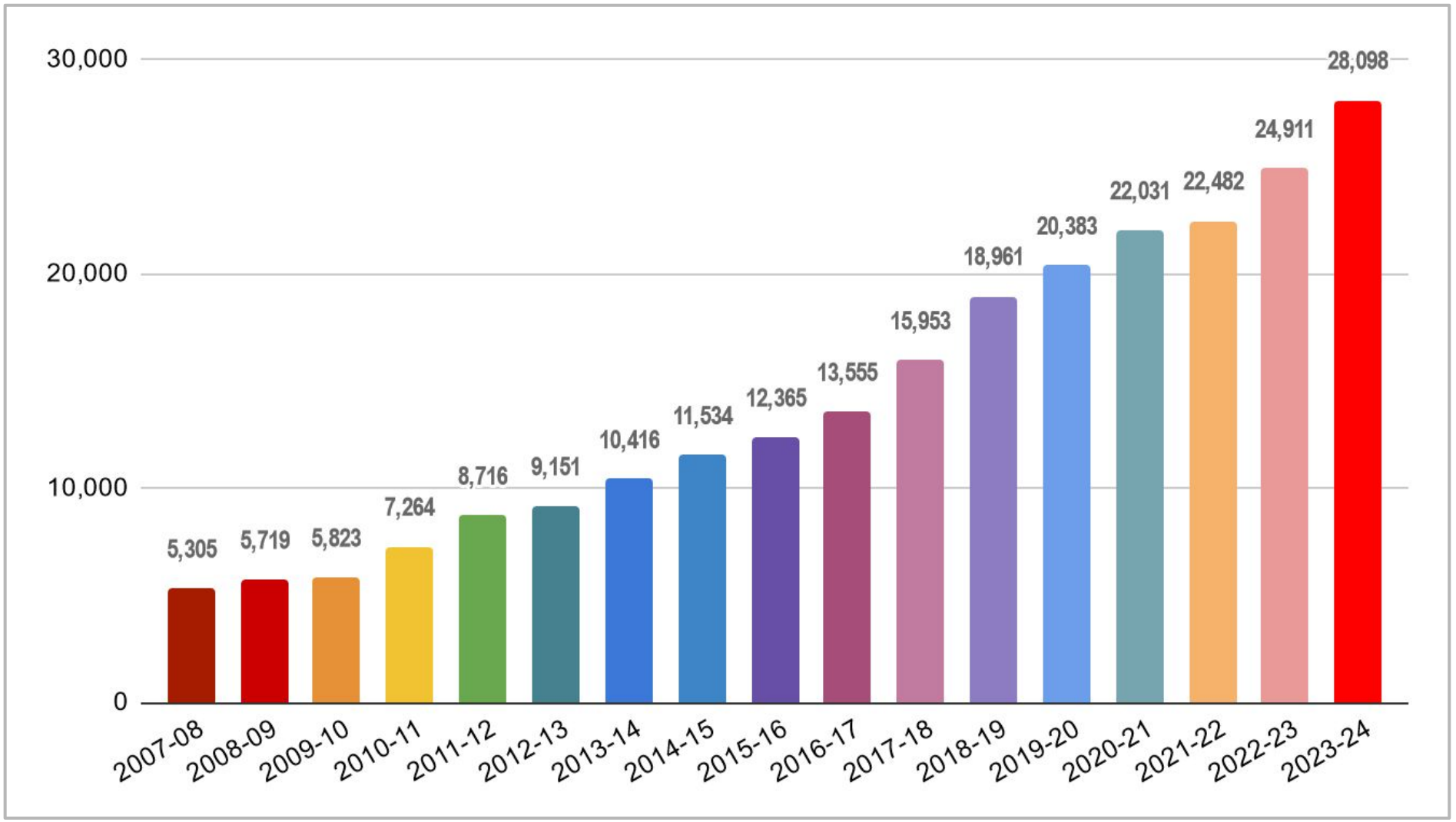
Do you know?

If you use one kilowatt of electricity for one hour, it is called 1 kWh or 1 unit of electricity.

At individual stage, the electricity consumption has been increased at 7.3% per year.



INSTALLED CAPACITY

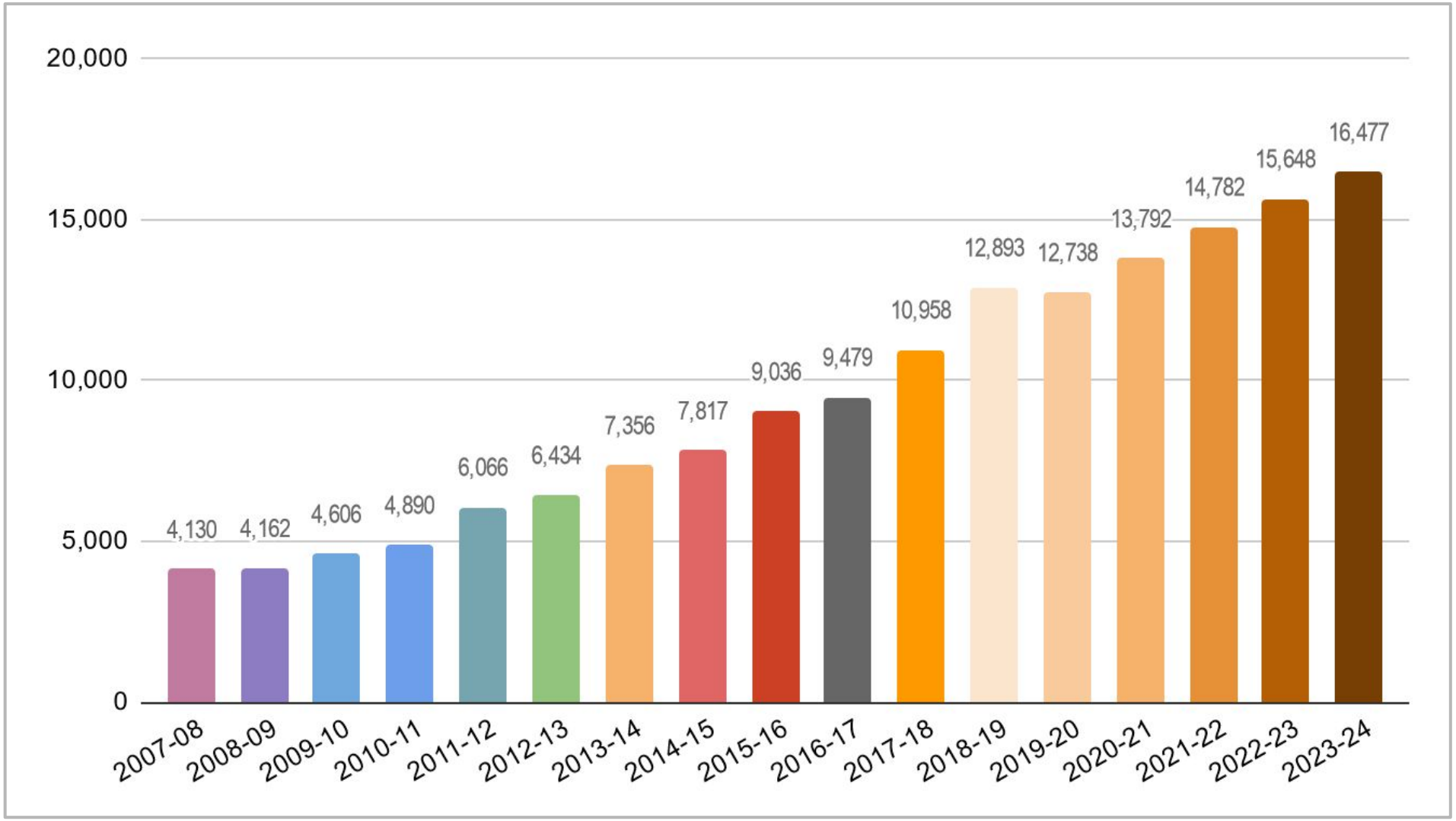


In the last 16 years, the installed capacity in the power sector has been increased at a rate of 11.2% per year on average.

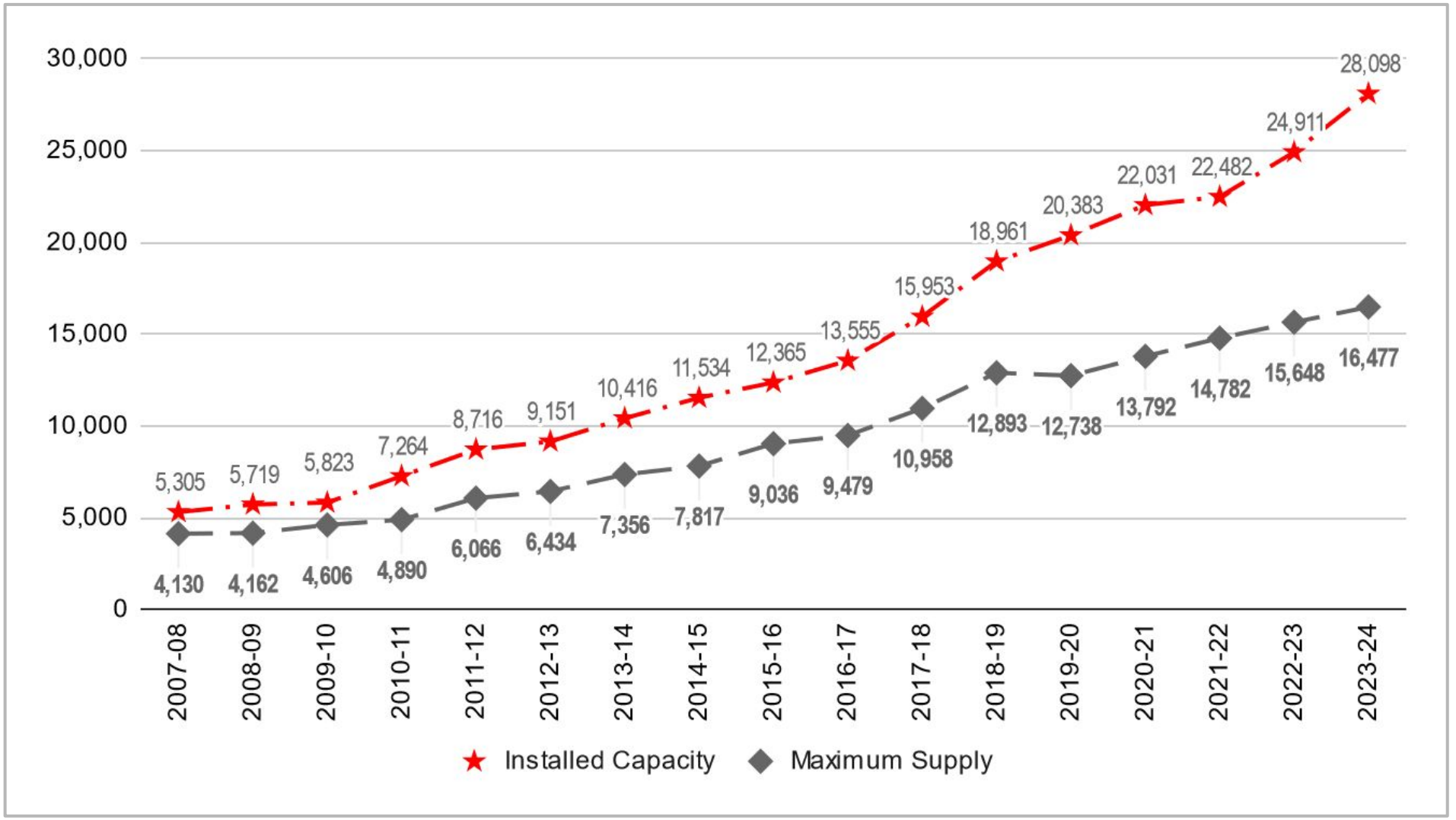
1,000 Watt = 1 Kilowatt (KW), 1,000 KW = 1 Megawatt (MW), 1,000 MW = 1 Gigawatt (GW)

PEAK HOUR DEMAND

In the last 16 years, the peak hour supply has been increased at a rate of 9.2% per year on average. So, 2% of capacity has been increased every year.



