INTEGRATED MANAGEMENT SYSTEM (IMS) MANUAL

INTEGRATED MANAGEMENT SYSTEM

FOLLOWING ISO 9001:2015, ISO 14001:2015 AND ISO 45001:2018 INTERNATIONAL STANDARDS

BANGLADESH POWER DEVELOPMENT BOARD (BPDB)

WAPDA Building (1st Floor), Motijheel C/A, Dhaka-1000, Bangladesh.
Telephone: +88-02-9554209
E-mail address: bpdb@yahoo.com, web address:info@bpdb.gov.bd

MESSAGE FROM CHAIRMAN

We are pleased to introduce hereby, a Manual for Integrated Management System for Bangladesh Power Development Board.

This Integrated Management System Manual (IMS Manual) describes the measures and controls that are essential for various activities and services of Bangladesh Power Development Board to comply with the requirements of ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 Standards. This manual will ensure optimization of electrical energy generation and schedule maintenance, minimization of Voltage and Frequency fluctuation in tolerable range, improved customer care, reduction or elimination of any injuries and ill-ness, prevention of environmental pollution and to ensure compliance with applicable law and other requirements and continual improvement of performance of Bangladesh Power Development Board.

Compilation of this manual is a continuation of BPDB's efforts to enhance the Quality, Health Safety and Environmental Performance. It is designed in line with the existing quality and OHSAS manual of BPDB.

I herewith instruct all the employees of Bangladesh Power Development Board to follow the measures stipulated in this IMS Manual, while executing related tasks and to actively co-operate and contribute in realizing the set Objectives.

This journey calls for up-gradation and adoption of new emerging techniques and practices in quality, health, safety and environmental Management. In the endeavor, adopting tools and methods to study and analyze problems for continual improvement and involving cross-functional team to solve day-to-day activities will enrich the organization as a whole and benefit individually in enhancing professional performance.

Let us move forward with a comprehensive IMS Management System, with a commitment to improve IMS performance for the betterment of all the employee, suppliers, contractors, visitors, neighbors and other stake-holders of Bangladesh Power Development Board.

……
(Engineer Md. Belayet Hossain**)**
Chairman, Bangladesh Power Development Board

Bangladesh Power Development Board (BPDB)

IMS Manual

REVISION HISTORY

REVISION DETAILS				REVISION STATUS	
SL. #	Referred Section	Revision. #	Change Details	Date of Amendment	Approval

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ENDORSEMENT

Bangladesh Power Development Board (BPDB) was created in 1972 as a public sector organization to boost the power sector. The BPDB is responsible for major portion of generation and distribution of electricity mainly in urban areas of the country. The Board is now under the Power Division of the Ministry of Power, Energy and Mineral Resources. With the aim to provide quality and reliable electricity to the people of Bangladesh for desired economic and social development, the power system has been expanded to keep pace with the fast-growing demand. The management of BPDB is very dynamic and working proactively in a challenging environment and is committed to act as a leading organization in the field of power generation and distribution of electricity through its exceptional customer service and technical competence.

The strategic management for BPDB involves the establishment of the near-term objectives. The 'Policies' and 'Objectives' of the organization to achieve its goal have also have been suggested.

BPDB had established Quality and Occupational Health and Safety Management System incorporating the requirements of ISO 9001: 2008 and OHSAS 18001: 2007 and was certified. Now the Quality and OHAS Management System has been updated following ISO 9001: 2015 and ISO 45001: 2018 respectively. This IMS Manual mainly incorporates three standards i.e., ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018. Details of inside view of the quality, health, safety and environmental systems and commitment, which BPDB has been pursuing, are shown in this manual. This IMS manual is the sole property of BPDB. Updating the manual is done as per the Procedure for Control of Document of the Integrated Management System. Customer who has been provided with controlled copies of this manual will be informed whenever an amendment in the IMS Manual is made. Distribution of the CONTROLLED copies of this manual is limited within the List of Controlled Copy Holders of the IMS Manual. CONTROLLED/UNCONTROLLED copy of the manual can be made available to the Customers and any distinguished personality with the written permission of the Chairman, BPDB.

VISION & MISSION OF BPDB

Vision

To deliver uninterrupted quality power to all.

Mission

To secure continuous growth of electricity for sustainable development and ensure customer satisfaction

IMS POLICY

Bangladesh Power Development Board (BPDB) is engaged in Generation, Distribution and Management of corporate power sector utilities and support services. Accordingly, BPDB commits itself to the following IMS Policy:

1. Establishing Integrated Management System (IMS) as per ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 Standards and maintain it with commitment for continual improvement of the IMS.
2. Apply integrated management as a dynamic, evolutionary practice and continual improvement on the following:
    a. Optimum Electrical Energy Generation
    b. Economy in Fuel Consumption
    c. Improvement of Availability Factor
    d. Minimization of Heat Rate for efficiency improvement
    e. Optimization of Schedule Maintenance
    f. Reduction of Forced Outage
    g. Reduction/Realization of System Loss
    h. Minimization of Voltage and Frequency Fluctuation in tolerable Range
    i. Improved customer care
    j. Elimination of hazards and reduce OH&S risks
    k. Prevention of Environmental Pollution
3. Commit the whole organization, company, suppliers and business partners to the highest quality standards of services provided to the customer, while complying fully with the legal requirement to the generation and distribution of electricity.
4. Keep education and training programs for the employees in issues related to quality, health safety and environment extensible to suppliers and business partners.
5. Evaluate and recognize the quality of the work performed by the employees, individually or collectively.
6. This policy is communicated to all the employees within all relevant levels of the organization and makes them understand.
7. This policy is reviewed from time to time for its continuing suitability.

IMS OBJECTIVES

Bangladesh Power Development Board (BPDB) has fixed following IMS Objectives:

a. It will implement Quality, Health Safety and Environmental Management Systems in accordance with ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 Standards and obtain and maintain certification by

(i) Implementing Integrated Management Systems in compliance with the ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 standards.

(ii) Obtaining third-party certification to the ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 Standards by **20th April, 2022.**

(iii) Maintain the Integrated Management System as measured by subsequent successful surveillance audit and re-certifications.

1. INTRODUCTION OF BPDB

1.1. HISTORY

At the time of partition of Indo-pak sub-continent, in the year 1947 when the British colonial rulers left, power generation and distribution of this part of the country were in the hands of some private companies. The power supply to then 17 provincial districts was within the township in a limited way. The generation voltage was 400 volts. Power used to be supplied to most of the districts during nighttime only. Only exception was Dhaka City where power used to be supplied by two 1500 kW generators and the generation voltage was 6600 volts and this was the highest supply voltage. There were no long distance transmission lines. Besides power used to be generated by some industries (tea, sugar and textiles) and railway workshops. Dhakeswari Cotton Mills, Pahartali Railway workshop, Saidpur Railway workshop and Sugar Mills were amongst them. In aggregate the generation capacity of the country was 21 MW. The generation capacity of the power utility companies together was only 7 (seven) MW and there was no transmission system.

In 1948, Electricity Directorate was created in order to plan and improve power supply situation. In 1959, Water and Power Development Authority (WAPDA) was created and the power sector really started working satisfactorily. In 1960, Electricity Directorate was merged with WAPDA. The basic philosophy was to give more autonomy to an organization for development of this basic infrastructure. At that time relatively higher capacity plants were built at Siddhirganj, Chittagong and Khulna (highest plant size was only 10 MW Steam Turbine at Siddirganj). At the same time Kaptai dam was under construction under Irrigation department. Unit size of Kaptai was 40 MW, which for that time was considered to be a large power plant. Side by side construction of Dhaka-Chittagong 132 KV transmission line was in progress. Construction of Kaptai dam and commissioning of Dhaka-Chittagong 132 KV transmission line in the year 1962 may be taken as milestone of power development of this country. In 1972, after the emergence of Bangladesh through a bloody War of Liberation as an independent state, Bangladesh Power Development Board (BPDB) was created as a public sector organization to boost the power sector. During mid 1977s government emphasized on the rural electrification for achieving a desirable social upliftment in the country. A different approach and a new model were considered for undertaking a comprehensive scheme. Thus, the Government created Rural Electrification Board (REB) in October 1977. Later in 1991 Dhaka Electric Supply Authority (DESA) now DPDC was created basically to operate and develop distribution system in and around Dhaka (including the metropolitan city) and bring about improvement of customer service, collection of revenue and lessen the administrative burden of BPDB. Public investments and state ownership have been the traditional means to exercise control over the electricity sector. Government regulated the natural monopoly of power supply primarily to protect the consumer's interest. The situation is fast changing. Structural changes are taking place and new corporate characters are emerging. The gradual expansion of the infrastructure has also been justified by the need for realizing

social goods relating to rural electrification and low cost electricity supply to the public.

Power Sector Scenario:

While the power sector in Bangladesh has witnessed many success stories in the last couple of years, the road that lies ahead is dotted with innumerable challenges that result from the gaps that exist between what's planned versus what the power sector has been able to deliver. There is no doubt that the demand for electricity is increasing rapidly with the improvement of living standard, increase of agricultural production, progress of industries as well as overall development of the country.
Severe power crisis compelled the Government to enter into contractual agreements for high-cost temporary solution, such as rental power and small IPPs, on an emergency basis, most are diesel or liquid-fuel based. This has imposed tremendous fiscal pressure.

With a power sector which is almost dependent on natural-gas fired generation (89.22%), the country is confronting a simultaneous shortage of natural gas and electricity.

Nearly 400-800 MW of power could not be availed from the power plants due to shortage of gas supply. Other fuels for generating low-cost, base-load energy, such as coal, or renewable source like hydropower, are not readily available and Government has no option but to go for fuel diversity for power generation.

Plants Commissioned During 2009 - 2017

YEAR	MW	YEAR	MW	YEAR	MW	YEAR	MW
2009	356	2012	951	2015	1357	2018	4381
2010	775	2013	663	2016	1132	2019	2404
2011	1763	2014	635	2017	1187	2020 (Till June)	913

Calendar Year Wise Power Generation Projects from 2020 to 2025 in MW

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

Generation from gas is much higher than compared to other fuel like hydro and coal. For this reason, government has taken strategic decision to diversify primary fuel supply for power generation. In line with this strategy, a sustainable long term power development plan has been prepared for mitigation the growing demand to reach the generation capacity 24,000 MW by 2021. Under this plan, the coal (indigenous or imported), imported power from neighboring countries, the limited domestic gas, nuclear power and LNG, renewable will be used for power generation. Government has also taken energy efficiency and conservation program for reduction of the growing power demand.

Under the PSMP 2016, 43 projects of capacity 15,294 MW are now under construction stage, 12 projects of capacity 2745 MW are now in the signing process and 6 projects of capacity 650 MW are now in tendering process. The under construction and tendering process projects will be implemented in phase during the period of 2020-27.

Highest generation so far was recorded on 27/04/2021, which was 13,792 MW and it is increasing gradually. A list of Maximum Power Generation per year is given below:

Year	Electricity Highest Generation (MW)	Highest Generation Date
2021	13792.00	27-04-2021
2020	12892.00	05-09-2020

2019	12738.00	05-08-2019
2018	10958.00	28-05-2018
2017	9011.00	18-10-2017
2016	7485.00	30-06-2016
2015	5821.00	29-08-2015
2014	7418.00	18-07-2014
2013	6675.00	12-07-2013
2012	6350.00	04-08-2012
2011	5174.00	23-11-2011
2010	4698.5	20-08-2010

With proper load management, irrigation for agriculture was given the fullest support which contributed to bumper harvests during the last crop seasons.

Government has prepared a new Power Sector Master Plan (PSMP) in 2016. According to the Master Plan, the estimated generation capacity requirement in 2030 will be 30,000 MW against the demand of 27,000 MW and in 2041 generation capacity will be 57,000 MW against the demand of 51,000 MW.

Government has already initiated different energy saving measures and Demand-Side management program to save power and energy. One such program is the distribution of energy efficient CFL free of cost. 10.5 million have already been distributed through this program. Mass awareness raising programs have been undertaken. Inclusion of energy efficiency in the school curricula, essay competition amongst the school students on energy efficiency issues, use of electronic and print media are some of them.

Considering the country's future energy security and low-carbon emission strategy, programs have been undertaken to promote use of renewable energy. Government has already formulated pro-investment policy to encourage private sector investment in RE Sector. Bangladesh has the fastest growing Solar Home System (SHS) in the world with over one million homes covered under the program being spear headed by IDCOL, a public infrastructure financing entity.

Sustainable Energy Development Authority (SEDA) to be Sustainable & Renewable Energy Development Authority (SREDA), as a nodal agency for renewable energy, energy efficiency and energy conservation, will be set up. Another agency in the name of **Bangladesh Energy Research Council (BERC)** had been formed for R&D in power and energy sector;

1.2. **Power Sector Development and Reform**

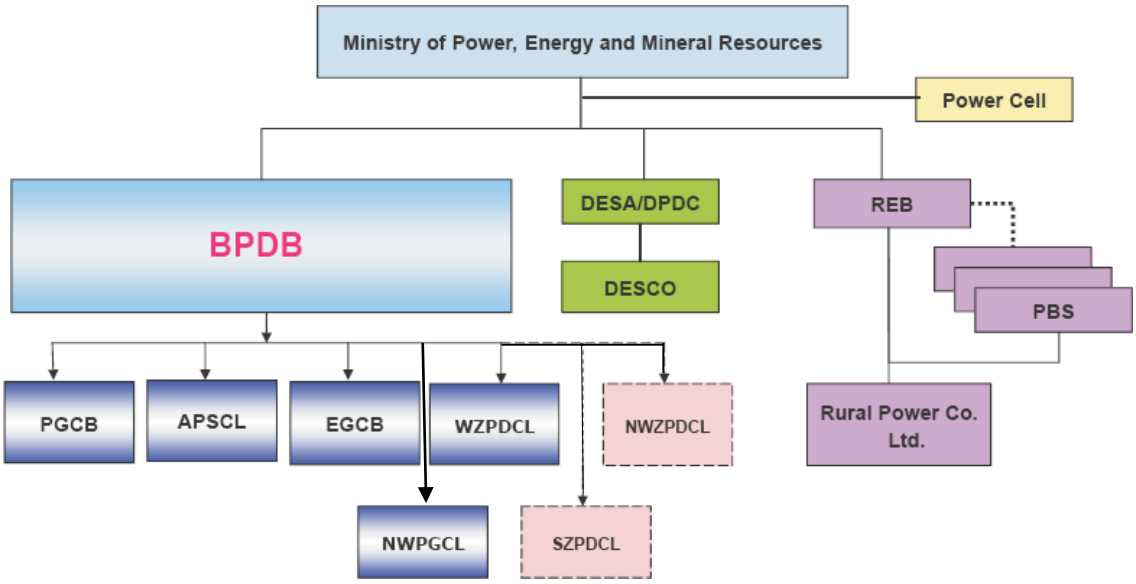
The power sector in Bangladesh has been undergoing a process of significant institutional change. Since 1972 the operation of the power sector has been the responsibility of the Bangladesh Power Development Board (BPDB), reporting to the Ministry of Power, Energy and Mineral Resources (MPEMR). This responsibility has been subdivided over the years, initially with the setting up of the Rural Electrification Board (REB) in 1978, and the subsequent creation of a co-operative based model for expansion of access, the co- operatives being known as Palli Bidyuit Samity (PBS). In 1991 the responsibility for power distribution in Dhaka was vested with the Dhaka Electric Supply Authority (DESA) which has been transformed as Dhaka Power Distribution Company (DPDC) w.e.f. July 1, 2008.

Since the mid 1990s, the Government of Bangladesh has continued with the vertical unbundling of the sector, through the creation of separate publicly owned entities for generation, transmission and distribution, and the development of a Single Buyer market model. This has led to the entry of a number of Independent Power Producers (IPPs) into the market. The unbundling has led to the creation of a number of independently managed entities which are gradually taking over the operational responsibility previously vested with BPDB, thereby changing its status to that of a holding Company, with management control being decentralized into the business units. As part of the

ongoing program of power sector reform, a regulatory body,' the BERC (Bangladesh Energy Regulatory Commission) has been set up, and a unit called Power Cell has been set up within the MPEMR to drive the reform process forward.

The BPDB is responsible for major portion of generation and distribution of electricity mainly in urban areas of the country. The Board is now under the Power Division of the Ministry of Power, Energy and Mineral Resources. With the aim to provide quality and reliable electricity to the people of Bangladesh for desired economic and social development, the power system has been expanded to keep pace with the fast growing demand.

1.3. **BPDB and Present Power Sector Structure**



1.4. **Background of BPDB**

After the emergence of Bangladesh through War of Liberation as an independent state, Bangladesh Power Development Board (BPDB) was created as a public sector organization to boost the power sector. During mid 1970s government emphasized on the rural electrification for achieving a desirable social upliftment in the country. A different approach and a new model were considered for undertaking a comprehensive scheme. Thus, the Government created Rural Electrification Board (REB) in October 1977. Later in 1991 Dhaka Electric Supply Authority (DESA) now DPDC was created basically to operate and develop distribution system in and around Dhaka (including the metropolitan city) and bring about improvement of customer service, collection of revenue and lessen the administrative burden of BPDB. Public investments and state ownership have been the traditional means to exercise control over the electricity sector. Government regulated the natural monopoly of power supply primarily to protect the consumer's interest. The situation is fast changing. Structural changes are taking place and new corporate characters are emerging. The gradual expansion of the infrastructure has also been justified by the need for realizing social goods relating to rural electrification and low cost electricity supply to the public.

The main fuel used for power generation is indigenous gas. Total installed capacity was 20,383 MW which includes 9,717 MW Public, 622 MW JV, 7,332 MW IPP/SIPP, 1,301 MW Rental Power Plant, 251 MW under REB (for PBS) and 1,160 MW Power Import from India. The maximum peak generation was 12,738 MW which was 1.20% lower than that in the previous year (FY 2018-19).

Installed and Present Capacity by Fuel Type as on October 2021

Fuel Type	Installed		Present	
	Capacity (MW)	Total (%)	Capacity (MW)	Total (%)
Coal	1768.00	8.03 %	1688.00	8.06 %
F. Oil	0.00	0 %	0.00	0 %
Gas	11450.00	51.97 %	11100.00	53.02 %
HFO	5953.00	27.02 %	5341.00	25.51 %
HSD	1341.00	6.09 %	1286.00	6.14 %
Hydro	230.00	1.04 %	230.00	1.1 %
Imported	1160.00	5.27 %	1160.00	5.54 %
Solar	129.00	0.59%	129.00	0.62%
Total	16018.00	100 %	15155.00	100 %

1.5. **Energy Generation**

Total net energy generation in FY 2019-20 was 71,419 GWh, which was about 1.26% higher than previous year's net generation of 70,533 GWh. Net energy generation in the public sector was 35,316 GWh and 29,429 GWh in the private sector (including REB). Another 6,674 GWh was imported from India through the interconnection in Bheramara and Tripura.

Installed Capacity, Present Capacity, Maximum Peak Generation

Year	Installed capacity (MW)	Present Capacity (MW)	Maximum Peak Generation (MW)
1974-75	667	490	266
1975-76	766	606	301
1976-77	767	571	342
1977-78	752	557	396
1978-79	718	571	437
1979-80	822	625	462
1980-81	813	707	545
1981-82	857	712	604
1982-83	919	810	709
1983-84	1,121	998	761
1984-85	1,141	1,018	887
1985-86	1,171	1,016	883
1986-87	1,607	1,442	1,084
1987-88	2,146	1,859	1,317
1988-89	2,365	1,936	1,393
1989-90	2,352	1,834	1,509
1990-91	2,350	1,719	1,640
1991-92	2,398	1,724	1,672
1992-93	2,608	1,918	1,823

1994-95	2,908	2,133	1,970
1995-96	2,908	2,105	2,087
1996-97	2,908	2,148	2,114
1997-98	3,091	2,320	2,136
1998-99	3,603	2,850	2,449
1999-00	3,711	3,549	2,665
2000-01	4,005	3,830	3,033
2001-02	4,234	3,833	3,218
2002-03	4,680	3,428	3,428
2003-04	4,680	3,592	3,592
2004-05	4,995	3,721	3,721
2005-06	5,245	3,782	3,782
2006-07	5,202	3,718	3,718
2007-08	5,305	4,130	4,130
2008-09	5,719	5,166	4,162
2009-10	5,823	5,271	4,606
2010-11	7,264	6,639	4,890
2011-12	8,716	8,100	6,066
2012-13	9,151	8,537	6,434
2013-14	10,416	9,821	7,356
2014-15	11,534	10,939	7,817
2015-16	12,365	11,770	9,036
2016-17	13,555	12,771	9,479
2017-18	15953	15410	10958
2018-19	18961	18438	12893
2019-20	20383	19892	12738

Maximum Generation

Year	**Maximum Generation in MW**			**% Increase over the preceding year**
	East Zone	West Zone	**System Total**	
1970-71	172	53	225	-
1971-72	141	42	183	18.66
1972-73	175	47	222	21.53
1973-74	185	65	250	12.60
1974-75	199	67	266	6.36
1975-76	220	81	301	13.28
1976-77	254	88	342	13.49
1977-78	287	109	396	15.78
1978-79	331	105	437	10.25
1979-80	338	124	462	5.82
1980-81	399	146	545	18.03
1981-82	451	153	604	10.72

1982-83	506	203	709	17.45
1983-84	549	212	761	7.40
1984-85	651	236	887	16.47
1985-86	613	270	883	0.47
1986-87	734	349	1,084	22.76
1988-89	980	413	1,393	5.77
1989-90	1,070	439	1,509	8.33
1990-91	1,141	499	1,640	8.68
1991-92	1,160	512	1,672	1.95
1992-93	1,293	530	1,823	9.05
1993-94	1,355	520	1,875	2.84
1994-95	1,472	498	1,970	5.07
1995-96	1,497	590	2,087	5.96
1996-97	1,594	520	2,114	1.29
1997-98	1,560	577	2,136	1.03
1998-99	1,828	621	2,449	14.62
99-2000	1,878	787	2,665	8.84
2000-01	2,175	858	3,033	13.82
2001-02	2,447	771	3,218	6.08
2002-03	2,512	917	3,428	6.54
2003-04	2,646	946	3,592	4.79
2004-05	2,750	971	3,721	3.58
2005-06	2,809	973	3,782	1.65
2006-07	2,725	993	3,718	1.70
2007-08	3,089	1,041	4,130	11.09
2008-09	3,589	573	4,162	0.78
2009-10	3,883	723	4,606	10.67
2010-11	3,962	928	4,890	6.17
2011-12	4,805	1,261	6,066	24.05
2012-13	5,010	1,424	6,434	6.07
2013-14	5,320	2,036	7,356	14.33
2014-15	5,902	1,915	7,817	6.27
2015-16	6,699	2,337	9,036	15.59
2016-17	7,024	2,455	9,479	4.90
2017-18	8034	2924	10958	15.60
2018-19	9012	3881	12893	17.66
2019-20	9005	3733	12738	1.20

Plant Wise Generation (FY 2019-20)

SL No.	Name of Power Station	Type of Fuel	Installed Capacity (As of June) (MW)	Net Energy Generation (GWh)	Annual Plant Factor (%)	Efficiency (%) (Net)	Overall Thermal Efficiency (%) (Net
PUBLIC							
DHAKA ZONE							
1.	a) Ghorashal TPP (Unit 1 & 2)	Gas	110	313.86	45.11%	25.02%	
	b) Ghorashal Repowered CCPP Unit - 3	Gas	210	463.93	32.98%	27.97%	
	c) Ghorashal Repowered CCPP Unit – 4	Gas	210	626.87	42.31%	28.53%	
	d) Ghorashal TPP Unit - 5	Gas	210	194.59	12.61%	28.90%	
	e) Ghorashal TPP Unit - 6	Gas	0	- 1.23	-	-	
2.	Ghorasal 365 MW CCPP Unit-7	Gas	365	1789.83	59.03%	47.18%	
3.	Tongi 80 MW GTPP	Gas	105	- 0.79	-	-	
4.	Haripur GTPP	Gas	32	1.88	1.65%	18.50%	
5.	210 MW Shiddirganj TPP	Gas	210	- 4.69	-	-	
6.	Siddhirganj 2x120 MW GTPP	Gas	210	318.89	18.13%	24.60%	
7.	Haripur 412 MW CCPP	Gas	412	2800.29	80.71%	55.15%	**39.72**
8.	Gazipur 52 MW PP	F. Oil	52	93.72	21.28%	38.30%	
9.	Kodda 150 MW PP	F. Oil	149	175.19	14.01%	38.78%	
10.	Siddhirganj 335 MW CCPP	Gas	335	918.91	33.19%	36.60%	
11.	Gazipur 100 MW PP	F. Oil	105	287.82	31.71%	41.01%	
CHATTOGRAM ZONE							
12	Karnafuli Hydro	Hydro	825.19	825.19	41.07%	-	
13	Rauzan 210 MW /ST (1st)	Gas	612.78	612.78	45.31%	29.34%	
	Rauzan 210 MW /ST (2nd)	Gas	313.31	313.31	21.89%	25.88%	
14	Shikalbaha 150 MW Peaking PP	Gas	959.03	959.03	75.41%	34.30%	
15	Hathazari 100 MW Peaking PP	F.Oil	4.49	4.49	0.75%	37.73%	
16	Sangu, Dohazari-kaliaish 100 MW PPP	F.Oil	104.80	104.80	12.14%	40.12%	
17	RPCL Raozan 25 MW	F.Oil	33.27	33.27	15.68%	38.19%	
18	Shikalbaha 225 MW PS	Gas	225	1382.99	72.64%	49.16%	
		HSD		0.34	-	-	
19	Kaptai Solar	Solar		9.51	15.60%	-	
CUMILLA ZONE							
20	a) Ashuganj TPP Unit-3	Gas	150	496.79	46.06%	32.67%	
	b) Ashuganj TPP Unit-4	Gas	150	169.26	16.33%	33.24%	
	c) Ashuganj TPP Unit-5	Gas	150	214.37	20.33%	34.32%	
21	Ashuganj 50 MW PP	Gas	53	244.15	63.61%	38.93%	
22	Ashuganj 225 MW CCPP	Gas	221	1480.50	77.93%	47.77%	
23	Ashuganj 450 MW CCPP (South)	Gas	360	2350.52	77.52%	55.70%	
24	Ashuganj 450 MW CCPP (North)	Gas	360	2458.47	81.34%	56.47%	

