Mongolia Energy Sector: Promoting Sustainable Energy Development and Regional Cooperation

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Mongolia Energy Sector: Promoting Sustainable Energy Development and Regional Cooperation

- Recent Government Actions Undertaken in Energy Sector
  - Energy Law adopted in 2001
- Current Status of Restructuring
  - Unbundling
  - Corporatization
  - Commercialization
  - Privatization
- Independent Regulatory Body
- Main Result - Separation of Policy Implementation from Regulation, Regulation from Ownership

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- Creation of Independent Regulatory Body
- Energy Regulatory Authority (ERA)
  - Licensing
  - Tariff setting
  - Consumer Right Protection
  - Monitoring
- Main Result - Efficient Operators Could Enter the Market

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- Mongolia Integrated Power System (MIPS)
  - to develop reliable and affordable energy supply
  - to contribute to regional development
  - to improve energy security

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The Government Resolution #140 approved the “Mongolia Sustainable Energy Sector Development Strategy Plan (2002-2010)”

Main principles:

- Financial sustainability
- Restructuring
- Capacity building
- Energy access and affordability
- Energy conservation

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- Major Ongoing Projects in Energy Sector Financed by the Government and Donors
- Renovation of Diesel Generators in Soums
- Connection of 40 soums to the grid
- Aimag diesel power companies
- Ulaanbaatar Heat Efficiency (MON-1548)
- The World Bank financed Energy Project (#3503)

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- Major Ongoing Projects in Energy Sector Financed by the Government and Donors
- Durgun HPP Project
- Taishir HPP Project
- 100000 Solar Ger Program
- Projects aimed to Improve Reliability of Operations at Generation and Transmission Side
- Uyench HPP

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- Efficiency of Utilization of Loans and Technical Assistance
- Main objective - improve reliability of operations of power plants and coal mines;
- Between 1991-2002 in infrastructure sector the total of 816.3 million USD loans and grant aid were utilized;
- Loans of 530.0 million USD
- Grant aid of 290.0 million USD
- 31% utilized in energy sector;
- Major recipients: Power Plant #3, #4, Baganuur, Shivee Ovoo coal mine
- Major borrowers: ADB, the World Bank, Government of Japan

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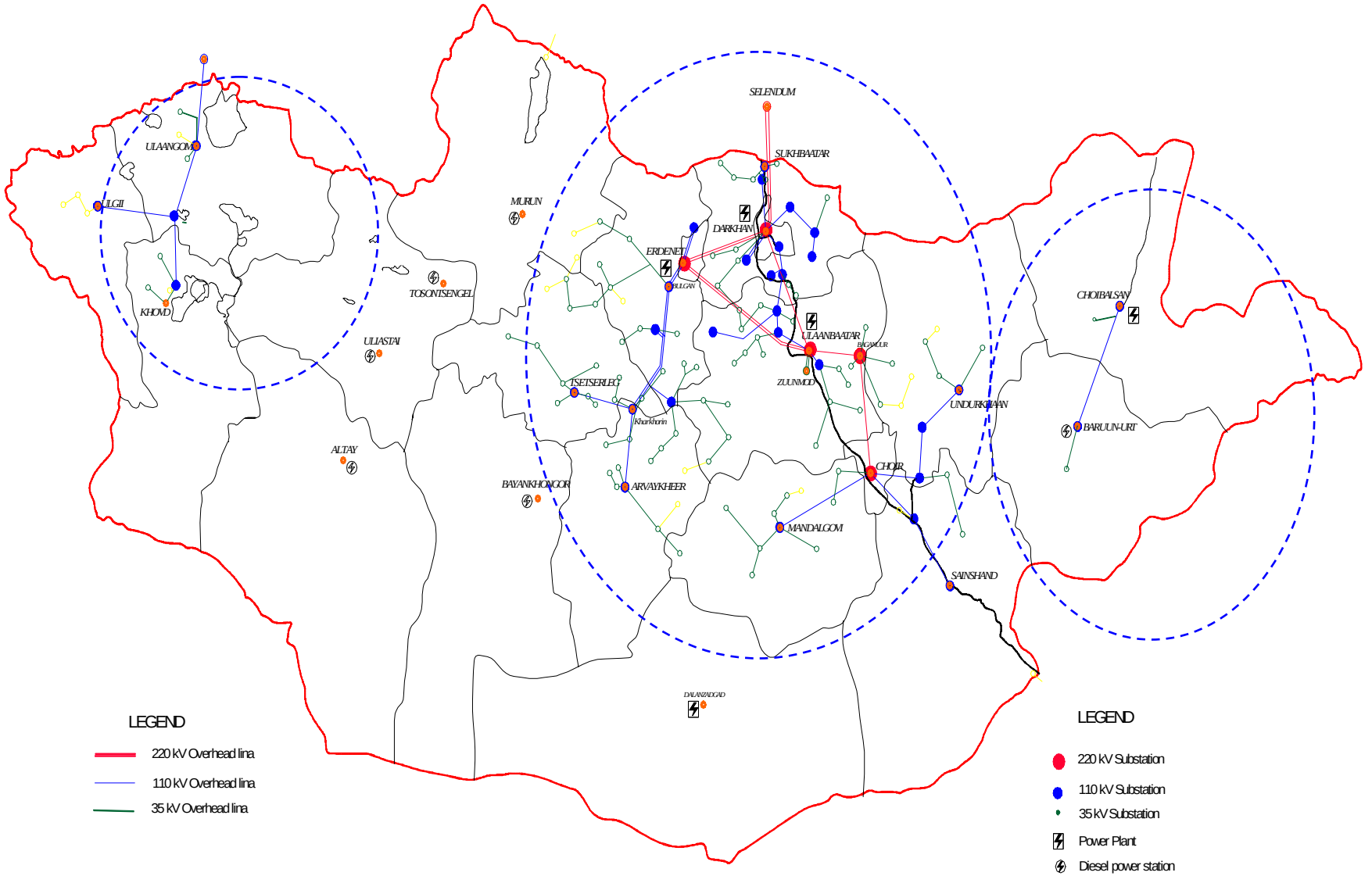
- Main Policy Challenges and Near term Actions
- Financial sustainability of energy sector
- Rural energy access and affordability
- Further Restructuring and Private Sector Participation (PSP)
- Preparation and search for next large scale investment