DEMAND-SUPPLY GAP

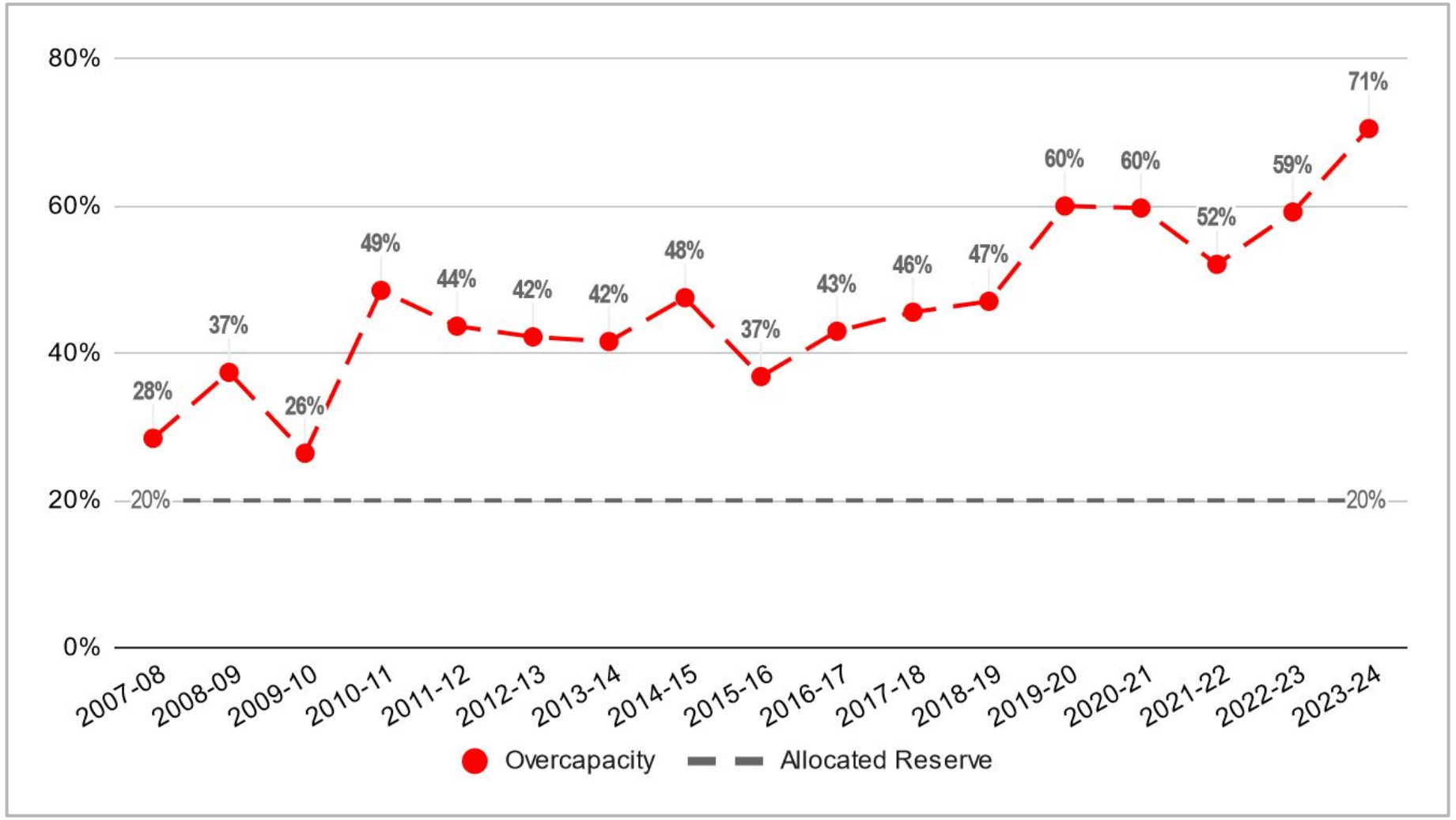


As a result, the gap between demand and supply has been increased. In 2023-24, the installed capacity was 28,098 MW while the maximum supply was 16,477 MW. So, 11,621 MW of capacity was kept idle all the year round which was 71% of the demand.

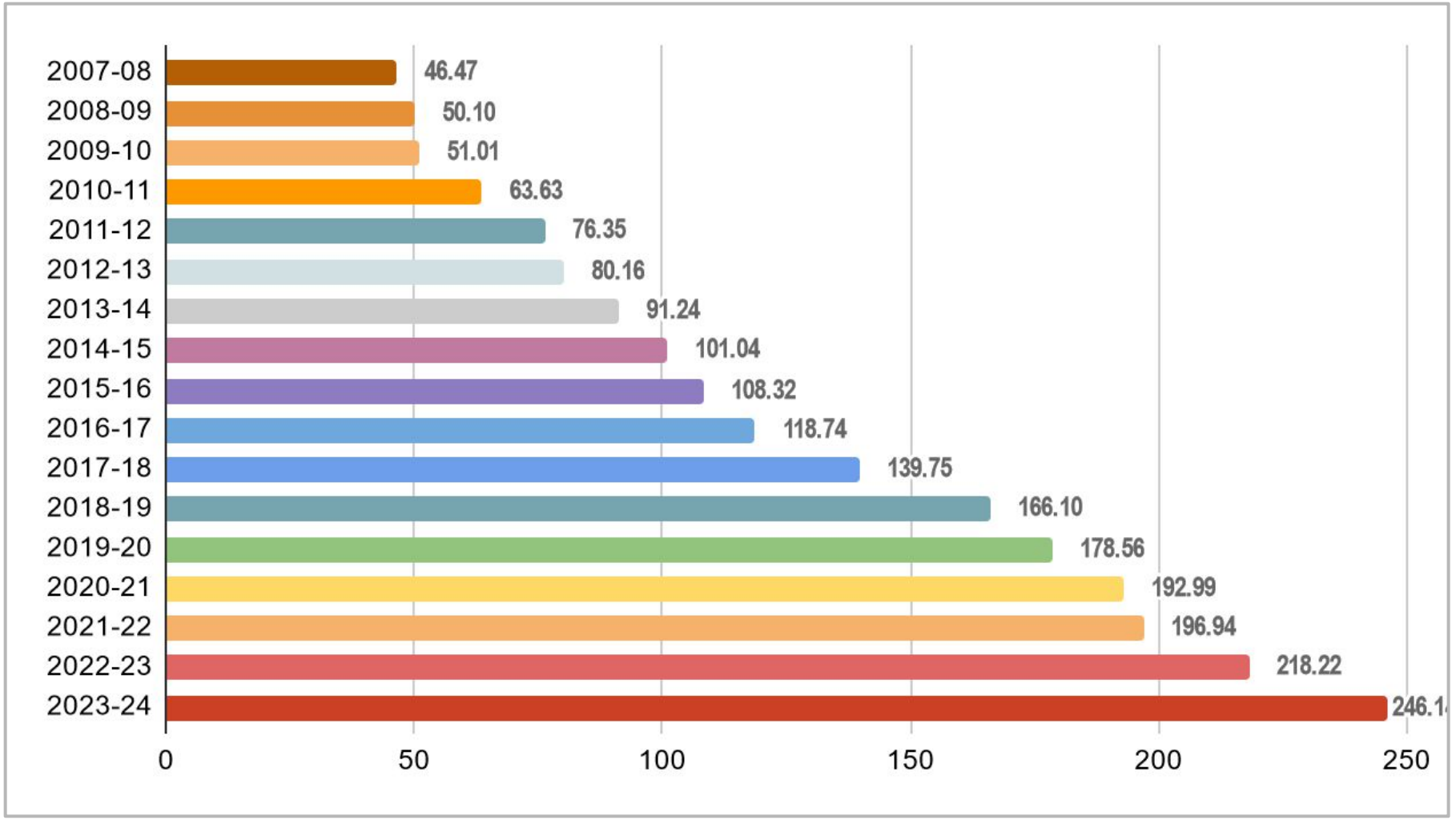
OVERCAPACITY

Do you know?

To mitigate emergency (storm, cyclone, grid failure etc), 20% of the maximum demand or equal to the capacity of the largest power plant is kept as Reserve Capacity of the Power System.



GENERATION CAPACITY



Generation capacity is the electricity supplying capacity of a power plant for a certain period, i.e., a day, month or year. Generation capacity may calculate by multiplying installed capacity (kw) X 8760 X PLF (%)