25	Chandpur 150 MW CCPP	Gas	163	590.80	44.06%	33.64%
26	Titas 50 MW Peaking PP	F.Oil	52	7.64	1.97%	39.36%
SYLHET ZONE						
27	Shahjibazar 70 MW GT, Habiganj	Gas	70	480.46	83.77%	27.50%
28	Shahjibazar 330 MW CCPP	Gas	330	1531.47	56.29%	36.16%
29	Fenchuganj C.C. (Unit #1)	Gas	97	496.55	82.26%	29.83%
30	Fenchuganj C.C. (Unit #2)	Gas	104	352.40	48.23%	30.81%
31	Sylhet 1x20 MW /GT	Gas	20	98.05	56.29%	29.99%
32	Sylhet 230 MW	Gas	231	615.68	31.21%	29.60%
33	Bibiyana-3 GTG	Gas	400	1081.55	32.32%	44.61%
KHULNA ZONE						
34	Khulna 225 MW (NWPGCL)	HSD	230	5.91	0.43%	23.22%
35	Bheramara GT unit-3	HSD	20	3.89	2.95%	20.67%
36	Bheramara 360 MW CCPP (NWPGCL)	Gas	410	2320.61	67.63%	51.08%
37	Faridpur 50 MW Peaking PP	F.Oil	54	39.50	8.90%	36.59%
38	Gopalganj 100 MW Peaking PP	F.Oil	109	48.53	5.48%	34.26%
39	Modhumoti 105 MW NWPGCL	F.Oil	105	216.47	23.70%	39.79%
BARISHAL ZONE						
-	Barishal 2x20 MW /GT	HSD	-	1.07	0.57%	22.21%
40	Bhola 225 MW CCPP	Gas	194	1054.25	65.55%	42.11%
RAJSHAHI ZONE						
41	Baghabari 71 MW /GT	Gas	71	239.89	50.37%	26.73%
	Baghabari 100 MW /GT	Gas	100	70.99		26.53%
42	Sirajgonj 210 MW CC (NWPGCL) Unit-1	Gas	210	1251.51	71.09%	42.86%
		HSD		-		N/A
43	Baghabari 50 MW Peaking RE	F.Oil	52	42.52	9.57%	37.69%
44	Bera 70 MW Peaking RE	F.Oil	71	13.03	2.25%	35.33%
45	Santahar 50 MW PP	F.Oil	50	26.92	6.33%	38.29%
46	Katakhali 50 MW PP	F.Oil	50	41.52	9.71%	36.36%
47	Chapainobabgonj Peaking Power Station 100 MW, Amnura	F.Oil	104	168.36	18.94%	38.98%
48	Sirajgonj 210 MW CC (NWPGCL) Unit-2	Gas	220	660.16	35.90%	41.24%
		HSD		-		N/A
49	Sirajgonj 210 MW CC (NWPGCL) Unit-3	Gas	220	1236.18	66.66%	42.28%
		HSD		-		N/A
RANGPUR ZONE						
50	Barapukuria Coal based S/T (unit 1,2)	COAL	250	307.46	23.80%	25.52%
51	Barapukuria Coal based S/T (unit 3)	COAL	274	1759.57	80.60%	34.23%
52	Saidpur 20 MW /GT	HSD	20	9.22	5.30%	21.07%
53	Rangpur 20 MW /GT	HSD	20	3.38	1.99%	18.06%
	Total (Grid)		**9,717**	**34411.37**	**44.50%**	-
	Isolated East	HSD	0	3.78		
	Isolated West	HSD	0	0.00		
	Total PUBLIC		**9,717**	**34415.15**		
JOINT VENTURE						
1	Payra, Potuakhali 2*660 MW PP (U-1)	COAL	622	900.90	16.71%	36.91%
Total Joint Venture			**622**	**900.90**	**16.71%**	**36.91%**

PRIVATE						
A. IPP						
1	Ashuganj 51 MW PP (Midland)	GAS	51	267.91	59.97%	5.51%
2	RPCL 210MW CCPP	GAS	210	1289.58	72.88%	45.85%
3	Haripur 360MW CCPP(HPL)	GAS	360	2585.76	81.99%	48.40%
4	Meghnaghat 450 MW CCPP(MPL)	GAS	450	3042.34	77.18%	44.78%
5	Ghorashal 108MW PP (Regent)	GAS	108	286.50	30.28%	43.20%
6	Ashuganj 195MW PP (APSCL-United)	GAS	195	342.07	20.02%	42.52%
7	Bibiana-II 341 MW CCPP (Summit)	GAS	341	2533.40	84.81%	46.13%

8	Kushiara 163 MW CCPP (KP)	GAS	163	1148.09	80.41%	41.62%
9	Sirajgonj 410 MW CCPP (Unit-4)	GAS	414	3047.92	84.04%	48.68%
10	Meghnaghat CCPP(Summit)	GAS	305	1233.79	46.18%	41.64%
11	Natore 52 MW IPP (Raj-Lanka) (IPP)	F.Oil	52	79.77	17.51%	43.57%
12	Gagnagar 102 MW PP (Digital Power)	F.Oil	102	228.47	25.57%	41.25%
13	Patenga 50MW PP (Baraka)	F.Oil	50	133.22	30.41%	43.04%
14	Chattogram 108 MW PP (ECPV)	F.Oil	108	178.03	18.82%	42.49%
15	Jangalia 52 MW PP (Lakdanavi)	F.Oil	52	69.19	15.19%	43.59%
16	Katpotti 52 MW PP (Sinha)	F.Oil	51	88.05	19.71%	42.90%
17	Barishal 110 MW PP (Summit)	F.Oil	110	191.40	19.86%	43.86%
18	Madanganj-55 MW PP(Summit)	F.Oil	55	96.81	20.09%	42.54%
19	Manikganj 55 MW PP (Northern)	F.Oil	55	151.07	31.36%	44.41%
20	Nababganj 55 MW PP (Southern power)	F.Oil	55	110.27	22.89%	44.41%
21	Jamalpur 95 MW PP (Powerpack)	F.Oil	95	339.61	40.81%	43.57%
22	Bosila 108MW PP(CLC)	F.Oil	108	147.42	15.58%	43.20%
23	Kamalaghat 54 MW PP (Banko Energy)	F.Oil	54	217.41	45.96%	44.39%
24	Kodda 300 MW PP Unit-2 (Summit)	F.Oil	300	365.30	13.90%	43.34%
25	Mymensingh 200 MW PP (United)	F.Oil	200	507.83	28.99%	44.00%
26	Kodda 149 MW PP Unit-1 (Summit)	F.Oil	149	404.14	30.96%	42.73%
27	Rupsha 105 MW PP (Orion rupsha)	F.Oil	105	187.14	20.35%	43.36%
28	Chandpur 200 MW (Desh energy)	F.Oil	200	352.83	20.14%	44.00%
29	Juldah 100 MW PP Unit-3 (Acorn)	F.Oil	100	329.18	37.58%	43.86%
30	Ashuganj 150 MW PP (Midland)	F.Oil	150	196.07	14.92%	43.35%
31	Jamalpur 115 MW PP (United)	F.Oil	115	435.50	43.23%	44.00%
32	Bogura 113 MW PP (Unit-2) (Confidence)	F.Oil	113	223.19	22.55%	44.58%
33	Sikalbaha 105 MW PP (Baraka Sikalbaha)	F.Oil	105	99.24	10.79%	43.86%
34	Anwara 300 MW PP (United)	F.Oil	300	810.69	30.85%	36.00%
35	Rangpur 113 MW PP (Confidence)	F.Oil	113	280.46	28.33%	44.99%
36	Potiya 54 MW PP (Zodiac Power)	F.Oil	54	36.56	7.73%	44.27%
37	Shikalbaha 110 MW PP (Kornophuly Power)	F.Oil	110	41.59	4.32%	44.27%
38	Feni 114 MW PP (Lakdanavi)	F.Oil	114	34.82	3.49%	42.96%
39	Bogura 113 MW PP (Unit-1) (Confidence)	F.Oil	113	199.46	20.15%	44.97%
40	Choumohoni 113 MW PP (HF Power)	F.Oil	113	128.26	12.96%	44.99%
41	Juldah 100 MW PP Unit-2 (Acorn)	F.Oil	100	186.55	21.30%	43.88%
-	Manikganj 162MW P0wer Generation	F.Oil	-	-	-	-
-	Nutan Biddyut 220MW	F.Oil	-	-	-	-
42	Meghnaghat 104 MW PP (SPL)	F.Oil	104	10.83	1.19%	-
43	Keranigonj 300 MW PP (APR)	HSD	300	10.50	0.40%	36.00%
44	Daudkandi 200 MW PP (B.Trac)	HSD	200	7.11	0.41%	43.36%
45	Noapara 100 MW PP (Bangla Trac)	HSD	100	79.10	9.03%	36.60%
46	Aurahati 100MW PP (Aggreko)	HSD	100	6.35	0.72%	36.60%
47	Bramhangoan 100 MW PP (Aggreko)	HSD	100	5.13	0.59%	36.00%
48	Baghabari 200 MW PP (Paramount)	HSD	200	3.67	0.21%	36.00%
49	Sarishabari 3 MW Solar Plant	Solar	3	3.86	14.69%	-
50	Teknaf 20MW PP (Solartech)	Solar	20	36.03	20.56%	-
51	Mazipara, Tatulia 8 MW Solar PP (Symba)	Solar	8	11.49	16.39%	-
-	Sailo Solar Power Plant Shantahar	Solar	-	0.11	0.00%	-
-	Shalla 400 KW Solar	Solar	0.4	0.07	1.95%	-
Sub-Total IPP			**7233**	**22801.14**	**36%**	-
B. RENTAL & SIPP						
1	Bogura 22 MW PP (GBB)	GAS	22	133.166952	69.10%	29.02%
2	Bogura 20 MW PP (Energyprima)	GAS	20	78.662952	89.80%	41.79%
3	Ghorashal 78.5 MW PP(MAX)	GAS	78	151.975009	22.24%	35.84%
4	Tangail 22 MW PP (Doreen)	GAS	22	143.404572	74.41%	38.28%
5	Feni 22 MW PP (Doreen)	GAS	22	141.279397	73.31%	38.28%
6	Jangalia 33 MW PP (Summit)	GAS	33	208.181906	72.02%	38.24%
7	Ashuganj 55 MW PP (Precision)	GAS	55	218.732592	45.40%	32.50%
-	Kumargao 50 MW 3 yrs (Energyprima)	GAS	-	137.52756	31.40%	34.25%
8	Shahjibazar 86MW PP (Shahjibazar)	GAS	86	440.516616	58.47%	27.26%
9	Shazibazar 50 MW PP (EPL)	GAS	50	115.938819	26.47%	28.41%

10	Sylhet 10 MW PP (Desh)	GAS	10	64.287122	73.39%	35.56%
11	Fenchugonj 51 MW PP (Barakatullah)	GAS	51	284.768958	63.74%	31.29%
12	Fenchuganj 44 MW PP (EPL)	GAS	44	307.712992	79.83%	31.29%
13	Barabkunda 22 MW PP (Regent)	GAS	22	156.03566	80.96%	38.28%
-	Malancha, EPZ, Ctg	GAS	-	219.28032	-	-
14	Bhola 33 MW PP (Venture)	GAS	33	172.416844	59.64%	30.04%
-	Shahjahanulla 25 MW PP	GAS	-	133.344817	60.89%	35.84%
15	Bhola 95 MW PP (Aggreko)	GAS	95	445.52902	53.54%	35.53%
16	Khulna 115 PP MW (KPCL-2)	F.Oil	115	276.250119	27.42%	-
17	Noapara 40 MW PP (Khanjahan Ali)	F.Oil	40	91.546621	26.13%	40.96%
18	Madanganj 102 PP(Summit)	F.Oil	102	223.216584	25.48%	41.63%
19	Meghnaghat 100 MW(IEL)	F.Oil	100	193.30176	22.07%	41.13%
20	Siddhirganj 100 PP(Dutch Bangla)	F.Oil	100	184.437936	21.05%	-
-	Energies Power Cor.Ltd Shikalbaha 55MW	F.Oil	-	4.634333	1.04%	-
21	Amnura 50 MW PP	F.Oil	50	109.202081	24.93%	41.63%
22	Keraniganj 100 MW PP (Powerpac)	F.Oil	100	54.307056	6.20%	40.80%
23	Juldah 100 MW Unit-1 (Acorn)	F.Oil	100	90.61215	10.34%	41.19%
24	Katakhali 50 MW PP (Northern	F.Oil	50	69.537854	15.88%	41.27%
Sub-Total RENTAL& SIPP			**1400**	**4849.81**	**37%**	
C. IMPORT						
1	Power Import (Bheramara-Bharampur Phase-1)	Import	500	1,701		
2	Import from Tripura (1st Phase)	Import	100	1,007		
3	Import from Tripura (2nd Phase)	Import	60	902		
4	Power Import (Bheramara-Bharampur Phase-2)	Import	300	1,701		
5	Sembcorp Energy India Ltd	Import	200	1,363		
Total Energy IMPORT			**1,160**	**6,674**		
SIPP (REB)			**251**	**1,778.00**		
GRAND TOTAL			**20,383**	**71,418.87**		

1.6. **Distribution Zones**

BPDB is responsible for distribution of electricity in most of urban areas in Bangladesh except Dhaka Metropolitan City and its adjoining areas under DESA and DESCO, areas under West Zone Power Distribution Company Limited (WZPDCL) and some of the rural areas under Rural Electrification Board (REB). In the fiscal year 2019-20, BPDB sold bulk energy of 67,668 GWh to the distribution utilities including BPDB zones as single buyer which was 1.68% higher than the previous year. Retail sales of BPDB's Four distribution zones was 10,308 MkWh, which was 2.50% lower than the previous year. Distribution system loss (without 132 KV consumers) of BPDB came down to 8.99% from 9.12% of previous year. Collection/Import (C/I) ratio Come down to 90.19% from 92.87%. Per capita generation and consumption (Grid) increased to 426.23 kWh & 378 kWh from 426.05 kWh & 375 kWh respectively of previous year. Followings of the Distribution Zones of BPDB:

- Chittagong
- Comilla
- Sylhet
- Mymensingh

1.7. **Transmission Line**

During fiscal year 2019-20, very significant transmission components have been added to the system because of the completion of different project works. Transmission line length (ckt. km) has enlarged by 5.15% than that of previous year. The line details are as below:

Sl. No.	Transmission Line	Conductor Name & Size	Length (Circuit km.)
1	Payra-Gopalganj(N) 400kV double circuit transmission line	Quad ACCC Dhaka	163.55
2	Patuakhali-Payra 230kV double circuit transmission line	Twin ACCC Hamburg	93.00
3	Ishurdi-Rajshahi 230kV double circuit transmission line	Twin ACSR Mallard	158.24
4	Rangpur-Kurigram132 kV Single circuit transmission line	ACSR Grosbeak	40.949
5	Magura-Narail132 kV double circuit transmission line	ACSR Grosbeak	78.972
6	LILO of Bogura-Sirajganj 132 kV double circuit transmission line at Sherpur (Bogura) Substation	ACSR Grosbeak	2.616
7	LILO of Rajshahi-Chapai Nawabganj-Amnura 132 kV double circuit transmission line at Rajshahi(N)132 kV Substation	ACSR Grosbeak	1.624
8	LILO of Feni-Cumilla(N) 132 kV double circuit transmission line at Chowddagram substation	ACSR Grosbeak	3.152
9	LILO of Faridpur-Madaripur 132 kV double circuit transmission line at Gopalganj(N) substation	ACSR Grosbeak	6.12
10	LILO of Gopalganj-Madaripur 132 kV double circuit transmission line at Gopalganj(N) substation	ACSR Grosbeak	42
11	Kodda–Rajendrapur132 kV double circuit transmission line	ACCC Grosbeak	49.4
Total			**639.623 ckt.km**

Total length of 400 KV transmission line increased to 861 circuit km from the previous year (FY 2018-19) 697.76 circuit km. The total length of 230 kV transmission line increased to 3658 circuit km from the previous year of 3406.69 circuit km. The total length of 132 kV transmission line increased to 7,764 circuit km from the previous year of 7545.5 circuit km.

1.8. **Grid Sub-stations**

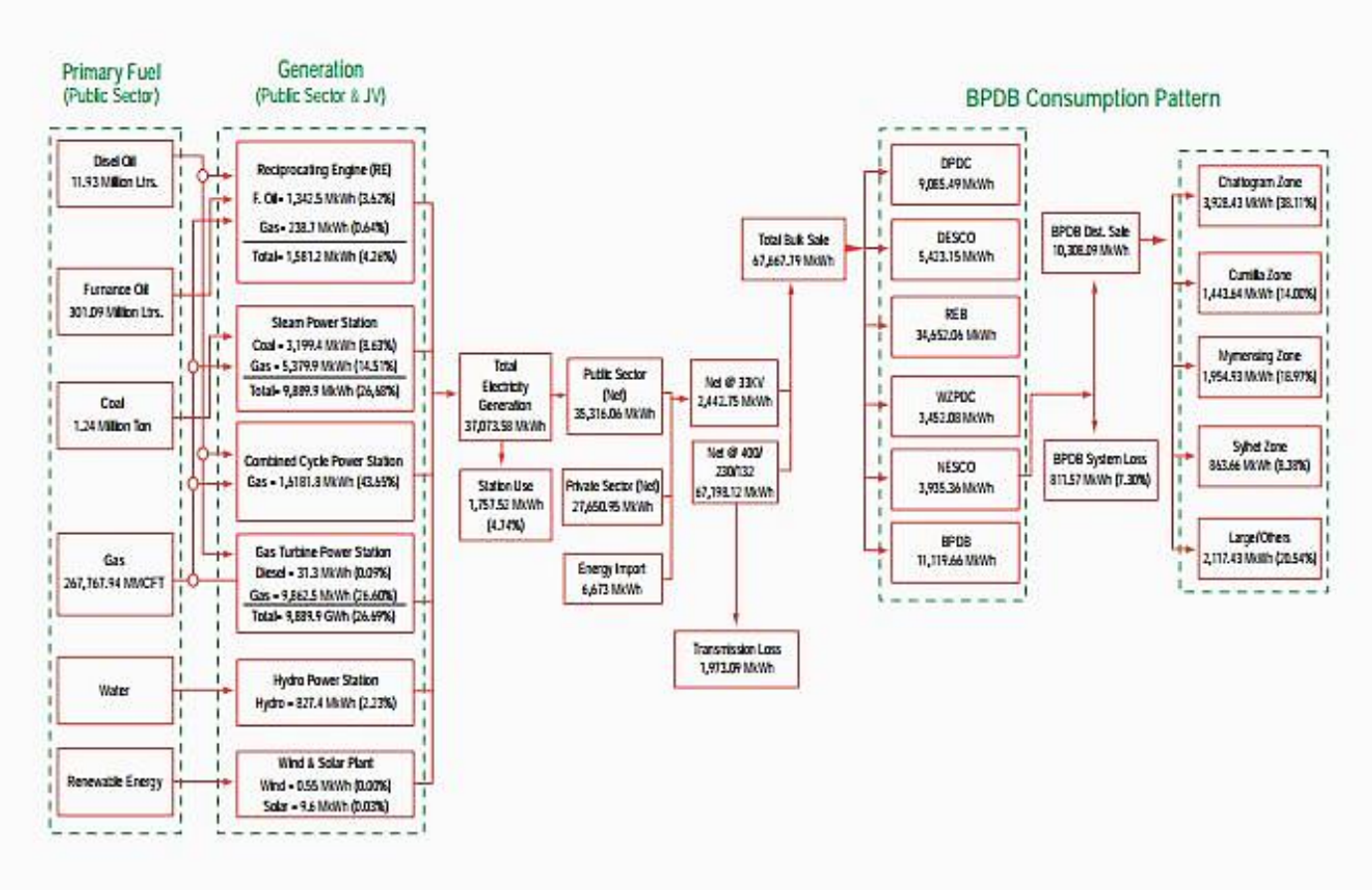
During fiscal year 2019-20 very significant transmission components have been added to the system because of the completion of different project works. The transformer capacity at the end of year 2019-20 has enlarged by 8.43% at difference voltage level. The substations capacity details are as below:

New Sub-stations

Sl. No.	**Substation Name**	**Transformer Capacity**

1	Gopalganj (N) 400/132 KV substation	1x325 MVA
2	GPH 230/33 KV substation (Private)	2 x 100/125 MVA
3	Rajshahi(N) 230/132 KV substation	2x300 MVA
4	Chauddagram 132/33 KV substation	2x50/75 MVA
5	Kurigram 132/33 KV substation	2x50/75 MVA
6	Narail 132/33 KV substation	2x50/75 MVA
7	Nawabganj 132/33 KV substation	2x50/75 MVA
8	PHP 132/33 KV substation (Private)	1x30/35 MVA
9	Rajshahi(N) 132/33 KV substation	2x80/120 MVA
10	Rajendrapur 132/33 KV substation	2x80/120 MVA
11	Sherpur(Bogura) 132/33 KV substation	2x50/75 MVA
12	Sreenagar 132/33 KV substation	2x50/75 MVA

1.9. **ENERGY FLOW CHART (FY 2019-20)**



As on september-2019, total installed capacity including Captive Power & Renewable is (19,195+2,800+334) =22,329 MW. Out of Grid Capacity 18,969MW (Public Sector 9,507 MW, Private Sector 8,528 MW & Power Import 1,160 MW) of Power Plants located at different parts of the country. The main fuel used for power generation is indigenous gas. In FY-2017-2018 Total 62,678 GWh electricity was generated (Public sector power plant 31,083 GWh, Private Sector Power Plants 26,812 GWh and Power import 4,783 GWh). The maximum demand served during peak hours is 12,893 MW in 29 May, 2019. The transmission network is about 11,500 ckt km long comprising 400, 230, 132 and 66 KV lines. The total grid sub-stations capacity is about 37,000 MVA as on November-2018.

1.10. **Number of consumers**

During this fiscal year 2019-20, BPDB has provided total 190629 new connections and the total number of consumers has been increased to 3,236,886 and the annual increment was 6.26%
Distribution system loss. BPDB 's distribution system loss in the FY 2019-20 that results 8.99% which was 9.02% in FY 2018-19.

1.11. **Bulk Electricity Sales by BPDB**

BPDB has been functioning as a single buyer in the power market of Bangladesh. BPDB purchases electricity from the public and private generation entities and sales bulk electricity to all the distribution utilities including its four distribution zones. Distribution entities purchases electricity from BPDB are as follows:

- Dhaka Power Distribution Company (DPDC)
- Dhaka Electric Supply Company (DESCO)
- West Zone Power Distribution Company Limited (WZPDCL)
- Rural Electrification Board (REB)
- Northern Electricity Supply Company Ltd (NESCO)
- BPDB's Four distribution zone

In FY 2019-20 bulk electricity sales to the distribution utilities increased to 67,668 MkWh from 66,547 MkWh which is 1.66% higher than the previous year. Total revenue collection also increased to 3,37,846 MTk from 3,32,294 MTk which is 1.64% higher than the previous year.

1.12. **SCADA**

Supervisory Control and Data Acquisition (SCADA) has started functioning within the Four zones of BPDB (Chattogram, Sylhet, Mymensingh & Cumilla) for system control and data acquisition of the distribution system/networks under it from one point of each zone through microwave link. Provided that 34 sub-stations within Chattogram zone, 18 sub-stations within Sylhet zone, 17 sub stations within Mymensingh zone, 10 sub-stations within Cumilla zone are connected under the SCADA of respective zone. BPDB also has a plan to set up one SCADA in Dhaka to monitor/control all SCADA of BPDB centrally. Key functions of SCADA are:
Supervising/Monitoring the networks under it continuously on its computer monitors round the clock and controls the power supply of the networks from the supervisors desk as and when necessary in a systematic manner as directed by the authority concerned.
Data acquisition and recording of power flow/supply status through each circuit of the entire networks on hourly basis round the clock for reporting to authorities concerned and analyzing demand, power factor & other necessary elements of each circuit for system management within the SCADA in an smart manner.
Preparing and reporting daily and monthly power supply, demand, load shedding, line shut-down, etc. of each circuit of the networks under it to authorities concerned for system planning.
Preparing power supply, demand, load shedding, line shut-down, etc. report for any specified span of time as wanted by the authorities concerned for system planning.
Load management matching with the power generation as per instructions of NLDC or authority concerned in order to keep the overall system healthy.
Appraising all important information regarding system to the authorities concerned as and when required

1.13. **Pole Manufacturing Units**

At present it owns two concrete pole manufacturing units located at Aricha and Chittagong. These are support industry to BPDB. These units are under the administrative control of BPDB Civil

Engineering Directorates and financial control network of Regional Accounting Office.