MAP OF MONGOLIAN POWER SYSTEMS



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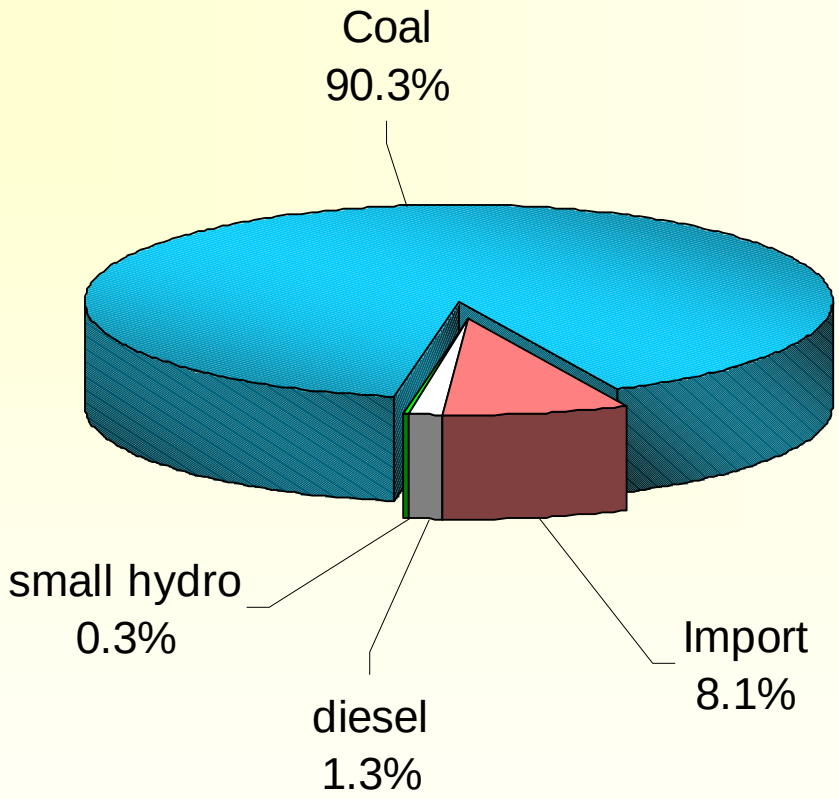
Total installed capacity	788.8 MW
Number of power plants	5
Transmission & distribution companies	5
Electricity output	2.3 Gwh
Transmission & distribution losses	25.0 %
Peak load	540 MW