1,000 Wh = 1 kWh, 1,000 kWh = 1 MWh, 1,000 MWh = 1 GWh, 1,000 GWh = 1 TWh

ACTUAL GENERATION

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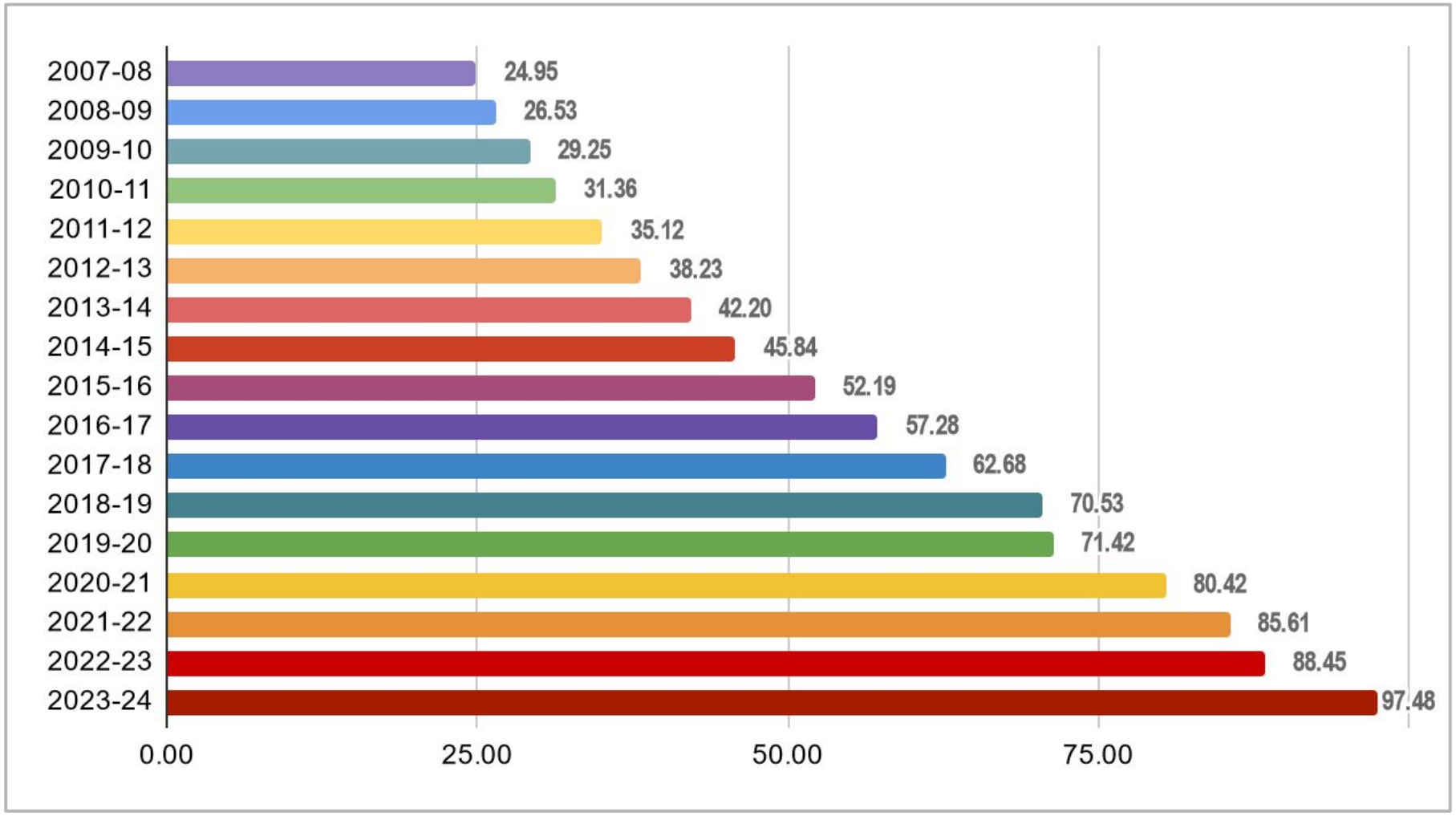
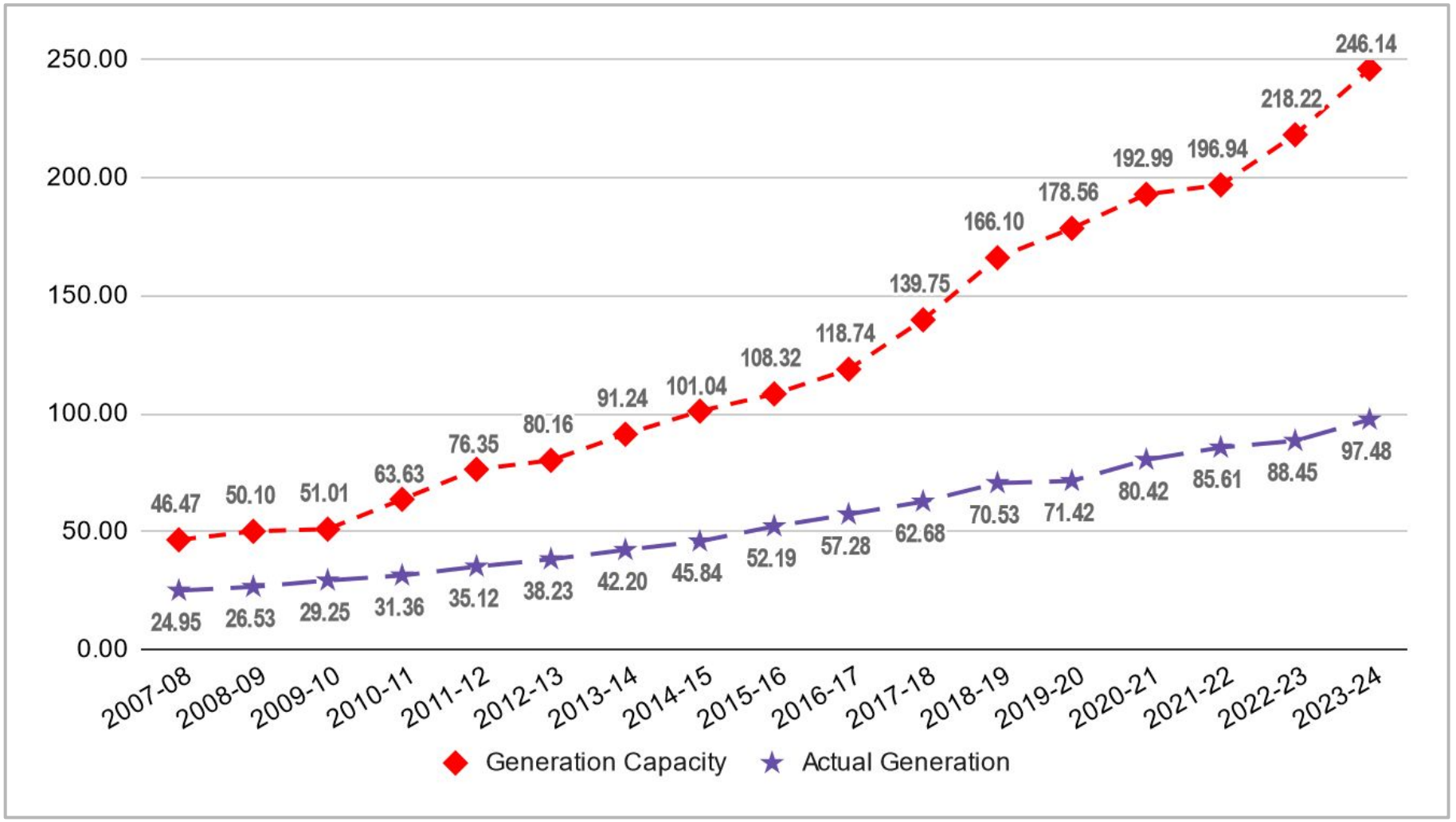
Do you know?

The actual generation depends on several things: (a) demand from consumers (b) status of the machinery, (c) fuel availability (d) transmission lines, and (e) transformers.



CAPACITY-SUPPLY GAP



The generation capacity in 2023-24 was 246.14 TWh while the actual generation was 97.48 TWh, which means 148.66 TWh of electricity was not served.

PLANT LOAD FACTOR

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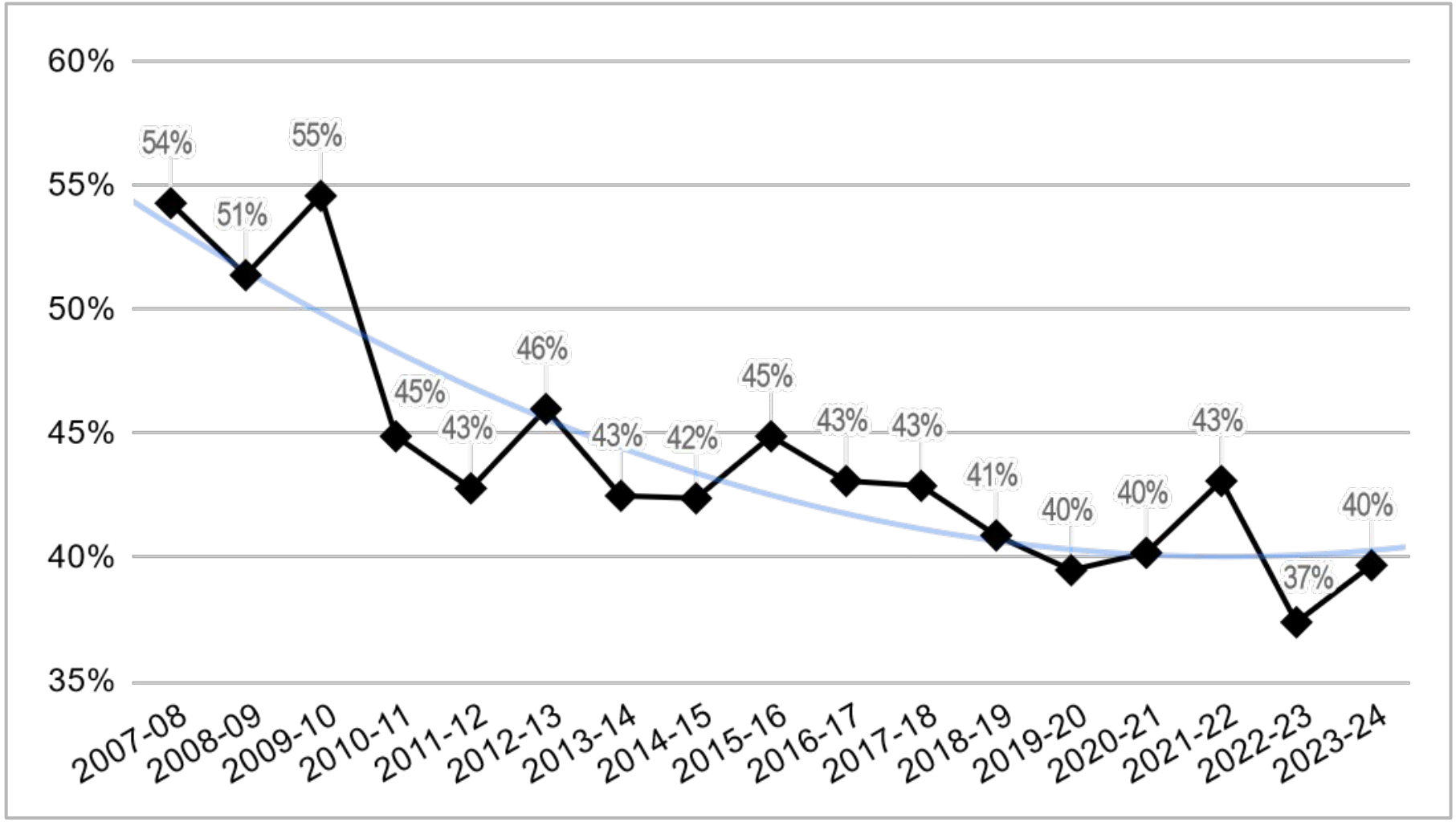
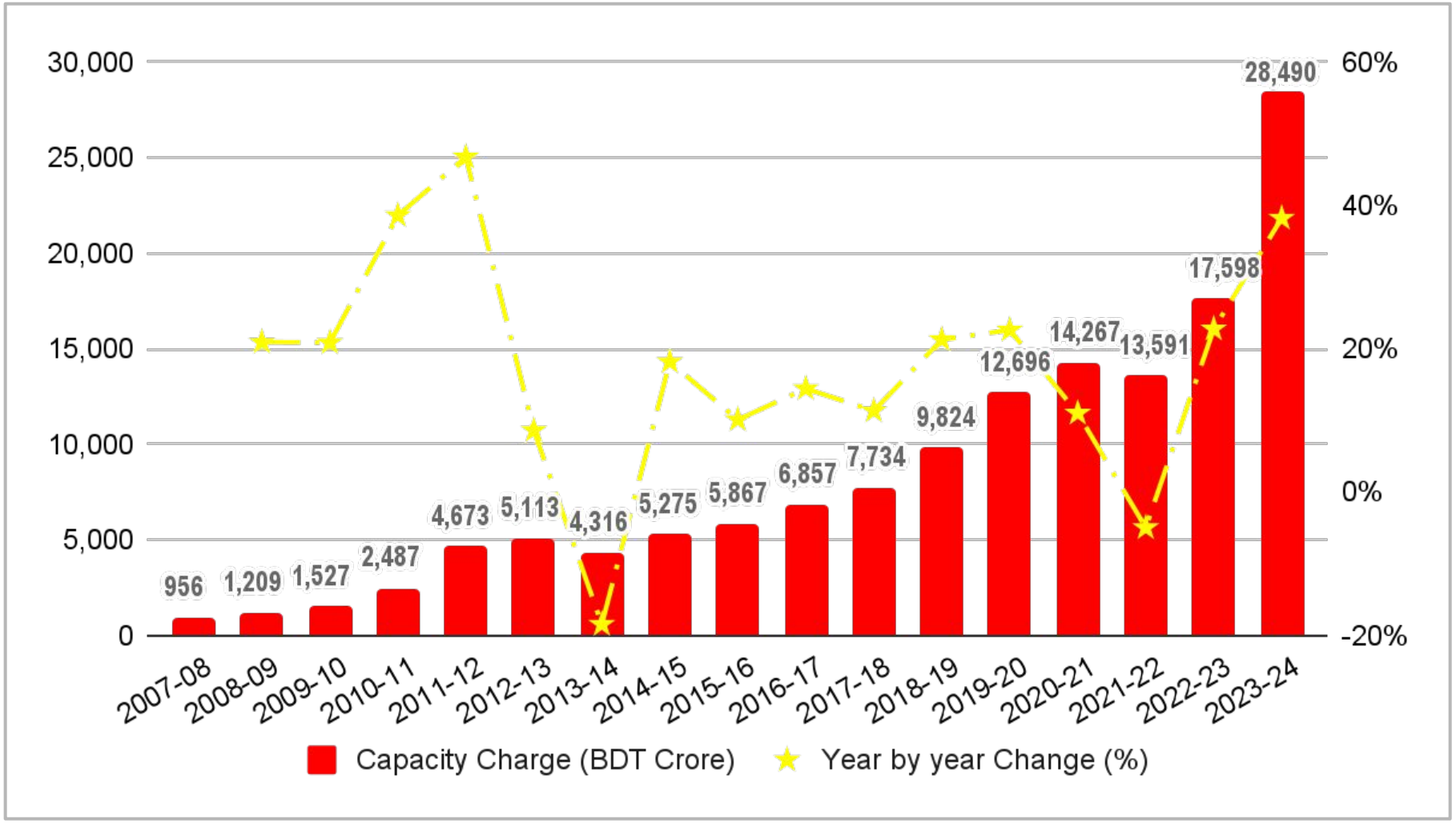
Do you know?

