

Expert Group Discussion

Presentation on

The Power Sector in the Upcoming 8th Five Year Plan *Lessons from the 7th FYP*



Presentation by

Dr Khondaker Golam Moazzem

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Study team

Dr Khondaker Golam Moazzem, Research Director, CPD

ASM Shamim Alam Shibly, Research Associate, CPD

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1. Introduction and Objectives

1. Introduction and Objectives

- The discussion on different issues related to the Eighth Five Year Plan (8th FYP) has been currently ongoing
 - Power and energy sector is an important area of focus in the 8th FYP
- The 8th FYP is expected to take into cognisance the experiences and lessons learnt from the 7th FYP (FY2016–20)
 - The power sector has experienced successes and challenges during the 7th FYP period
- Various targets and strategies set for the power sector under the 8th FYP need to take into cognisance the challenges concerning national and international commitments and targets
 - Challenges of economic recovery and rebound during the post-COVID period
 - Preparation for the post-graduation challenges and opportunities from the LDC group by 2024
 - Maintaining the pace of implementation of the targets set forth under Goal 7 of SDGs to meet the milestones of 2025 and 2030
 - Implementation of the commitments made as President of the Climate Vulnerable Forum (CVF) for two year term (2020-2022)
 - Commitment for undertaking visible initiatives against global warming under NDCs as part of the Paris Agreement (2050)
- Present study examines the level of achievements in the power sector regarding the targets set forth in the 7th FYP and understands the new issues and challenges
 - Put forward suggestions for the 8th FYP

2. Current State of the Power Sector of Bangladesh

2. Current State of the Power Sector of Bangladesh

- The power sector stands as a success case of infrastructure development under the present government
 - Visible progress has been made in terms of ensuring access to electricity across the country
 - This is reflected in terms of setting up power plants, increasing power generation capacity, transmission and distribution lines, number of consumers, irrigation connection, number of beneficiaries and p/c power generation
- Overall progress since 2009 are between as low as 54.7% (in case of transmission line and number of irrigation connections) to as high as 411% (number of power plants)

Progress of the Power Sector since 2009

Indicators	Beginning of 2009	October, 2020	Progress (%)
No of Power plant	27	138	(+) 411
Power generation capacity (grid based & including power import), MW	4942	20383 (31 October 2020)	(+) 312.4
Maximum power generation	4130 (17 Sept 2007)	12893 (29 May 2019)	(+) 212.2
Transmission line (circuit km)	8000	12379	(+) 54.7
Grid substation capacity	15870	47304	(+) 198.1
Distribution line (km)	260000	588000	(+) 126.2
Number of electricity consumers	10800000	38700000	(+) 258.3
Irrigation connection number	234000	362000	(+) 54.7
Distribution system loss	14.33%	8.73% (2019-20)	(-) 5.6
Beneficiary of electricity (incl. renewable energy)	47%	98%	(+) 51
Per capita power generation/kwh (including RE & captive power)	220	512 (2019-20)	(+) 132.7

2. Current State of the Power Sector of Bangladesh

- Such improvement in the power infrastructure has contributed to enhance the overall ranking of country's infrastructure in the global competitiveness during the FYP period
- The country ranking by the end of 6th FYP (2015) in quality of infrastructure and quality of electricity supply were 127 and 124 respectively
 - Both of these indicators made positive changes during 7th FYP period: to 114 and 68 respectively in 2019
- Bangladesh's rank in quality of electricity has surpassed many comparator countries including India, Pakistan and Cambodia during this period

Ranking of Bangladesh and Comparator Countries

Country	Overall infrastructure		Electricity supply quality (% of output)	
	Rank in 2015	Rank in 2019	Rank in 2015	Rank in 2019
Bangladesh	127	114	124	68
India	87	70	103	108
China	46	36	56	18
Cambodia	107	106	110	89
Myanmar	137	-	117	-
Pakistan	119	105	133	99
Sri Lanka	75	61	74	39
Thailand	48	71	58	31

3. Targets and Achievements during 7th FYP Period

3. Targets and Achievements during 7th FYP Period

Targets (2016-2021)

- 7th FYP had targeted to generate a total of 12,584 MW of electricity
 - Of which, 61% was supposed to be generated by the public sector and 39% by the private sector
- Gas and coal were the main sources of energy-mix targeted to generate electricity
 - Gas (32%), coal (36.2%), gas/LNG (5.9%) and import (4.8%)
- Renewable energy did not get any priority in the planned energy mix (0.8%)
- Targets on expansion of distribution lines, constructions of sub-stations, establishment of pre-paid meters and reductions of system loss etc., had been set

FY	Public sector (MW)	Private Sector (MW)	Total (MW)
2016	937	334	1271
2017	2599	738	3337
2018	1076	867	1943
2019	1320	1716	3036
2020	1750	1247	2997
Total	7682	4902	12584

Source: Power Division, Ministry of Power, Energy and Mineral Resources

Year	2016	2017	2018	2019	2020	Total
Gas	973	2401	657			4031 (32.0)
Gas/LNG					1750	1750 (13.9)
Duel Fuel	75	395	512			982 (7.8)
HFO	55	511				566(4.5)
Coal			274	3036	1247	4557 (36.2)
Import	100		500			600 (4.8)
Renewable	68	30				98 (0.8)
Total	1271	3337	1943	3036	2997	12584 (100.0)

Distribution Activity	BPDB	DPDC	DESC	WZPDC
Expansion/Construction distribution line (Km) of electric	14200	1750	1050	4618
Cons/ Modernize of sub-station (No.)	115	60	37	34
New consumer connection (No.)	14,00,000	4,26,000	4,26,000	6,00,000
Pre-paid meter (No.)	39,00,000	12,00,000	10,50,000	11,31,000
System Loss (%)	9.8	9	8	9.5
Customer service (call Centre) (No.)	57	1	1	446

3. Targets and Achievements during 7th FYP Period

Targets (2016-2021)

- A total of Tk.1461 billion of public investment had been projected to be required for implementing power sector projects
 - Of which, Tk.848 billion (58%) for generation, Tk.404 billion (27.6%) for transmission, Tk.209 billion (14.3%) for distribution and Tk147 billion (10.1%) for primary energy
- Against the overall financing requirement, 53% of total finance had been planned to be allocated under ADP allocation in the 7th FYP

Power Sector Financing Requirements (Taka billion FY2016 Prices)								
	Generation (Public)	Generation (Private)	Total Generation	Transmission	Distribution	Primary Energy	Total Public (other than primary energy)	Percent of GDP
FY2016	108	40	148	81	42	23	254	1.6
FY2017	259	106	365	81	42	28	382	2.4
FY2018	103	30	133	81	42	30	226	1.4
FY2019	195	347	542	81	42	32	318	1.7
FY2020	183	284	467	81	42	34	306	1.6
Total	848	807	1655	404	209	147	1461	8.7

Seventh Plan ADP Allocations for Power and Energy Sector (Taka billion)						
Ministry	FY2016	FY2017	FY2018	FY2019	FY2020	Total
Energy & Mineral Resources Division	19.9	32.6	36.7	40.8	45.7	175.7
Power Division	164.9	159	153.2	170.2	190.4	837.7
Total	184.8	191.5	189.9	211.1	236.1	1013.4