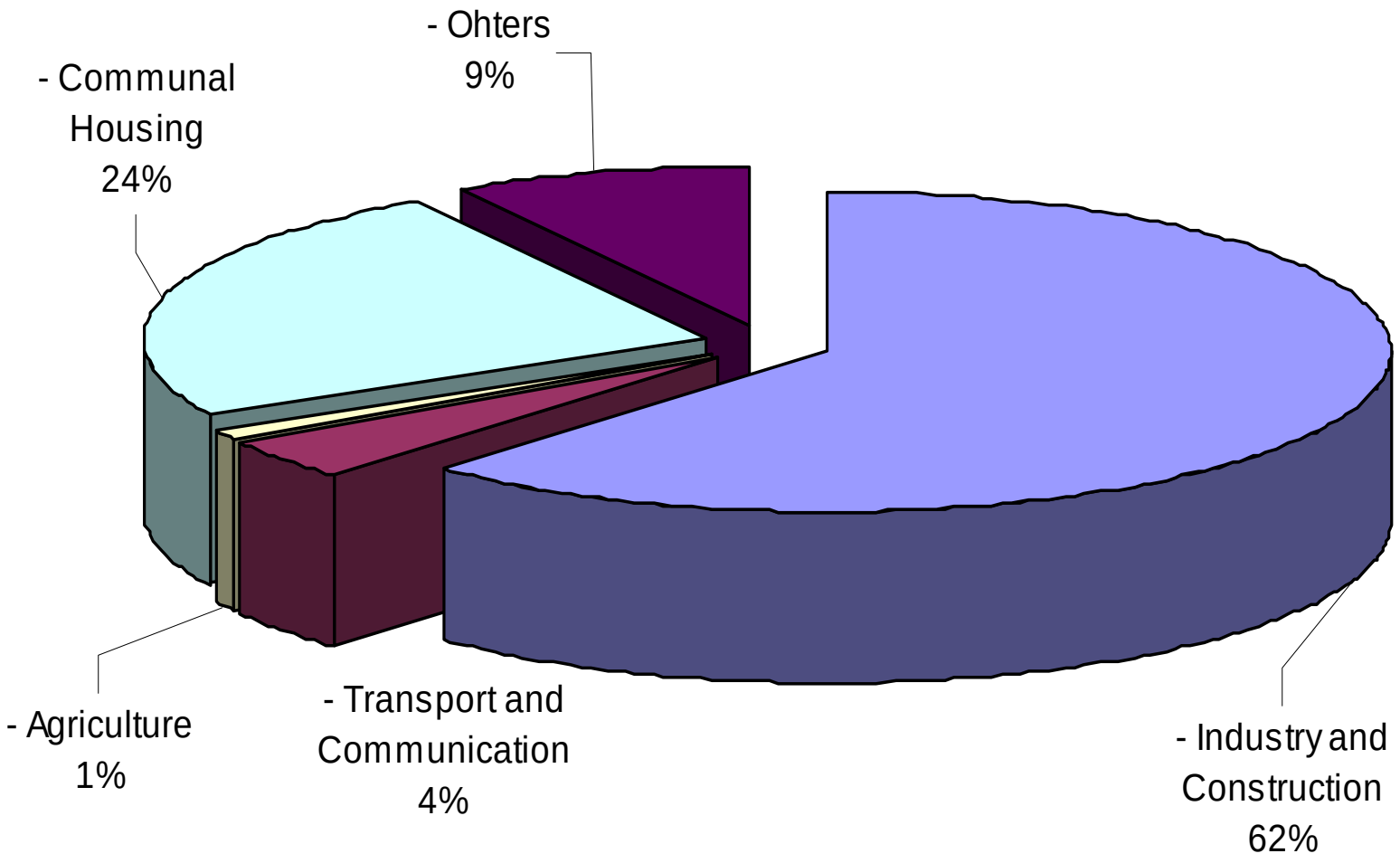
Existing Power Plants
(Central energy system)