Overcapacity and Plant Load Factor (PLF) has a inversely proportional relationship, like the demand and supply relationship in the market economics. If installed capacity increases, the PLF decreases.



CAPACITY CHARGE



BDT 147,556 crore has been paid as capacity charge in the last 16 years. Amount of capacity charge of the power sector has been increasing at 17% per year.

BENEFICIARIES

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SUMMIT

UNITED GROUP

BANGLA TRAC

中国机械进出口（集团）有限公司
CHINA NATIONAL MACHINERY IMP. & EXP. CORP.

ORION

CONFIDENCE POWER

aggreko

APR ENERGY
Powering your progress®

sembcorp

baraka GROUP

GENERATION COST

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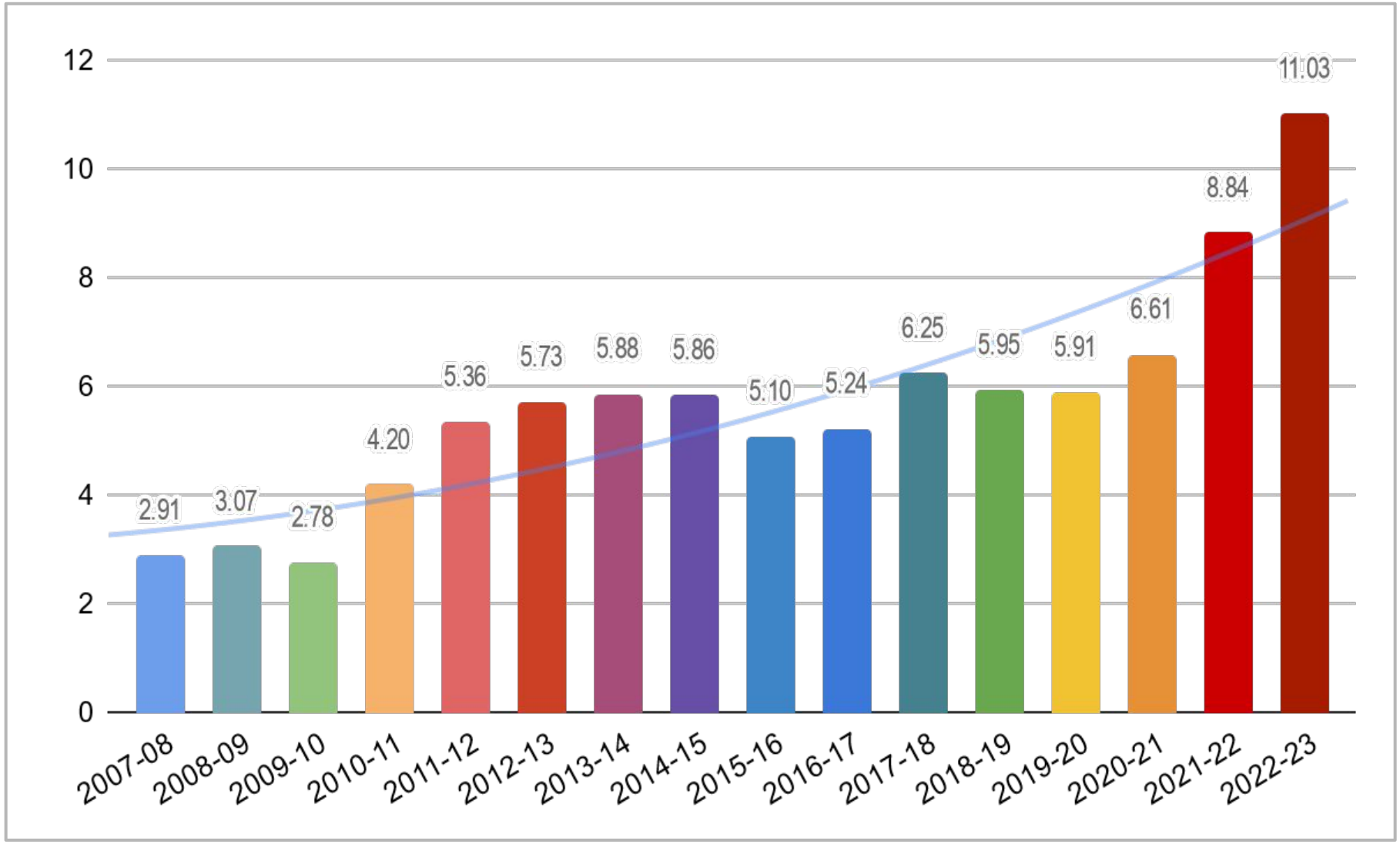
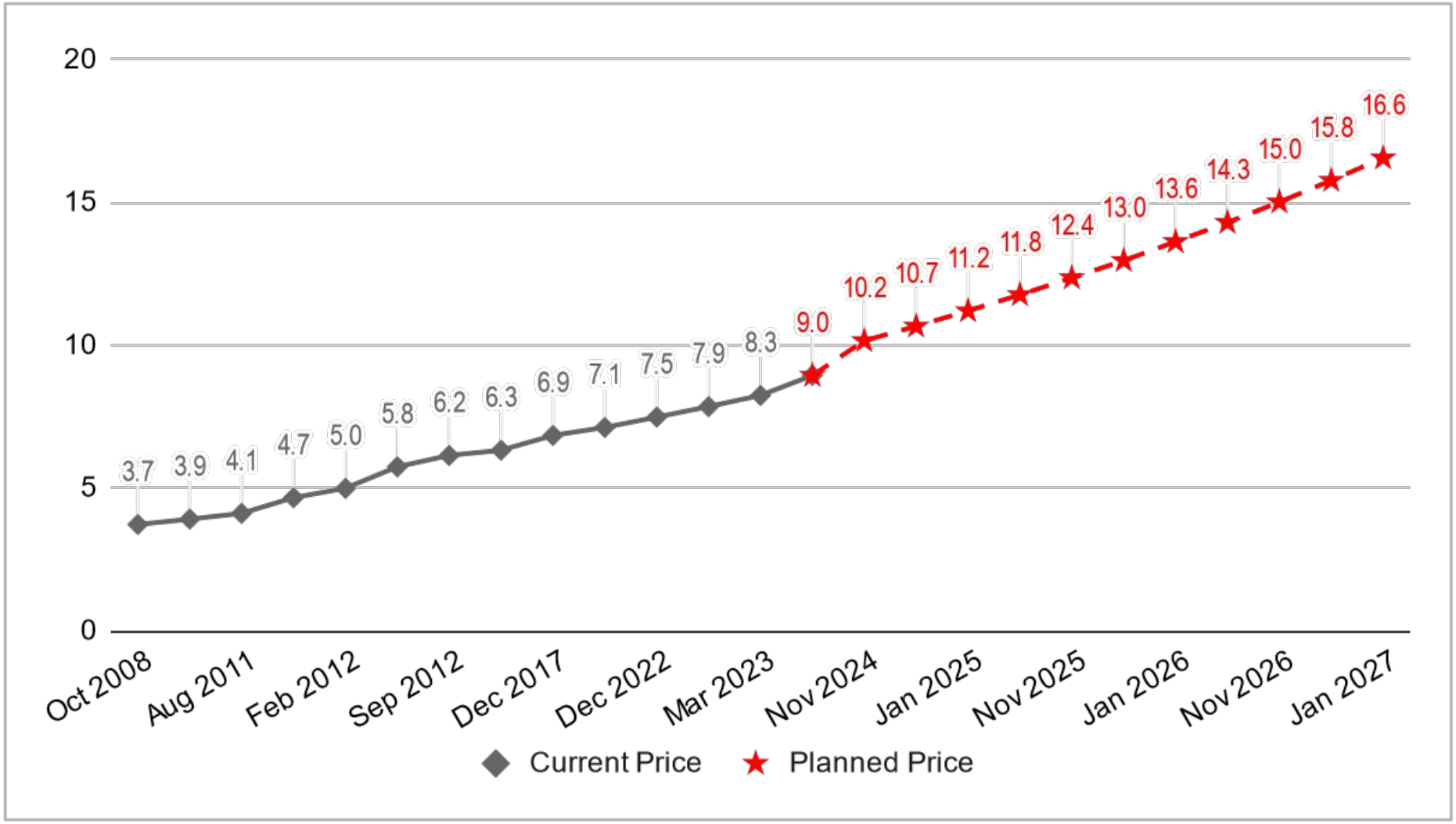
Electricity Generation Cost depends on three expenditures: (a) Fuel Cost, (b) O&M Cost, (c) Capacity Charge and (d) T&D Charge.