3. Targets and Achievements during 7th FYP Period

Achievements

- About 80% of the targeted power generation capacity has been installed during 7th FYP
 - Import of electricity from India has crossed the target
- The meagre target for power generation through renewable energy was not achieved
- Despite below the targeted installed capacity, maximum electricity generation was 62.5%
 - An excess generation capacity of 37.5% which has increased over the years
- Inappropriate target setting for demand for electricity caused a high amount of excess reserve
 - If the targeted installed capacity was fully realised, the excess reserve would be as high as 55.6% in 2020

Year wise plant installation capacity					
Fiscal Year	Targets	Achievements			% of targets achieved
		Capacity (MW)	Power Import (MW)	Total	
2016	1271	1132	100	1232	96.9
2017	3337	1187	60	1247	37.4
2018	1943	3763	500	4263	219.4
2019	3036	2404	0	2404	79.2
2020	2997	915	0	915	30.5
Total	12584	9401	660	10061	79.9

Year-wise power generation capacity			
Fiscal Year	Total Installed Capacity (cumulative)	Maximum power generation	% of reserve capacity
2016	12365	9036	26.9
2017	13555	9479	30.1
2018	15,953	10958	31.3
2019	18961	12893	32.0
2020	20383	12738	37.5

Distribution of installed capacity		
Owner ship	Installed generation capacity (MW)	Share (%)
Govt	9717	48
Private	8884	43
PPP	622	3
Import	1160	6
Total	20383	100

3. Targets and Achievements during 7th FYP Period

- The energy mix in the power generation **did not achieve the targeted composition** thanks to failure to implement coal-based power projects
 - Coal was supposed to contribute 36.2% of total installed capacity during the 7th FYP period
 - Energy mix was highly **dominated by fossil-fuels including gas and LNG (71.8%)** followed by liquid fuel (13.4%)
- Overall target for reduction of **system loss was not achieved**
 - **Distribution losses** have reduced within the targeted level
 - But **transmission loss** is still at a high level

Energy Mix for Power Generation					
Fiscal Year	Gas	Coal	Liquid fuel based	Hydro	Import
2016	68.63	1.62	20.57	1.84	7.32
2017	66.44	1.76	21.96	1.71	8.13
2018	63.31	2.7	24.72	1.63	7.63
2019	68.49	1.74	19.07	1.03	9.62
2020	71.8	4.2	13.4	1.2	9.3

Source: Power Division; Annual Report 2019-20; P-31

Transmission & distribution and distributional System Loss		
Fiscal Year	Distribution Loss	Transmission & distribution loss (total loss)
2016	10.96	13.1
2017	9.98	12.19
2018	9.6	11.87
2019	9.35	11.96
2020	8.73	11.23

Source: Power Division; Annual Report 2019-20; P-46

3. Targets and Achievements during 7th FYP Period

- The power and energy sector has received **funding beyond the targeted ADP amount**
 - About 107.6% of targeted ADP fund had been received by the sector
 - This covered **84% of the targeted financing requirement** of the sector
 - Power division in **most of the years of the 7th FYP has received significantly higher amount of budget** compared to the targeted levels
 - Energy and mineral resources division received less** budget compared to their targeted budget in most of the years, although their share is only 8.5% of the total budget of the ministry

Financing Power Sector through ADP during 7th FYP Period

Year	Energy & Mineral Resources Division			Power Division			Total		
	Target	Actual	% of total allocation spent	Target	Actual	% of total allocation spent	Target	Actual	% of total allocation spent
FY2016	19.9	11.0	55.3	164.9	152.7	92.6	184.8	163.8	88.6
FY2017	34.5	11.5	33.3	168.5	134.7	79.9	203.0	146.2	72.0
FY2018	41.1	10.1	24.6	171.5	275.5	160.6	212.6	285.6	134.3
FY2019	48.2	47.4	98.3	201.0	324.5	161.4	249.2	371.9	149.2
FY2020	56.6	24.8	43.8	235.9	236.7	100.3	292.5	261.5	89.4
Total	200.3	104.8	52.3	941.8	1124.2	119.36	1142.1	1229.0	107.6

3. Targets and Achievements during 7th FYP Period

Experts' Comments on Overall Strategies

Targets	Progress (Experts' Comments)
<p>Total generation during the Seventh Plan period (FY2016-FY2020) will increase by 12,584 MW (excluding captive power)</p>	<ul style="list-style-type: none"> • This was very ambitious due to the high projection of power demand based on economic growth for which a corresponding huge increase in industrial growth was predicted which was not materialized. Electricity growth has been increased due to the residential sector • If it had been achieved, it would have been worse for the economy.
<p>A major transformation is expected in the fuel source of power generation from domestic gas and imported liquid fuel to imported coal and LNG</p>	<ul style="list-style-type: none"> • Gas shortages are compensated by oil based power plant. Coal import has also been started. • LNG has not been used for power generation, It is being used for industrial purposes. A minimal portion is getting mixed for power generation • Why should we transform from fossil-to-fossil fuel based generation when we can implement renewable energy based generation?
<p>The reliance on gas and liquid fuel continues until FY2018.</p>	<ul style="list-style-type: none"> • Reliance on gas and liquid fuel has been continuing. However, now is the time to plan based on renewable energy. 8FYP & PSMP should be sorted how this breathing space can be used. • Gas is required for the economy which can be explored but oil should be phased out.
<p>The projected share of coal goes up from only 3 percent at the end of the Sixth Plan (FY2015) to 21 percent by the end of the Seventh Plan and subsequently to 50 percent by FY2030</p>	<ul style="list-style-type: none"> • This was not realized. Government has decided to abandon using coal for power generation (other than in 3 plants) • Least cost generation sources should be followed • The plan has been pushed back which is commendable and good for us not to achieve this goal as demand for electricity is low.
<p>The share of nuclear power increases significantly from zero in FY2015 to 8 percent by the end of the Seventh Plan and to 10 percent by 2030.</p>	<ul style="list-style-type: none"> • This was not realized during 7th FYP as the commencement date is in 2023. • Once the 2nd phase is completed, 10% target can be achieved by 2030. It is still in 1st phase.

3. Targets and Achievements during 7th FYP Period

Experts' Comments on Overall Strategies

Targets	Progress (Experts' Comments)
<p>First LNG-based power plant is expected to be commissioned in FY2020</p>	<ul style="list-style-type: none"> • No LNG based power plant has established yet
<p>Further increases are planned for imported power and some small increments are expected from renewable energy (solar and wind power).</p>	<ul style="list-style-type: none"> • Imported electricity is happened as per plan. • No success in wind. Very small success in solar. • Within next 2-3 months, almost 100MW will be added in solar when the total capacity will be increased to 150MW (current capacity 50MW).
<p>The Seventh Plan should make strong efforts to make progress in areas where the Sixth Plan was deficient. These include reduction of cost of electricity production and continued operational deficits in the power sector</p>	<ul style="list-style-type: none"> • It has not been fulfilled. Operational deficit has not been changed much • In general major impact of cost reduction has not been felt • HFO and HSD based plants are responsible to increase the cost, however in recent times, these fuel based plants are decreasing and so is the generation cost. Cost of HFO based plants (5500MW) are 14 tk per unit and HSD based plants (1300MW) are 176 tk per unit. Though, diesel based plants were idle, but govt had to pay the capacity charges to these plants. These were the reason to increase the cost. • Although there has been an improvement in the power sector, there has been no improvement in human resources. • Incentives in the public plants are lower to attract local talent to contribute.
<p>Improving sector efficiency by sharply reducing T&D losses</p>	<ul style="list-style-type: none"> • T & D loss reduction has been partially achieved