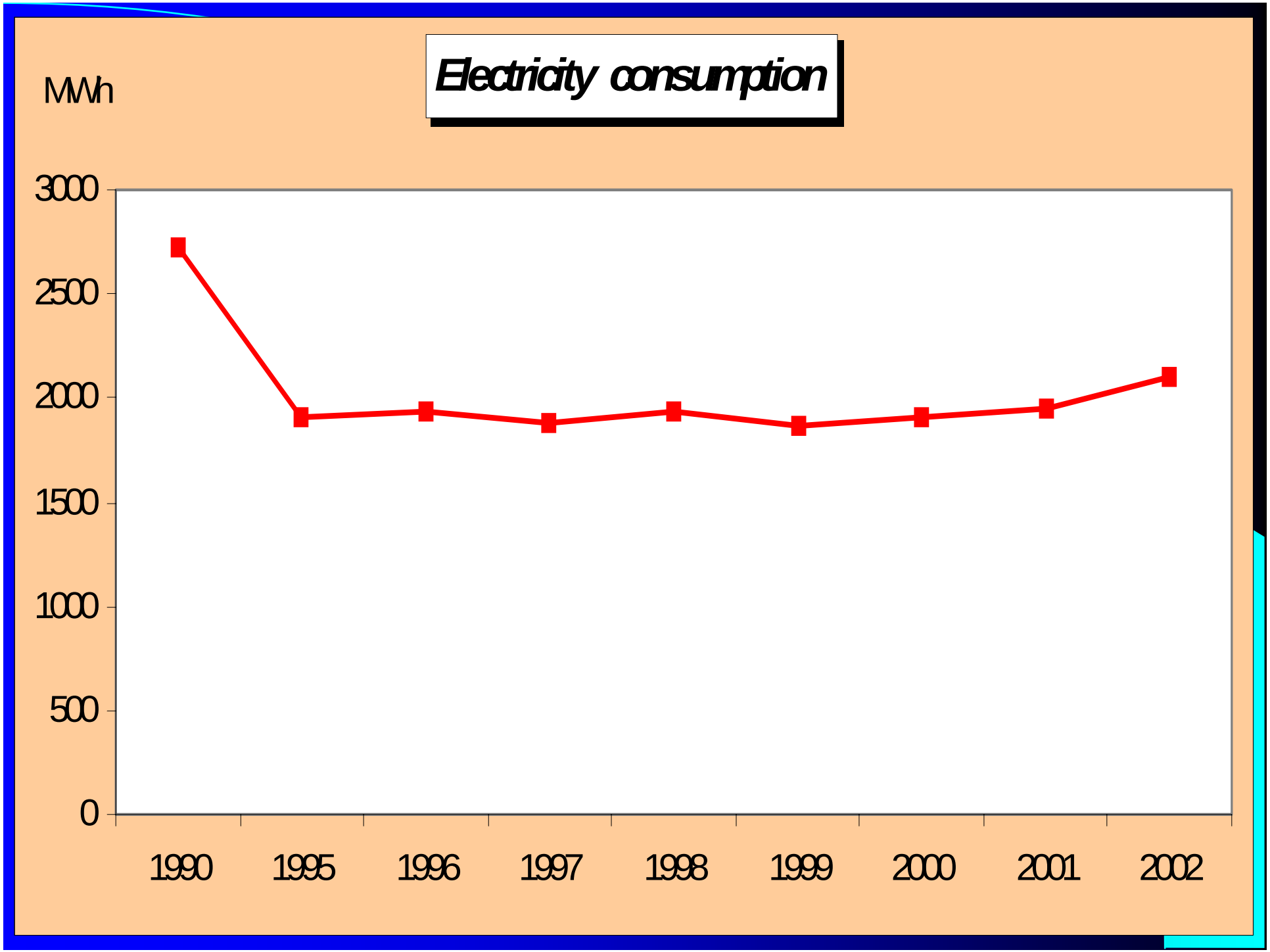
	Plant name	Start Year of Operation	Year of Retirement	Plant Life, years including rehabilitation	Installed Capacity, MW	Plant Factor, %
1	CHP-2	1961	2005	44	24	82
2	CHP-3	1968	2011	43	148	73
3	CHP-4	1983	2028	45	540	81
4	CHP-D	1966	2013	47	48	82
5	CHP-E	1987	2032	45	28,8	73
					788,8	