This IMS Manual has been prepared to describe the requirements and structure of the Bangladesh Power Development Board (BPDB)'s Integrated Management System. BPDB's Integrated Management System is based on, and has been developed to satisfy the requirements of the Standard for quality, environmental and occupational health and safety management systems (i.e., ISO 9001: 2015, ISO 14001:2015 & ISO 45001:2018 Standards).

For easy reference, the section headings of the Standard (from Section 4.0 onwards) have been adopted and are used for the documents' numberings of this IMS Manual.

2. Manual Administration

2.1. Introduction to Manual

This IMS Manual describes the Quality, Health Safety and Environmental Management Systems adopted by Bangladesh Power Development Board. The IMS Manual includes:

a) The scope of the Quality, Health Safety and Environmental Management System.

b) Reference to the procedures established for the Quality, Health Safety and Environmental Management Systems.

The Integrated Management System has been formulated on the basis of ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Standards.

2.2. Structure of The Manual

The IMS Manual is structured as shown in the 'Contents' of this Manual. The Clause Number of ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Standards is mentioned on each relevant pages of the Manual. Each page carries the page number, document number with date and version. The Signatures of the approving and issuing authority are maintained only in the Master Hard Copy. The Central Management Representative (MR) is the approving authority for the first and all revised versions of the IMS Manuals that are maintained centrally at BPDB. All versions are issued by the Management Representative electronically, in non-editable form and the Controlled Status is also mentioned in the Electronic version. This IMS Manual is available only in English language.

2.3. Control Procedure

The Management Representative (MR) is authorized by the Chairman to execute the activities of preparing, issuing, maintaining and amending the IMS Manual.

Apart from the controlled copies, as per the Distribution List, only the Management Appointee, if required, issues any additional copy of the IMS Manual, and such copies of the Manual are stamped "UNCONTROLLED COPY". These uncontrolled copies do not come under the purview of document control and are not in use within the company.

2.4. Amendment Procedure

The IMS Manual is reviewed by the Management Representative (MR), in consultation with the concerned personnel, and revised, if needed, under the following circumstances:

- Organizational Changes including changes in roles, responsibility, accountability, authority etc.
- Changing circumstances e.g. changes in ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Standards., changes in process activity.
- If there is any accident indicating any weakness IMS Management System
- Or at least once in a year

Each revision is formally released by the issue of amended versions. The revision history will have to be maintained. The Management Representative (MR) retains one copy of the obsolete section(s) for the current edition as well as previous obsolete version (s).

2.5. Use at Local Level

This manual is to be retained at every BPDB sites and to be referred to as the Apex Manual for the Integrated Management System documentation.
The central copy is marked as – "Integrated Management System (IMS) Manual – Head Office"
The copy at each site will be marked as - "Integrated Management System (IMS) Manual – name of site"
The copy of the manual at site will be exactly the same as the Head Office copy and hence will need no authorization, it being the unchanged version of the Head Office copy. However, appendices of this manual will change while used in site and top management of each site is encouraged to adopt them in line with the local condition.

3. Terms and Definitions

Bangladesh Power Development Board has used the following terms and definitions for the established IMS in line with the ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Standards.

01. **IMS -** Integrated Management System, the procedure being implemented and followed in BPDB for maintaining Quality Management System, Environmental Management System and Occupational Health and Safety Management System as per ISO 9001: 2015, ISO 14001: 2015 & ISO 45001: 2018.
02. **Policy -** Intentions and direction of an organization, as formally expressed by its top management.
    Note 1 to entry: This constitutes one of the common terms and core definitions for ISO management system standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives, Part 1.
03. **Objective -** Result to be achieved
    Note 1 to entry: An objective can be strategic, tactical, or operational.
    Note 2 to entry: Objectives can relate to different disciplines (such as financial, health and safety, and environmental goals) and can apply at different levels (such as strategic, organization-wide, project, product, service and process.
    Note 3 to entry: An objective can be expressed in other ways, e.g. as an intended outcome, a purpose, an operational criterion, as an environmental objective, or by the use of other words with similar meaning (e.g. aim, goal, or target).
04. **Controlled Documents -** Documents bearing Red color stamp marked as "controlled". Electronic versions in network having user access are also controlled documents.
05. **Uncontrolled Documents -** Documents that are obsolete, superseded or out of date, or not bearing the Red color "controlled" stamp**.**
06. **Operations -** The operation of the generating sets and associated support facilities.
07. **Maintenance -** The Maintenance of the generating sets and associated support facilities.
08. **Management Program -** The means, time frames and personnel responsible for achieving an objective and target.
09. **Management Representative (MR) -** A member of the management team, to be formally appointed by the Plant Manager, usually the HSE Manager. Responsible for maintenance of the IMS policy in general.
10. **Communication -** Written or electronic correspondence, telephonic conversations and oral discussions or meetings with any one and imparting training.
11. **Emergency Response -** Actions taken by the personnel outside of the immediate work area to address an environmental incident.
12. **Records -** Documented information that: (a) is evidence of a quality/environmental/OH&S activity or event that has been or is being performed, or (b) is required to be retained for future reference. It is information on quality, environmental or OH&S performance.
13. **Occupational -** Means involving a workplace, workplace activities or operational plant/equipment that is known to be potentially high risk.

14. **Audit -** Systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled.
    Note 1 to entry: An internal audit is conducted by the organization itself, or by an external party on its behalf.
    Note 2 to entry: An audit can be a combined audit (combining two or more disciplines).
    Note 3 to entry: Independence can be demonstrated by the freedom from responsibility for the activity being audited or freedom from bias and conflict of interest.
    Note 4 to entry: "Audit evidence" consists of records, statements of fact or other information which are relevant to the audit criteria and are verifiable; and "audit criteria" are the set of policies, procedures or requirements used as a reference against which audit evidence is compared, as defined in ISO 19011:2011 Standard.
15. **Management System Audit -** A systematic and documented verification process of objectively obtaining and evaluating evidence to determine whether an organization's integrated management system confirms to the integrated management audit criteria set by the organization, and for communication of the results of this process to management.
16. **Audit Criteria -** Policies, practices, procedures or other requirements against which the auditor compares objective evidence about the subject matter.
17. **Audit Team Leader -** Individual responsible for maintaining the IMS Audit Program. Example, a Lead Auditor or HSE Manager or MR.
18. **Objective Evidence -** Qualitative or quantitative information, records, or statements of fact pertaining to the existence and implementation of an audit element which is based on measurement or test and which can be verified.
19. **Management Review Committee -** A committee comprising the Plant Manager, the MR and at least Two other Managers, especially for reviewing the IMS at the plant.
20. **Management system -** Set of interrelated or interacting elements of an organization to establish policies and objectives and processes to achieve those objectives.
    Note 1 to entry: A management system can address a single discipline or several disciplines (e.g. quality, environment, occupational health and safety, energy, financial management).
    Note 2 to entry: The system elements include the organization's structure, roles and responsibilities, planning and operation, performance evaluation and improvement.
    Note 3 to entry: The scope of a management system can include the whole of the organization, specific and identified functions of the organization, specific and identified sections of the organization, or one or more functions across a group of organizations.
21. **Organization -** Person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives.
    Note 1 to entry: The concept of organization includes, but is not limited to sole-trader, company, corporation, firm, enterprise, authority, partnership, charity or institution, or part or combination thereof, whether incorporated or not, public or private.
22. **Top management -** Person or group of people who directs and controls an organization at the highest level.
    Note 1 to entry: Top management has the power to delegate authority and provide resources within the organization.
    Note 2 to entry: If the scope of the management system covers only part of an organization, then top management refers to those who direct and control that part of the organization.
23. **Interested party -** Person or organization that can affect, be affected by, or perceive itself to be affected by a decision or activity.
    EXAMPLE Customers, communities, suppliers, regulators, non-governmental organizations, investors and employees.
    Note 1 to entry: To "perceive itself to be affected" means the perception has been made known to the organization.

24. **Requirement -** Need or expectation that is stated, generally implied or obligatory.
    Note 1 to entry: "Generally implied" means that it is custom or common practice for the organization and interested parties that the need or expectation under consideration is implied.
    Note 2 to entry: A specified requirement is one that is stated, for example in documented information.
    Note 3 to entry: Requirements other than legal requirements become obligatory when the organization decides to comply with them.
25. **Compliance obligations (preferred term) - Legal requirements and other requirements (admitted term)** - Legal requirements that an organization has to comply with and other requirements that an organization has to or chooses to comply with
    Note 1 to entry: Compliance obligations are related to the environmental management system.
    Note 2 to entry: Compliance obligations can arise from mandatory requirements, such as applicable laws and regulations, or voluntary commitments, such as organizational and industry standards, contractual relationships, codes of practice and agreements with community groups or non-governmental organizations.
26. **Risks and opportunities -** Potential adverse effects (threats) and potential beneficial effects (opportunities).
27. **Competence -** Ability to apply knowledge and skills to achieve intended results.
28. **Documented information -** Information required to be controlled and maintained by an organization and the medium on which it is contained.

Note 1 to entry: Documented information can be in any format and media, and from any source.
Note 2 to entry: Documented information can refer to: — the environmental management system, including related processes; — information created in order for the organization to operate (can be referred to as documentation); — evidence of results achieved (can be referred to as records).

29. **Effectiveness -** Extent to which planned activities are realized and planned results achieved.
    Note 1 to entry: This constitutes one of the common terms and core definitions for ISO management system standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives, Part 1.
30. **Outsource (verb) -** Make an arrangement where an external organization performs part of an organization's function or process.

Note 1 to entry: An external organization is outside the scope of the management system, although the outsourced function or process is within the scope.

31. **Process -** Set of interrelated or interacting activities which transforms inputs into outputs.

Note 1 to entry: A process can be documented or not.

32. **Procedure -** Specified way to carry out an activity or a *process*.

Note 1 to entry: Procedures may be documented or not.

33. **Conformity -** Fulfilment of a requirement.
34. **Nonconformity** - Non-fulfilment of a requirement.
    Note 1 to entry: Nonconformity relates to requirements in this International Standard and additional environmental management system requirements that an organization establishes for itself.
35. **Corrective action -** Action to eliminate the cause of a nonconformity and to prevent recurrence
    Note 1 to entry: There can be more than one cause for a nonconformity.
36. **Continual improvement** - Recurring activity to enhance performance.
    Note 1 to entry: Enhancing performance relates to the use of the environmental management system to enhance environmental performance consistent with the organization's environmental policy.
    Note 2 to entry: The activity need not take place in all areas simultaneously, or without interruption.
37. **Effectiveness -** Extent to which planned activities are realized and planned results achieved.

38. **Indicator -** Measurable representation of the condition or status of operations, management or conditions [SOURCE: ISO 14031:2013 Standard]
39. **Monitoring** - Determining the status of a system, a process or an activity.
    Note 1 to entry: To determine the status, there might be a need to check, supervise or critically observe.
40. **Measurement -** Process to determine a value.
41. **Performance -** Measurable result.
    Note 1 to entry: Performance can relate either to quantitative or qualitative findings.
    Note 2 to entry: Performance can relate to the management of activities, processes, products (including services), systems or organizations.
42. **Environment** - surroundings in which an organization (3.1.4) operates, including air, water, land, natural resources, flora, fauna, humans and their interrelationships.
    Note 1 to entry: Surroundings can extend from within an organization to the local, regional and global system.
    Note 2 to entry: Surroundings can be described in terms of biodiversity, ecosystems, climate or other characteristics.
43. **Environmental management system -** Part of the management system used to manage environmental aspects, fulfil compliance obligations, and address risks and opportunities.
44. **Environmental policy -** Intentions and direction of an organization related to environmental performance, as formally expressed by its top management
45. **Environmental aspect -** Element of an organization's activities or products or services that interacts or can interact with the environment.
    Note 1 to entry: An environmental aspect can cause (an) environmental impact(s). A significant environmental aspect is one that has or can have one or more significant environmental impact(s).
    Note 2 to entry: Significant environmental aspects are determined by the organization applying one or more criteria.
46. **Environmental Incident or Emergency Situation -** Environmental releases that require an emergency response.
47. **Environmental condition -** State or characteristic of the environment as determined at a certain point in time.
48. **Environmental impact -** Change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects.
49. **Environmental objective -** Objective set by the organization consistent with its environmental policy.
50. **Environmental performance -** Performance related to the management of environmental aspects.
    Note 1 to entry: For an environmental management system, results can be measured against the organization's environmental policy, environmental objectives or other criteria, using indicators.
51. **Prevention of pollution -** Use of processes, practices, techniques, materials, products, services or energy to avoid, reduce or control (separately or in combination) the creation, emission or discharge of any type of pollutant or waste, in order to reduce adverse environmental impacts.
    Note 1 to entry: Prevention of pollution can include source reduction or elimination; process, product or service changes; efficient use of resources; material and energy substitution; reuse; recovery; recycling, reclamation; or treatment.
52. **Life cycle -** Consecutive and interlinked stages of a product (or service) system, from raw material acquisition or generation from natural resources to final disposal.
    Note 1 to entry: The life cycle stages include acquisition of raw materials, design, production, transportation/ delivery, use, end-of-life treatment and final disposal.
53. **Worker -** Person performing work or work-related activities that are under the control of the organization.

Note 1 to entry: Persons perform work or work-related activities under various arrangements, paid or unpaid, such as regularly or temporarily, intermittently or seasonally, casually or on a part-time basis.
Note 2 to entry: Workers include *top management*, managerial and non-managerial persons.
Note 3 to entry: The work or work-related activities performed under the control of the organization may be performed by workers employed by the organization, workers of external providers, contractors, individuals, agency workers, and by other persons to the extent the organization shares control over their work or work-related activities, according to the context of the organization.

54. **Participation -** Involvement in decision-making.
    Note 1 to entry: Participation includes engaging health and safety committees and workers' representatives, where they exist.
55. **Consultation -** Seeking views before making a decision.
    Note 1 to entry: Consultation includes engaging health and safety committees and workers' representatives, where they exist.
56. **Workplace -** Place under the control of the *organization* where a person needs to be or to go for work purposes.
57. **Contractor -** External *organization* providing services to the organization in accordance with agreed specifications, terms and conditions.
    Note 1 to entry: Services may include construction activities, among others.
58. **OH&S management system -** Management system or part of a management system used to achieve the OH&S policy.
    Note 1 to entry: The intended outcomes of the OH&S management system are to prevent injury and ill health to workers and to provide safe and healthy workplaces.
    Note 2 to entry: The terms "occupational health and safety" (OH&S) and "occupational safety and health" (OSH) have the same meaning.
59. **Safety Procedures (SP) -** The safety practices required to be carried out in accordance with regulations as laid down under site specific sets of procedure and instruction.
60. **OH&S policy -** *Policy* to prevent work-related *injury and ill health* to *workers* and to provide safe and healthy *workplaces*.
61. **OH&S objective -** *Objective* set by the *organization* to achieve specific results consistent with the *OH&S policy*
62. **Injury and ill health -** Adverse effect on the physical, mental or cognitive condition of a person.
    Note 1 to entry: These adverse effects include occupational disease, illness and death.
    Note 2 to entry: The term "injury and ill health" implies the presence of injury or ill health, either on their own or in combination.
63. **Hazard -** Source with a potential to cause *injury and ill health*.
    Note 1 to entry: Hazards can include sources with the potential to cause harm or hazardous situations, or circumstances with the potential for exposure leading to injury and ill health.
64. **Risk -** Effect of uncertainty.
    Note 1 to entry: An effect is a deviation from the expected — positive or negative.
    Note 2 to entry: Uncertainty is the state, even partial, of deficiency of information related to, understanding or knowledge of, an event, its consequence, or likelihood.
    Note 3 to entry: Risk is often characterized by reference to potential "events" and "consequences", or a combination of these.
    Note 4 to entry: Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated "likelihood" of occurrence.
65. **OH&S risk -** Combination of the likelihood of occurrence of a work-related hazardous event(s) or exposure(s) and the severity of *injury and ill health* that can be caused by the event(s) or exposure(s).

66. **OH&S opportunity -** Circumstance or set of circumstances that can lead to improvement of *OH&S performance.*
67. **OH&S performance -** *Performance* related to the *effectiveness* of the prevention of *injury and ill health* to w*orkers* and the provision of safe and healthy *workplaces*.
68. **Outsource -** Make an arrangement where an external *organization* performs part of an organization's function or *process*.
    Note 1 to entry: An external organization is outside the scope of the *management system*, although the outsourced function or process is within the scope.
    Note 2 to entry: This constitutes one of the common terms and core definitions for ISO management system standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives, Part 1.
69. **Monitoring -** Determining the status of a system, a *process* or an activity.
    Note 1 to entry: To determine the status, there may be a need to check, supervise or critically observe.
    Note 2 to entry: This constitutes one of the common terms and core definitions for ISO management system standards given in Annex SL of the Consolidated ISO Supplement to the ISO/IEC Directives, Part 1.
70. **Incident -** Occurrence arising out of, or in the course of, work that could or does result in *injury and ill health.*
    Note 1 to entry: An incident where injury and ill health occurs is sometimes referred to as an "accident".
    Note 2 to entry: An incident where no injury and ill health occurs, but has the potential to do so, may be referred to as a "near-miss", "near-hit" or "close call".
    Note 3 to entry: Although there can be one or more *nonconformities* related to an incident, an incident can also occur where there is no nonconformity.

Note: Other Terms and definitions used are as per ISO 9000:2015, iso 14001:2015 & ISO 45001:2018.

3.1. **Abbreviations**

BPDB	Bangladesh Power Development Board
PPA	The Power Purchase Agreement
PM	Plant Manager
HSE	Health safety and Environment
HR & ADMIN	Human Resources and Administration
QHSE	Quality, Health Safety and Environment
IMS	Integrated Management System
QMS	Quality Management System
EMS	Environmental Management System

OH&S	Occupational Health and Safety
MR	Management Representative
AMR	Additional Management Representative
DMR	Deputy Management Representative
PSMP	Power System Master Plan

4. Organization and its context

4.1. Understanding the organization and its context

BPDB is committed to defining out position in the marketplace and understanding how relevant factors arising from legal, political, economic, social and technological issues influence the strategic direction and organizational context.

BPDB identifies, analyses, monitors and reviews factors that may affect the ability to satisfy the customers and stakeholders, health safety and environmental status as well as; factors that may adversely affect the stability of the process, or the management system's integrity.

IMS Input Hierarchy

ensure that the IMS is aligned with the organisation's strategy, whilst taking account of relevant internal and external factors; it is initially collated and analysed pertinent information in order to determine potential impact on organisation's context and subsequent business strategy.

BPDB then monitors and reviews this information to ensure that a continual understanding of each group's requirements is derived and maintained. To facilitate the understanding of the context, BPDB regularly consider issues that influence the context during management review meetings and are conveyed via minutes and business planning documents.

Internal Issues	External Issues
Market share	Customers and suppliers

Employees	Markets and Competition
Performance	Regulatory and statuary
Capacity	Economic Backdrop
Values and Culture	Technological
Innovation and knowledge	Cultural and social

The output from this activity is evident as an output to the consideration of risks and opportunities, and the actions that is taken to address them. For more information about risk and opportunity management framework, refer to section 6.1 of this IMS Manual.

The following documented information are also maintained and retained to describe the organizational context:

a. Analysis of business plan;
b. Analysis of technology and competitors;
c. Economic reports from relevant business sectors;
d. Technical reports from technical experts and consultants;
e. SWOT analysis reports or schedules for internal issues;
f. PESTLE analysis reports or schedules for external issues;
g. Minutes of Meetings (Management and design review, production planning), process maps and reports etc.

BPDB is responsible for major portion of generation and distribution of electricity mainly in urban areas except Dhaka, West Zone and Northern Zone. BPDB is also responsible to purchase power as a single buyer from power producers. Construction, operation, maintenance, and development of the power plant, electrical sub-station and distribution line rely on BPDB.

Both generation and distribution are involved with activities, machinery, infrastructure, situations, circumstances etc. which are associated with large number of hazards as well as environmental pollution.

Starting from High Voltage Electricity, to high pressure steam at more than 500 degree Celsius, with machines rotating at very high speeds, and processes moving fast under highly dynamic states, all combine into a scenario that demand high discipline and good competency. Moreover, BPDB has some positive or negative effects on the process of managing environmental responsibilities.

In order to keep the HSE risks at “Acceptable” level, BPDB decided to implement an Integrated Management System in the entirety of the organization, which would be effective and Certified by an internationally renowned Certification Body, under a viable and globally reputable Accreditation Scheme.

4.2. Understanding the needs and expectations of interested parties

4.2.1. Internal and external interested parties

The following internal and external interested parties have potential effect on BPDB ability to meet customer and other requirements:

- Shareholders (owners)
- Employees
- Community
- Customers
- Suppliers
- Regulators

A procedure for Context of the Organisation, is provided to identify, analyse the requirements of interested parties. Another procedure for Risk Management, is adopted for identifying and evaluating risks and opportunities.

The continuing relevance of interested parties, and their impact on BPDB ability to meet customer and other requirements, are reviewed at the management reviews of the IMS.

BPDB identifies and assess the potential impact of any relevant needs and expectations that may arise from interested parties in order to ensure that its product (electricity) and processes continue to meet all relevant requirements.

BPDB converts their relevant needs and expectations into requirements which become inputs to IMS wherever appropriate, to ensure that our processes are aligned to deliver the requirements of our interested parties.

4.3. Scope of the Integrated Management System

BPDB's Integrated management system shall apply to all the functions that engage BPDB within the Area of its jurisdiction.

Functions of BPDB: BPDB plans, promotes, develops, operates and maintains an integrated and efficient power generation system network in all its aspects including planning, investigation, research, design and engineering, preparation of preliminary feasibility and detailed project reports, environmental aspect impact assessment, hazard identification and risk assessment, construction operation and maintenance of generation stations, substations, power evacuation and communication facilities and appurtenant works, execution of turnkey jobs for other utilities and sale of power.

Scope: 'BPDB' generates power and supplies to meet the requirements of BPDB'. For the purposes of the IMS, the requirements of ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 applies to all operations of generation and distribution of power and related services at BPDB's at different locations of the country and processes that include sales, procurement at head office, local procurement process, waste management plan, health safety processes by plant authority.

This Manual describes the BPDB Integrated Management System (IMS), which is based on the following principles:

- Innovation in all aspects of business as the right and obligation of every employee
- Individual responsibility for the quality of generation and supply, and continuous improvement of work performed
- Understanding of the IMS Policies as a guide for decision making
- Conformance with the requirements of ISO 9001: 2015, ISO 14001: 2015 and ISO 45001: 2018.

BPDB is committed to continually improving the effectiveness of the Integrated Management System.

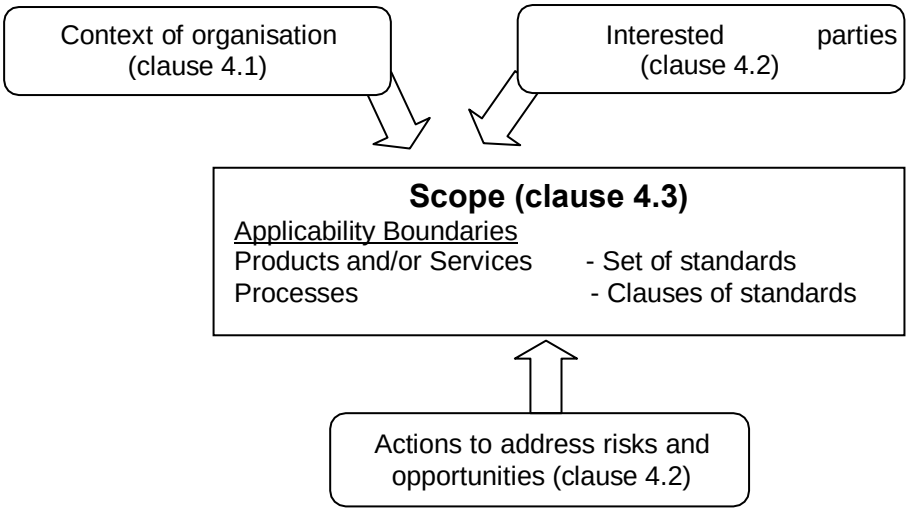
Permissible Exclusions:

The following clauses of ISO 9001: were determined to be not applicable to BPDB.

I. **Exclusion:** ISO 9001:2015 Section 8.3, Design and development including all subsections

Justification: BPDB does not design or develop products. All principal product characteristics are specified by the government. BPDB's activities are limited to developing methods and means of production, fabrication, or installation.

II. **Exclusion:** ISO 9001:2015 Section 8.5.3, Property belonging to customers or external providers.
Justification: BPDB does not receive from customers any tangible or intellectual property that is intended for incorporation into, or in any way associated with products.



Covered Activities

Activities performed by BPDB are those which are performed at different locations of the country and processes that include administration, procurement at head office, local procurement process, waste management, take actions to reduce health and safety hazards and risks by plant authority.