3. Targets and Achievements during 7th FYP Period

Experts' Comments on Mobilising IPPs

Targets	Progress (Experts' Comments)
<p>Massive expansion in power generation will require \$24 billion investment (excluding 600 MW of imported power)</p>	<ul style="list-style-type: none"> • Projection of electricity demand considering massive industrial growth, was faulty. • Industrial growth should be calculated based on growth in demand at micro sector rather than based on economic growth • Economic growth due to infrastructure development will share the wrong picture of industrial growth and demand for electricity since the energy requirement varies between different sectors • There has been over investment than the demand which is still lower than the capacity to generate. • Despite the large investment, the large power plants are not completed in accordance with the investment.
<p>IPP programme for the Seventh Plan is based on large and efficient power supply rather than reliance on a multitude of small-scale rental plants</p>	<ul style="list-style-type: none"> • IPPs delivered output with reliability compared to that of the small rental power plants • Government may obsolete the rental plants since large plants are already in line and some of those are already completed. Rentals were only used to meet immediate crisis.
<p>No new rental plant contracts will be needed during the Seventh Plan and the share of rental plants will fall progressively</p>	<ul style="list-style-type: none"> • It has not been followed • Contracts have been renewed for the expired rental power plant

3. Targets and Achievements during 7th FYP Period

Experts' Comments on Power trade

Targets	Progress (Experts' Comments)
<p>Use of power trade will continue to be a major element of the electricity generation strategy for the Seventh Plan.</p>	<ul style="list-style-type: none"> • An initiative regarding the power trade agreement has been observed with Bhutan, under which activities are yet to start
<p>The Seventh Plan will further expand trade with India and also explore hydro-power import opportunities with Nepal and Bhutan.</p>	<ul style="list-style-type: none"> • An initiative regarding the power trade agreement has been observed with Bhutan, under which activities are yet to start. Import of hydropower is a tri-lateral issue for Bangladesh where India provide the corridor). • The negotiation is ongoing, and activities are pending. • India is generating hydropower and offering Bangladesh to purchase directly from them.
<p>The Seventh Plan power generation programme plans to obtain at least 600MW of electricity through power trade.</p>	<ul style="list-style-type: none"> • 600MW power trade was achieved under 6FYP initiative. It was not planned under 7FYP. • No new power trade has been materialised under 7FYP • However, power trade negotiations on the agreement are underway

3. Targets and Achievements during 7th FYP Period

Experts' Comments on Coordinating Transmission and Distribution Programmes with Generation

Targets	Progress (Experts' Comments)
<p>Efforts will also continue to further reduce T&D losses from 13.03 percent in FY2015 to 12 percent by FY2020.</p>	<ul style="list-style-type: none"> • Single digit T&D loss is ideal and standard for the power sector which have been achieved by one or two of the agencies under the power division • T&D progress are made, but the quality is questionable since load shedding, and power outage are still common in rural areas. • The efficient and robust power distribution should be achieved under a good planning.
<p>Massive transmission and distribution development programmes are to ensure uninterrupted power distribution and achieve the target of power supply for all.</p>	<ul style="list-style-type: none"> • The target has been achieved but the quality of T&D is an issue of concern • Uninterrupted power distribution is not going to be materialised unless the quality of transmission & distribution have been improved • Power is not uninterrupted and reliable yet, industries are largely based on captive power due to lack in uninterrupted supply. • Transmission process should be transferred to private sector since it requires huge funding
<p>Up to 2020 about 8000 km of new transmission lines and 120,000 kilometres distribution lines need to be constructed</p>	<ul style="list-style-type: none"> • It has been observed that the T&D process are initiated after completing a power plant which is supposed to be initiated in accordance with the power generation plan so that every plant will be able to start its operational activities at full capacity. • National Load Dispatch Centre (NLDC) was not made independent which was a major requirement for the power T&D process. Automated system in NLDCs' activities were not materialised.

3. Targets and Achievements during 7th FYP Period

Experts' Comments on Improving Operational Efficiency of Generation Plants & Improving Procurement

Targets	Progress (Experts' Comments)
Adoption and implementation of a proper O&M is of highest priority	<ul style="list-style-type: none"> Government is not successful to improve operational efficiency of generation plants & improving procurement It has not been progressed much It has not been adopted. Efficiency of government has increased but major drawback remains in developing human resources.
The Government may want to consider turn-key type investments that will reduce procurement problems and ease project implementation	<ul style="list-style-type: none"> That has not yet realised

Experts' Comments on Pricing Policies and Cost Recovery

Targets	Progress (Experts' Comments)
The average cost is projected to rise owing to shortage of gas and reliance on more expensive primary fuel.	<ul style="list-style-type: none"> The cost of primary fuel has not been increased since the growth was lower and the demand for electricity was lower as well Cost is likely to decrease due to drop in liquid fuel based rental plants
The average cost of generation will likely grow from an average of Taka 6/kWh in 2013 to Taka 8-9/kWh during 2014-2020.	<ul style="list-style-type: none"> The average cost of generation has marginally increased during 7FYP. It has not been increased since the price of fossil fuel is lower in the global market as well. Distribution cost will increase due to large scale rural electrification. It needs more infrastructure and materials to connect rural household in the grid compared to the town where houses are adjacent to one another.

3. Targets and Achievements during 7th FYP Period

Experts' Comments on Demand Side Management

Targets	Progress (Experts' Comments)
SREDA will be empowered to offer financial incentive schemes for promoting the programmes to conserve power system in the range of 1,000MW during the Seventh Plan	<ul style="list-style-type: none"> This was not implemented.
A range of incentives has been proposed including preferential taxation, subsidy and low-interest financing	<ul style="list-style-type: none"> Various fiscal incentives including waiver of tax, VAT have been provided to private and foreign power producers
SERDA will implement the Government's power conservation strategy	<ul style="list-style-type: none"> A draft plan has been prepared but progress on related activities are unknown
In long run, the Green Building Code will be adopted for the implementation	<ul style="list-style-type: none"> Green building code has been prepared but its implementation at individual level has been made optional