Electricity generation by source 2002

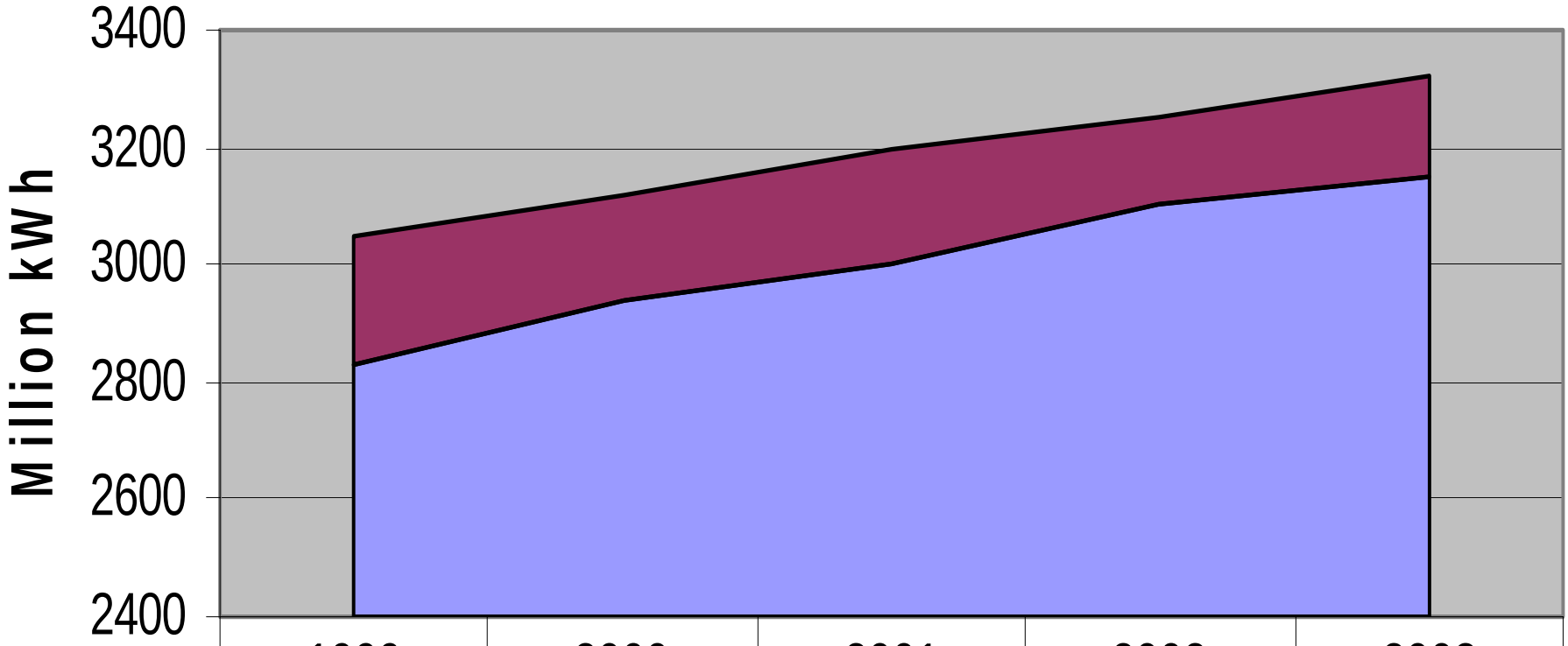


ELECTRICITY DEMAND STRUCTURE



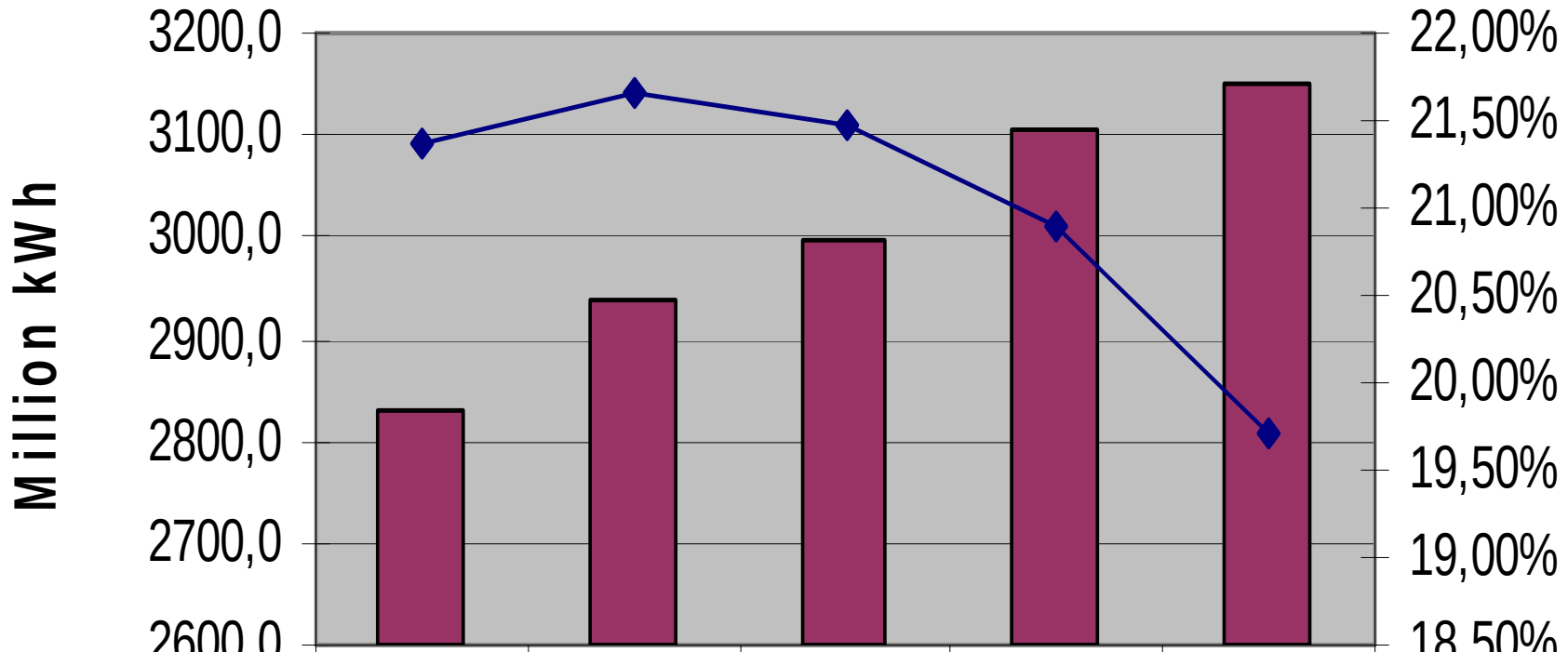

Electricity consumption
MWh
3000
2500
2000
1500
1000
500
0