ELECTRICITY PRICE (RETAIL)



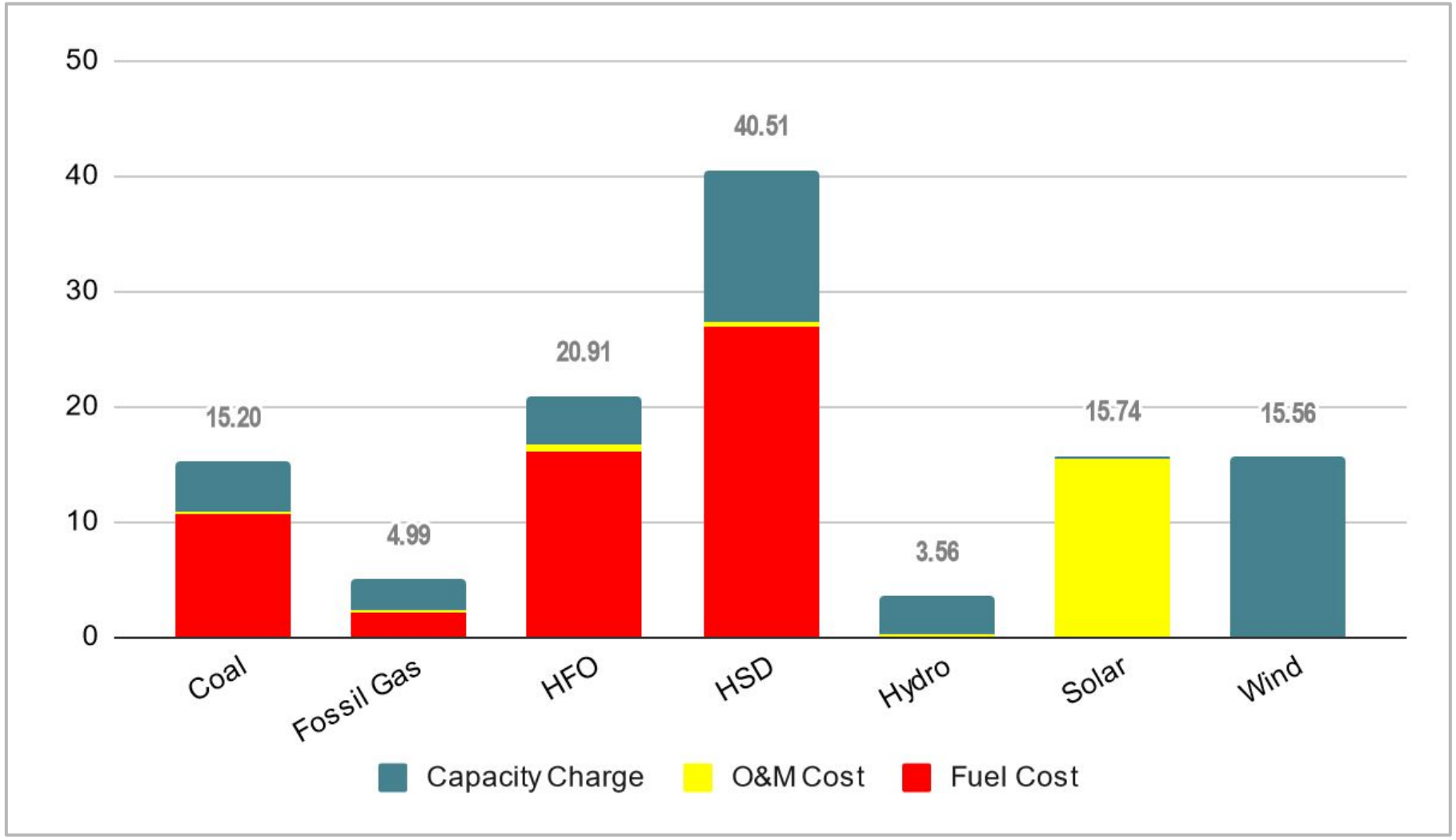
Electricity supply cost has been increasing at 6.5% per year.

FUEL COST

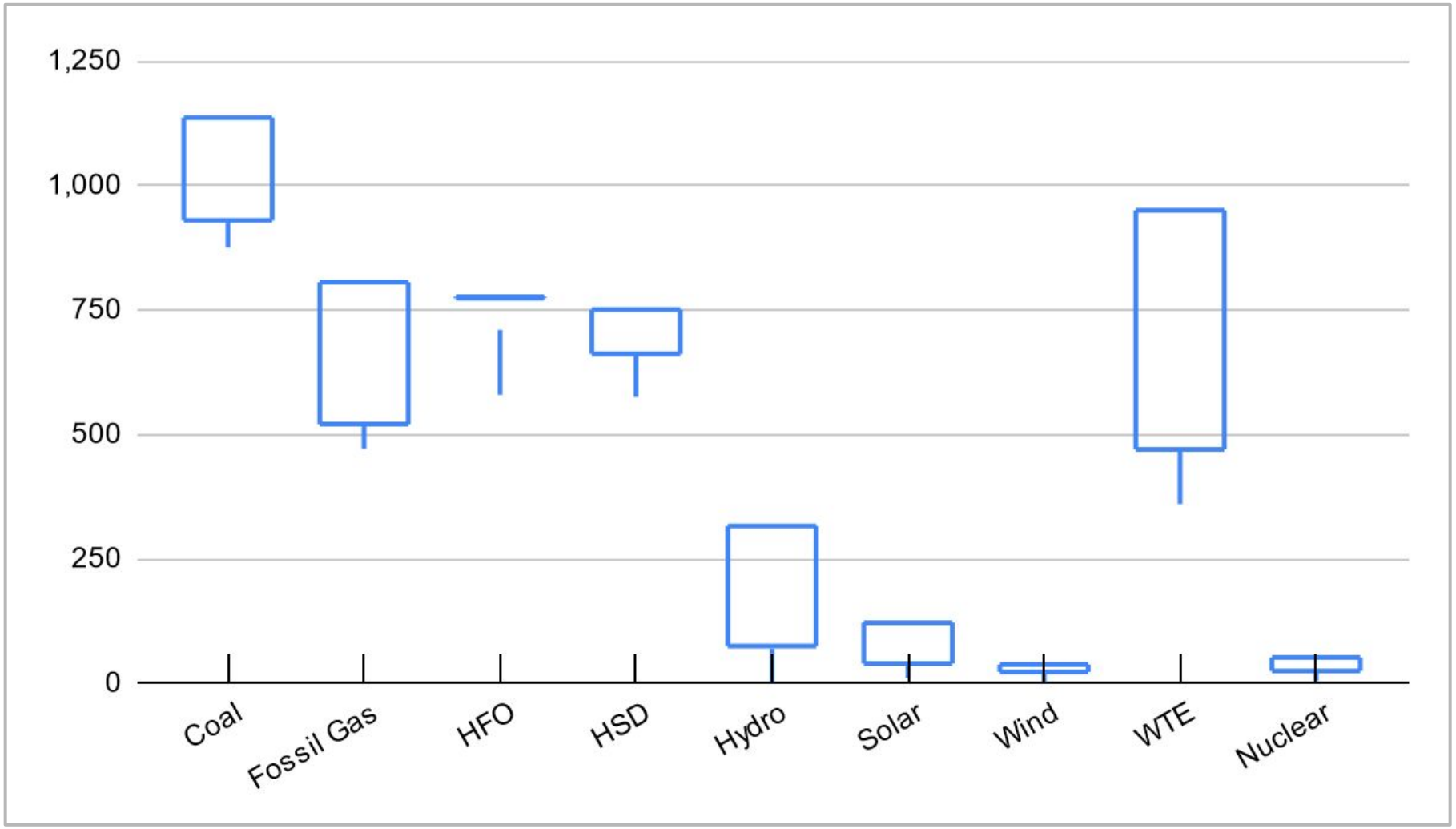
HSD is the most expensive fuel in Bangladesh (BDT 26.86), followed by HFO (BDT 16.10) and Coal (BDT 10.72).

IPP Solar is still expensive due to collusive deals, but at individual and private level, solar is the cheapest option after domestic fossil gas.

In solar and wind, there is no fuel import cost.



EMISSION



Emission and pollution is the major concerns for coal, gas, HFO and HSD.

If we consume 1 unit of electricity, coal power emits around 1 kg of CO2, while Gas emits 471 gram.

Emission from 1 kWh of electricity from coal costs BDT 3.50.

COAL POWER PLANT

Construction Period	44 Months
Construction Cost	BDT 18.20 Crore/MW
Emission	875.18 g/kWh

FOSSIL GAS POWER PLANT

Construction Period	36 Months
Construction Cost	BDT 12.10 Crore/MW
Emission	520.90 g/kWh

HFO POWER PLANT

Construction Period	30 Months
Construction Cost	BDT 9 Crore/MW
Emission	773.60 g/kWh

HSD POWER PLANT

Construction Period	30 Months
Construction Cost	BDT 9 Crore/MW
Emission	661.70 g/kWh

NUCLEAR POWER PLANT

Construction Period	48 Months
Construction Cost	BDT 55 Crore/MW
Emission	22.10 g/kWh

WIND POWER PLANT

Construction Period	24 Months
Construction Cost	BDT 17.50 Crore/MW
Emission	20.30 g/kWh

SOLAR POWER PLANT

Construction Period	13 Months
Construction Cost	BDT 11 Crore/MW
Emission	51.30 g/kWh

COMPARATIVE ANALYSIS

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Particulars	Coal	Gas	HFO	HSD	Nuclear	Solar	Wind
Construction Period (Month)	44	36	30	30	48	13	24
Expenditure (BDT Crore/MW)	18.20	12.10	9.00	9.00	55.00	11.00	17.50
Emission (g/kWh)	875.20	520.90	773.60	661.70	22.10	51.30	20.30
Lifetime (Year)	25	22	15	15	60	20	20

IMPACTS

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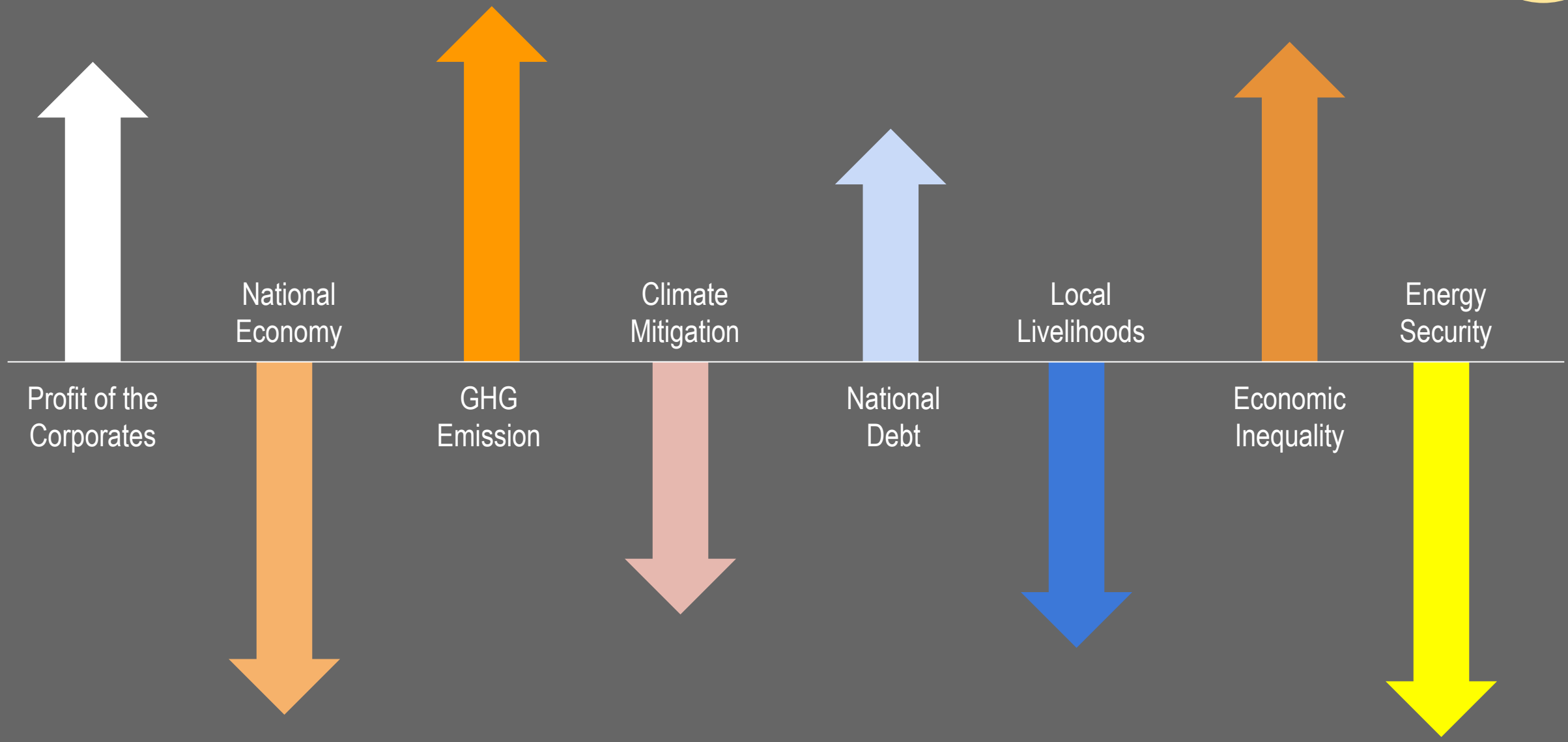

COMMITMENT & REALITY

COMMITMENTS

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100% Renewable Energy as early as possible before 2050

(CVF Declaration 2016)

We will ensure 30% Renewable Energy by 2030, 40% by 2041 and 100% by 2050.