3. Targets and Achievements during 7th FYP Period

Experts' Comments on Electricity through Renewable Energy

Targets	Progress (Experts' Comments)
<p>RE is important to meet the demand in areas where grid supply is not possible during the Seventh Plan.</p>	<ul style="list-style-type: none"> • Solar home system has negligible growth during this period • Currently the progress is at a snail's pace due to prevalence of grid power distribution
<p>The Seventh plan will focus on two main areas of renewable energy: solar and wind power</p>	<ul style="list-style-type: none"> • In case of wind, the plan has not been developed or worked at all • Small scale solar based initiatives have been implemented • Some agreements have been done in case of wind based generation but the success rate under 7FYP is nil
<p>For the Seventh Plan the Government has adopted the 500WM Solar Programme broken down into 340MW of commercial purpose and 160MW of social sector.</p>	<ul style="list-style-type: none"> • Through unsolicited bidding process, the procurement process was conducted in the renewable energy sector. • The progress in the social sector was very limited and in commercial sector, industrial rooftop solar panel for own uses have escalated some progress. • The targets have not been achieved but government is implementing in social sector and gradually the investments are flowing into the commercial sector. • Wind mapping has been done in a small scale, so is the tender and negotiation process, though have not been implemented at all.
<p>Commercial projects will be implemented by the private sector while social projects will be implemented by the different ministries and agencies as a part of social responsibility of the Government</p>	
<p>Commercial projects are: (a) Solar Park (grid connected); (b) Solar Irrigation; (c) Solar Mini-grid/micro-grid; and (d) Solar rooftop.</p>	
<p>The social projects are: (a) Rural health centres; (b) Remote educational institutes; (c) Union e-Centres; (d) Remote Religious Establishment; (e) Off-grid Railway Stations; and (f) Government & Semi-Government Offices in the off-grid areas.</p>	
<p>Government has a plan to generate electricity from wind power under public & private initiatives.</p>	

3. Targets and Achievements during 7th FYP Period

Experts' Comments on Reform Initiatives

Targets	Progress (Experts' Comments)
<p>Upgrade electricity price gradually to cost level</p>	<ul style="list-style-type: none"> • A Bill was placed to the National Parliament in June, 2020 on allowing BPDB to revise power tariff more than once in a year • The Bill was passed in the Parliament in November, 2020
<p>Strengthen BERC to be able to perform its agenda on licensing, energy pricing, quality of utility performance including energy efficiency, and consumer satisfaction/dispute resolution</p>	<ul style="list-style-type: none"> • BERC has been doing this • How efficient and fairly BERC regulating these issues are important issues of concern • Not well connected and the reform process is slow.
<p>There is a need to revisit the PSMP to check for relevance of the generation plan in the context of realities in the primary energy sector.</p>	<ul style="list-style-type: none"> • There are differences in various policy documents regarding different targets related to the power sector

4. Challenges of the Power Sector towards Setting Targets in the 8th FYP

4. Challenges of the Power Sector towards Setting Targets in the 8th FYP

- **Challenges of Over-Generation Capacity:** Over generation capacity (technically it is called ‘reserve capacity’) has become a major burden for the power sector.
 - **Excess reserve capacity had increased** over the years during 7th FYP period (Table)
 - At the end of 7th FYP (30 June, 2020), the level of **reserve capacity was 44.2% (9,016 MW)**
- Such a high level of reserve capacity is against the benchmark set forth at the PSMP 2016 (25%)
 - Even Bangladesh’s reserve capacity is much higher compared to that of other developing countries (10 per cent) (IEEFA, 2020)
 - It is faultily argued that electricity demand would increase within a short period after completion of ongoing large scale infrastructure development projects (e.g. metro rail and special economic zones etc.)
- Such over capacity is partly responsible for BPDB’s financial burden which needs to be adjusted through budgetary and non-budgetary measures

Over Capacity in terms of Demand and Generation

Year	Reserve capacity (as per max. generation)	% of share of overcapacity of installed capacity
2015-16	3329	26.9
2018-19	6068	32.0
2019-20 (30 June, 2020)	9016	44.2

Source: Authors’ analysis based on BPDB data

4. Challenges of the Power Sector towards Setting Targets in the 8th FYP

- ***Under-utilisation of Power Plants:*** An unbalanced growth in generation capacity and lack of corresponding rise in demand forced a large number of power plants to remain idle
 - At the end of 7th FYP period (30 June, 2020), as **many as 51 power plants were** found to be without any generation (37% of the total 137 power plants)
 - The comparable figure at the initial period (**1 July, 2015**) was **32.6% of 98 plants**)
- Such underutilisation of power plants has forced the BPDB to pay a minimum capacity payment to individual power producers.
 - This **capacity payment has been increasing** over the years – from Tk.5003 crore in FY2015 to Tk.8929 crore in FY2019
 - This has forced the government to allocate resources to finance the deficit. The capacity payment is almost **equivalent to the amount of subsidy** taken from the government in FY2019
- ***Low Level of Efficiency:*** BPDB's financial burden has been increasing due to low level of efficiency of the power plants. **About 52% of total plants operate at an efficiency level of less than 40% (Table); however, level of efficiency has improved compared to that in 2015** (70.6% operated below the level of 40%) (Table)
 - About 34% power plants operated at an efficiency level of 30-40%, and another 16.3% of plants operated at an efficiency level of 20-30%.
 - **None** of the available plants **operated over 60% and above level**
- The huge variation in plant factor among the power plants is another reason for unstable efficiency level.

4. Challenges of the Power Sector towards Setting Targets in the 8th FYP

Power generation through different public and private sector (no. of plants), 2015

Efficiency level (%) Net	Percentage of total number of plants	Power generation through different public and private sector (no. of plants)			No. of plants
		Public PP	IPP	Rental	
0-10%					
10-20%	2.1	2			2
20-30%	28.4	22	2	3	27
30-40%	42.1	16	5	19	40
40-50%	23.2		9	13	22
50-60%	1.1	1			1
>60%	0.0				
Total	96.8	41	16	38	95

Source: BPDB Annual Report 2015

Power generation through different public and private sector (no. of plants), 2020

Efficiency level (%) Net	Percentage of total number of plants	Power generation through different public and private sector (no. of plants)				No. of plants
		Public PP	Joint venture	IPP	Rental	
0-10%	0.0					0
10-20%	1.6	2				2
20-30%	16.3	18			3	21
30-40%	34.1	23	1	7	13	44
40-50%	45.0	10		40	8	58
50-60%	3.1	4				4
>60%	0.0					0
Total	100.0	57	1	47	24	129

Source: BPDB Annual Report 2020

4. Challenges of the Power Sector towards Setting Targets in the 8th FYP

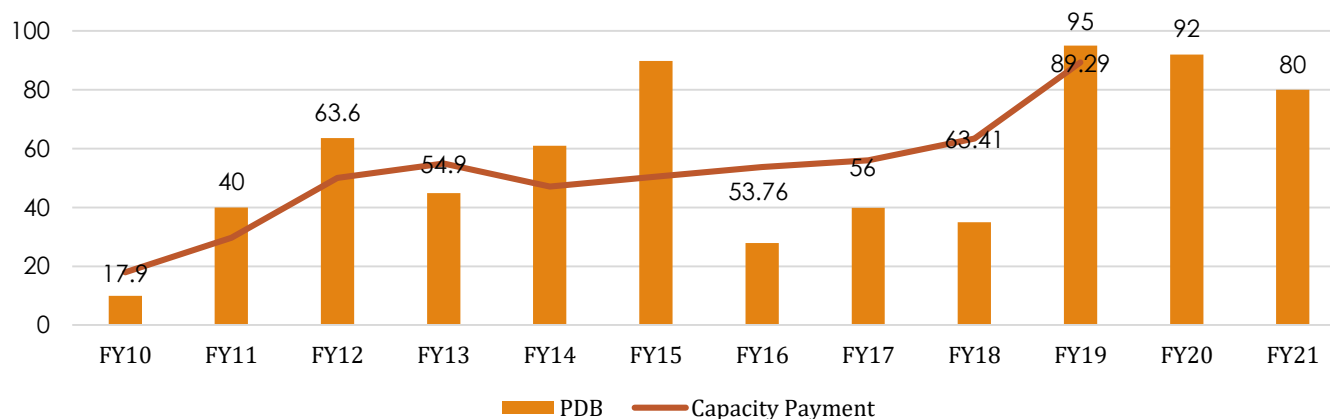
- **BPDB's Rising Yearly Expenditure:** The power generation cost per unit has experienced an upward trend over the years – from Tk.5.86 in 2015 to Tk.5.91 in 2020
 - Both operating revenue and operating expenditures have increased. **BPDB's loss has reduced by 17.5% during** this period
 - Expenditures in selected heads such as purchasing electricity from IPPs and purchasing of coal were found to be exceptionally high
- The **financial burden of BPDB has been increasing** because of a huge amount of import of fossil-fuel every year
- BPDB is in partial relief as import payment would be lower in FY2020 because of low price of crude oil and petroleum products in the world market
- The amount of borrowing has been significantly increased in recent years. During 7th FYP period, BPDB took loan in the form **of subsidy amounted to be Tk.28,980 crore**
 - During FY2020, its subsidy was accounted for more than **one-fifth of total subsidy allocated for different sectors**