1990
1995
1996
1997
1998
1999
2000
2001
2002

TOTAL ELECTRICITY CONSUMPTION



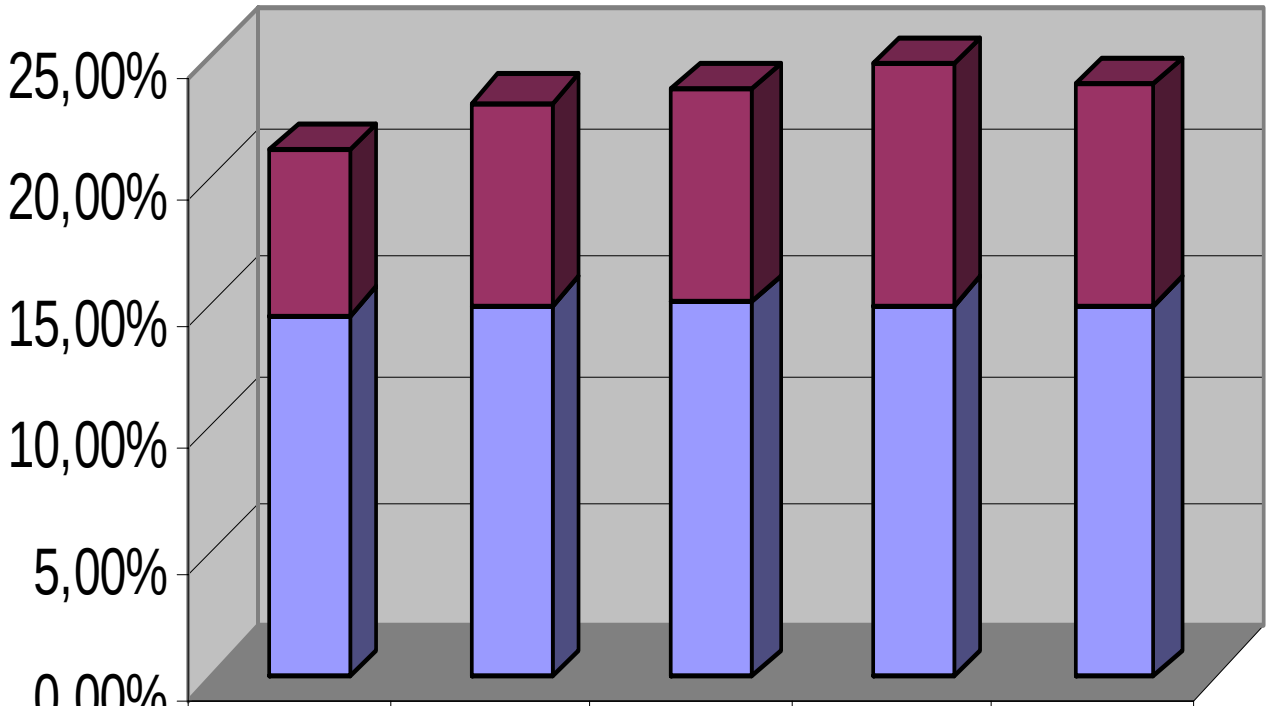
	1999	2000	2001	2002	2003
Imp	218,2	183,9	194,5	146,9	170,35
Gen	2832	2938,6	2998,6	3105,4	3152,1