Business functions:

- Public Relations
- Administration and Management
- Power Generation
- Distribution
- Stores
- PC Pole Manufacturing & CERS

Products & Services

Generation and distribution of electrical energy throughout the country to different categories of customers, CERS and pole manufacturing for its own and other entity's consumption.

Supply Chains

Procurement and purchasing activities are controlled by Director Purchase typically include the provision of professional services such tendering, consulting, machineries installation, etc. Outside Suppliers/Vendors used by BPDB are subject to pre-qualification prior to use and are monitored after a certain period. Client designated sources may also be used, where specified by contract.

Relationships with interested parties

In addition to our suppliers, BPDB has various other interested parties which it deals with. A list of these parties is shown below.

Interested Parties and Requirements

Interested Parties that are considered relevant to BPDB include the following:

- Clients
- Suppliers/Vendors
- Employees of the organization
- Contractors providing services to the organization
- Insurance companies
- Regulatory bodies

Legal, regulatory and other requirements include the following:

- ✓ Client contracts
- ✓ Industry Codes and Standards (e.g., ASME, API, ASTM, NACE, AISC, AWS, etc.)
- ✓ International Standards (e.g., ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018),
- ✓ Bangladesh Statutes and regulations (e.g., Labour Rules, Bangladesh Fire Protection and Dowsing Rule, Bangladesh Environment Conservation Act)
- ✓ Other international laws

Legal, regulatory and other requirements are identified and assessed as part of the proposal review process and form part of BPDB's contractual obligation with the client.
Such requirements are accessed electronically where possible from their originating sources, and verified periodically as appropriate to the organisation.

Facilities within the Scope

The Integrated management system applies to all processes, activities, and employees of different locations in the country where all activities of the organisation are performed. It has well developed infrastructure, utility support and security system and accommodates the organisation's all businesses and activities. The Integrated management system applies to all processes, activities and employees within the organisation.

4.4. Integrated Management System & its processes

BPDB has established, documented and implemented an Integrated Management System in accordance with the requirements of ISO 9001:2015, ISO 14001: 2015 and ISO 45001: 2018. The system is maintained and continually improved through the use of IMS objectives, internal and external audit results, analysis of data, corrective action, and management review. To design and implement the Integrated Management System, BPDB has:

- Identified the processes needed for the IMS and their applications throughout the organization. These are documented on the Process Interaction diagram at the end of this section.
- Identified the sequence and interaction of these processes and illustrated them on the Process Interaction diagram.
- Determined criteria and methods needed to ensure the operation and control of the processes are effective. These are documented throughout the manufacturing process.
- Secured the continuing availability of resources and information necessary to achieve planned results and for the continual improvement of these processes.
- Established systems to monitor measure and analyze the processes.
- Established processes to identify and implement actions necessary to achieve planned results and continual improvement of these processes.

The Integrated Management System is designed as a system of interrelated processes. All main activities of the system are defined as Integrated System Processes and are grouped into the following categories:

- Leadership Processes (5)
- Planning Processes (6),
- Support Processes (7),
- Operation Processes (8),
- Performance Evaluation Processes (9)
- Improvement Processes (10),

And are organized into a Plan-Do-Check-Act (PDCA) cycle.

The sequence and interrelation between the Integrated System Processes

The sequence and interrelation between the Integrated System Processes are illustrated in the Processes Map diagram. Each Integrated System Process is further broken down into its sub-

processes as shown in next page.
Integrated System Processes and their sub-processes are documented in this IMS manual and in associated Integrated Management System Process Procedures (IMS-PR) and Work Instructions (WI). This documentation defines the Integrated Management System processes and their sequence and interaction and instructs on how to implement and apply them throughout the organization.
Integrated Management System documentation also defines criteria and methods needed to ensure that the operation and control of Integrated System Processes are effective. This includes assignment of responsibilities and allocation of resources for the process, instructions on how to carry out (or operate) the process, and definition of methods for monitoring and/or measuring the effectiveness of the process.

Integrated Management System Processes

- Context of the organization and interested parties
- Integrated Management System processes
- Leadership and commitment
- IMS policy
- Roles, responsibilities and authorities
- Risks and opportunities
- IMS objectives
- Planning of changes
- Resources, Competence, Awareness and Communication
- Documented Information
- Production/Service provision and planning
- Sales, contracting and customer communication
- Purchasing and subcontractor control
- Production and service provision
- Release of products and services
- Control of nonconforming outputs
- Monitoring, measurement, analysis and evaluation
- Internal audit Management review
- Opportunities for improvement
- Corrective and preventive actions (CAPA)
- Continual improvement

5. Leadership

5.1. Leadership and commitment

5.1.1. Leadership and commitment for the Integrated Management System

Chairman of BPDB has overall responsibility for the IMS. Top management has been actively involved in implementing the Integrated Management System, establishing the IMS policy, and IMS objectives. Management has provided the strategic direction, and resources necessary for the continuous improvement of the IMS and the company. Top management provides evidence of its leadership and commitment to the development and implementation of the Integrated Management System and continually improving its effectiveness by:

5.1.1.1 taking accountability of the effectiveness of the Integrated Management System;

5.1.1.2 ensuring that the IMS Policy and IMS objectives are established for the Integrated Management System and are compatible with the strategic direction and the context of the organization;

5.1.1.3 ensuring that the IMS policy is communicated, understood and applied within the organization;
5.1.1.4 ensuring the Integration of the management system requirements into the organization's other business processes, as deemed appropriate;
5.1.1.5 promoting awareness of the process approach;
5.1.1.6 ensuring that the resources needed for the Integrated Management System are available;
5.1.1.7 communicating the importance of effective IMS management and of conforming to the management system requirements;
5.1.1.8 ensuring that the Integrated Management System achieves its intended results;
5.1.1.9 engaging, directing and supporting persons to contribute to the effectiveness of the Integrated Management System;
5.1.1.10 promoting continual improvement;
5.1.1.11 supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.

5.1.2. Customer Focus

The principal objective of the Integrated Management System is to focus the organisation on to the customer, environment and OH&S Risks and in particular, on enhancing customer satisfaction and improving environment and OH&S conditions. The keys to achieve high customer satisfaction and improve environmental & OH&S conditions are accurate determination of overall requirements and effective verifications that the requirements are met.

Top management of BPDB adopts a customer-first approach which ensures that customer needs and expectations are determined, converted into requirements and are met with the aim of enhancing customer satisfaction.

This is accomplished by assuring:

5.2.1 customer and applicable statutory and regulatory requirements are determined, understood and consistently met;
5.2.2 the risks and opportunities that can affect conformity of products and services and the ability to enhance customer satisfaction are determined and addressed;
5.2.3 the focus on enhancing customer satisfaction is maintained.

Management ensures that customer requirements are met by inspecting and testing products at various stages of production and upon completion. Management ensures that customer satisfaction is systematically monitored as a measure of performance in determining and meeting customer requirements.

5.2. IMS Policy

IMS policy is established by top management. In formulating the IMS policy, top management ensures that the policy is appropriate to the purpose of the company and includes a commitment to comply with the requirements and continually improve the effectiveness of the Integrated Management System. IMS policy is given in page 2 of 4 of QM- 02.

IMS policy provides a framework for establishing specific IMS objectives and provides direction for the continual improvement effort. The use of the IMS policy in setting IMS objectives is addressed in this manual in given in page 3 & 4 of 4 of IMS Manual -02.

IMS policy is posted throughout the organisation, and its role is explained and discussed at the general orientation training provided to all new employees. The IMS policy is also communicated to customers, consumers and other interested parties. For this purpose, it is displayed in the reception area and posted on the organisation's internet site.

IMS policy is periodically reviewed within the framework of management reviews of the Integrated Management System. This is to ensure its continual relevance and suitability.

5.3. Organizational Roles Responsibilities & Authorities

Top management has assigned responsibilities and authorities for all relevant roles in the company. These are communicated through the combination of the Organogram and job descriptions.
The Management Representative accepts responsibility and authority for:

i. ensuring that the Integrated Management System conforms to applicable standards;
ii. ensuring that the processes are delivering their intended outputs;
iii. reporting on the performance of the Integrated Management System;
iv. providing opportunities for improvement for the Integrated Management System;
v. ensuring the promotion of customer focus throughout the organization;
vi. ensuring that the integrity of the management system is maintained when changes are planned and implemented.
vii. ensuring improvement of environmental and OH&S condition.

Responsibilities and Authorities

Top Management

- Define the BPDB Policy and BPDB Objectives;
- Ensure the communication and understanding of the BPDB Policy throughout the organization;
- Take accountability for the effectiveness of this IMS;
- Ensure the integration of this IMS into the organization's business processes;
- Promote the use of process approach and risk-based thinking;
- Ensure the resources needed for the IMS are available;
- Communicate the importance of conforming the IMS requirements;
- Engage, direct and support persons to contribute to the effectiveness of the IMS;
- Promote improvement;
- Support other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.

CE/D/ACE/SE/DD/XEN

- Implement the IMS as defined by this manual and related procedures;
- Obtain and communicate customer requirements to the appropriate personnel or functional organization;
- Ensure that qualified personnel and other resources are available to implement the IMS;
- Ensure that products/services satisfy customer requirements including quality, safety, cost, schedule, and performance; and
- Ensure that personnel comply with applicable laws, regulations, specifications, standards and documented procedures.

All Personnel

- Ensure the quality of their work;
- Operate in conformance with the requirements of this IMS; and
- Stop work in progress to make appropriate notifications when unsafe conditions exist or requirements are not being met.

Management Representative (MR)

BPDB has appointed and authorized Member, Distribution, BPDB MR is responsible for implementing and maintaining the BPDB Integrated Management System. In addition to his present responsibilities, the management representative shall be responsible to:

- Ensure that the processes that are required by the BPDB Integrated Management System, and that are defined in the IMS Manual, Section 4.1, are established, implemented and maintained and to ensure that the necessary resources are identified to be made available

Ensure that management reviews are performed and to regularly report to top management

- on the performance of the Integrated Management System, which shall include any need to improve the BPDB Integrated Management System
- Establish internal communication and training structures to promote and ensure staff from all levels of the organization has an awareness of the needs of BPDB customers
- Where relevant communicate with external parties on matters related to IMS
- Ensure that the processes of this IMS are delivering their intended outputs;
- Report on the performance of this IMS and on opportunities for improvement, in particular, to top management;
- Ensure the promotion of customer focus throughout the organization;
- Ensure the integrity of the IMS is maintained when changes to the IMS are planned and implemented;
- Document and maintain the IMS, and the development of IMS Procedures and their subsequent revisions;
- Establish an IMS awareness program for personnel;
- Assigned qualified personnel to perform scheduled audits of the IMS as implemented within the organization and report results to Top Management;
- Perform evaluations of external parties providing services to, or on behalf of, BPDB;
- Initiate or direct actions which result in solutions to IMS problems and verify results;
- Control further processing, delivery or installation of nonconforming products / services until the deficiency or unsatisfactory condition has been corrected.

General Manager, Commercial Operation, BPDB has been appointed by top management as Deputy Management Representative (DMR) of BPDB and Senior System Analyst, Computer Centre, BPDB has been appointed by top management as Assistant Management Representative (AMR) of BPDB to assist MR. They will do the work of the assignments as designated to them by MR, in addition to their present responsibilities. Additionally, some additional DMRs and AMRs have been appointed with the jurisdictions according to zone and functional areas. Detail of responsibilities and authorities of key positions are given in Annex-1.

Organizational Chart

The organizational structure of BPDB is given in Appendix - 1.

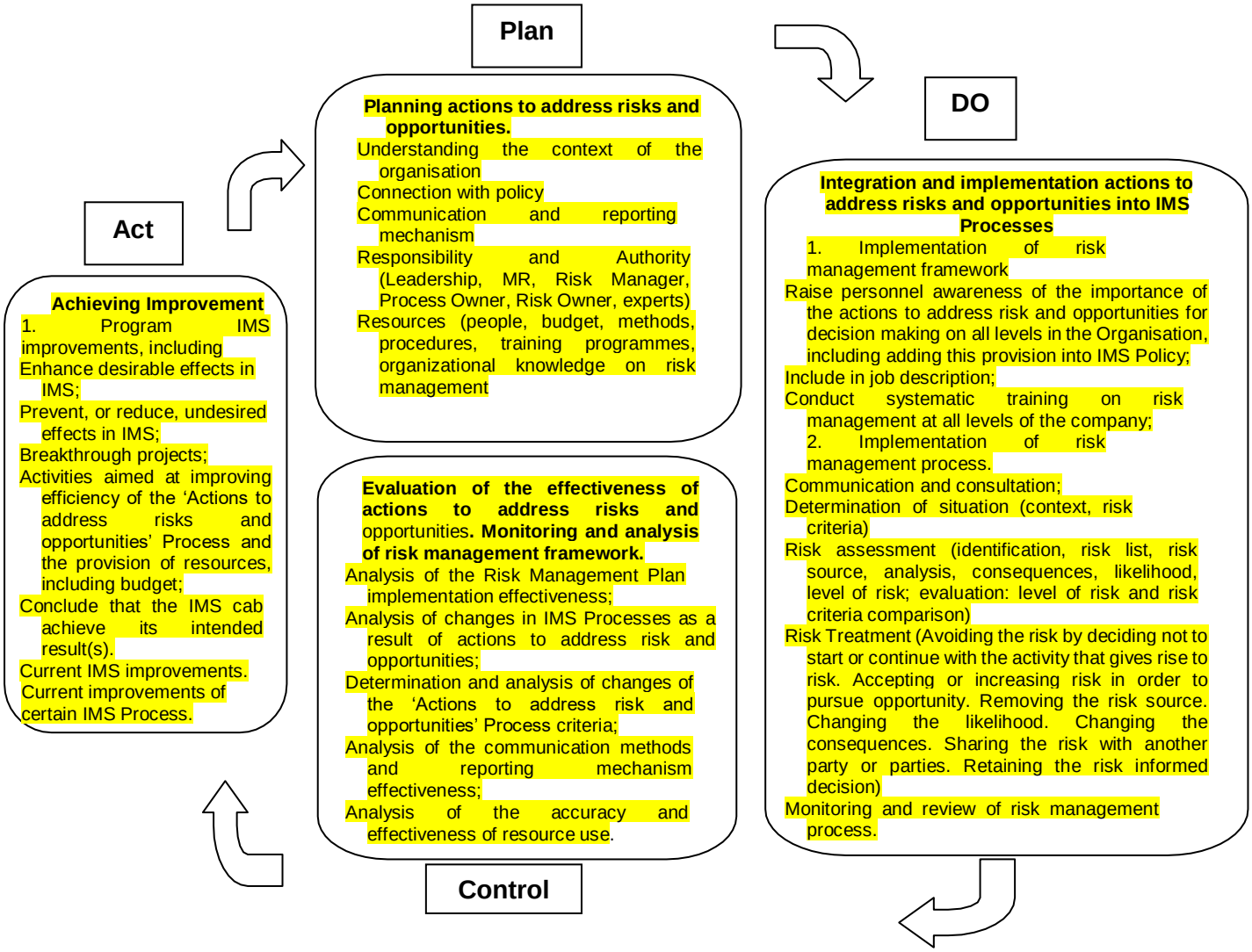
6. Planning for the Integrated Management System

The planning of IMS explain the requirements of quality, health, safety and environment and how it is met with the Integrated Management System. The planning process takes care of the various activities that are essential to meet the specifies requirements for services offered by BPDB and to ensure customer satisfaction as well as environment and OH&S condition improvement.

Interlink of processes and the responsibilities between different functions in relation to different activities of Integrated Management System have been shown in Responsibility Matrix. When planning for the Integrated Management System, BPDB considers the risks and opportunities that need to be addressed. Actions for addressing risks and opportunities are proportionate to their potential impact on the conformity of products

'Risk management processes' are the constituent parts of the 'Actions to address risks and opportunities''

Process


Plan
Planning actions to address risks and opportunities.
Understanding the context of the organisation
Connection with policy
Communication and reporting mechanism
Responsibility and Authority (Leadership, MR, Risk Manager, Process Owner, Risk Owner, experts)
Resources (people, budget, methods, procedures, training programmes, organizational knowledge on risk management
DO
Integration and implementation actions to address risks and opportunities into IMS Processes
1. Implementation of risk management framework
Raise personnel awareness of the importance of the actions to address risk and opportunities for decision making on all levels in the Organisation, including adding this provision into IMS Policy;
Include in job description;
Conduct systematic training on risk management at all levels of the company;
2. Implementation of risk management process.
Communication and consultation;
Determination of situation (context, risk criteria)
Risk assessment (identification, risk list, risk source, analysis, consequences, likelihood, level of risk; evaluation: level of risk and risk criteria comparison)
Risk Treatment (Avoiding the risk by deciding not to start or continue with the activity that gives rise to risk. Accepting or increasing risk in order to pursue opportunity. Removing the risk source. Changing the likelihood. Changing the consequences. Sharing the risk with another party or parties. Retaining the risk informed decision)
Monitoring and review of risk management process.
Control
Evaluation of the effectiveness of actions to address risks and opportunities. Monitoring and analysis of risk management framework.
Analysis of the Risk Management Plan implementation effectiveness;
Analysis of changes in IMS Processes as a result of actions to address risk and opportunities;
Determination and analysis of changes of the 'Actions to address risk and opportunities' Process criteria;
Analysis of the communication methods and reporting mechanism effectiveness;
Analysis of the accuracy and effectiveness of resource use.
Act
Achieving Improvement
1. Program IMS improvements, including
Enhance desirable effects in IMS;
Prevent, or reduce, undesired effects in IMS;
Breakthrough projects;
Activities aimed at improving efficiency of the 'Actions to address risks and opportunities' Process and the provision of resources, including budget;
Conclude that the IMS cab achieve its intended result(s).
Current IMS improvements.
Current improvements of certain IMS Process.

IMS Planning Format

Activity	Responsibility	Reference Documents	IMS Records
Document and Data Control	MR	Lists of Procedures/ Work Instructions/ Formats/Tags/ Register/ Specifications	As per procedures and record formats
Control of Quality Records	Do	List of Records	All IMS Records as per List of Records
Management Review	Chairman, MR	Internal Audit Summary, Customer Complaints Summary, Corrective and Preventive Actions, Recommendation of Improvement, Company's Strategic Direction	Management Review Records
Context of the Organisation	-do-	Identifying and evaluating risks and opportunities	Risk assessment and opportunity determination.
Risk Management	Chairman, MR	Internal Audit Summary, Customer Complaints Summary, Corrective and Preventive Action Summary	Management Review Records
Human Resource Development, Competency	Director, Personnel.	Assessment of Competency, Appraisals	Evaluation Reports
Training		Training Needs and Plan	Training Records
Suitable and Safe Working Conditions	CE, SEs of Operation, Maintenance	Check Lists, Fire Drill Records	Fire Drill Records, Inspection Report on Accidents
Contract Review	SE, Distribution	Market Survey & Forecast, Customers' query & feed back, Product Specifications, Power Availability Reports, Tariff Approval	Contract Review and Amendment Records, Offers, Invoices.
Procurement	Director, Purchase	Specifications of Products/ Sub-contract Documents, Limits of Authority, PPR	Supplier Approval Records, Purchase Orders' processing records
Storage Facility	CE Service, Store Keeper, Store-in-Charge	Receipt and issue of materials	Safe keeping, stock records
Managing Independent power producer (IPP)	CE, Director	Arrange and finalise Contract agreement, Billing	Contract Agreement Monthly electricity generation bills
Customer Supplied Product			
Preservation of Product	Store Keeper, Store-in-Charge	As per instruction of procedures	Safe keeping, stock records
Control of Inspection, Measuring and Test Equipment	XEN concerned	IMS Manual	Calibration Records
Projects and Development	CEs	Bid documents for procurement of equipment/spares, construction of new power plant projects, Bidding process	Records of Bid documents, Evaluation of Bids, Project Planning, Final Acceptance Certificate
Distribution Construction Project	CEs		
Civil Works	CE, concerned persons	Complain handling	Complain register, maintenance and works records

		Maintenance & Repair works, Development works	
Power Plant Operation and Maintenance	CEs, Managers, XEN	Generation plan, stable operation, operation criteria, procedures, Annual Maintenance Plans, Monthly Preventive Maintenance Plan Machine History Card	Log Sheets & other records, Receiving Inspection Report, In Process Control Reports, Break Down Record, Annual Maint. Record, Machine History card
Substation Operation and Maintenance	SE, S/S	Substation operation	
Customer Affairs	SE, S/S	Complain receiving, analyzing complains, corrective actions	Complain register
PC Pole Manufacturing	XEN	Annual Production Plan, manufacturing under controlled conditions	Records of plan, production, product quality
Control of Nonconforming Products	SE/XEN Operation	Monitoring and Inspection Procedure, Raw Material, and Product Specification	Monthly Analysis of Product Non- conformity
Commercial Operation	GM		
Central Equipment Repair Shop	SE	Request for repairs	Records of Repairs, Test
Internal Quality Audits	MR, DMRs	Checklists, IMS documents, records of processes	Nonconformity Reports, Audit Analysis
Statistical Techniques	All Functional Heads of the IMS	Records of processes, Data of Corrective and Preventive Actions	IMS Records
Non-conformity,	-do-	Monthly Analysis of Nonconforming Products, Internal Audit Reports Summary, Customer Complaints, Statistical Analysis Reports.	Monthly Analysis of Customer Complaints, Minutes of Corrective Action Team, Audit Analysis, Statistical Report Inferences.
Hazard Identification and Risk Assessment	MR	Identification of Hazards and associated risks and assessment of those risks	EIA & HIRA Register & Hazard Observation Card
Waste Management	MR, Head of Operation,	Management of Waste	Waste Register
Chemical Management	MR, Head of Operation	Management of Chemicals	
Environmental Impact Aspect Assessment	MR	Identification of environmental aspects and associated impacts	EIA & HIRA Register

6.1. Actions to address risks and opportunities

6.1.1. Risks

a. Risks are determined to prevent or reduce undesired effects, and to give assurance that Integrated Management System can achieve its intended results.

b. Following types and categories of risks are determined and addressed:

- **Processes:** risks of nonconforming output, process breakdown, process inefficiency, excessive variability, etc.
- **Quality:** risk of defects and non-attainment of specified requirements
- **Suppliers:** risk of defects and non-attainment of specified requirements
- **Business:** risks to business continuity, data loss, public relations, etc.;

c. Risk levels are evaluated using appropriate risk evaluation and analysis methods. When risk

levels are high, appropriate risks reduction actions are implemented and integrated into Integrated Management system processes. Risk reduction actions are proportionate to the potential impact on the conformity of products and services.

d. Processes related to determination and evaluation of risks, and to the implementation of risk reduction actions are defined in "Procedure for Risk Management".

6.1.2. Opportunities

a. An opportunity is a set of circumstances which makes it possible to do positive things, for example:

- Develop new products and services
- Develop new markets and/or increase market share
- Improve work environment
- Improve productivity
- Improve operational efficiency (reduction of resource use, reduction of waste, etc.)

b. Opportunities may be identified as positive effects of risks; as in a risk forcing implementation of a risk reduction measure that is beneficial in a broader context than just reducing this particular risk. For example, health risks may require measures to improve working environment. However, these measure also create opportunities to attract better qualified employees, improve morale and job satisfaction, and reduce turnover; and so the health risk creates opportunities to improve the overall job satisfaction.

c. Taking or not taking an opportunity presents different levels of risk. To evaluate these risks, taking (or not taking) the opportunity is defined as a risk management project, and the associated risks are evaluated as for any other project (Procedure for Risk Management).

Actions to address risks and opportunities' Process are implemented in four phases:

a. Planning actions to address risks and opportunities. Project of risk management framework.
b. Integration and implementation of actions to address risks and opportunities into IMS processes.
c. Evaluation of the effectiveness of actions to address risks and opportunities, Monitoring and analysis of risk management framework
d. Achieving continual improvement in Integrated Management System.
   Understanding the Context of the Organisation. It is a prerequisite for the risk management framework project, defining the levels of risk and risk criteria, as well as risk treatment.

Information flows on internal and external context include:

- Information on the applicable laws ('Control of documented information' Process);
- Standards ('Control of documented information' Process);
- Information on markets and market trends ('Marketing Activity' Process);
- Information on competitors including technology ('Marketing Activity' Process);
- Information about the policy, objectives, strategies, promising business opportunities ('Management Review' Process);
- Information about the organizational structure and resources ('Management Review' and 'Personnel Management' Processes);
- Information about the technologies and future developments ('Design and Development' Process);
- Information about the personnel qualification ('Personnel Management' Process);
- Other information, specific to the particular case.

BPDB ensures that:

a) Proper actions are identified to address these risks and opportunities;
b) This done to:
1) integrate and implement the actions into its Integrated Management System processes;
2) evaluate the effectiveness of these actions.