4. Challenges of the Power Sector towards Setting Targets in the 8th FYP

Changes in operating income and operating expenses during 7th FYP

Head of Accounts	FY 2015 (Tk. cr)	FY2020 (Tk. cr)	Amount increase/ (Decrease)	Percentage of increase/Decrease
Operating Revenue	21,187.63	35,535.40	14,347.77	67.72%
Operating Expenses	26,462.41	39,887.15	13,424.74	50.73%
Profit/(Loss)	-5,274.78	-4,351.75	923.03	-17.50%

Loans/Subsidies, and Capacity Payment by BPDB (in billion taka)



4. Challenges of the Power Sector towards Setting Targets in the 8th FYP

- **Revision of Tariff:** During 7th FYP the tariff has been revised three times (changes between 10.3% and 14%) (Table)
 - BPDB has undertaken additional steps in view of its growing financial burden
 - In June 2020, the Ministry of Power, Energy and Mineral Resources had placed a new bill to the National Parliament seeking permission for adjustment of power tariff more than once in a year
 - The bill is passed in November, 2020
- This bill will allow the BPDB to raise the retail tariff more than once a year
 - The last revision of the tariff was held in March, 2020
 - An **upward adjustment of tariff would help the BPDB to accommodate its financial burden by passing through a part of the burden to the users of electricity**
- The question is whether such an adjustment is rationale and justified without addressing overcapacity and inefficiency related excess expenditure

Revision of Power Tariff during 7th FYP Period

Range	Rate/unit			% increase from 2015 to 2020 (Paisa)
	1-Sep-2015	1-Dec-2017	1-Mar-2020	
0-50*	3.36	3.5	3.75	11.61
0-75	3.8	4	4.19	10.26
76-200	5.14	5.45	5.72	11.28
201-300	5.36	5.7	6	11.94
301-400	5.56	6.02	6.34	14.03
401-600	8.7	9.3	9.94	14.25
600+	new	10.7	11.46	

4. Challenges of the Power Sector towards Setting Targets in the 8th FYP

- **Fiscal-Budgetary Pressure through IPP Projects**
- The **operational costs of IPP projects have significant** budgetary implications for the Power Division
 - Different levels of energy-mix, operational inefficiencies, un- and under-utilisation of capacity and operation of expensive quick rental power plants imply significant budgetary implications
- The import payment for different primary energy which is largely used by IPPs has been increasing over the years (Table)
 - During 7th FYP period, **government spent US\$24.1 billion for** importing different amount of fossil fuel
- Since BPDB possesses the **sole authority to import petroleum and coal, it** has to make the import payment of the required energy for the IPPs
 - The foreign currency used for such import put pressure to the overall forex reserve of the country

Bangladesh's Import of Energy ('000 US\$)

Year	Crude Petroleum*	Petro- leum Products*	271111 Natural gas, liquefied	HS: 70119 & 270112 Coal
2016	381402.9	2277812.1	6	111740
2017	533625.2	2778086.7		209883
2018	557606.7	4156228.6	367177	246562
2019	930304.1	5732372.8	135357	382269
2020	270343.1	5005712.0	71395***	47142**
Total	2673282	19950212.2	573935	997596

Note: * data for fiscal year; ** Data for January-October 2020 only; Data for January-July, 2020 only

Sources: ITC calculations based on UN COMTRADE and ITC statistics

4. Challenges of the Power Sector towards Setting Targets in the 8th FYP

- **Abandoning Coal for Power Generation is a welcome initiative, but those are planned to be replaced by LNG based power plants**
- The ministry has put forward a number of arguments with regard to abandoning coal and replacing those by LNG based power plants
 - *Coal-based power plants at different stages of implementation: 22 units with a total capacity of 23,236 MW - 15 units are under public sector (18,664 MW) and seven units are under private sector (4,572 MW)*
 - Other than the three, rest of the coal-fired power plants (at different levels of implementation) will be abandoned
- Curiously, the **Ministry raised the logic of LNG-based power plants as an alternative to coal-fired power plants in the country**
 - *Implementing projects: A total of 10 LNG based power plants with a capacity of 12,155 MW of electricity are currently being implemented*
- Even within the current plan, LNG and gas would cross the target (35%) by 2037 (25525MW; 42.5%)
- With the current initiative of abandoning coal to shifting to LNG would completely change the energy-mix in the power sector
 - **From a moderately diversified to overwhelmingly dependent on a single source, LNG (70%).**

4. Challenges of the Power Sector towards Setting Targets in the 8th FYP

- **Scopes for Renewable Energy are not adequately explored**
- Despite all the potentials, renewable energy has never got adequate attention from the ministry
- As per the latest BPDB document, about 1,482 MW renewable energy would be generated by 2025
 - And there is no plan to add renewable energy after 2025
- Overall, **a total of 1,552 MW renewable energy has been targeted which will be only 2.8% of total capacity of 2041**
- If the abandoned coal-based power plants have been shifted to solar power plants, those plants would generate a total amount of 4,779 MW of electricity
- Together with the **existing and other renewable energy projects, a total of 6,331 MW of electricity could be generated by 2041**
- This amount of electricity would increase the share of renewable energy in power generation to **10.6% by 2041**
- Out of 36 projects implemented by SREDA, **only 8 projects are being implemented by the government** while the rest 25 projects are being implemented by the private sector
 - **Government has less interest in investing** in renewable energy projects
 - Only 4 projects are currently in operation while the 11 projects are in the process of implementation and **19 projects have been at planning** phase (2 projects are rejected)

5. Reflections of the Power Sector in the 8th FYP

5. Reflections of the Power Sector in the 8th FYP

- 8th FYP has set following strategies for the power sector
 - The Government will increase focus on **energy efficiency gain, renewable energy and financial sustainability**
 - Move towards least-cost power production by **curtailing the reliance on high-cost rental power plants** with a time-bound plan to phase them out
 - Move towards an **optimal fuel mix in generation** and optimizing on power trade
 - Move to an efficient least-cost power production structure based on
 - An optimal and efficient primary fuel mix and
 - Transmission **and distribution of electricity through further** reduction of T&D losses
 - Continue to enhance the generation capacity to match the expansion of demand from all segments of the economy
 - With **100% population connected** to the quality electricity supply