MCPP 2021

10% Renewable Energy by 2021

(REP 2008)

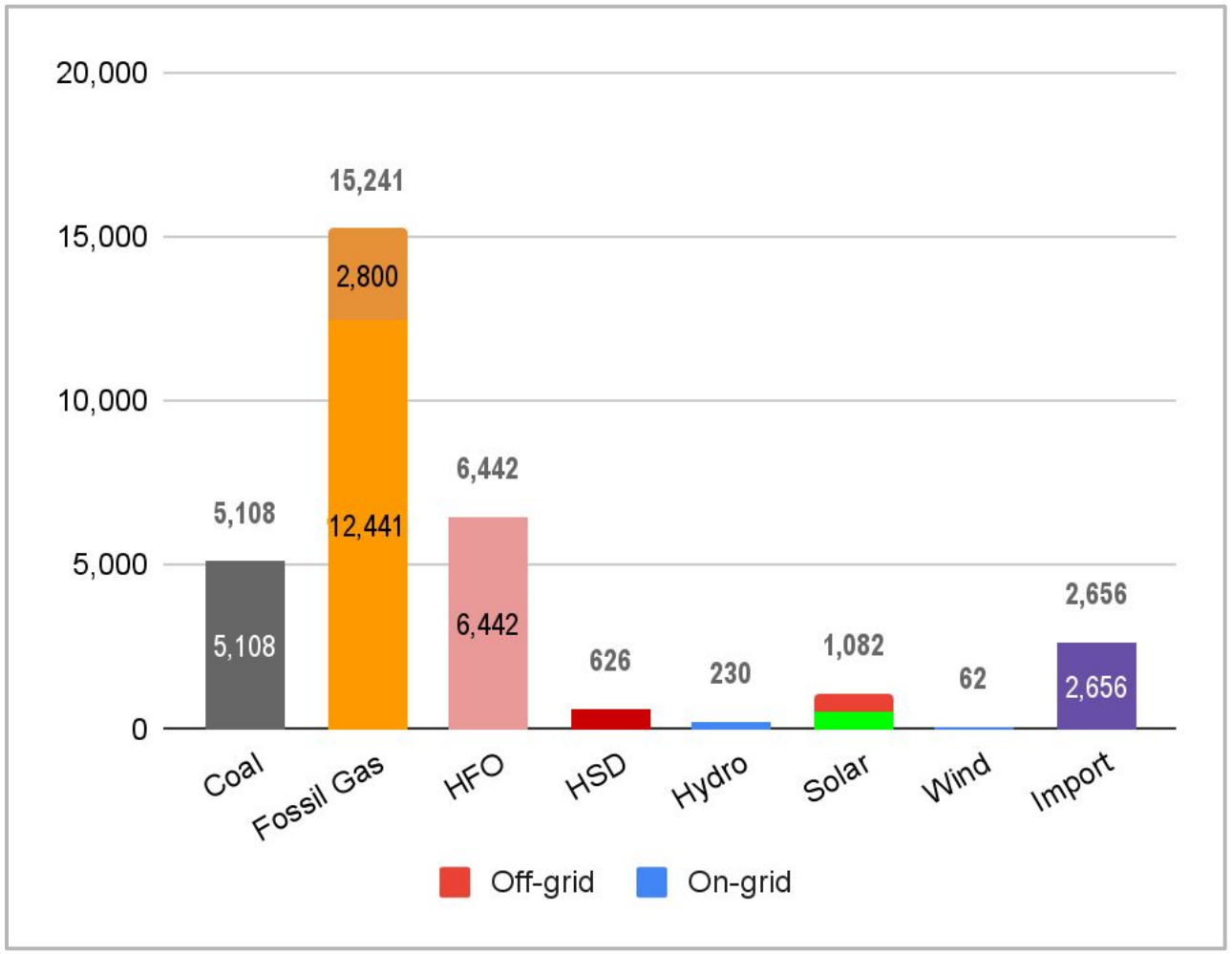
20% Renewable Energy by 2030

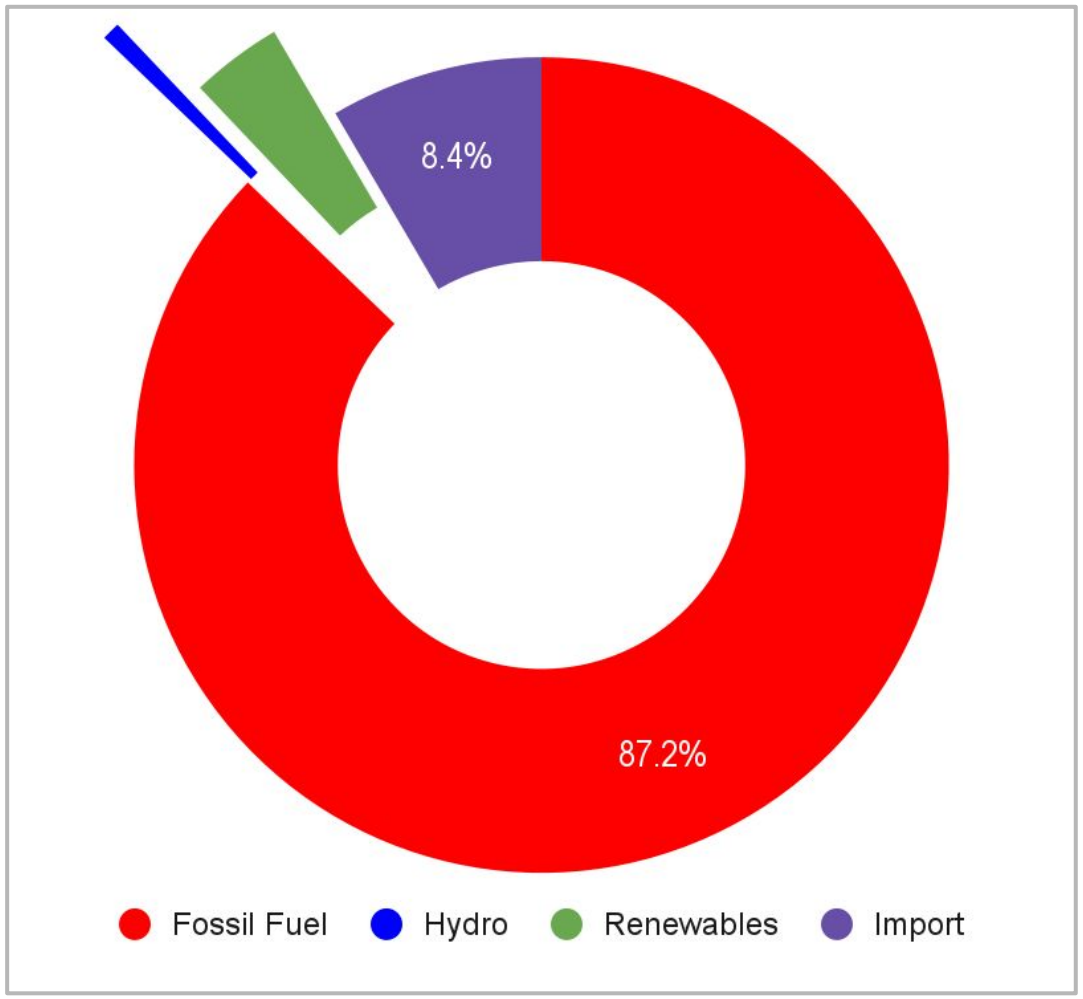
(Draft REP 2022)

10% Renewable Energy by 2025

(8FYP 2020)