Actions taken to address risks and opportunities shall be proportionate to the potential impact on the

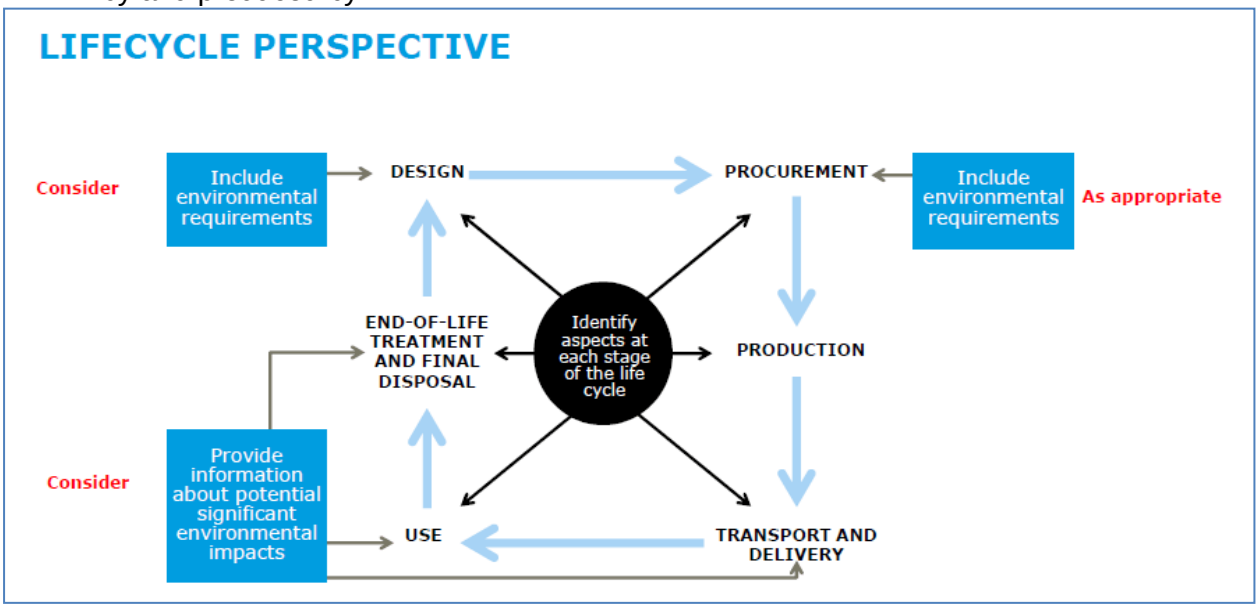
conformity of products and services.
Documented procedure has been established to cover all the above activities keeping proper records.

6.1.3. Environmental Aspects of BPDB

The environmental aspects are identified by BPDB that the facility may be expected to have control or influence upon. BPDB also determines which of those aspects are considered significant in accordance with "Risk and Opportunity Register". The method and process to determine significant aspects are recorded. When determining environmental aspects, BPDB considers a life cycle perspective which does not require a detailed life cycle assessment. BPDB thinks carefully about the life cycle stages that can be controlled or influenced by the organization. Typical stages of a product (or service) of BPDB life cycle include raw material acquisition, design, production, transportation/delivery, use, end-of life treatment and final disposal. The life cycle stages that are applicable will vary depending on the activity, product or service. These aspects are reviewed at least annually by the management team or when there is a new or changed process or activity at the facility. The Management Representative maintains meeting minutes and other records.
The Lifecycle perspectives of BPDB basically confines to the following:

- Procurement of equipment, specially the auxiliaries
- Selection of vendor for end-of-life disposal of hardware, i.e., batteries, e-waste, transformers, etc.
- Awareness among interested parties about use of electricity (which is the sole product of BPDB) at optimum power factor (as close as possible to unity) for low environmental impact (Global Warming)
- Continued R&D for elimination of use of those products (e.g. plastics, heavy-metals) which has high impact before and after usage by BPDB.

Above issues are ingrained in BPDB to cover the Life-cycle perspective of the products used by and produced by BPDB.



6.1.4. Hazard Identification

Hazard identification is the process of finding, listing, and characterizing hazards. Hazard identification helps the organization to recognize and understand the hazards in the workplace and to workers in order to assess, prioritize and eliminate hazards or reduce OH&S risks. Hazard identification begins at the conceptual design stage of any new workplace, facility,

products and services. Hazards can be physical, chemical, biological, psychosocial, mechanical, electrical, or based on movement and energy.

Hazards are identified and used as a basis of decision making as per the [Doc No]: Risk Management Plan. The hazards are identified considering a wide range of elements that are involved as sources of hazards. BPDB's hazard identification processes considers routine, non-routine activities and situations, human factors, infrastructure, potential emergency situations, new or changed hazards, changes in knowledge of and information about hazards. It is understood that if hazard identification is comprehensive the IMS performance will be good and BPDB can operate without any LTA.

BPDB documents and keeps the results of identification of hazards, risk assessments and determined controls up to date. It also ensures that the OH&S risks and determined controls are taken into account when establishing, implementing and maintaining its OH&S management system.

6.1.5. Compliance obligations, Legal & other requirements

BPDB has developed and implemented a procedure for the purpose of identifying, accessing and communicating legal and other requirements that are applicable to the facility. Additional information is also available through legal publications and subscription services. It is the responsibility of Management Representative (MR) to ensure that the facility maintains compliance with quality, environmental, health and safety regulations and legislations and other requirements. At least annually, the most current national, regional and local legal and other requirements as applicable to BPDB will be reviewed by the MR. In addition, permit requirements, lending agency requirements and commitments made in Environmental Impact Assessments (EIA) and other relevant project documentation will be reviewed to ensure continued compliance with the terms.

In identifying the other requirements, BPDB considers the identified needs and expectations of the interested parties and evaluates which of these expectations become mandatory compliance obligation based on the contractual agreement or other similar instruments.

The legal and other requirements relevant to the operations of the Bangladesh Power Development Board are identified by the HSE Manager by obtaining and reviewing, on a regular basis, relevant publications as described in 3.02.05: Legal and Other Requirements.

Planning Action

BPDB has planned to take actions to address its significant environmental aspects & OH&S risks and opportunities, compliance obligations, its technological options, its business, operational and financial scenario and the views of the interested parties as well as its identified risks and opportunities. The organization integrated and implemented the actions into its IMS processes, or other business processes. BPDB had evaluated the effectiveness of these actions. While planning these actions, BPDB has considered its technological options and its financial, operational and business requirements and the views of interested parties.

BPDB's identified risks and opportunities are a priority for the organization to achieve the intended outcomes of its environmental, occupational health and safety management system. The actions planned include establishing IMS objectives or incorporated into other management system processes, either individually or in combination.

One of the aspects of the planning of BPDB is that it ensures planning is comprehensive, so that no areas of opportunities or threats are out of the focus. The integration of IMS processes into the business processes of BPDB is also taken into consideration during planning.

6.2. IMS Objectives and planning to achieve them

In ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018, planning is addressed in several clauses. This section responds to Clauses 6.2.1 and 6.2.2, and thus addresses only planning of the overall IMS and for achieving IMS objectives. Requirements for planning of processes for provision of products and services (generation & transmission) are included in Clause 8.1.

6.2.1. IMS objectives

- The management of BPDB establishes annual key initiatives, which include IMS objectives. The objectives are communicated to all levels of the organization for use in establishing each function's and employee's annual key objectives.
- IMS objectives are established throughout the organization to implement the IMS policy, to meet requirements for products and processes, and to improve Integrated Management System and IMS performance.
- IMS objectives are measurable, and reviewed against performance goals at each management review meeting.
- All the applicable requirements are taken into consideration while setting objectives.
- IMS objectives are set to be relevant to conformity of products and services with an aim to enhance the customer satisfaction and improve environmental and OH&S condition.
- IMS objectives defines the direction and priorities for continual improvement. Setting of IMS objectives and achieving its outcome are described in “Objectives and Targets” procedure.

These objectives will be reviewed from time to time for its continued suitability and applicability in the system.

6.2.2. Planning for achieving IMS objectives

Plans for achieving IMS objectives include determination of methods, resources, responsibilities, completion due dates, and evaluation criteria. The process for planning and implementing IMS objectives is defined in process

6.3. PLANNING OF CHANGES

Planning of Integrated Management System changes is implemented through management reviews,

- Changes to the Integrated Management System are determined and planned within the framework of management reviews, as defined in process “Procedure for Management Review”. Planning of changes may be in response to changing circumstances, such as product, process, capacity, or other operational or organizational changes; or to improve the effectiveness and efficiency of the Integrated Management System.
- When planning for changes, the management review considers the purpose and consequences of the change, and its impact on the Integrated Management System; as well as availability of resources and allocation responsibilities and authorities.
- Actions to implement changes may be defined in Management Review (Actions review output actions), actions to implement IMS Objectives, Corrective Actions (CAPAs), and Risk Reduction Actions.

- **Methods for change management**

a. Changes to processes-

Management system processes will undergo changes, typically when:

i. Improvement opportunities have been identified, typically to improve process effectiveness
ii. Nonconformities within a process are identified and require corrective action
iii. Conditions in the industry or company change, requiring a process to be updated
iv. New processes are added which impact on existing processes, requiring changes
v. Customer requirements result in a need to change processes
vi. Any other reason determined by management

In such cases, the process must be changed in a controlled manner to ensure proper authorization and implementation of the changes. At a minimum, process changes shall include the steps herein:

i. The request for a process change shall be documented, following the procedure “Nonconformance, Correction and Corrective Action”**.** The justification for the change shall be recorded.

ii. The change shall be reviewed by appropriate management, including the senior most manager responsible for the process. Changes must be approved prior to implementation.
The appropriate process will be updated to reflect the change. This relevant document will undergo review and approval per the "Procedure for Document Control".

iii. The revision indicator of the process will be incremented, and the nature of the change recorded.

iv. The follow-up verification step of the CAR process shall seek to ensure the change has had the intended effect, and/or has improved the process. If not, the change may be rolled back or a new change made to correct any new issues that arise as a result of the change

b. Changes to process outputs:

i. The methods for changing process outputs are typically defined in the concerned process procedure. Where a process output is a document, the rules for changing documents above shall apply.

ii. Formal changes to process outputs will be used when the change is significant. Minor changes may be made without formal control, however the decision on what constitutes a significant vs minor change must be agreed upon by those involved in the change. If a customer indicates a change is significant, this will trump any internal decision.

c. Changes to documentation:

i. Management system documents undergo changes when there is a need to revise them.

ii. Changes to documentation are done in accordance with the "Procedure for Document Control".

7. Support

7.1. Resources

7.1.1. General

The organization shall determine and provide the resources needed for the establishment, implementation, maintenance and continual improvement of the Integrated Management System. The organization shall consider:

a) the capabilities of, and constraints on, existing internal resources;
b) what needs to be obtained from external providers.

BPDB determines and provides the resources needed:

a) to implement and maintain the Integrated Management System and continually improve its effectiveness
b) to enhance customer satisfaction by meeting customer requirements
c) to improve environmental and OH&S conditions by meeting legal and other requirements.

Resource allocation is done with consideration of the capability and constraints on existing internal resources, as well as needs related to supplier expectations. Resources and resource allocation are assessed during management reviews. Resources are the basic inputs to processes that have to be managed for product realization. Resources could normally be divided into the following three distinct categories, namely:

- Human resources, e.g. people: where the physical and mental talents and skills of people are employed to visualize, control and deliver a product or service
- Capital resources, e.g. manmade goods: which are those resources that were created and are then employed to make it possible to deliver a final product or service. Capital resources usually have a long working life, and are used over and over again. Examples include things like, raw materials, accessories, semi finished products, equipment, office buildings, furniture, computers, vehicles, etc.
- Other resources

With most capital resources, BPDB has determined and provided the other relevant resources that are required by it to achieve its objectives. These resources include inter alia, the essential equipment as listed and procured in accordance with the requirements of construction process and all the human resources that are required by BPDB to ensure that:

a) BPDB's Integrated Management System is implemented and maintained, and that its effectiveness is continually improved
b) The needs of its customers are being met, and their satisfaction are being enhanced

7.1.2. People

The human resources management has been identified as a process that is required by BPDB to deliver its products.
Top Management ensures that it provides sufficient staffing for the effective operation of the management system, as well its identified processes. Staff members performing work affecting product quality are competent on the basis of appropriate education, training, skills and experience. The documented procedure "Procedure for Human Resource Development" defines these activities in detail.
The human resources process is BPDB and used to provide the necessary and competent employees that are required by BPDB to provide the products in accordance with its scope and to maintain the manning levels. BPDB has identified the requirements of human resources and provided them. For any further requirements, it will be identified and provided. The organogram illustrates the organisational structure of BPDB's top management.

7.1.3. Infrastructure

BPDB determines, provides and maintains the infrastructure needed to achieve conformity to product requirements. Infrastructure includes, as applicable:

- buildings, workspace and associated facilities;
- process equipment, hardware and software;
- supporting services such as transport;
- information and communication technology.

Equipment is validated per documents prepared for procurement and maintained per the procedure "Preventive Maintenance Procedures".
Where equipment is used for critical measurement activities, such as inspection and testing, these shall be subject to control and either calibration or verification.
BPDB has identified and established required facilities to achieve conformity of the product. Adequate workspace, machinery and instruments are available to provide the required services as per required specification. Care is taken to assess the needs of the facility and technology from time to time to cope with the changing need of the customer and accordingly plans are made to include those.
These are

i. Equipment and Machinery-records on equipment and machinery are maintained at respective locations
ii. Work Space and associated facilities-required spaces and facilities are provided at respective work areas. Further requirements are to be placed in management review committee meeting with justification for provision.

7.1.4. Environment for the operation of processes

BPDB provides a clean, safe and well-lit working environment. Both at operational and office areas of BPDB manages the work environment needed to achieve conformity to product requirements. Specific environmental requirements for products are determined during IMS planning and are documented in subordinate procedures, work instructions, or job documentation. Where special work environments have been implemented, these shall also be maintained.
The needs of BPDB employees include being able to work in a good work environment. A good work environment positively contributes towards boosting and maintaining employee morale, which in turn contributes to the achievement of IMS objectives.
A safe and sustainable work environment must be created for BPDB employees. BPDB has

developed, implemented and are maintaining a process for maintaining safe health and safety management within its scope of activities.
The Health and Safety Plan will materialize in:

- providing safe, healthy and hygienic working conditions for all employees
- creating general safety awareness amongst all employees
- reducing incidents and accidents that results in material damages and injuries

All levels of management are actively involved with the health and safety programme, and where improvements can be made, it is the duty of the respective divisional/departmental managers and/or section heads to implement such improvements.
Training is an essential element for a safe work environment. Health and safety awareness does not come naturally and management continuously teaches, motivates and sustains employee health and safety knowledge and awareness to prevent injuries. Health and safety is also a condition of employment and every employee must assume personal responsibility for working safely at all times.

BPDB has established physical factors and work environment needed to achieve product conformity. These include

I. Physical factors
   a. Heat - Excluding areas where necessary (especially control rooms of substations where a controlled temperature of 25 ± 2^0C is required)) the ambient temperature to be maintained is around 30 ± 5^0C. If necessary proper air circulation with exhaust fan are maintained
   b. Light level - 300~500 lumen as per workstations requirements
   c. Cleanliness - Total cleanliness in work area
   d. Air flow - Well ventilation is provided at the work area; exhaust fans are provided where cross ventilation is absent
   e. Hygiene - Cleanliness is maintained throughout the work area as it is the prime object for a Good hygiene practice, first-aid boxes are available at appropriate locations of work areas, safe drinking water is supplied, and good numbers of clean toilets are made available at appropriate locations. Medical service is available from the local hospital/clinic.

II. Human factors
   f. Safety - All working places are marked with red line for safe walking passage, all moving parts are covered with safety covers, all protruding edges etc. are marked for safety first. All the gates are kept clean for emergency exits. Regular fire drills are maintained. Sufficient numbers of fire extinguishers are available inside the projects. Safe drinking water is available in all substations and work areas. First aid boxes are made available at appropriate locations.

These are monitored and recorded once every month.
Human factors are considered to the extent that they directly impact on the quality of products.

7.1.5. Monitoring and measuring resources

BPDB determines the monitoring and measurement to be undertaken and the monitoring and measuring devices needed to provide evidence of conformity of products to pre-determined requirements. BPDB establishes processes to ensure that monitoring and measurement can be carried out and are carried out in a manner that is consistent with the monitoring and measurement requirements.
Where necessary to ensure valid results, measuring equipment shall:
d) Be calibrated or verified at specified intervals, or prior to use, against measurement

standards traceable to international or national measurement standards, where no such standards exist, the basis used for calibration or verification shall be recorded

e) Be adjusted or re-adjusted as necessary
f) Be identified to enable the calibration status to be determined
g) Be safeguarded from adjustments that would invalidate the measurement result
h) Be protected from damage and deterioration during handling, maintenance and storage In addition, BPDB shall assess and record the validity of the previous measuring results when the equipment is found not to conform to requirements. The sub-stations controlling officers shall take appropriate action on the equipment and any variation of electric energy affected. The concerned locations shall maintain records of the results of calibration and verification.

When used in the monitoring and measurement of specified requirements, the ability of computer software to satisfy the intended application shall be confirmed. XEN (Gen/Dist) shall confirm this prior to the initial use and reconfirm it as necessary.

7.1.6. Organizational knowledge

BPDB also determines the knowledge necessary for the operation of its processes and to achieve conformity of products and services. This may include knowledge and information obtained from:

a. internal sources, such as lessons learned, feedback from subject matter experts, and/or intellectual property;

b. external sources such as standards, academia, conferences, and/or information gathered from customers or suppliers.

This knowledge shall be maintained and made available to the extent necessary. When addressing changing needs and trends, BPDB shall consider its current knowledge and determine how to acquire or access the necessary additional knowledge.

7.2. Competence

A competency is a collection of observable attitudes, skills, and knowledge derived from the organization's top performers. In this article, we will discover what competency is and how it can help your organization stay competitive. Competency is that they are Knowledge, Skills, and Attitude and itis also observable and measurable. Another characteristic of a competency is that it is based on actual performance. In determining training program competencies can also be used. This ensures that training the employees is not just do the task but training them to succeed. Reference: "Procedure for Competency Management".

7.3. Awareness

Top management ensures that the people of the organisation are aware of

a) the IMS policy;
b) relevant IMS objectives;
c) requirements of customers
d) statutory and regulatory requirements
e) their contribution to the effectiveness of the management system, including the benefits of improved performance;
f) the implications of not conforming with the management system requirements.

Training and subsequent communication ensure that people are aware of above points.

The Purpose of Training Package:

- Enable qualifications to be awarded through the direct assessment of competencies
- Encourage the development and delivery of training to suit individual needs
- Encourage learning in a workplace environment

- Provide a pool of potential employees who meet nationally recognized standards of competence in a particular area.

The benefits of Training Package:

- Training meets the needs and requirements of industry and standards set by industry.
- Qualifications are consistent and nationally recognized, making it easier for students to move between states and territories and for employers to hire people who have worked for other companies or moved from interstate.
- Students and employees have the flexibility to choose how, when and where the training is undertaken.
- Individuals and businesses are assured of the quality of training and qualifications in areas that specifically suit the needs of the enterprise.

Components of Training Package
A Training Package has two parts: endorsed components and support materials.

1) Endorsed components

The three compulsory endorsed components of a Training Package are:

a) National competency standards

the skills and knowledge a person must be able to demonstrate at work are defined by industry.

b) National qualifications

all qualifications (certificate I, II, III, IV, Diploma, Advanced Diploma) for an industry and the units of competency required for each qualification.

c) Assessment guidelines

the requirements for an individual's performance to meet the competency standards. They are designed to ensure judgments made by the people assessing the competence of an individual's performance are valid, reliable, fair and consistent.

2) Support materials:

Training Package support materials are designed to support the delivery and assessment of the training. Generally, they are learning strategies, assessment resources or professional development advice.

BPDB ensures competency and awareness through the following means:

a) A competency record for each post is maintained in an approved form titled "Assessment of Competence to Perform Tasks". General Manager Training uses this competency record as a basis to find suitable candidates and assess their competencies accordingly, where necessary, through interviews, before appointments are made.
b) "In-service" training programmes are being implemented and are being maintained to ensure that employee competency is maintained and continuously improved.

BPDB shall ensure that all its staff are trained to a level of competency enabling them to perform their required duties and shall maintain and enhance that competency through a staff development training programme.

7.4. Communication

7.4.1. General

At BPDB, Communication procedure has been established, implemented and maintained for internal and external communications relevant to the Integrated management system. This procedure addresses the following:

a) what to communicate;

b) when to communicate;
c) with whom to communicate;
d) How to communicate.

When establishing the communication and reporting system, the organization has:

- taken into account its compliance obligations (here legal and other requirements);
- ensured that IMS information communicated is consistent with information generated within the Integrated management system, and is reliable.

The top management ensures that it responds to relevant communications on its Integrated management system. The top management ensures that it retains the documented information as evidence of its communications, as appropriate.

Person (s) concerned shall ensure that all the communication within the organization and external is carried out as per the laid down procedure. Communication structures, methods and issues addressed within the organization and with external interested parties are ensured as addressed below.

7.4.2. Internal Communication

As communication between various departments plays a major role in ensuring the establishment and continual improvement of Quality, Health Safety & Environmental consciousness and culture in the organization, enough care has been ensured during documenting various IMS procedures towards proper cross-functional interactions. Over and above these, internal communication structures and methods are also established to ensure proper communication of the organization's vision, mission and commitment of IMS Policy across the organization. For smooth functioning of Integrated Management System to ensure the compliance with requirements of the Integrated Management System a system for internal and external communication is established in the organization. This applies to BPDB including its employees, contractors and sub-contractors. The Internal communications include providing information to various levels and functions in the organization that are responsible for performance regarding the Environmental aspects, OH&S Hazards, product quality, customer satisfaction, impact and risk, monitoring, incident reporting audit and management review. While, External communications include receiving, documenting and responding to Quality, Health Safety and Environmental aspects and impacts with regulatory and interested parties.

BPDB shall ensure that the IMS Communications procedure includes, but not limited to:

- Internal communication among the various levels and functions of the BPDB;
- Communication with contractors and other visitors to the workplace;
- Relevant communications with external stakeholders;
- Receiving, documenting and responding to communications from external sources;
- Development of an internal IMS Performance Reports to be used for internal communication and Management Review Purposes.

All the internal communications from various channels/ methods i.e., from management and down and vice versa including across the departments, contractors and other interested parties, is ensured in the organization by following means:

- Job descriptions
- Induction Trainings
- Regular Trainings
- Process documents such as Procedures, work instructions etc.
- Contract documents e.g. with contractors
- Regular Newsletters/ Bulletins
- Prize awards and promotional activities
- Internal communication channel (intranet, intercom and emailing)
- Public Address System

- Formal and informal meetings
- Customer satisfaction and feedback form
- Departmental meetings, wherein respective Managers address their teams.
- Presentations and periodical reports from individual HODs about the performance presented to Top Management
- Proper Management Information System to communicate the performance
- Posters and Displays placed at various strategic locations to spread the importance of IMS aspects of business
- Vendor evaluation form
- Signage, wherever needed
- Work Permit Systems to ensure adequate controls to prevent any HSE incidents or accidents,
- Safety precautions at appropriate places
- Communication boards put up at various locations in the organization.
- Suggestion Schemes
- Visitor Pass for communicating the precautions to be taken by the visitors

The structure includes the people from top to bottom or bottom to top who would be involved in effective communication of any of the issues listed below:

- Any important message to all employees is disseminated through the MD to respective HODs to Managers and further to all staff members.
- Any performance or operational issues shall be communicated from bottom to top through HODs/ Managers to MD.
- Wherever specific communication structures are needed such as Emergency Handling, in such cases a separate communication structure shall be established by MR and HSE Steering committee.
- Various issues which are communicated periodically include the following:
- Organization's IMS policy
- Objectives of the organization's IMS objectives
- Performance of the organization in terms of achievement of the objectives
- Importance of meeting compliance obligations (here Legal and other requirements)
- Essence of IMS
- Quality, Environment, Health and Safety measures
- Measures to increase customer satisfaction by ensuring quality of product delivered
- Precautions to be taken say while performing activities or tasks in areas categorized as high risk area (activity).
- Any kind of message from the Top Management to be disseminated across all levels of the organization

The IMS Communication Procedure also addresses the communication with contractors and other visitors to the workplace.

7.4.3. External Communication

External communication with interested parties may be for the purposes of the following:

- Publishing of Quality, Health Safety and Environmental performance data as part of annual reporting and on website.
- Reporting of incidents to relevant Government Authorities.

7.5. Documented information

BPDB has planned, mobilized human and material resources and established the sequence of processes to realize the products. It also established and maintains an Integrated Management

System and continually improves its effectiveness in accordance with the requirements of ISO-9001:2015, ISO 14001:2015 and ISO 45001:2018 standards.

The documented information of BPDB includes those which are required by ISO- 9001:2015, ISO 14001:2015 and ISO 45001:2018 standards. And those required as necessary for BPDB to maintain its effectiveness.