8FYP Targets on Installed Power Generation Capacity

	Baseline (FY2019)	Target (2021)	Target (2022)	Target (2023)	Target (2024)	Target (2025)
Installed Power Generation Capacity (MW)	22,787	24,000	25,000	26,000	27,000	28,000

5. Reflections of the Power Sector in the 8th FYP

- **Regular power tariff adjustments to** ensure the long term sustainability of power generation and **moving away from a budgetary subsidy** that is now prevalent
- Enhance **exploitation of gas, coal, renewable resources**, increased energy imports
- **Hydropower will be given** prime importance among other renewable resources
 - The other renewable resources include wind power, solar energy, biomass, and waste to power, where the core strategic goal will be to make the **energy available at the optimum rate to all consumers**
- Emphasis was also placed on improving efficiency and service delivery of relevant public agencies
- Primary energy related issues highlighted with regard to:
 - Gas allocation policy
 - Investment for exploration and development of undiscovered resources
 - Domestic coal utilization
 - Import of **LNG/gas pipeline and coal**
 - Demand side management (DSM) and energy conservation
 - Improved cooking stove (ICS)
 - Rationalising energy subsidy and pricing

5. Reflections of the Power Sector in the 8th FYP

- Financing strategy for power and primary energy as stipulated in the 8th FYP
 - Total public investment in energy (power and primary energy) will be about 1.4% of GDP per year on average during the 8FYP period
 - A sound financing strategy will be required for the energy sector
 - It will be a **combination of PPP financing** for power generation and measures to contain energy subsidies
 - For primary energy, the Eighth Plan assumes that the **level of subsidy will be capped at around 0.2% of GDP** throughout the plan period
 - The subsidy will be targeted to the poor and for supporting the expansion of renewable energy programmes
 - This will require that energy prices are managed properly in line with long-term trends in primary fuel
 - Government will ensure that the **average price of electricity must be at least equal to the average cost of production**

8FYP Sectoral ADP allocation

(Taka Billion; Current Prices)					
Ministry	FY21	FY22	FY23	FY24	FY25
Energy and Mineral Resources Division	20.0	24.7	28.4	33.2	39.8
Power Division	284.6	334.5	372.3	419.0	502.8
Sector Total	304.7	359.2	400.8	452.2	542.6

6. Addressing the Challenges of the Power Sector in the 8th FYP

6. Addressing the Challenges of the Power Sector in the 8th FYP

- **A fresh demand projection** for electricity is needed for 2030 and 2041 considering the revised projection of long term industrial and overall economic growth
- Avoid making faulty and ambitious projections on industrial growth and demand for power in medium to long term
 - **Micro-level growth analysis** is required. In terms of power demand by the **residential sector**, looking into urbanisation, usage of appliances, village demand, etc. should be analysed for the next five years
 - Regarding **industrial demand for electricity**, sector/sub-sector level demand should be analysed for the next five years
 - The plan must **revisit the projection of demand taking** into account of COVID effect and **post-covid recovery** and rebound
- Analysis of electricity demand and plan for power generation reveals a huge over-capacity in the post-COVID period
 - Given the huge amount of over capacity, **government need not require to be hurry** for establishment of new fossil-fuel based power plants with immediate electricity demand

6. Addressing the Challenges of the Power Sector in the 8th FYP

- Energy-mix should be justified putting **emphasis on renewable energy**
 - Oil-based plant should be **gradually phased out**. No new oil plant should be considered, and renewal of oil plant contract must be stopped
 - Oil-based power plant must be retired from further power generation when excess demand persists
 - Sites for coal-fired power plants should **be provided for developing** renewable energy based power plants
 - Increasing renewable energy based power plants will provide cheap electricity
- The Ministry should refrain from setting up LNG-based power plants in the sites of abandoned coal fired power plants
 - LNG-based power plants along with those of gas-based power plants which are currently at different stages of implementation, would surpass the targeted share of LNG/gas in total electricity generation for 2041 (40% vs. 35%)
 - Replacing coal by LNG would fully change the energy-mix in power generation and would make Bangladesh's power **sector single source-based (LNG based)** as its share would rise to 70% by 2041

6. Addressing the Challenges of the Power Sector in the 8th FYP

Mobilising IPPs

- All **quick rental power plants should** be gradually phased out
 - Incentive programs will be developed to encourage private investment in renewable energy to adopt clean energy technology
 - Several options will be explored to increase the share of renewable energy in the energy mix such as off-shore wind, tidal energy, waste to energy etc.

Power trade

- Power trade **negotiations for an agreement with Bhutan and Nepal** along with India should be realized during the 8th FYP period
 - This will create an opportunity for an excess amount of electricity to export to neighbouring states of India

Coordinating Transmission and Distribution Programmes with Generation

- Given the context of current T&D quality, **independent power body should be established to monitor the infrastructure** quality and to ensure the transmission process, which must not be hampered by different types of power

6. Addressing the Challenges of the Power Sector in the 8th FYP

- Power distribution and transmission should be **handled in accordance with the power generation right** after the completion of the plant establishment
- The government must take immediate steps to give **the full independence to NLDC**;
 - Otherwise, nuclear power transmission will not be possible, even if the government starts to transmit, any technical error will cause a major setback in the system
- **Unified and renewed transmission and distribution infrastructure** are required
 - **NLDC will maintain the criteria of the power plant's T&D process** in a harmonious way which will be safer.

6. Addressing the Challenges of the Power Sector in the 8th FYP

- **Improving Operational Efficiency of Generation Plants**
 - **BoT (Build on Transfer), BoO (Build on Operate) and BoOT (Build on Operate Transfer)** can be followed for investment in the power plant sector by the private investor.
- **Pricing Policies and Cost Recovery**
 - **Cost reduction strategy should be continued** in 8FYP. The cost is likely to increase in the coming years
- Making the price **close to competitive depends on the** government's decision
 - If the government does not provide the subsidy, then the price would rise along with that of cost. But exaggerating the production cost due to the discrepancies in policy plan is not expected
 - Economic reasons are also responsible for providing subsidy to tackle high electricity cost so that the production does not get hampered
- **Subsidy management**
 - **It is highly unlikely that the government will withdraw subsidy at a full scale.** Given the fiscal constraints, government is likely to reduce subsidy in the coming years.
- **Demand Side Management**
 - The **Green building code needs to be finalized** and based on that activities need to be undertaken. The building code needs gradually made mandatory.