TOTAL GENERATION



	1999	2000	2001	2002	2003
E-Gen	2832,0	2938,6	2998,6	3105,4	3152,1
PP's %	21,36%	21,66%	21,47%	20,89%	19,72%

TOTAL ELECTRICITY LOSS



	1999	2000	2001	2002	2003
NT-Loss	6,52%	8,17%	8,49%	9,61%	8,80%
T-Loss	14,60%	14,89%	15,07%	15,00%	15,00%

Electricity Import from Russia to Mongolia

- Main features of Electricity Import
  - To ensure dynamic and static reliability of the system;
  - To meet peak demand of the Central Energy System (CES);
  - Minister of Infrastructure sets the limit for Electricity Import according to the Energy Law;
  - Electricity Payment Term
    - Capacity Payment: 1500 USD per 1 MW
    - Energy volume: 0.016 USD per 1 kWh
    - Fine for Exceeded Use of Capacity: 245 USD per 1 MW

Data on Electricity Import and Export from/to Russian Federation to/from Mongolia

Year	Import	Export	Saldo	Reserved Capacity	Exceeded Capacity Use	Payment per Unit of Exceeded Capacity	Payment for Exceeded Capacity Use	Total Payment for Import	Average Price	Measured Currency
	mln. kWh		%	MW	MW	$				
1977	19.2			10	-			829.0	0.043	thousand roubles
1978	130.2			30	-			4,622.0	0.035	
1979	375.3			55	5,228.0			7,316.3	0.019	
1980	262.9			85	360.0			7,546.3	0.029	
1981	504.8			100	3,526.0			14,023.7	0.028	
1982	759.8			100	12,187.0			23,638.4	0.031	
1983	679.1			100	5,108.0			22,134.8	0.033	
1984	405.9			120	2,684.0			15,812.8	0.039	
1985	163.5			100	5,206.0			7,281.0	0.045	
1986	81.4			61	3,226.0			4,838.0	0.059	
1987	70.6			55	2,906.0			4,023.0	0.057	
1988	74.9			55	4,161.0			3,811.7	0.051	
1989	158.2			45	10,413.0			6,875.5	0.043	
1990	227.9			60	9,784.0			8,974.6	0.039	
1991	79.7			60	2,663.0	425	1,131.8	10,050.9	0.126	
1992	99.3	68.3	13	45	2,047.0	400	818.8	8,980.4	0.099	thousand USD
1993	198.3	98.3	13	45	8,218.0	370	3,040.7	12,475.0	0.067	
1994	214.8	60.4	13	150	9,787.4	348	3,406.0	13,561.6	0.066	
1995	380.8	28.2	13	150	5,108.9	245	1,251.7	16,098.8	0.043	
1996	381.0	40.0	13	150	3,174.7	245	777.8	15,724.9	0.042	
1997	344.7	41.9	13	150	447.4	245	109.6	12,159.7	0.036	
1998	355.7	60.3	13	150	1,308.5	245	320.6	13,361.9	0.038	
1999	194.8	59.4	26	150	149.7	245	36.7	6,157.6	0.034	
2000	151.0	25.0	26	150	170.7	245	41.8	3,659.2	0.025	
2001	156.8	17.8	26	120	480.2	245	117.7	3,956.0	0.026	
2002	102.9	5.9	38	120	111.5	245	27.3	2,807.1	0.029	
2003	131.2	16.0	38	120	19.1	245	4.7	3,961.5	0.034	

THANK YOU