BPDB's IMS Manual defines the scope of the BPDB's Integrated Management System. The scope includes all of BPDB's activities, which are described as:

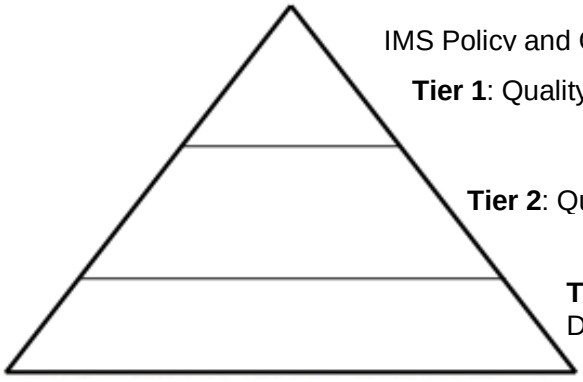
- The efficient and satisfactory generation of electrical energy and evacuation of this generation to the receiving point of customer with monitoring system
- The maintenance of generation and auxiliary systems that includes project and civil works, mechanical, electrical and Instrument & Control equipment, computer network and control systems both in operation and maintenance
- Distribution activities both in operation and maintenance
- Operation and maintenance of Distribution system
- Human Resource development
- Commercial operation and customer management
- Planning development and implementation of projects
- General office administration and HR Activities
- Other supporting services

These are included in IMS. The IMS Manual of BPDB is a direct collection of IMS documents with references to documented procedures.

The documentation is used to ensure that:

- The products conform to specified requirements
- Customer satisfaction is achieved as per IMS Policy
- All the works at all the areas are done to achieve IMS Objectives

BPDB has a three-tier documentation, IMS with IMS Policy and Objective being at the tip. IMS Manual, which is the highest level or Apex Manual, is at the Tier–1. IMS Procedures are at the Tier-2. Tier-3 contains Work Instructions, Formats, Charts, drawings, and reference manuals/documents.



Documented Information and Records

7.5.1. General

BPDB's Integrated Management System consists of several documents that are required by the Standard.

7.5.2. Creating and Updating

BPDB's Integrated Management System shall include the following documentation:

a) BPDB's IMS policy as required and defined in ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 and BPDB's IMS objectives as required in ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018.

b) An IMS Manual, this document, as required by the organisation

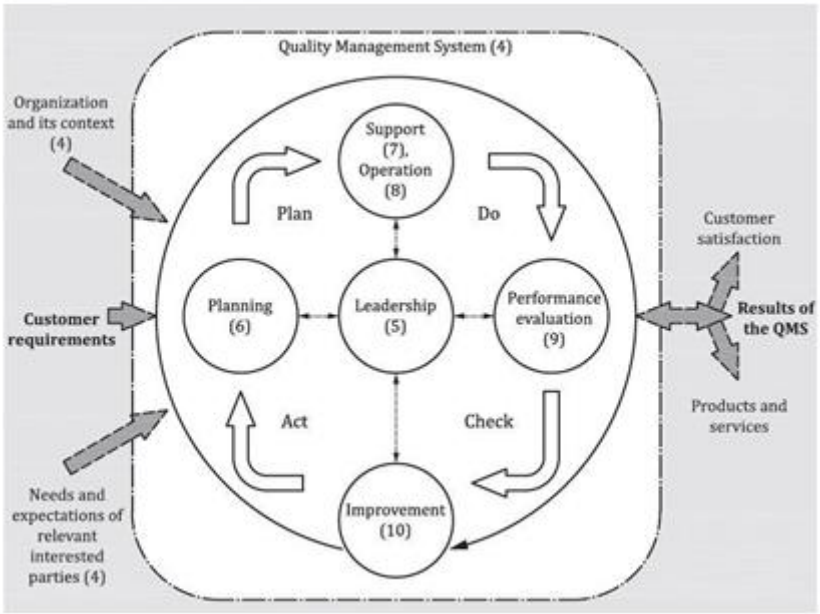
c) Following procedures (with the procedure number in left side) have been established to make an effective and dynamic Integrated Management System.

Procedures are given in Appendix - in Master List of Documents (Level II)

d) All these procedures are listed under Master List of Document (Level 2 Manual) (Annex – 3)

a) The processes that are required by the BPDB's Integrated Management System are defined under Section 4.4 and includes references to the applicable process procedures that are required to ensure the effective planning, operation and control of the processes.

e) All the relevant records that are generated through the applicable processes in accordance with the requirements of the Standard and as required by BPDB are listed under Master List of Document (Level 3 Manual).



IMS Manual

a) BPDB's IMS Manual defines the scope of the BPDB's Integrated management system. The scope includes all BPDB's activities, which are described as:

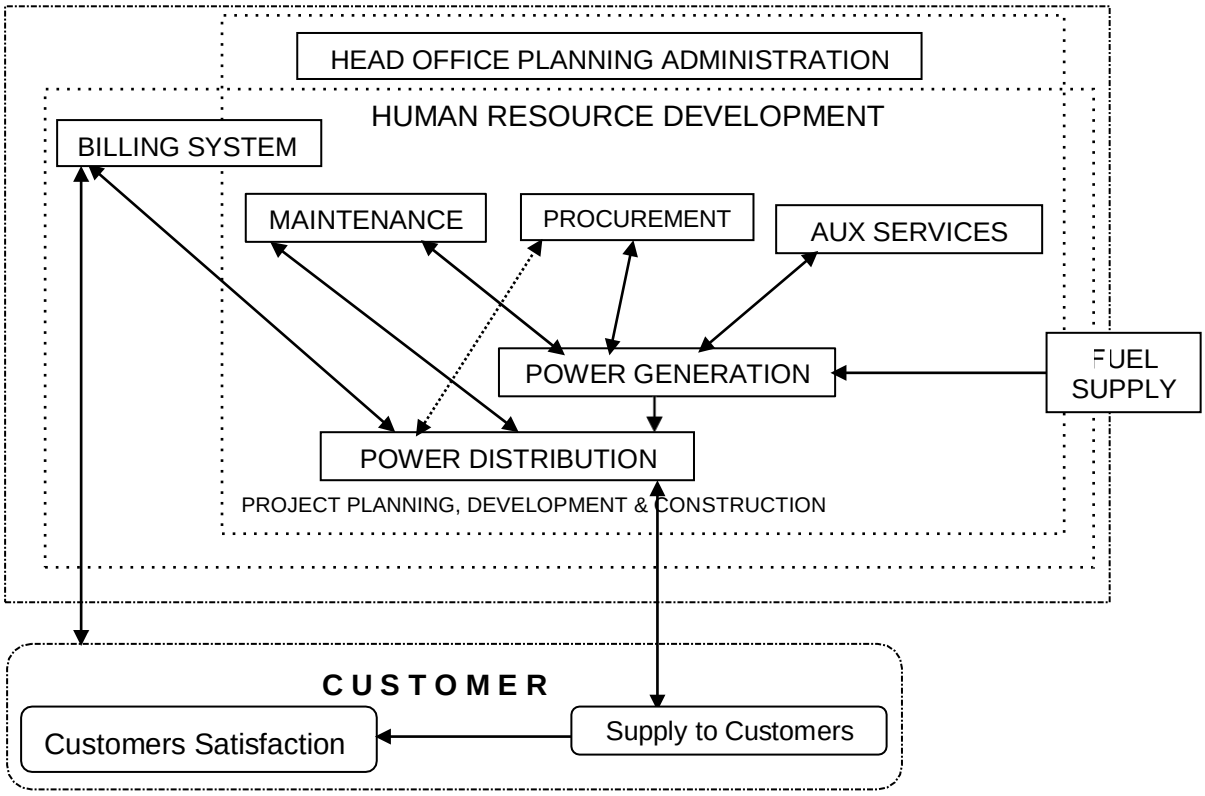
- The efficient and effective planning & development (also design is not included as it is not applicable) of projects as per requirements of market and customers and also of existing standards/codes
- The efficient and satisfactory supervision works of projects, transmission and operation

system of power transmission with monitoring system
- The maintenance of transmission line and substations which includes buildings, equipment, electrical and mechanical equipment, computer network and systems
- Training and skills development
- General office administration, and
- Financial and Audit management
- Company Affairs and Legal Matters

b) The relevant documented procedures that apply to the processes of BPDB's Integrated Management System are described in this manual.

c) There is a definitive interaction between processes that could be regarded as either inputs or outputs, which means that, outputs from one process are part of the inputs for another process and vice versa.

The following schematic example explains the interaction between processes as identified by BPDB's Integrated Management System.



7.5.3. Control of Documented Information

Document and data control procedures are necessary to provide efficient information management at all levels of the organization. The IMS Manual contains specific details on the control of essential documents and data. The purpose of this section is to provide an overview of information on management principles and to define the document control procedure.

A controlled document is any document or data that is listed by user and current document update status.

Controlled documents include the IMS Manual, IMS Procedures, Drawings, Standards, Work Orders, IMS Documents and other essential process information. The purpose of document control is to ensure that all personnel have timely access to current information.

Document control procedure:

All the documents of BPDB's IMS Manual, IMS Documents of the company, documented procedures, works instructions, forms are to be reviewed, approved and issued prior to issue as per "Procedure for Document Control". Master lists of controlled documents are maintained by the Management Representative (MR) to prevent the use of invalid or obsolete procedures. These documents are issued by MR after approval.
Controlled documents shall be reviewed, updated as necessary, re-approved as required and re-issued as per "Procedure for Document Control" by Management Representative (MR).

Control of Records

Documented information retained are records that are established and maintained to provide the evidence of conformity to the Standard requirements and to demonstrate the effective operation of BPDB's Integrated Management System. Maintaining records that represent a clear history of what happened during a relevant process, also provides the means of tracing the origins of problems that enables it to be rectified and recurrence prevented.
BPDB has established a documented procedure "Procedure for Control of Records" that defines the controls that are employed for identification, storage, protection, retrieval, retention time and disposition of all records.
All divisional and sectional heads shall be responsible to index, file and store the applicable records in designated storage areas. Management and other applicable legal requirements shall determine the retention time of the records.
Records shall be stored as such, that it is readily identifiable and easily retrievable for immediate access when required.

Control of Documented Information

Documented information is controlled for its use in terms of availability of right document, at right place and at right time. All these documents are maintained as below.

a. Documented information is legible to anybody.
b. Care is taken during storing of Documented information to ensure accessibility.
c. The Storage facility is selected to ensure protection against theft, fire, termites and other reasons of deterioration.
d. The storage facility is kept in such a suitable place so that it is not affected due to moisture, dampness and rainwater soaking.

All these documents have their identity with type of documents, specific title, document number, revision status, effective date etc.

For the control of documented information, a documented procedure, "Procedure for Document Control" has been established to define the controls needed for the identification, storage, retrieval, protection, retention time, and disposition of documented information. This procedure also defines the methods for controlling documented information that are created by and/or retained by suppliers. These controls are applicable to those records which provide evidence of conformance to requirements; this may be evidence of product requirements, contractual requirements, procedural requirements, or statutory/regulatory compliance. In addition, documented information includes any records which provide evidence of the effective operation of the management system.
Master List of Documents is given in Annex – 3 of this Manual.

8. Operation

8.1. Operational Planning and Control

BPDB has planned and developed the processes those are needed for the realization of its products (generation of electrical energy and also distribution of it to the customers). The "BPDB required" processes, as listed in Section 4.1 (a), defines the process procedures that are followed by BPDB to deliver its products and meets its objectives.

BPDB establishes the following scheduling for the Facility's capacity and Net Energy Output:

a. Year Ahead Notification
b. Quarter-Ahead Notification
c. Month-Ahead Notification
d. Week-Ahead Notification
e. Notification of Revised Declared Capacity
f. Dispatch Instructions and Revised Dispatch Instructions

The processes associated with initiating, generation along with other auxiliary facilities, monitoring the generation and supply by BPDB is well controlled. All processes are conducted by appropriate equipment depending upon generation requirements.

Monitoring equipment and tools used to validate process and the product electric power are controlled and maintained through calibration and preventive maintenance activities as necessary. Where product conformance cannot be validated by objective measurement process validation techniques are used. Process validation arrangements include:

• Defined criteria for review and approval of processes
• Approval of equipment and qualification of personnel
• Use of specified methods and procedures for process validation
• Records of validation (and re-validation) are maintained
• Periodic requirements to re-validate the process

8.2. Eliminating hazards & reducing OH&S risks

BPDB has established a procedure and has been maintaining for implementation of operational controls for identifying operations and activities associated with quality services, significant environmental aspects and unacceptable workplace hazards and ensuring that sufficient controls are in place through engineering design, procedures or work practices. The operation controls are enhanced through establishing operating criteria for the process(s), implementing control of the process(s), in accordance with the operating criteria.

Controls are implemented following a hierarchy (e.g. elimination, substitution, engineering, administrative and PPE) and can be used individually or in combination.

These procedures are:

1) To identify the quality, environmental, health and safety operational controls present in Bangladesh Power Development Board and assure that such controls are adequate to minimize the potential environmental impact and/or health and safety risks from activities.

2) To identify management and operational controls currently in place to reduce the significant impacts and risks associated with operations at BPDB. In addition, it requires that periodic reviews occur to ensure that the operational controls are current, in place and effective.

3) BPDB has identified and planned those operations, including maintenance, that are associated with the identified significant quality, environmental and OH&S hazards/risks consistent with its policy, objectives & targets in order to ensure that they are carried out under specified conditions.

BPDB always ensures that the specified conditions are determined and executed by:

- establishing, implementing and maintaining procedures to cover and control situations where their absence could lead to deviation from the policy, objectives & targets,
- stipulating operating criteria in the procedures where their absence could lead to deviations from policy & objectives.
- establishing, implementing, maintaining procedures related to the identified significant quality, environmental aspects & OH&S risks of products, equipment and services purchased & used by BPDB,
- controls related to contractor & other visitors to the workplace,
- establishing and maintaining procedures for the design of workplace, process, installations, machinery, operating procedures and work organization, including their adaption to human capabilities in order to eliminate or reduce risks at their source.

BPDB has done the followings in consistent with a life cycle perspective:

a) established controls, as appropriate, to ensure that its environmental requirements are addressed in the design and development process for the product or service, considering each life cycle stage;
b) determined its environmental requirement for the procurement of products and services, as appropriate;
c) communicated its relevant environmental requirement to external providers, including contractors;
d) considered the need to provide information about potential significant environmental impacts associated with the transportation or delivery, use, end-of-life treatment and final disposal of its products and services.

Plan for Generation, Operation of Auxiliaries and Distribution Network

BPDB maintains a policy to meet the requirements of customer all time. BPDB is to supply electric power and energy as required by NLDC. Technical Limits and Characteristics are defined in the documents. BPDB has established the Order Opportunity Workflow to ensure that customer requirements are identified, documented, and understood prior to the organisation accepting a customer contract. Once the order is accepted the same system ensures that customer requirements are communicated to the appropriate members of the organization. This communication includes specific detail regarding Technical Limits and Contracted Characteristics requirements. Additionally, the organisation identifies all obligations related to the product with respect to regulatory and legal requirements. Records of these reviews are maintained.
Processes and their interrelationships for generation of electric power had been established initially it should be reviewed on a regular basis and suitable actions should be taken for their improvement. The processes are managed as a system by creating and understanding the networks of uninterrupted generation and the processes (including auxiliaries), their sequences and interactions are reviewed regularly. The consistent operation of this system is often referred to as the "systems approach to management".
The generation plan is as per requirements of BPDB and the plant follows the following.

Month Ahead Notification

Not less than 14 days before each month BPDB/NLDC shall provide to BPDB estimated requirements on a day-by-day basis, for Net Energy Output and Maximum capacity during that month and also, provisionally for the following month, but shall not be bound by these figures.

Week Ahead Notification

Not less than 48 days before each week BPDB/NLDC shall provide to BPDB estimated requirements on an hour by hour basis, for Net Energy Output and Maximum capacity during that week and also, provisionally for the following week, but shall not be bound by these figures

Declared Capacity Notification

To enable BPDB/NLDC to give final schedules of requirements, plant operation manager shall notify the Control Center, by 12 hours each day, of the Declared Capacity available during each hour of the following day. However, BPDB may notify the control center, not less 12.00 hours prior to its scheduled occurrence, of any reasonable modification to the Declared Capacity schedule.
For the plant processes, the organization appoint a plant manager (often referred to as the “process owner") with defined responsibilities and authorities to establish, maintain, control and improve the process and its interaction with other processes. The organization also ensures that the responsibilities, authorities and roles of other personnel in the process are recognized throughout the organization, and that the people associated with the individual processes have the competences needed for the tasks and activities involved.

Scheduled Outages and Maintenance Outages

BPDB carries out the generation of electrical energy from its power plants to supply to customers’ receiving point. For this it carries out some planning and execution of generation considering the requirements of its customer and national policy for energy.

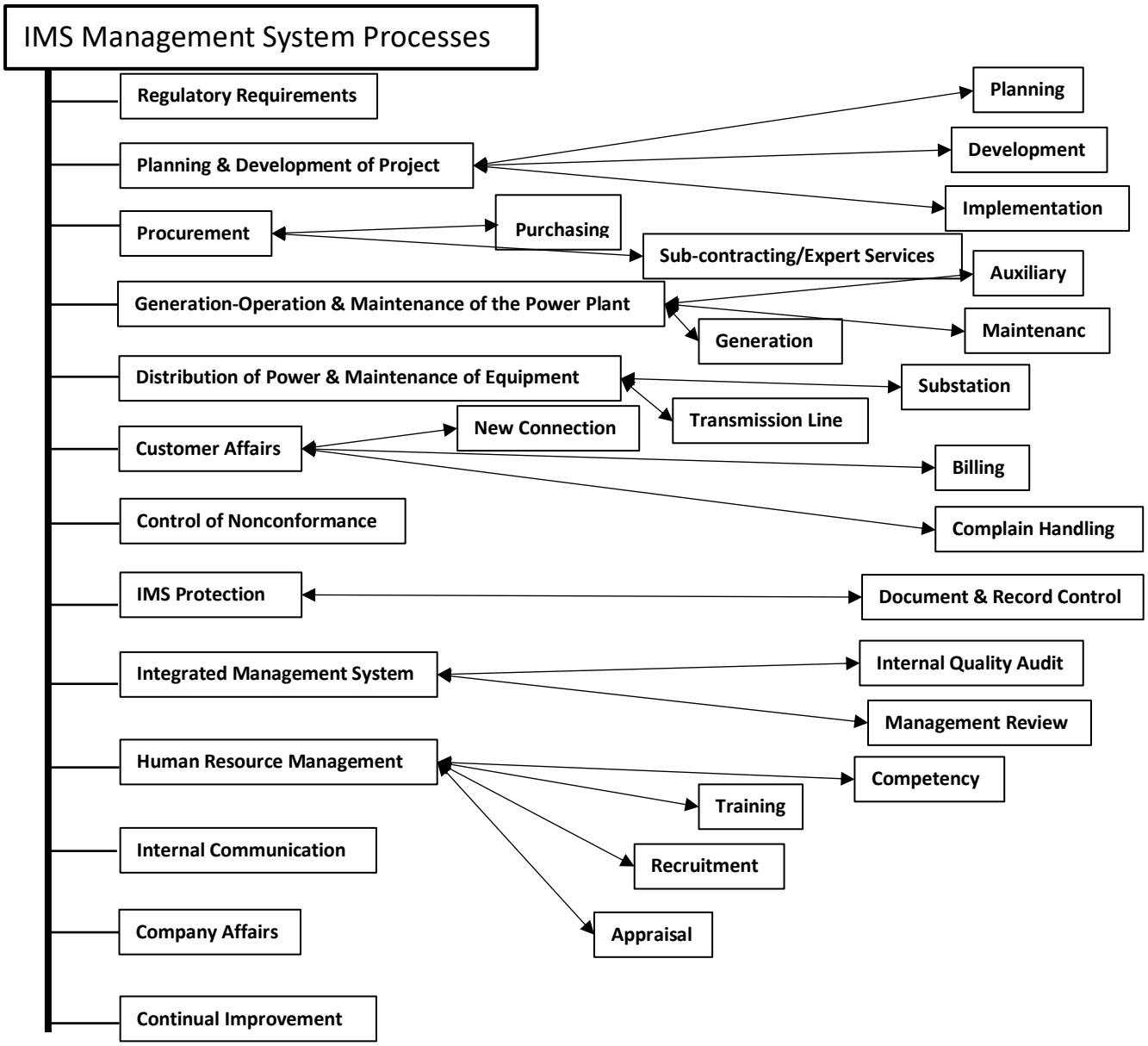
The generation process involves Load Dispatching Centre (LDC) of PGCB on whose programme planning, operation and control of the whole system of generation is carried out. Daily demand plan on the basis of generation plan and also a load control/shedding is also planned by NLDC. The operation of the system runs on this plan and on the major quality criteria of voltage and frequency of the electrical energy to be distributed to the customers.

All these activities are managed and controlled as per established some series of procedures on “Procedure for Generation” and “Procedure for Operation and Control of Auxiliary System”. Additionally, distribution processes are managed and controlled as per established procedures “Procedure for Substation Operation” and “Procedure for Substation Maintenance”.

Maintenance is vital for keeping the equipment/accessories always ready for use. Schedule (both monthly and annual) maintenance, breakdown maintenance and emergency maintenance are carried out as per established system. Proper safety measure prior to start the maintenance job and during maintenance jobs are ensured. Procedures on Mechanical, Electrical, Instrument and Control Maintenance gives details of the control mechanism.
Planning and Development department do the planning and arrange to obtain approval from ECNEC, donor banks/bodies for new or extension of projects for power plants and distribution systems. The projects may be GOB funded, GOB & donor funded, Donor funded and Own funded. DPP (Development Project Proforma/Proposal), TPP (Technical Assistance Project Proforma/Proposal) & PDPP (Preliminary Development Project Proforma/Proposal) of a project (Generation & Distribution) is prepared on the basis of Feasibility Study. Project document contains sufficient information on each criterion for justification of approval of the project. After finishing the preparation DPP/RDPP, PDPP/RPDPP, TPP/RTPP, a note for providing with information regarding cost of project is sent to the competent higher authority of BPDB for approval. Another major work of Project Planning is “approving the Layout Plan” for the construction of Power Plants, Buildings, Roads and any other constructions of BPDB. After the approval of projects P&D and Procurement sections do the necessary formalities for preparation of tender documents and do the specification works where necessary. Project office under project director performs the supervision and execution of the new projects. For the existing installation, concerned head of the zone has the same responsibility of execution. All these activities are managed and controlled as per established procedures “Procedure for Project and Development” and “Procedure for Purchase”. Projects are then implemented as per established procedures “Procedure for Power Station Construction Project” and/or “Procedure for Distribution Construction Project”.

INTEGRATED MANAGEMENT SYSTEM (IMS) OF BPDB

Process Structure of Bangladesh Power Development Board



8.3. Determination of requirements for products

8.3.1. Customer Communication

BPDB has established effective communication arrangements with its customers, to ensure that relevant information is shared regarding the delivery of its services.

When communicating with its customers, due consideration is given regarding the following:

a) Information that pertains to the products/services that are delivered, i.e. through its agreed periodical review with the customers

b) In-process enquiries and proposed amendments, i.e. through periodic progress meetings and reports, where applicable

c) Customer feedback, including complaints, i.e. through the concerned marketing personnel or site engineers at sites, and the progress meetings where applicable

8.3.2. Determination of requirements related to products

Bangladesh Power Development Board (BPDB) deals with following customers.

- Dhaka Power Distribution Company (DPDC)
- Dhaka Electric Supply Company (DESCO)
- West Zone Power Distribution Company Limited (WZPDCL)
- Rural Electrification and Board (REB)
- BPDB's six distribution zones where local customers of following categories are included.

a. Residential Light & Fan
b. Agricultural pump
c. Small Industry
d. Non Residential Light & Fan
e. Commercial
f. Medium Voltage General
g. High Voltage General
h. Street Light and Water Pump

Customer requirements for generation plants are identified as per requirements of intended requirements and supply is made accordingly. For customers at distribution ends, requirements are collected when customers place their demands for connection or its up gradations in a prescribed form as per “Procedure for Commercial Operation”.

Frequency, Power Factor and Voltage Limits

(a) At rated voltage and frequency, the Facility will operate at 100% load with a power factor in the range 0.85 lagging to 0.95 leading at the Delivery Point, which range shall not be exceeded.

(b) The Facility will operate within the line voltage range used in practice by BPDB and in no case shall the Facility be required to operate more than +10% or less than -20% on the high voltage system.

(c)The Facility shall operate within the frequency range 48.5 Hertz to 51.5 Hertz which range shall not be exceeded.

To ensure that customers receive the information and support they require concerned Incharges has been authorized, with prior information to authorized office where required, to everything necessary to manage, nurture and grow BPDB’s relationships with customers. In principle the system is capable of managing all aspects of the customer relationship, most importantly, ensuring that the customers are satisfied with the supply of electric power and energy.

Every section, every location, and every system individual are installed who are primarily responsible for BPDB’s success with the customer.

8.3.2.1 Review of requirements related to products

The requirements of customers, both existing and future, are identified during the stage of system and project planning along with the facilities available at the point of customers. BPDB has been explicitly established and constituted to execute the Contract of Customers, on agreed terms and conditions. BPDB reviewed and accepted the Contract Agreement of the Customers before signing the agreement.

Considering the electric energy that BPDB delivers to its customers, is directly dependent on the contract term, it is therefore assumed that the requirements of the individual customers are fixed and

would remain unchanged, only variation will be on total demand which can be accommodated on the situation of the time of consideration.

BPDB's commitment to deliver quality energy is documented in the agreement with the customers. The Superintending Engineer/ O&M reviews the BPDB performance pledges on periodical basis, to ensure that it remains relevant.

8.4. Emergency Preparedness & Response

BPDB has a plan to identify the potentiality and respond to accidents and emergency situations for preventing and mitigating the health and safety related incidents, as well as, environmental impacts arising from emergency situation and accidents. The Emergency Action Plan is developed and reviewed in accordance with the designated procedure "Emergency Preparedness and Response Plan".