6. Addressing the Challenges of the Power Sector in the 8th FYP

- SREDA should strengthen its capacity to deliver projects on time
 - SREDA should immediately finalise the solar energy road map for 2021-2041 and develop an action plan based on the roadmap
 - Development partners who had expressed interest/invest in developing the sites would come forward to redirect their project aid for setting up RE projects
- Being the leader of the CVF Bangladesh needs to set precedence in renewable energy based power generation
- The new PSMP is expected to design towards that direction taking into cognizance of long term targets for clean energy based power sector development

6. Addressing the Challenges of the Power Sector in the 8th FYP

Revision and Synchronization of Different Policies: *BPDB*

- BPDB website shows (updated on August, 2020) data on electricity generation which is significantly higher than what is reported in the 8th FYP
- While the 8th FYP planned for a generation of **additional 5,000MW**, the **BPDB indicates additional generation of 18,458MW by 2025**

Year-wise maximum possible demand for electricity and electricity generation

Year	Maximum possible demand (incremental)	Maximum possible generation (incremental)
2020	14757	22152
2021	16823	23699
2022	18731	28595
2023	20697	31026
2024	22769	32887
2025	24952	36018

Distribution of Sources of Power Generation

Year	Public	Private	Import	Total
2020	2456	1063	0	3519
2021	2139	150	0	2289
2022	981	3109	1496	5586
2023	3621	757	0	4378
2024	2400	590	0	2990
2025	1975	1240	0	3215
Total	13572	6909	1496	21977

6. Addressing the Challenges of the Power Sector in the 8th FYP

Revision and Synchronization of Different Policies: *SDG 2030*

- Under SDG 7 (affordable, reliable, sustainable, and modern energy), government has set **the target of generating 20 per cent of total energy consumption** from renewable sources by 2030
 - This is not matched with other available policy documents

Revision and Synchronization of Different Policies: *National Solar Energy Road Map 2021-2041*

- In the BAU case, future solar capacity is **estimated to be 6,000 MW**
 - For the mid and high deployment cases, the estimations are **20,000 MW and 30,000 MW respectively till 2041**
 - This figures are not matched with that of SDG 2030 targets
- The installed capacity of the **solar PV systems will be half (50%) of the** projected generation capacity of the country
 - Under the condition of high economic growth and with EE&C measures
- In the high deployment scenario, the energy generation from the **solar PV systems will be around 47,000 GWh per year**
 - The solar PV systems will provide **nearly 20% of the total electric energy** demand of the country by the year 2041 in high deployment scenario

6. Addressing the Challenges of the Power Sector in the 8th FYP

Revision and Synchronization of Different Policies: *National Solar Energy Road Map 2021-2041*

- In order to execute the high deployment scenario, the government should undertake several important and timely steps
 - According to the Bangladesh Delta Plan 2100, there will be more than 3,800 square kilometers of new reclaimed land in the near future
 - If around **5% of this reclaimed new land is used for solar power projects**, and the government undertakes the necessary land and transmission infrastructure development, these projects can be built and operated by either the government utilities or the private sector through competitive bidding of IPP projects or by both
 - Such measures can be expected to bring down the tariff
 - 40% of the targeted **30 GW capacity can be implemented on the reclaimed lands along the major riverbanks and Meghna estuary**

6. Addressing the Challenges of the Power Sector in the 8th FYP

- **Revision and Synchronization of Policies: *Draft Solar Energy Master Plan 2021-2041***
- The Roadmap recommends that Government of Bangladesh (GOB) should consider opting for the high deployment case - realization of the Bangladesh Delta Plan 2100
- The Roadmap proposes several doable actions or specific measures
 - revise policy documents and set new renewable energy target, especially a solar energy target;
 - formulate policies and implement **smart grid to tackle** high shares of VRE;
 - introduce policies for **large-scale storage system (grid) for peak shifting, shaving of load and VRE** generation smoothing;
 - **upgrade existing grid infrastructure**, especially the **transmission network** to evacuate uninterrupted and high quality grid power according to the grid code for safe injection of generated power from solar plants;
 - **develop capacity in terms** of both institutional and human resources;
 - ensure availability of long term and concessionary financing through commercial financial institutes for RE;
 - mandate **net metering for new industrial** and commercial electric connections;
 - develop **solar power hubs** (by the Government) along with facilities of power evacuation infrastructure (transmission lines)

6. Addressing the Challenges of the Power Sector in the 8th FYP

Revision and Synchronization of Policies: *Perspective Plan of Bangladesh 2021-2041*

- Following target should be dropped - **“To meet up the coal demand for power generation from domestic sources, Petrobangla has a plan to develop other two coal fields at Jamalganj and Khalaspir by the year 2041”**
- The projection on renewable energy under the perspective plan needs to be aligned with recently developed solar energy roadmap.
 - The projection on **renewable energy in the perspective plan is made only on hydro-power (1%). No mention about solar energy**

Targets under Perspective Plan of Bangladesh 2021-2041

Objectives/Performance Indicators	FY2019 (Actual)	FY2021 (Target)	FY2031 (Target)	FY2041 (Target)
Make power sector financially viable	Losses amounting Tk.75 billion			
Total grid based generation capacity of electricity	18,961 MW	21,369 MW	33,000 MW	56,734 MW
Maximum Peak Demand Based on PSMP 2016 base case	12,893 MW	14,500 MW	29,300 MW	51,000 MW
Increase efficiency of energy use as well as reducing the system loss (T&D loss)	11.96% (T&D losses)			T&D loss target: Single digit
Diversify fuel use in power generation capacity to balance use of low-cost fuel with low carbon content of the fuel mix	57.4% gas; 32.4% liquid fuel; 2.8% coal; 6% power import; 1.2% hydro 0.2% renewables	45% gas; 27% coal; 17% liquid fuel; 9% power import; 1% hydro	29% gas; 30% coal; 14% nuclear; 9% liquid fuel, 17% power import, 1% hydro	35% gas; 35% coal; 12% nuclear; 16% power import; 1% liquid fuel; 1% hydro
Increase private sector investments in electricity, gas, and other energy supply	50% including imports	50%	55%	60%
Encourage energy trade	1160 MW	2,000 MW	5,000 MW	9000 MW
Access to electricity	72%	100%	100%	100%

6. Addressing the Challenges of the Power Sector in the 8th FYP

Cross-country references (Malaysia)

- Formulating a comprehensive demand side management master plan
 - **DSM is a vital tool to reduce peak electricity** demand impacting the overall load on an electricity network
 - Less dependence on expensive imports of fuel, reducing peak power demand and minimising harmful emissions to the environment
 - DSM will be able to maximise the return on utilisation of existing and new electricity supply assets
 - The flattening of the demand curve will positively constrain demand growth and result in deferment of construction of new electricity supply infrastructure
- Implementing **net energy metering**
- Expanding demand side management measures for buildings, industries and households
 - Infrastructure related initiatives such as **implementation of smart grids** and highly efficient co-generation technologies for combined heat and power system will be promoted
- Electricity supply would be provided **through off-grid generation for areas which are too far from the grid**. The development of alternative systems such as solar hybrid, mini and pico hydro will be supported by off-grid networks to ensure wider coverage.