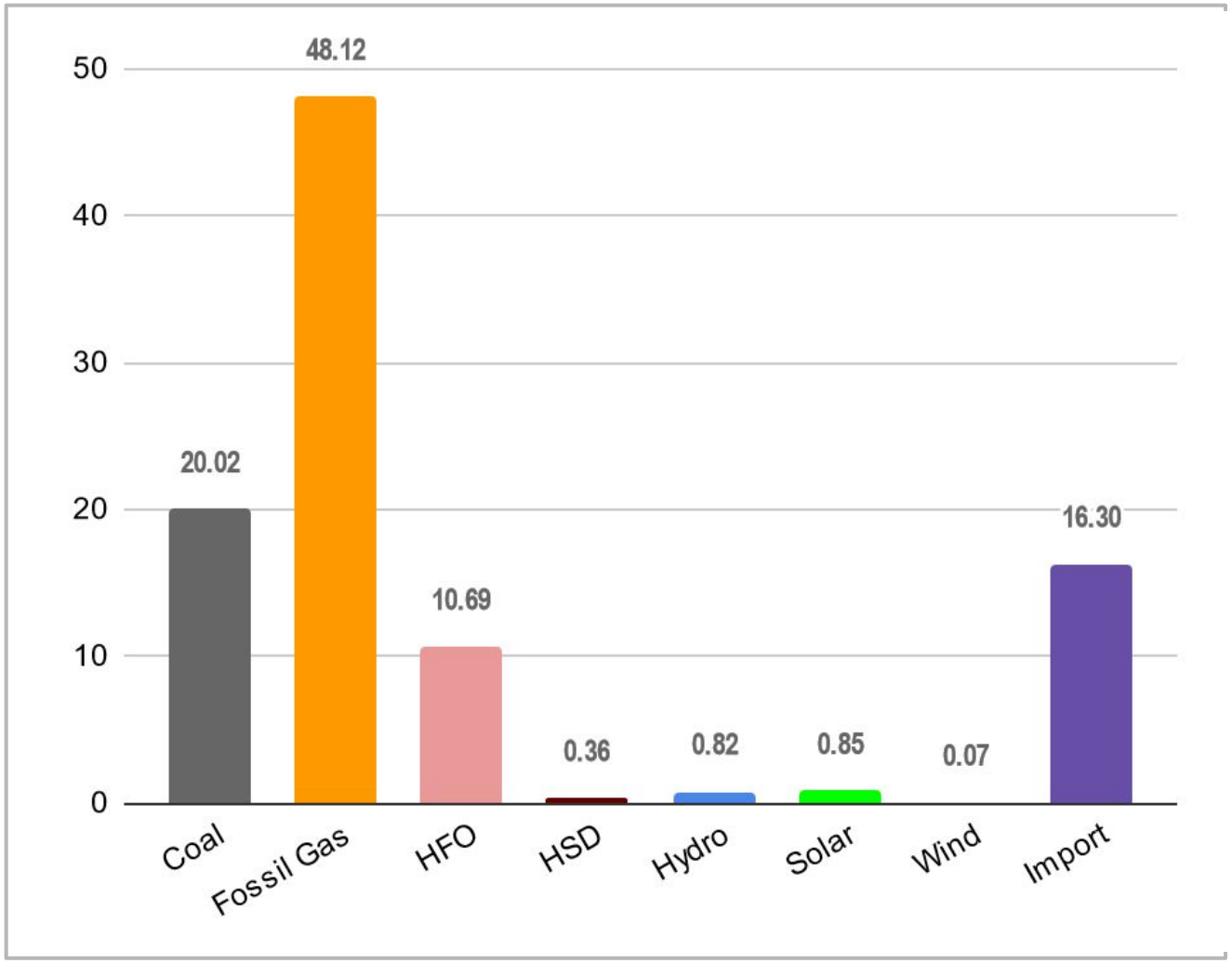
SHARE OF RE IN INSTALLED CAPACITY

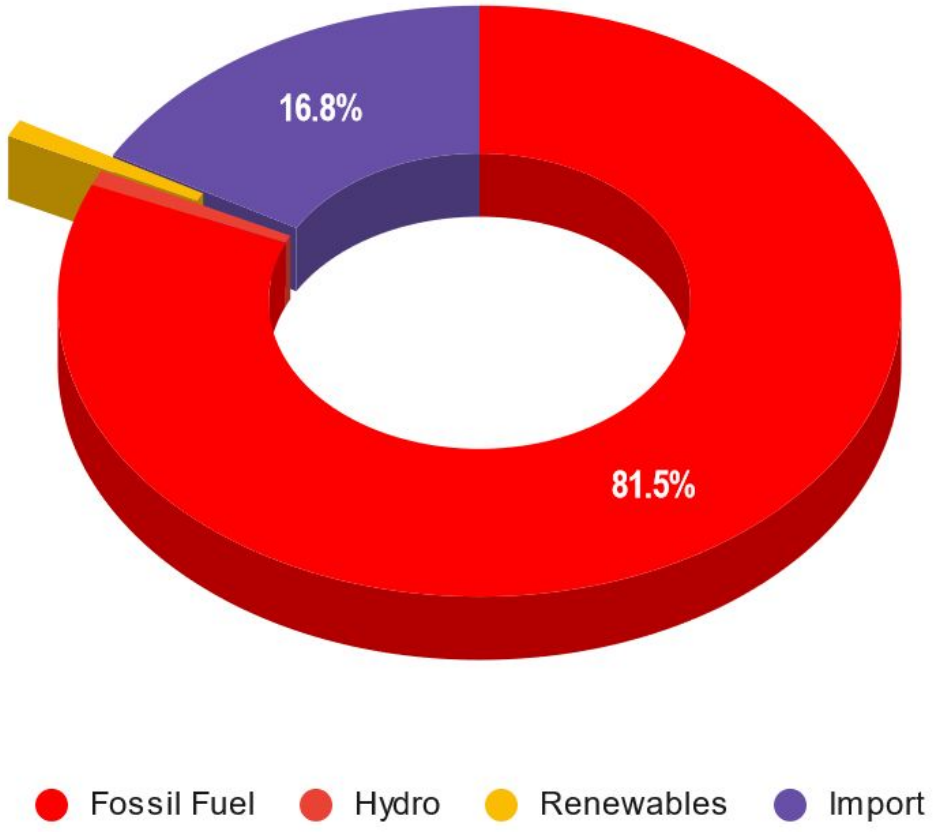




In the installed capacity, 87.2% are fossil fuels and only 3.6% are RE while 8.4% imported and 0.7% hydropower.

SHARE OF RE IN ACTUAL GENERATION





In the installed capacity, 81.5% are fossil fuels and only 0.9% are RE while 16.8% imported and 0.8% hydropower.

RE POTENTIAL

72,000 MW
PEAK HOUR DEMAND
BY 2050

IEPMP 2023

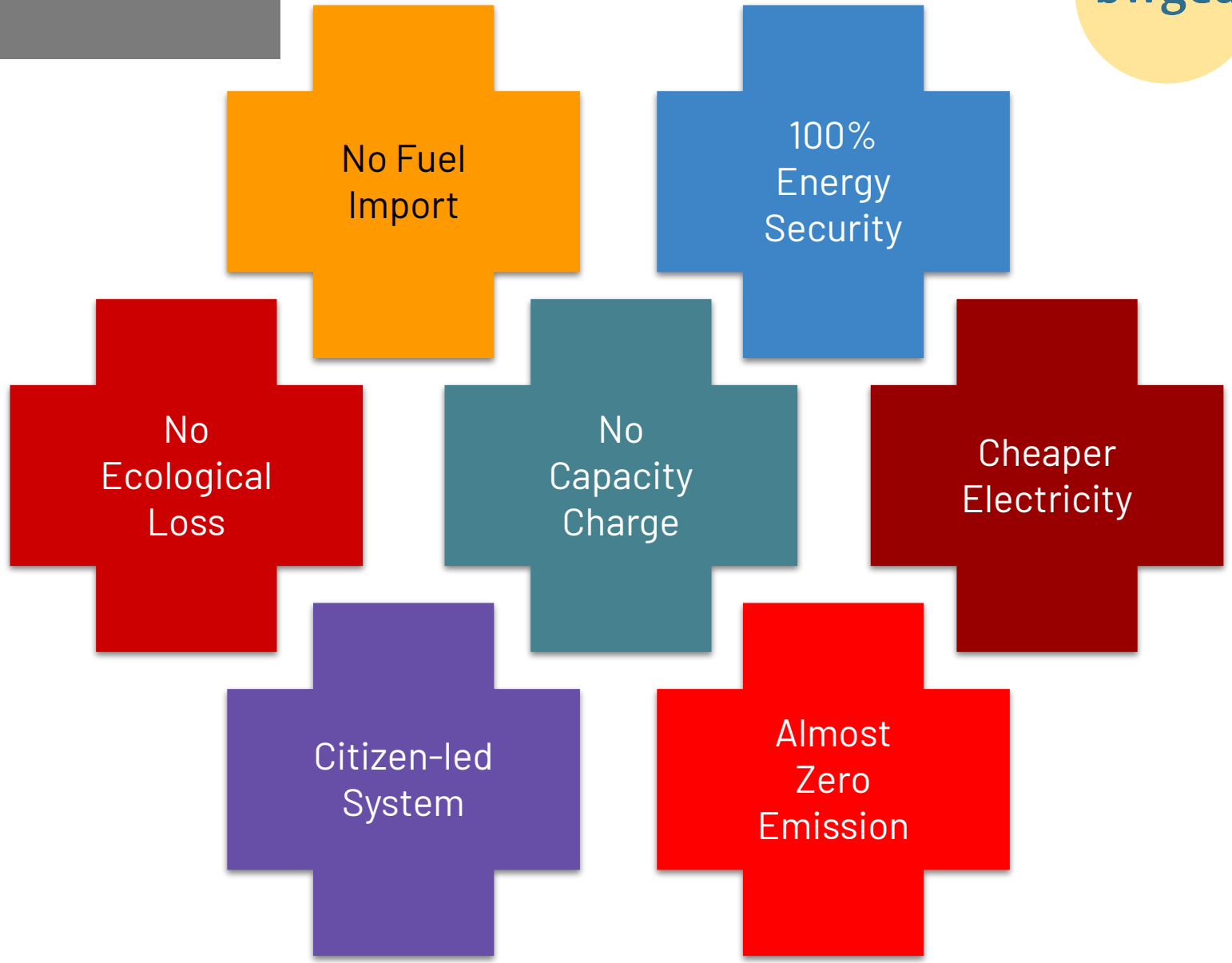
200,000 MW
SOLAR PHOTOVOLTAICS

Solar Energy Roadmap 2020
University of Sydney 2019
CLEAN 2023

30,000 MW
SOLAR PHOTOVOLTAICS

NREL 2019

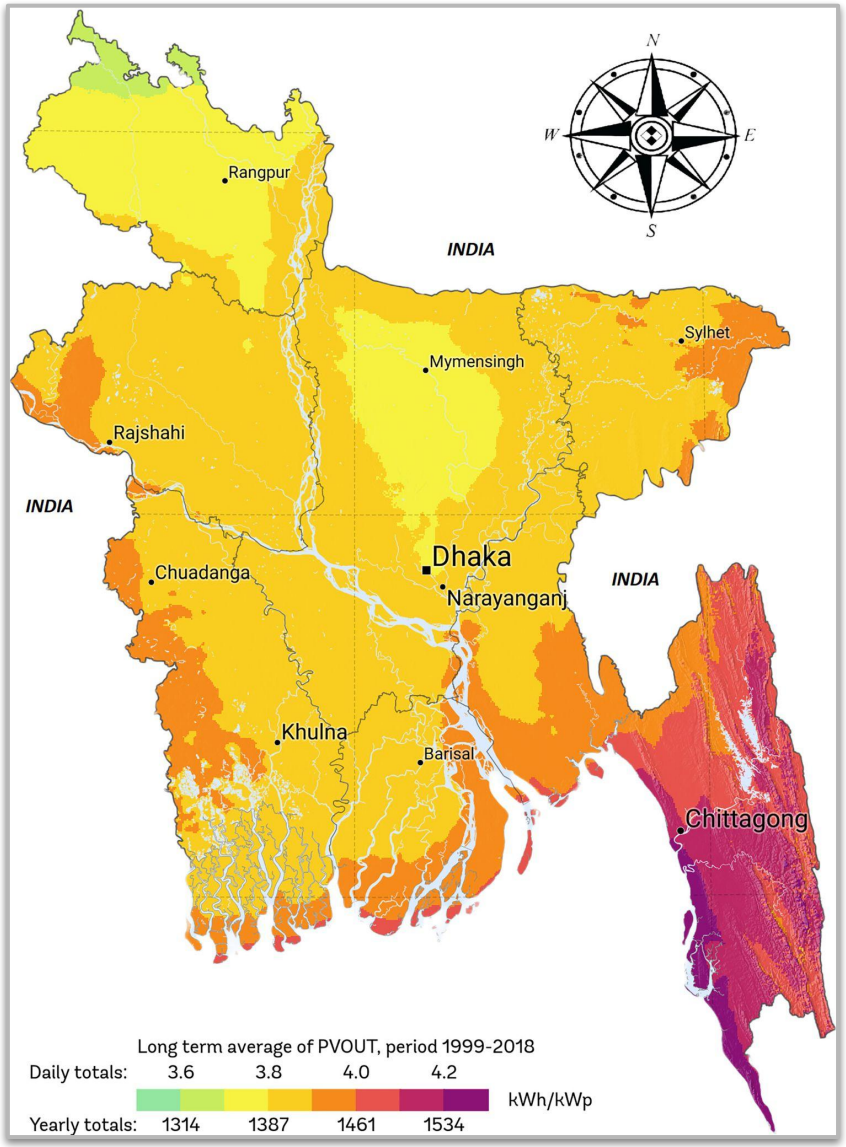
CAUSES OF SHIFTING



WAY FORWARD

JUST & EQUITABLE TRANSITION

SOLAR POWER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W
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Rangpur
INDIA
Sylhet
Mymensingh
Rajshahi
INDIA
Dhaka
Chuadanga
Narayanganj
INDIA
Khulna
Barisal
Chittagong
Long term average of PVOUT, period 1999-2018
Daily totals: 3.6 3.8 4.0 4.2
kWh/kWp
Yearly totals: 1314 1387 1461 1534

SOLAR HOME SYSTEM

Pros: a) fulfills basic energy needs, b) affordable for the low-income families.