BPDB periodically tests the planned response actions, where practicable; review and revise the process(es) and planned response actions, in particular after the occurrence of emergency situations or tests.

BPDB provides relevant information and training related to emergency preparedness and response, as appropriate, to relevant interested parties, including persons working under its control.

8.4.1. Design and development of products and services

BPDB has no activity covering design and development of products and as such it is excluded from the Integrated Management System of BPDB.

8.4.2. Control of externally provided products and services

BPDB ensures that purchased products and goods conform to specified purchase requirements by following PPR and standard practice. Also, BPDB ensures the services required from suppliers/sub-contractors conform to the requirements of jobs to be performed by the designated suppliers/sub-contractors. The type and extent of control applied on the suppliers/sub-contractors and the purchased products or goods/performed jobs shall be dependent upon the effect the purchased products or goods/performed jobs have on the subsequent products that are realized.

BPDB evaluates and selects suppliers/sub-contractors based on their ability to supply/perform products and goods/jobs in accordance with its requirements. Criteria for selection, evaluation and re-evaluation are established in the tender documents, EOI, request for quotations.

Records of the results of evaluations and any necessary actions arising from the evaluation are kept and maintained.

Appropriate documented purchasing procedures have been established to address the product and goods needs of BPDB in terms of its Integrated Management System "Procedure for Purchase".

Purchasing/sub-contracting requisitions are established to provide the information required describing the product or goods/jobs to be purchased/availed, including where appropriate:

a) The requirements for approval of the product or goods/jobs, applicable procedures and processes

b) The requirements for qualification of personnel, specifically with regards to technical requirements

c) The requirements as defined in BPDB's Integrated Management System.

The procurement section shall ensure that specified purchase/sub-contract requirements are adequate prior to communicating to the supplier/sub-contractor.

Receiving inspection/verification

BPDB establishes and implements the inspection or other activities necessary for ensuring that purchased products and goods/jobs meets the specified requirements.
BPDB states the intended verification arrangements and method of product release in the purchasing information and may include customers, if desired, in the process. “Procedure for Purchase” identifies the methods and process of verification of purchased products.
Production and service provision

Control of production and service provision

BPDB is engaged with the installation & operation of generation plant and evacuates the electric energy from generation source to transmission grid network (distribution companies, REB and direct consumers) receiving point and has developed the generation and evacuation processes as defined in Section 4.1. BPDB has further developed and implemented process procedures (see Section 4.1) that describe how the electric energy will be generated and transmitted to customer to ensure that it achieves its objectives in accordance with BPDB’s Integrated Management System.
As per contract, BPDB and its customer cooperate in establishing the following scheduling for the Facility’s capacity and Net Energy Output:
Year Ahead Notification Quarter-Ahead Notification Month-Ahead Notification
Week-Ahead Notification and also Dispatch Instructions and Revised Dispatch Instructions

8.4.2.1 Appropriate work instructions, workmanship standards, and sales pick lists have been developed for processes that affect quality. These documents explain how to manufacture and/or assemble the product, the standard time required, what machines and/or tools should be used, and what inspection techniques and tools need to be employed to ensure product conformance, how the products should be packaged, and when and by whom the products should be delivered.
8.4.2.2 Work force with appropriate competence with required qualification and training for process tasks are engaged. Appropriate control of suitable infrastructure and process environment are ensured.
8.4.2.3 The majority of material is purchased for a specific job or inventory without expiration. If a product or materials expires, First-In-First-Out requirements are handled as they arise. Materials which would fall under this requirement will be coded with the date received and issued in a FIFO manner.

Recording of Telephoned Communications

Each Party authorises the other Party to tape record all telephone voice communications relating to Declared Capacity and Net Energy Output and Dispatch of the Facility received from the other Party pursuant to this Agreement and shall supply, at the request of the other Party, a copy of transcript of any such recording.

- **Generation Processes**

The processes associated with initiating, generation along with other auxiliary facilities, monitoring the generation and supply by BPDB is well controlled. All processes are conducted by appropriate equipment depending upon generation requirements.
Monitoring equipment and tools used to validate process and the product electric power are controlled and maintained through calibration and preventive maintenance activities as necessary. Where product conformance cannot be validated by objective measurement process validation techniques are used. Process validation arrangements include:

- Defined criteria for review and approval of processes
- Approval of equipment and qualification of personnel
- Use of specified methods and procedures for process validation
- Records of validation (and re-validation) are maintained
- Periodic requirements to re-validate the process

Processes and their interrelationships for generation of electric power had been established initially should be reviewed on a regular basis and suitable actions should be taken for their improvement.
The processes are managed as a system by creating and understanding the networks to have uninterrupted generation and the processes (including auxiliaries), their sequences and interactions are reviewed regularly. The consistent operation of this system is often referred to as the "systems approach to management".
BPDB has established a planned electric power generation under controlled conditions including those of auxiliary facilities. Controlled conditions include the availability of information that describes the characteristics of the product and requirements of BPDB, the use of proper equipment in proper way, the availability and use of monitoring and measuring equipment, conducting proper and on time monitoring and measurement, and constant monitoring of power supply to BPDB/NLDC. All these are documented in the “Procedure for Operation and Control of Generation” and “Procedures for Operation and Control of Auxiliaries”.

All relevant plant, equipment and instruments are taken care of by written documented procedures (Procedures for Mechanical, Electrical and Instrument & Control Maintenance) to ensure process capability of each.

Where applicable, the process control procedures also describe, inter alias, the relevant controlled conditions, that includes:

a) Applicable reference documents, purpose of the procedures, and other relevant information that describes the characteristics of the services that are to be delivered
b) Detailed works procedures with defined responsibilities, interfaces with other parties, and detailing how the products are to be realized
c) The availability and uses of suitable facilities and equipment
d) The availability of monitoring and measuring devices, as necessary
e) The implementation of monitoring and measurement activities
f) Any other relevant customer service activities

To handle nonconforming products, established “Procedure for Nonconformance, Correction and Corrective Action is followed”.
Additionally, distribution processes are managed and controlled along with the relevant controlled conditions as per established procedures “Procedure for Substation Operation” and “Procedure for Substation Maintenance”. Customer related processes are controlled by procedure “Procedure for Customer Affairs”.

8.4.2.4 Special Processes**:** When required, documented instructions and training of personnel are in place for special processes.

8.4.2.4.1 Validation of special processes:

BPDB validates the processes for the provision of electric energy generation and distribution where the resulting output cannot be verified by subsequent monitoring and measurement. This includes any process where the deficiencies are only discovered after the customers have chosen to provide appropriate feedback relating to the deficiencies.

The validation demonstrates that the applicable process has the ability to achieve planned results.

Where applicable, BPDB establishes arrangements for these processes, through the management review process that would include:

a) Defining criteria for the review and approval of the processes
b) Approving appropriate equipment and qualification of personnel
c) Using specific methods and procedures
d) Keeping records of these validations, which shall be in a form suitable for the purpose
e) Revalidating the process, as appropriate

Processes are validated when completion of new projects follows testing and commissioning activities are carried out following specific instructions stipulated in the work orders for the projects

involved.

Process Control in BPDB starts from the power plant with the receipt of generation programme and others from LDC PGCB. These are analyzed to plan generation for the day. These are then placed in the plan for the product realization at all the stages required checking and testing is ensured including final checking. These processes are long established by BPDB for its customer.

8.4.2.5 Service Provision. BPDB does not currently perform service work for the product.

8.4.3. Identification and Traceability

Due to the nature of the product (electric energy), it is very difficult to identify the product during the processes of generation and distribution which is a continuous one. BPDB has established identification methods and steps for identification of other purchased products, etc. by its own unique name/or number. Also, all the components are identified by the designations appropriated in design drawings, documents etc.

8.4.4. Property Belonging to customers or external providers

CERS (Central Workshop) of BPDB deals with external customers for repairing transformers and testing Electrical & Electronics Test, High Voltage Test, Oil Test, Meter Test etc. CERS exercise care with customer supplied items while it is under the control of CERS. CERS identify, verify, protect and safeguard customer property provided for repairing and testing. If any customer property is lost, damaged or otherwise found to be unsuitable for use, CERS report to the customer and records maintained.

8.4.4.1 Receiving

Customer-supplied products are received and inspected following the same procedure that applies to purchased products, Receiving Inspection. In the event the supplied products fail receiving inspection, or are not suitable for any other reason, the customer is contacted.

8.4.4.2 Marking, storage, and handling

8.4.4.2.1 Marking, storage, handling, and preservation of customer supplied products follow the same procedures that apply to purchased products. The applicable procedure “Procedure for Storage Facility”.

8.4.4.2.2 Customer-owned tooling and returnable packaging are permanently marked so that ownership of each item is visually apparent.

8.4.4.3 Special requirements

8.4.4.3.1 8.5.3.3.1 When specified in a contract, special handling instructions from customers will take precedent over the company's standard procedures.

8.4.4.3.2 Loss or damage

Customers are contacted in the event of loss, damage, deterioration, or unsuitability of their products.

8.4.5. Preservation

BPDB establishes system and steps to safe guard the system of generation and distribution so that the quality of electric energy remains till it delivers the electric energy to customer. Necessary security people are provided to ensure the security of the installations of BPDB.

Delivery of the electric energy, where required, is done as per established system of the organization and following instruction given by Customer.

BPDB also ensures preservation of all the materials or items at its disposition as per necessity.

8.4.5.1 Storage

8.4.5.1.1 Stockrooms and storage, staging and holding areas are controlled by Material Control. Only products that are properly identified and that have passed required inspections are authorized to enter and leave the stockrooms. Periodically, the stockrooms are inspected to assess the condition of stock.

8.4.5.1.2 Material and spare parts are controlled using an inventory management system. The system can report available stock quantities, product location, and turn-over times. The system is used to optimize and minimize inventory levels.

8.4.5.1.3 "Procedure for Control of Store", governs the operation of stockrooms and storage, staging and holding areas.

8.4.5.2 Packaging and labeling

8.4.5.3 Shipping and delivery – not applicable as electrical energy generated are transmitted to the customers without any time through distribution system.

8.4.6. Post-delivery activities– not applicable

8.4.7. Control of changes

When required to ensure continuing conformity with requirements BPDB shall review and control changes for production or service provision.

Documented information detailing the results of the review of changes, the person(s) authorizing the change, and any necessary actions arising from the review are retained.

8.5. Release of products and services– not applicable

8.6. Control of nonconforming outputs

BPDB is providing products (electrical energy) and are measured against set criteria. Non-conformities in the products are divided into three categories, namely:

(i) Those non-conformities that applies to the electrical energy that were needed by realization processes to achieve its objectives

(ii) Those non-conformities that applies to the execution of the Operation and Maintenance process procedure

(iii) Those non-conformities that applies to the electrical energy, which are measured historically through customer feedback and satisfaction, EIA and HIRA Register, as appropriate

As the generation process is continuous one and the energy is consumed immediately after it reaches customers' receiving points, it is very difficult to control the delivered electrical energy with non-conformity. BPDB shall ensure that electrical energy that does not conform to the requirements are identified and controlled to prevent its unintended delivery to customer. The controls and related responsibilities and authorities for dealing with non-conforming products are defined in the documented procedure "Procedure for Non-conforming Product".

Non-conformities that occur during the execution of the generation and subsequent transmission to customer are typically identified, recorded and addressed.

The methods for determining customer satisfaction are described in Section 8.2.1.

In order to deal with non-conformities that apply to the products, BPDB is applying one or more of the following ways:

a) By taking appropriate action to eliminate detected non-conformities, including action appropriate to the effects or potential effects of the non-conformity. Possible non- conformities' causes could include, i.e. fluctuation of control of generation, power evacuation problems, sudden overload in the line or system, fluctuation of loads, breakdown in the system.

b) By taking appropriate preventive action to ensure that non-conformities are prevented from occurring

Records of the nature of non-conformities and of any subsequent actions taken, including changes to process procedures, are being kept and maintained, as appropriate

9. Performance evaluation

9.1. 9.1 Monitoring, measurement, analysis and evaluation

9.1.1. 9.1.1 General

BPDB shall determine:

a) what needs to be monitored and measured;

b) the methods for monitoring, measurement, analysis and evaluation needed to ensure valid results;

c) when the monitoring and measuring shall be performed;

d) when the results from monitoring and measurement shall be analysed and evaluated.

BPDB shall evaluate the performance and the effectiveness of the Integrated Management System. BPDB shall retain appropriate documented information as evidence of the results.

9.1.2. Customer satisfaction

BPDB shall monitor customer perceptions of the degree to which their needs and expectations have been fulfilled. The organization shall determine the methods for obtaining, monitoring and reviewing this information.

BPDB has identified and defined suitable criteria for satisfaction measurement for all of its customers (see Section 8.2.2), and has developed appropriate methods for collecting and analysing the pertinent data.

Information and data pertaining to customer satisfaction are collected from various sources, i.e.:

(i) Customer feedback received through correspondence. Top management, usually responds and replies to formal letters that are received from customers. The necessary actions that are prompted by this correspondence are then delegated to the appropriate levels for information and execution.

(ii) Customer feedback received through the "Customer Service" line. The telephone operator records any feedback, which could include, complaints, spontaneous expressions of satisfaction, and other unsolicited customer feedback, that are received via the "Customer Service" line, in the Customer Service office.

Service Register. The register kept at site of each project, must be submitted to the Project Leader after every workday for information and comments. Should any action be required, then the Project Leader shall instruct the relevant person(s), as appropriate.

(iii) Customer feedback received through appropriate meetings, complain formats and satisfaction survey. SE of concerned distribution zone is responsible for having meetings with the customer, to discuss and record issues.

The resulting data is periodically analysed by SEs, and is presented and discussed at management review meetings.

9.1.3. Analysis and evaluation

BPDB shall determine, collect and analyze appropriate data to demonstrate the suitability and effectiveness of the Integrated Management System of BPDB and to evaluate where continual improvement of the effectiveness of the Integrated Management System can be made.

Appropriate data concerning customer satisfaction, as a measure of demonstrating the achievement of IMS objectives, is collected by means of customer feedback as defined in Section 9.1.2. Data is also generated as a result of the monitoring and measurement of applicable processes as defined in

Section 9.1. Data is also generated as a result of the monitoring and measurement of electrical energy. Data is continuously analysed and confirmed during management review (see Section 9.3), and provide appropriate information relating to:

a) Customer satisfaction, which is the principal objective of the quality management system
b) Improvement of environmental and OH&S Conditions.
c) Conformity to the requirements related to the delivery of the applicable services
d) Characteristics and trends of processes, including opportunities for preventive actions
e) Characteristics and trends of electrical energy, including opportunities for preventive actions
f) Suppliers and their contribution to the products of BPDB

The information so gathered and analysed is used for improving the effectiveness of BPDB's Integrated Management System.

9.2. Internal audit

9.2.1. Responsibility of MR

The Management Representative is responsible internal audit process and has established an internal audit plan and schedule in accordance with IMS Procedure, "Procedure for Internal Quality Audit". Every relevant process is audited at least once a year. Certain selected processes are audited more frequently, depending on their importance and quality performance history.

Only personnel independent of the audited process are assigned to conduct internal audits of a function. Management Representative is responsible for managing and conducting the audit process. Auditors prepare for audits by reviewing applicable standards and procedures, analysing IMS records, and establishing questionnaires and checklists. The selection of auditors and preparation for the audit are explained in IMS Procedure, "Procedure for Internal Quality Audit".

Conducting the audit, the auditors seek objective evidence indicating whether:

a) The audited processes complies with the requirements of BPDB's Integrated Management System and the Standard
b) BPDB's Integrated Management System is effective

BPDB conduct internal audits at six months intervals to provide information on whether the Integrated Management System:

a) conforms to:
1) the organization's own requirements for its Integrated Management System;
2) the requirements of International Standards ISO 9001: 2015, ISO 14001:2015 and ISO 45001:2018;
b) is effectively implemented and maintained.

Evidence of conformance is obtained through the information that is gathered by observing, interviewing personnel and examining records. Audits are conducted in a way that minimises disruption of the audited processes. Non-conforming conditions are documented and recorded using the audit non-conformance report form.

When non-conforming conditions are identified, the manager responsible for the concerned area or process is requested to propose and implement a corrective action. Implementation and effectiveness of the action are verified by a follow-up audit. The audit non-conformance report is used for monitoring and recording the implementation of the corrective actions.

For each audit, a comprehensive audit report is prepared, containing all relevant records, including audit non-conformance reports, which is submitted to top management for information. When the auditing cycle is completed, all audit reports that were compiled in corrective action log during the cycle are analysed and are presented at the management review meeting by MR.

9.3. Management review

9.3.1. General

Management review enforces the commitment of top management to implement and maintain the Integrated Management System

Management has established a formal management review meeting, at planned intervals, which shall not be further than six (6) months apart, to review BPDB's Integrated Management System and to ensure that it remains suitable, adequate and effective. The management review also includes the assessment of appropriate opportunities for improvement and possible needs for changes to BPDB's Integrated Management System.

Minutes of the management review meeting and other appropriate review records, such as, internal audit reports, etc., are being kept and maintained by the section.5.6.2 Top management shall review the organization's Integrated Management System, at planned intervals, to ensure its continuing suitability, adequacy, effectiveness and alignment with the strategic direction of the organization.

9.3.2. Management review inputs

Management must ensure that they gather adequate and sufficient of appropriate information to enable them to take informative decisions. Therefore, management has established relevant documents, to utilize in its review on the effectiveness of BPDB's Integrated Management System.

Management considers and uses the following for their review:

1. the status of actions from previous management reviews
2. review and updating of external and internal issues of that are relevant to the Integrated Management System
3. information on the performance and effectiveness of the Integrated Management System, including
   a. customer satisfaction and feedback from relevant interested parties
   b. the extent to which IMS objectives have been met
   c. process performance and conformity of products and services
   d. nonconformities and corrective actions
   e. monitoring and measurement results
   f. audit results
   g. the performance of external providers
4. the adequacy of resources
5. the effectiveness of actions taken to address risks and opportunities
6. opportunities for improvement

review of the IMS Policy for adequacy and to ensure it remains consistent with the needs of customers and the organisation;

9.3.3. Management review outputs

The management review materialises in a clearly defined, appropriate and sensible output, which are easily being directed for execution. The minutes of the management review meeting shall serve as the medium to communicate the review output through the appropriate levels of the organization for information and action, and includes all relevant decisions and actions pertaining to:

a) The improvement of the relevant processes and overall improvement of BPDB's Integrated Management System to enhance its effectiveness

b) The improvement of the delivered services to enhance the satisfaction of BPDB customers

c) The analyses of resources need and actions that is required to satisfy those needs. The outputs of the management review shall include decisions and actions related to:

i. decision on delayed actions proposed in the last meeting.
ii. decision on the audit reports
iii. decision on proposed and/or executed corrective and preventive actions
iv. decision on customer complaints/ feedback

v. improvement of the effectiveness of the Integrated Management System and its processes,
vi. any need for changes to the Integrated Management System, and
vii. resource needs. The organization shall retain documented information as evidence of the results of management reviews.

BPDB has established a documented procedure "Procedure for Management Review" for reviewing the Integrated Management System. The Management Representative is responsible management review process in accordance with IMS Procedure.

10. Improvement

10.1. General

BPDB has developed and implemented appropriate processes to determine and select opportunities for improvement and implement any necessary actions to meet customer requirements and enhance customer satisfaction.

a) Demonstrate conformity of its process as required for realization of products to meet requirements as well as to address future needs and expectations;
b) Ensure to correct, prevent or reduce undesired effects;
c) Ensure to improve the performance of the Integrated management system
c) Continually improve the effectiveness of the Integrated management system

10.2. Nonconformity and corrective action

The Integrated Management System of BPDB aims to control all sorts of nonconformities before they occur however in case any nonconformity is detected; appropriate corrective action is initiated immediately. Identification of corrective action and its implementation is systematically carried out, generating adequate traceability for future reference. Effectiveness of the action taken is reviewed appropriately.

BPDB shall take action to eliminate the cause of non-conformities in order to prevent recurrence.

Corrective actions shall be appropriate to the effects of the non-conformities encountered.

The corrective action process that is followed by the Integrated Management System is as defined below:

a) The MR, and/or other management members, as directed, shall review the identified non-conformities, including customer complaints
b) Then determine the causes and principle contributing factors that led to the occurrence of the nonconformities
c) Evaluate the need for action to ensure that non-conformities do not recur
d) Together with the relevant department manager or section head, determine, prioritise and implement the appropriate action that is needed to address the non-conformity
e) Keep and maintain records as appropriate to the non-conformity:
(i) Corrective action required with regards to procured products, is recorded on the delivery notes
(ii) Corrective action required with regards to non-conformities that were identified during internal audits, is recorded by the relevant department manager or section head in the "work copy" of the audit report that is submitted to the Quality section after completing the corrective actions
(iii) Corrective action required as a result of management reviews is recorded in the minutes of the management review meeting

f) Corrective action taken is reviewed as appropriate to the non-conformity:

(i) Corrective action required with regards to procured products, is reviewed by the procurement section
(ii) Corrective action required with regards to non-conformities that were identified during internal audits, is reviewed by the Quality section
(iii) Corrective action required as a result of management reviews is reviewed in subsequent

management review meetings by top management
This is addressed in details in a procedure and a set form established by BPDB.

10.3. Continual improvement

BPDB shall continually improve the effectiveness of the Integrated Management System through the use of the IMS policy, its IMS objectives, activities after identifying opportunities, internal audit results, analysis of data, corrective actions and management review, all as defined in the IMS Manual.
Manufacturing process improvements continually focus on the control and the reduction of variation in product characteristics and manufacturing process parameters.
Opportunities for improvement

a) Opportunities and priorities for improvement are identified by comparing present IMS performance to objectives defined in the IMS policy and IMS objectives.

b) IMS performance is determined by analyzing information about customer satisfaction, records of product and process nonconformity, results of internal audits, and other data and information relevant to IMS performance. Section 9.1.3, Analysis of Data, defines the scope and system for collecting and analyzing such information.

c) IMS performance is evaluated by management reviews of the IMS. Where IMS performance falls short of a defined objective, the management review identifies specific improvement actions to reach the objective. When an IMS objective is reached, the management review may set a new, higher objective in this area and specify new improvement actions for reaching it.

d) This process of facilitating continual improvement though the use of IMS policy, objectives, and analysis of data, is defined in Operational Procedures, Continual Improvement, and Management Review.

e) In addition to management reviews, departmental managers identify improvement opportunities continually, based on daily feedback form their operations and other activities. Employees are also encouraged to come forward with ideas for improving products, processes, systems, productivity, and working environment. These improvement opportunities are evaluated and prioritized by Quality Assurance and, where appropriate, are implemented though the system of corrective actions.