6. Addressing the Challenges of the Power Sector in the 8th FYP

Cross-country references (Thailand)

- **Encouraging manufacturers, local communities**, and local authorities to generate renewable energy from solar energy, wind power, biomass, and solid waste
- **Investments in transmission and** distribution system will accommodate renewable energy and smart-grid development
- The energy saving target to be set in for 2025, 2030 and 2041
- **Feed-in Tariff (FIT) has been planned** to be implemented in order to reflect the real cost of renewable power generation and to specify the timeframe of purchasing
- Power generation from municipal waste, biomass, and biogas will be promoted
- Competitive Bidding measures would be adopted to promote the AEDP

6. Addressing the Challenges of the Power Sector in the 8th FYP

Cross-country references (Sri Lanka)

- Use full potential of hydro resources for electricity generation
- Increase the share of electricity generation from Non Conventional Renewable Energy (**NCRE**) sources (plants organic waste, small hydro passing, wind farms, solar plants, biomass cogeneration plants,)
- Diversify energy mix to generate a portion of electricity using indigenous gas resources
- Promote off-grid renewable energy applications for small/medium scale applications
- Accelerate improvements in identified sections of the transmission and distribution network where losses are high
- Develop **transmission network and construct grid substations** to strengthen the national grid
- Promote **low energy / zero energy buildings** and low fuel consuming eco-friendly houses and buildings
- Upgrade and improve **the meters and metering systems to reduce** commercial losses

6. Addressing the Challenges of the Power Sector in the 8th FYP

Cross-country references (India)

- The government of India has a **target to achieve 175,000 MW of grid-connected renewable electricity by March 2022**
 - About 100,000 MW **solar**, 60,000 MW **wind**, 10,000 MW **biomass** and 5,000 MW of **small hydropower**
 - In addition, the MNRE is targeting 1,000 MW of geothermal capacity by 2022
 - The 2018 National Electricity Plan sets out ambitions to achieve 275,000 MW of renewables by 2027, which would increase their share to an estimated 44% of installed capacity and 24% in electricity generation.
 - To reach the 2022 target, the government launched **competitive auctions for solar PV (2010) and wind (2017)** with long-term power purchase agreements containing fixed price contracts
 - The MNRE announced it would tender 25-30 GW annually until end of 2021 to reach the solar PV target of 100 GW by 2022 (in 2019, India had 32.5 GW of installed solar capacity)
- For residential and commercial solar PV applications, the GoI has set an ambitious target of 40 GW of rooftop solar by 2022 within the 100 GW solar target.
 - Approved financial support totalling USD 6.5 billion by 2022 to promote the use of solar among farmers
 - The KUSUM scheme will **support farmers to replace existing diesel pumps with solar PV pumps** (with both on-grid and off-grid features)
 - The scheme aims to add solar and other renewable capacity of 28 GW by 2022⁵³

7. Conclusion

7. Conclusion

- The overall success in the power sector was not fully transformed into achieving the targets set forth in the 7th FYP
 - The sector is increasingly facing challenges with regard to inefficiency, cost escalation, lack of cleaner energy-mix, poor quality of transmission and distribution and rising financial burden
 - Those challenges would likely to aggravate in the future and hence it is important to take lessons from that to ensure proper implementation of the 8th FYP
- Since the 8th FYP is likely to adopt by the NEC soon, we hope that both the document and the strategy and action to be prepared based on that will highlight the suggested issues
- The power sector will pass an important phase during the 8th FYP period
 - This is related with the post-covid recovery challenges, implementation challenges of SDGs, and challenges in meeting commitment under CVF and NDC
 - The success in ensuring access to electricity over the last decade needs to direct towards efficiency enhancement, cost reduction, cleaner energy-mix, demand side management, enhancing use of non-conventional renewable energy mix for power generation

7. Conclusion

- A major drive of the initiative will be to make rationale projection on power demand for the 8th FYP period and afterwards (2021-2041)
 - This needs to be carried out considering existing excess reserve capacity, possible sectoral demand in the post-COVID period, possible growth of industries and enterprises during 8th FYP period and beyond
 - The upcoming PSMP 2021 would provide better understanding about the demand for electricity in the coming years
 - An alignment of the demand projection to be made by the upcoming PSMP with other policy documents will be highly important
- Since the country is currently with excess reserve capacity, this is high time to make necessary adjustment in different indicators and thereby reflect the possible changes in the 8th FYP document
 - The energy mix which is highly biased towards fossil-fuel should be gradually rebalanced with setting up renewable energy based projects
 - Government should ensure exit of quick rental power plants and dated and inefficient power plants with a view to reduce costs and financial burden
 - Government should ensure that no new power plant will be set up under the capacity payment clause
 - Priority should be given to setting up new projects on renewable energy-based power plants

7. Conclusion

- 8th FYP should focus on SREDA by putting priority within the institutional structure of the Ministry of Power, Energy and Mineral Resources
 - Strengthening the capacity of implementing RE projects should be the focus
 - Both traditional and non-traditional renewable energy projects should get priority in the upcoming policy document
 - Incentive structure of the power sector should focus on RE based power projects
- All policy documents need to be aligned in terms of key targets set forth on the power sector and this should also be followed in case of 8th FYP
 - These targets are related with demand for power, installed capacity and power generation during 2030-2041, and energy-mix
 - Renewable energy related targets should be aligned with newly prepared solar energy master plan
- Government's stance on abandoning coal-fired based power plants (other than the three) should be specifically mentioned in all relevant policy documents including 8th FYP
 - These documents include Perspective Plan 2041, SDG 2030, PSMP 2021, Solar Energy Master Plan and NDC 2021

7. Conclusion

- 8th FYP should highlight that power sector will follow competitive bidding processes in the supply chain including generation, transmission and distribution of electricity
 - Power sector needs to shift its activities from the ‘emergency management’ (initiated in early 2010s) to ‘market-led’ management (needs to be initiated towards 2021-2030).
 - It needs to reduce lack of transparency, accountability, efficiency, irregularities and corruption in the generation, transmission and distribution processes
 - Given the development of the power and energy sector, the ‘Speedy Supply of Power and Energy Act’ needs to be abandoned immediately
 - The sector should gradually return to lead its operation under the public procurement act and rules as the period of emergency need appears to be over
- 8th FYP should highlight a gradual shift in energy tariff setting mechanism from administered tariff towards synchronizing with market rate
 - The equity issue needs to be taken into account in case of SMEs, agriculture, low-income households
 - As an institution, BERC needs to be independent in taking decisions
 - Revision of power tariff should be justified by undertaking appropriate measures in case of inefficiency, demand side management, reduction of capacity payment

7. Conclusion

- 8th FYP should highlight appropriate mechanism to lessen the fiscal pressure, huge import payment and debt burden caused for different power sector related activities
 - These include subsidy burden, import of petroleum, LNG and coal and credit from the international market
- 8th FYP should put focus on reduction of BPDB's operational cost by undertaking efficient cost management strategies
 - A major strategy should be taking measures for low level of rise in per unit production cost of power
 - Reducing the burden of capacity payment
 - Demand side management should be highlighted
- Improvement of transmission and distribution of electricity should be a major focus of the power sector during 8th FYP period
 - A balanced development of transmission and distribution would ensure better quality of electricity across the country
 - Reduction of losses particularly related to transmission should get priority

7. Conclusion

- 8th FYP should reflect improvement of operational efficiency of generation plants
 - BoT (Build on Transfer), BoO (Build on Operate) and BoOT (Build on Operate Transfer) can be followed for investment in the power plant sector by the private investor
 - Incentive programme will be developed to encourage private investment in renewable energy related technologies
- Awareness raising initiatives to encourage manufacturers, local communities, and local authorities to generate renewable energy from solar energy, wind power, biomass, and solid waste
- The government must take immediate steps to give the full independence to NLDC
 - Unified and renewed transmission and distribution infrastructure are required where NLDC will maintain the criteria of the power plant's T&D process in a harmonious way which will be safer

Thank you.