Cons: a) energy poverty cannot be met, b) low quality materials, c) No remote data accumulation, (d) More than 60% inactive now.

ROOFTOP SOLAR SYSTEM

A 5-member family requires around 3 KW of Rooftop Solar System, which can generate 4,861 kWh of electricity annually and 405 kWh monthly.

A 3 KW RSS will cost BDT 2,25,000 without battery system, and BDT 3,65,000 with fully equipped battery system for 1 day.

The amount could be recovered within 7 years (without batter) and 10 years (with battery).

Pros: (a) 1 MW of Solar Power saves BDT 2.61 crore of Forex reserve annually, (b) Almost no emission, (c) Independent and fluctuation free electricity supply.

Cons: High expenditure (although less than fossil fuels)

Recommendation: At least 30% subsidy for individual investors. 10% additional for female investors.

GROUND-MOUNTED SOLAR

Pros: (a) Fulfilling requirements of the industrial and urban service sector, (b) Grid stability, (c) Centralized management.

Cons: (a) Land grabbing, (b) Higher LCOE as profit oriented, (c) Evacuation lines.

FLOATOVOLTAICS

Pros: Fish and electricity can be produced together, profitable for aquaculture.
Cons: Lack of human resources.

AGRIVOLTAICS

Pros: Profitable for farmers.
Cons: (a) Lack of human resources, (b) High investment

SOLAR CHARGING STATION

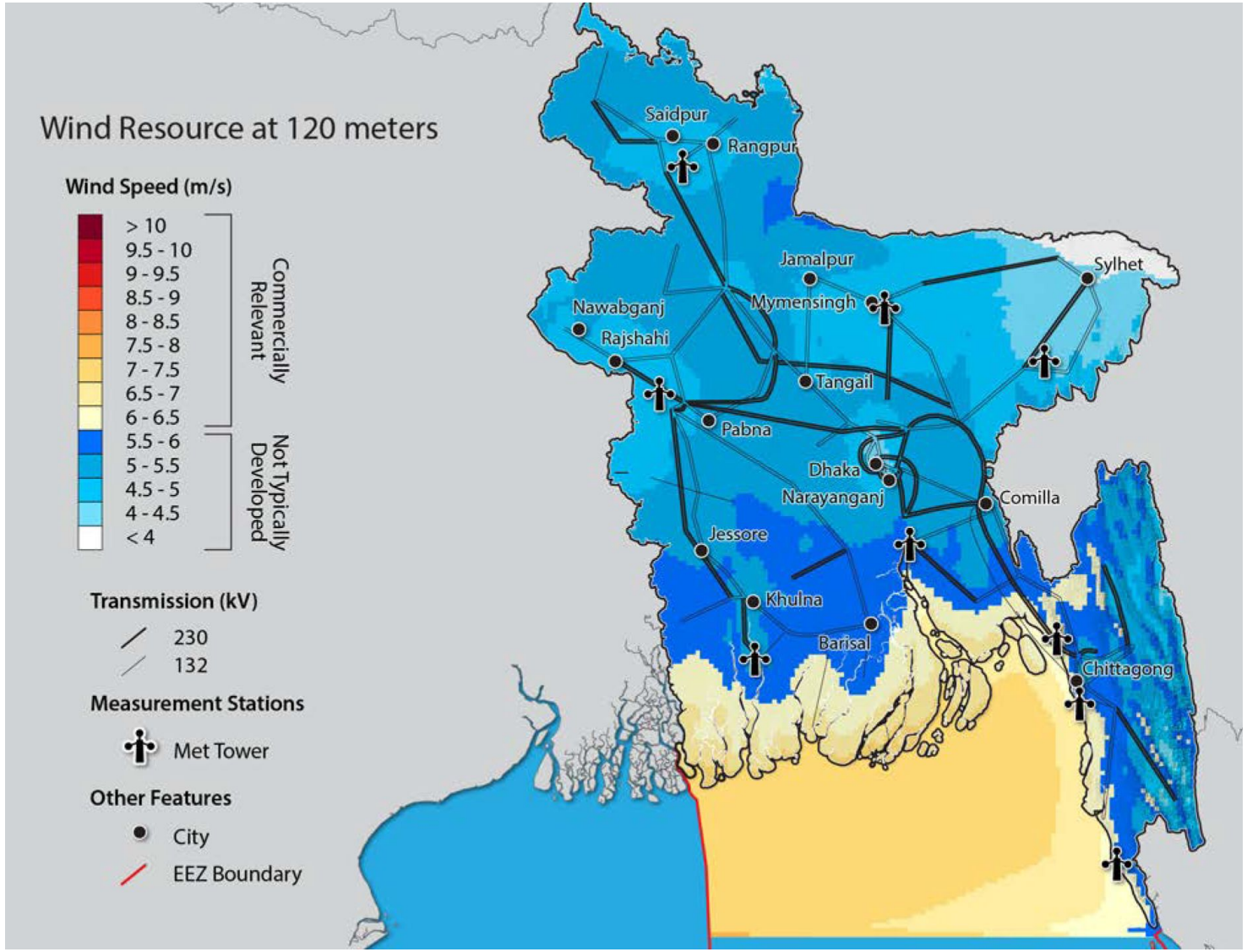
Pros: Quick greening the transport sector.
Cons: (a) Policy barriers

ROADSIDE & RAIL LINE SOLAR

Pros: Quick greening the transport sector.
Cons: (a) Policy and investment

SOLAR IRRIGATION PUMPS

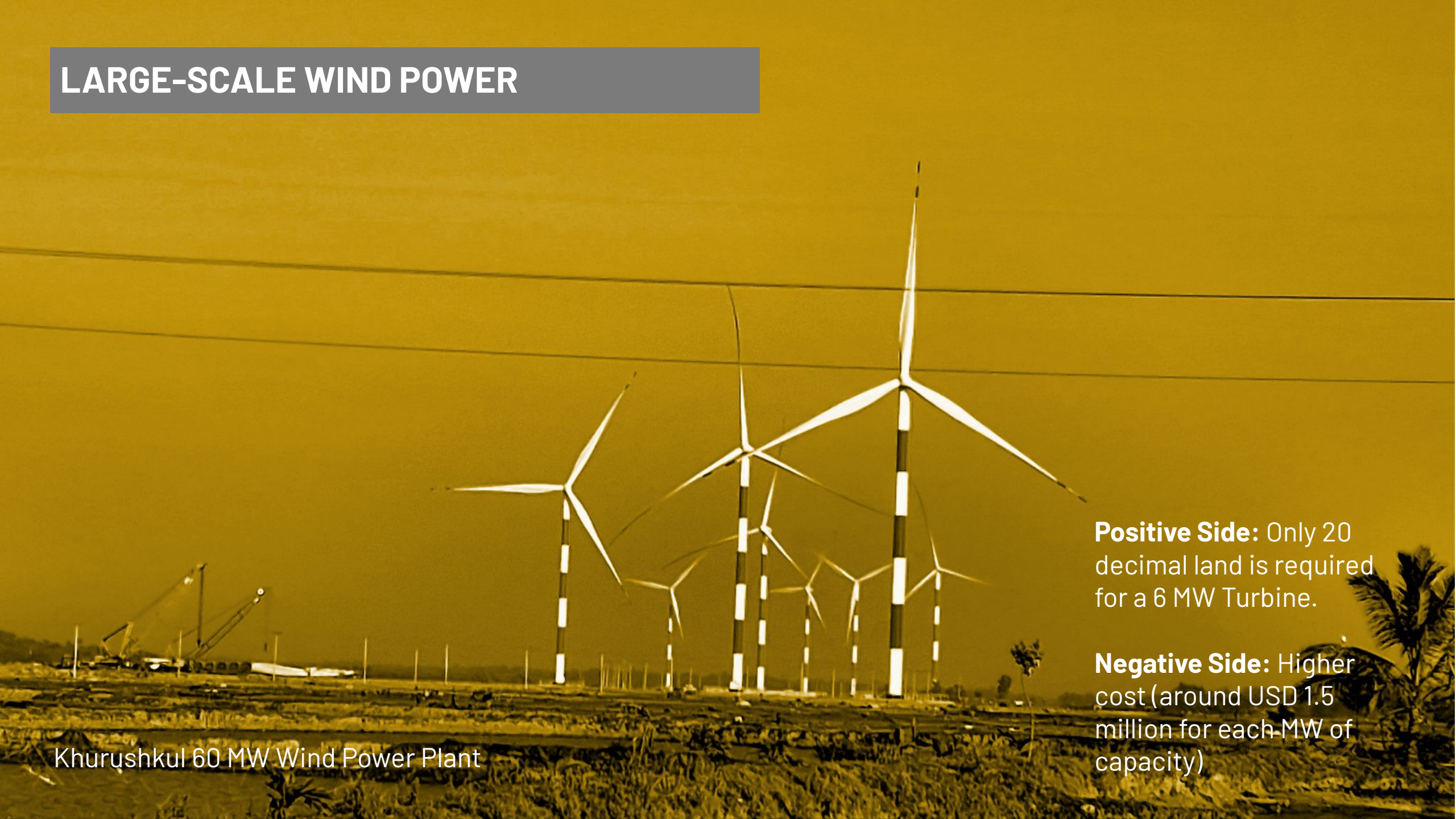
WIND POWER



According to the United States National Renewable Energy Laboratory (NREL), Bangladesh has a potential of installing 30,000 MW Wind Power in the Country if the turbines set as high as 120 meters.

Currently, the LCOE of wind power is BDT 18-20 per kWh, but it could be reduced to USD 10-12 easily.

LARGE-SCALE WIND POWER



Khurushkul 60 MW Wind Power Plant

Positive Side: Only 20 decimal land is required for a 6 MW Turbine.

Negative Side: Higher cost (around USD 1.5 million for each MW of capacity)

ROOFTOP WIND POWER

Positive Side: No land required. Near 30% PLF (2,628 kWh per KW)

Negative Side: Higher cost (around 1.5 lakh per KW.

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WHAT TO DO

RECOMMENDATIONS

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POLICY

1. A long-term **Energy Plan** for paradigm shift from fossil fuel to renewables based on a **Energy Transition** Policy.
2. Formulation and endorsement of a **Renewable Energy Policy (REP)** focusing to achieve 30% RE by 2030, 40% by 2041 and 100% by 2050.
3. Formation of a **Renewable Energy Division** (RED) besides Power Division.
4. Adequate **Budget Allocation** for renewables to achieve the targets.
5. Cancelation of the **Quick Supply of Energy and Electricity Act** to ensure level playing field for all investors.

OPERATION

1. Establish **district-level offices** of SREDA and DOE so that the small investors can reach financial and technical resources easily.
2. Provide 50% (BDT 35,000) subsidy for **Solar Irrigation Pumps** (SIP) directly to the entrepreneurs.
3. Provide at least 25% (BDT 20,000) subsidy for per KW of **Rooftop Solar** at individual stage. Additional 10% for female investors.
4. **Finance and Capacity Building** through Department of Cooperative, Social Services, Youth and Women Affairs.
5. **Long-term land leasing policy** to protect the communities.

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THANK YOU

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