Appendix – 1 – IMS Policy

Appendix – 2 – Organogram

Appendix – 3 – Master List of Documents

Appendix – 4 – Site Mapping

Appendix – 5 – Document Mapping

Appendix – 6 – Legal Register

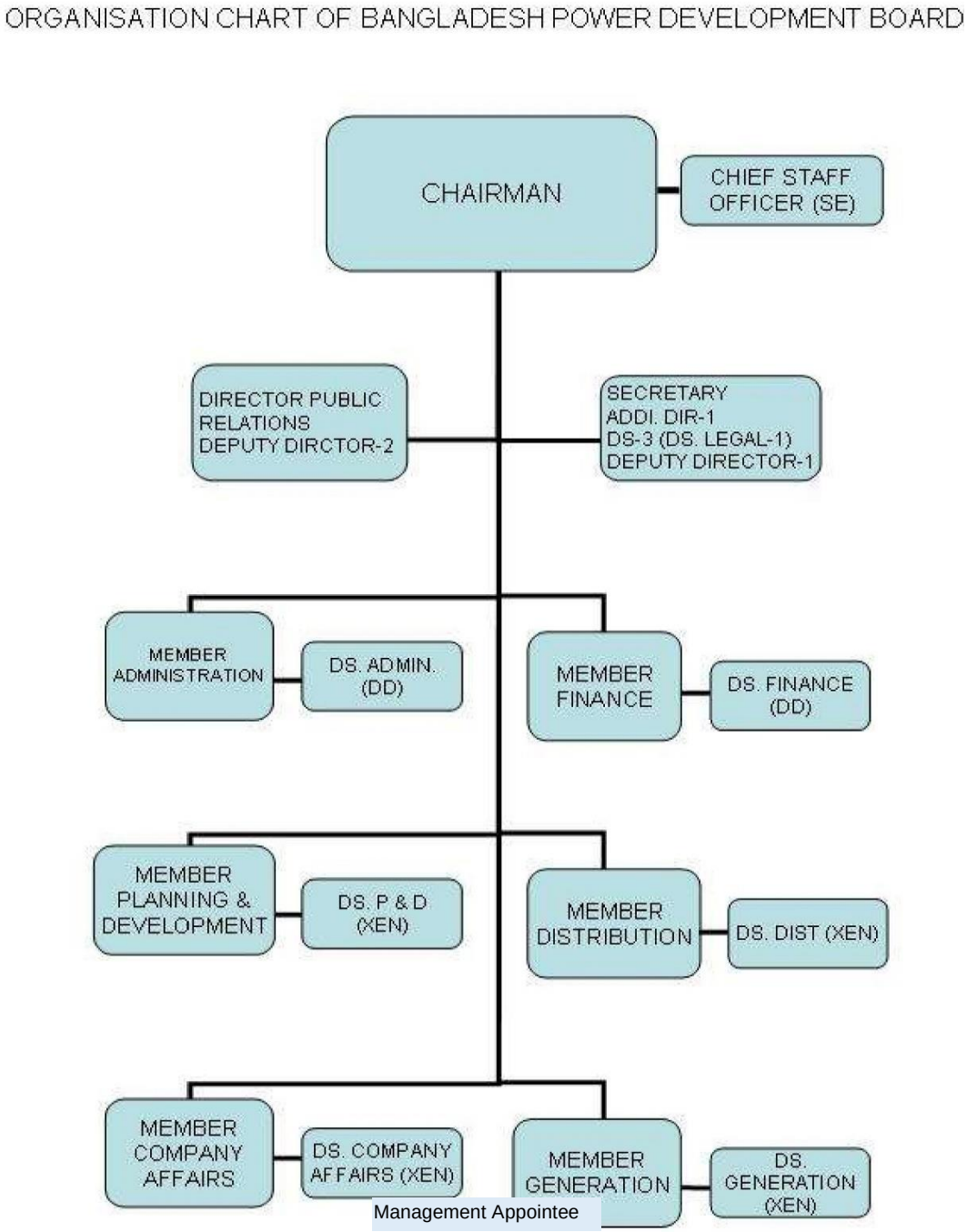
Appendix – 1 – IMS Policy

IMS POLICY

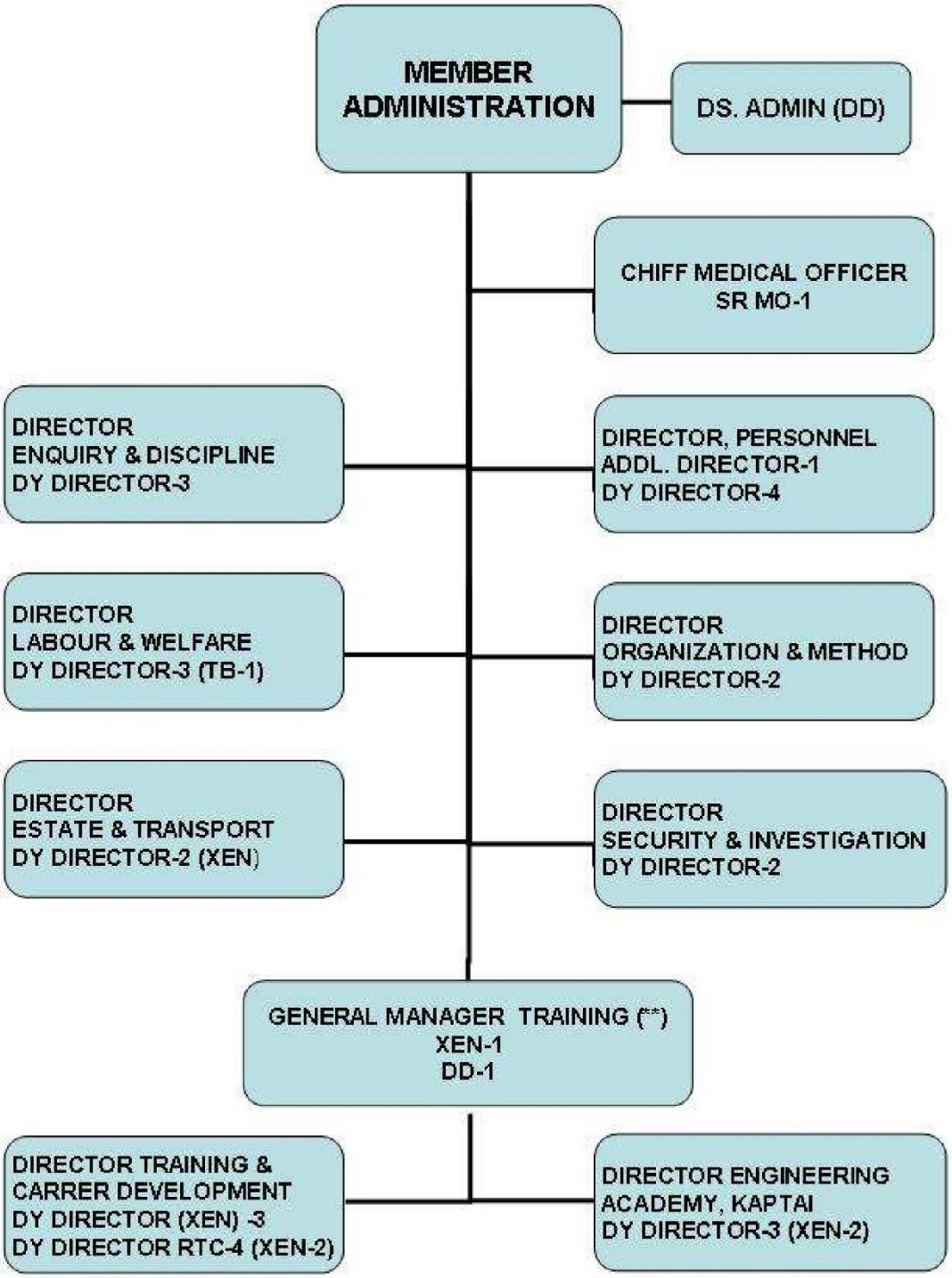
Bangladesh Power Development Board (BPDB) is engaged in Generation, Distribution and Management of corporate power sector utilities and support services. Accordingly, BPDB commits itself to the following IMS Policy:

1. Establishing Integrated Management System (IMS) as per ISO 9001: 2015, ISO 14001: 2015 and ISO 45001: 2018 Standards and maintain it with commitment for continual improvement of the IMS.
2. Apply integrated management as a dynamic, evolutionary practice and continual improvement on the following:
    a. Optimum Electrical Energy Generation
    b. Economy in Fuel Consumption
    c. Improvement of Availability Factor
    d. Minimization of Heat Rate for efficiency improvement
    e. Optimization of Schedule Maintenance
    f. Reduction of Forced Outage
    g. Reduction/Realization of System Loss
    h. Minimization of Voltage and Frequency Fluctuation in tolerable Range
    i. Improved customer care
    j. Elimination of hazards and reduce OH&S risks
    k. Prevention of Environmental Pollution
3. Commit the whole organization, company, suppliers and business partners to the highest quality standards of services provided to the customer, while complying fully with the legal requirement to the generation and distribution of electricity.
4. Keep education and training programs for the employees in issues related to quality, health safety and environment extensible to suppliers and business partners.
5. Evaluate and recognize the quality of the work performed by the employees, individually or collectively.
6. This policy is communicated to all the employees within all relevant levels of the organization and makes them understand.
7. This policy is reviewed from time to time for its continuing suitability.

Appendix – 2 – Organogram



OFFICE OF THE MEMBER (ADMINISTRATION)



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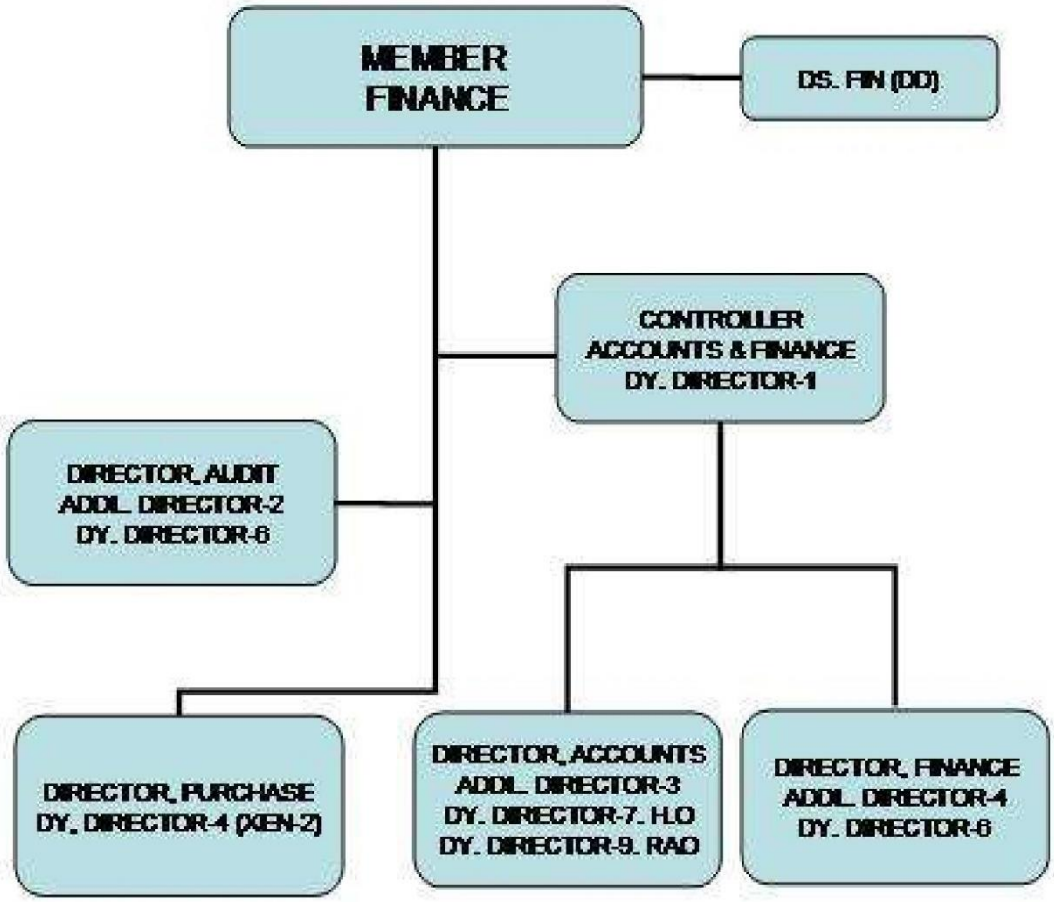
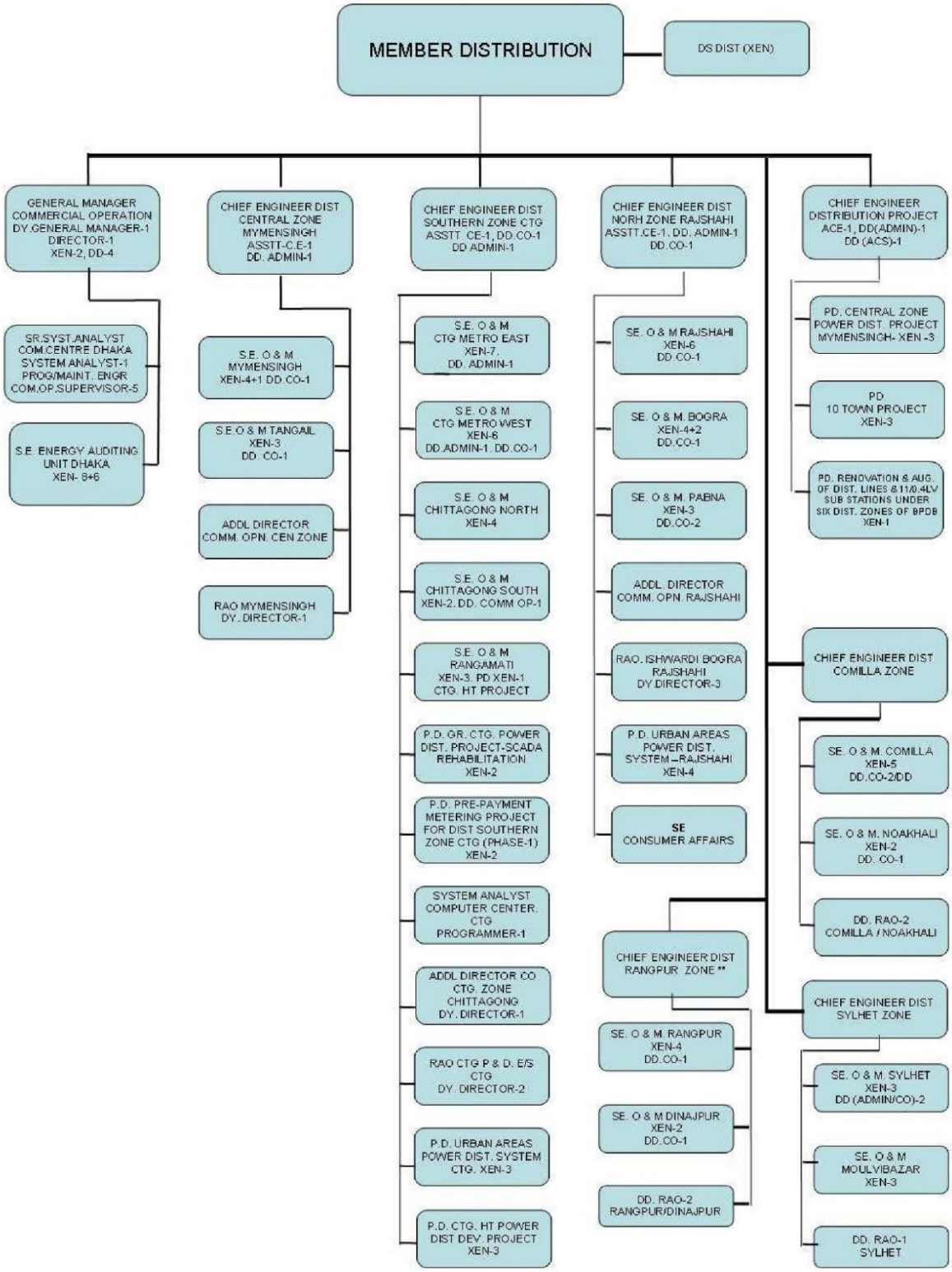
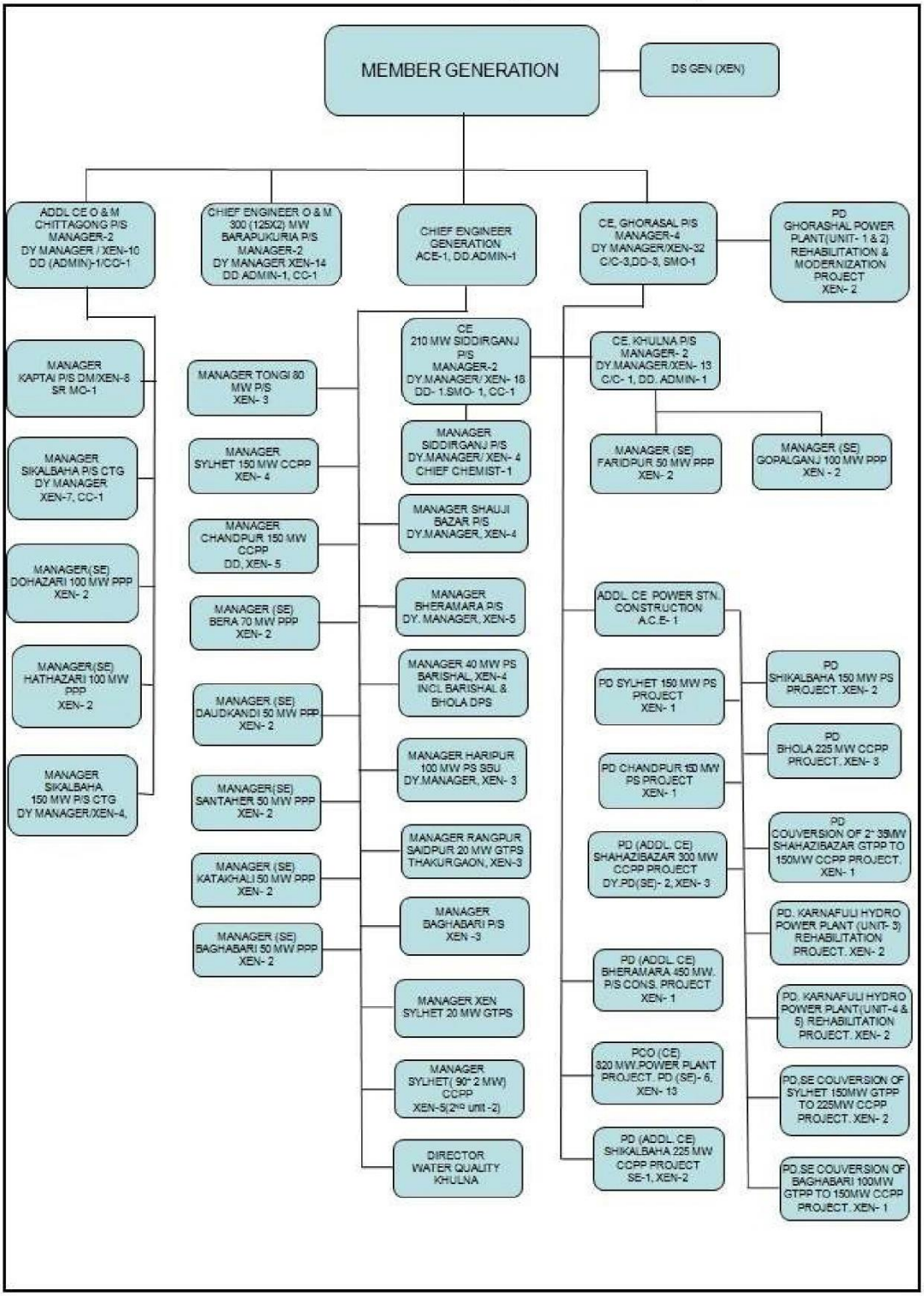


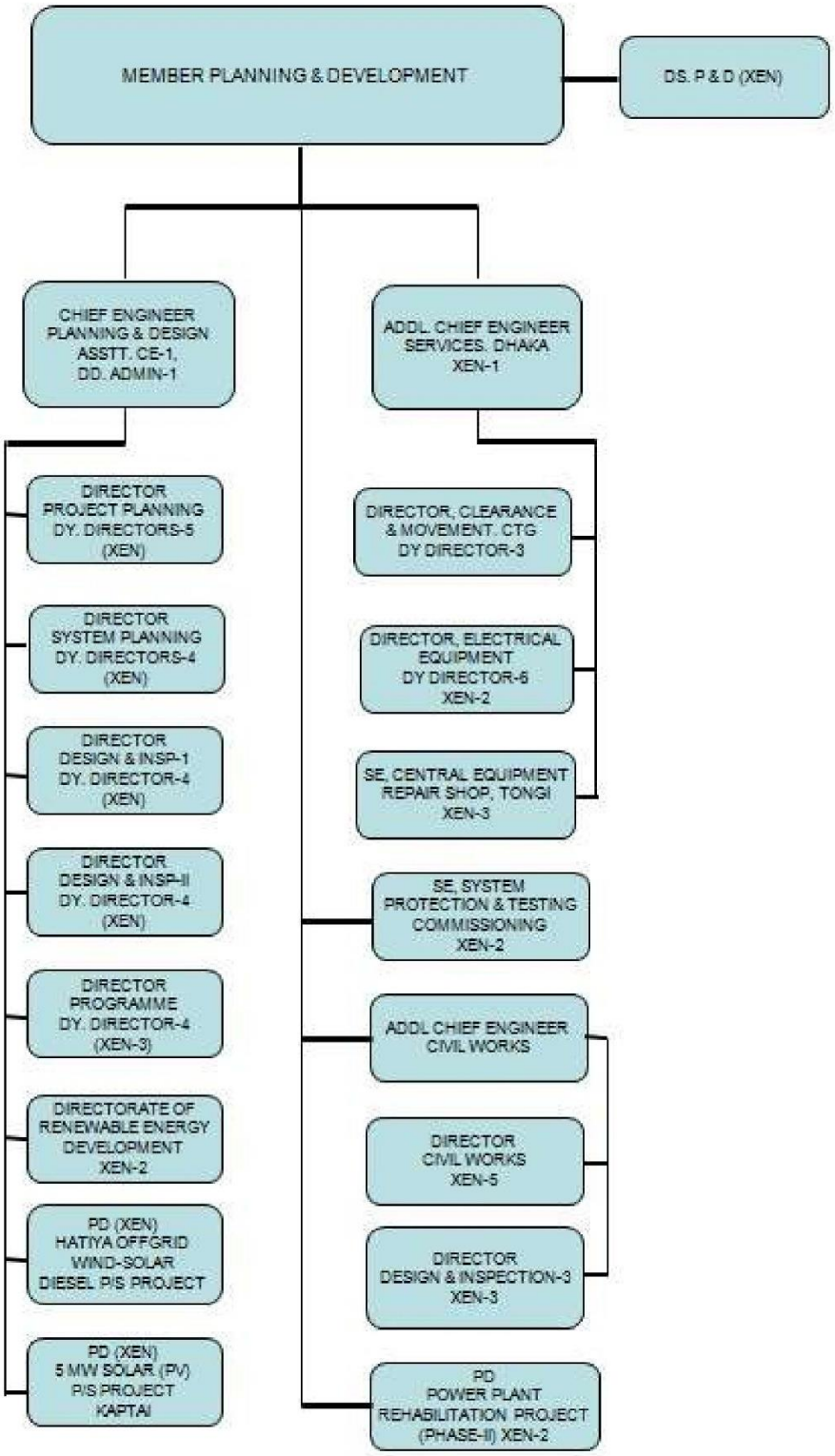
OFFICE OF THE MEMBER (DISTRIBUTION)



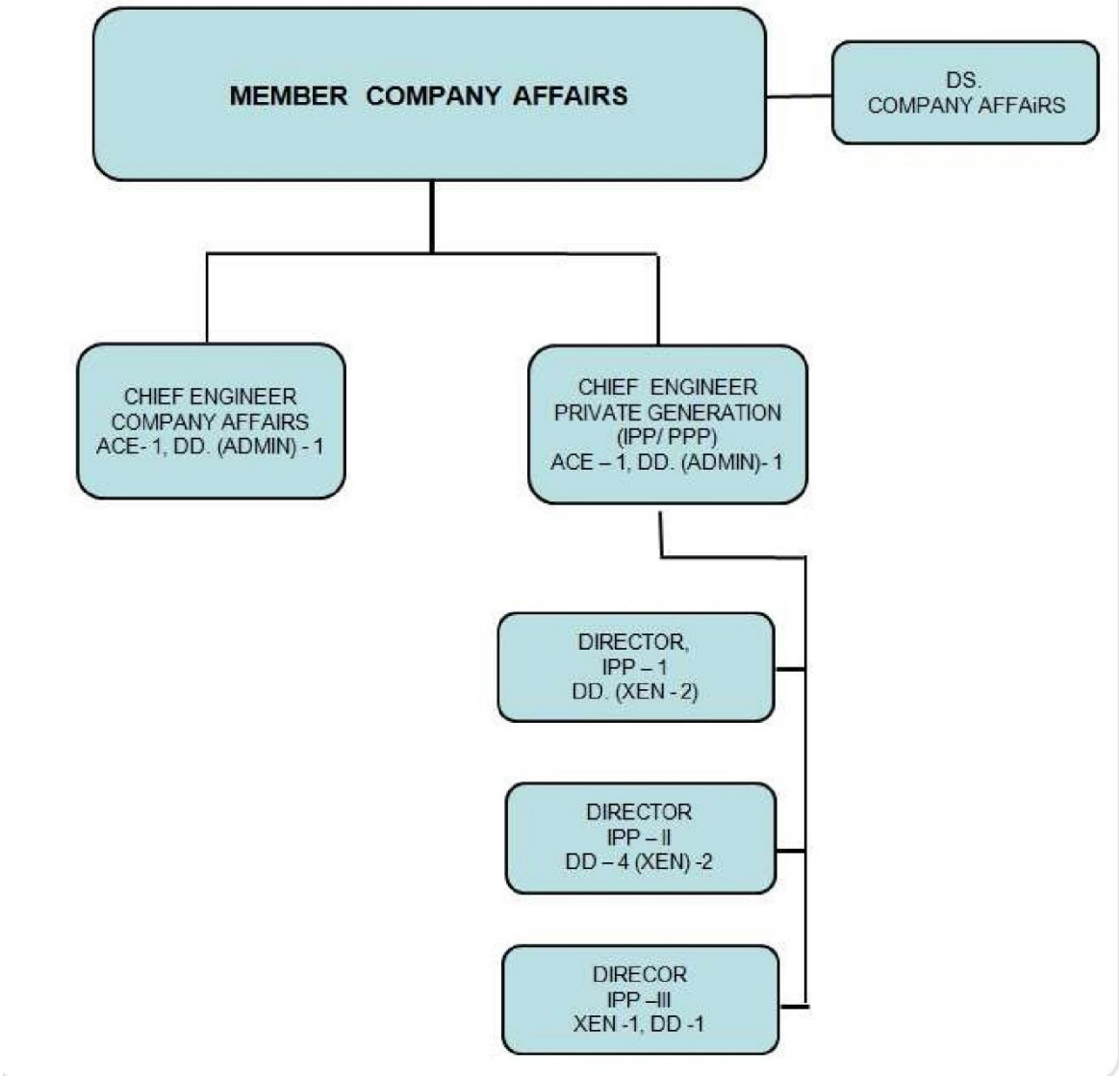
OFFICE OF THE MEMBER (GENERATION)



OFFICE OF THE MEMBER (P & D)



OFFICE OF THE MEMBER, COMPANY AFFAIRS



ORGANISATION CHART OF BANGLADESH POWER DEVELOPMENT BOARD