

# **POWER TARIFF POLICY FOR BHUTAN**

**Presentation to BCCI  
9<sup>th</sup> November 2005**

**Department of Energy**

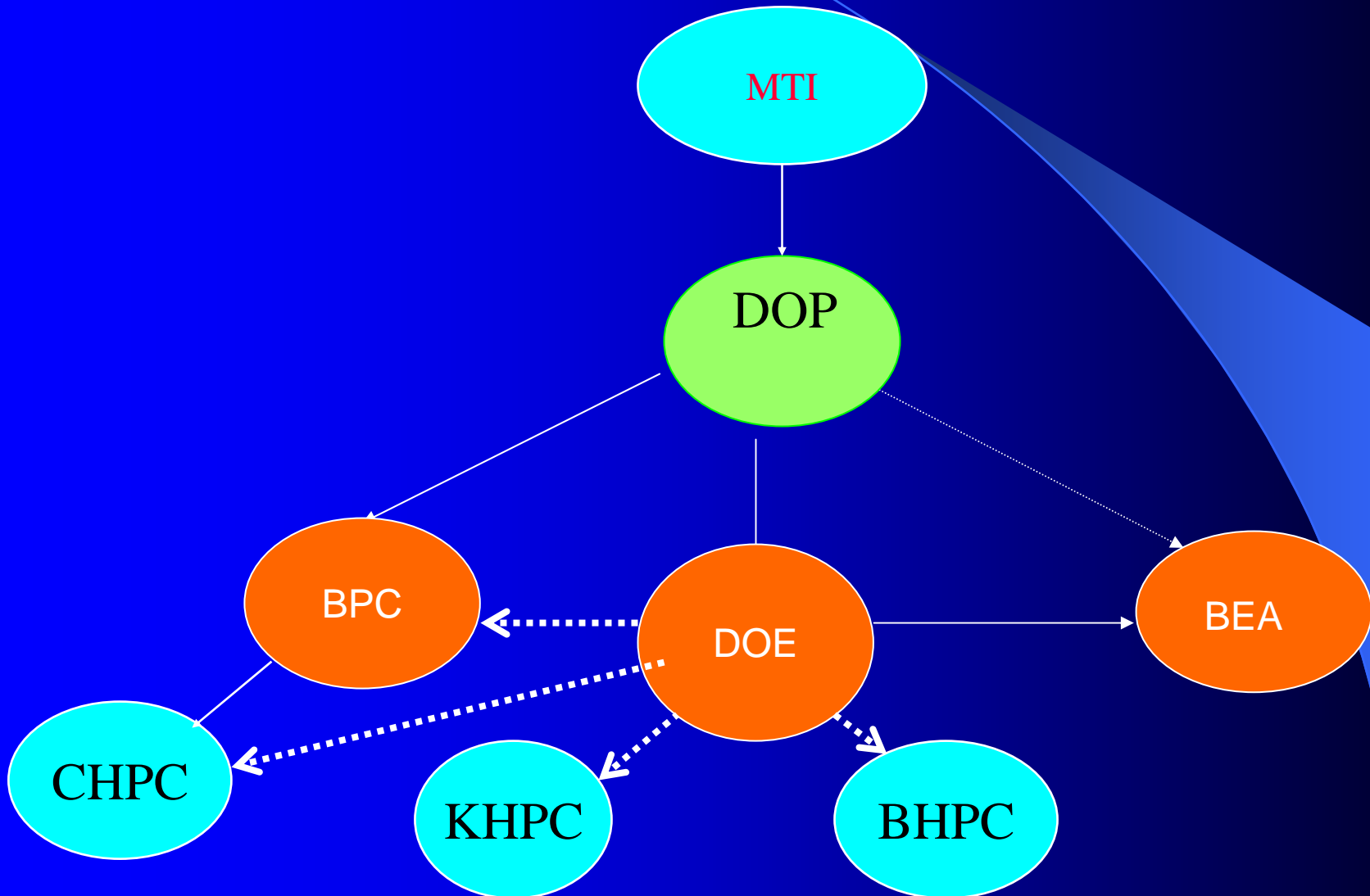
# Presentation format

- Power Sector Mandate
- Reforms in the power sector
- Summary of Hydropower potential
- Electricity demand, projections & implications
- Generation targets
- Power Dilemma & Policy interventions
- Power availability for domestic consumption

# POWER SECTOR MANDATE

- i. Meet the electricity requirements of the Country both for household consumption and industrial demand in a safe, reliable and affordable manner.
- ii. Ensure that revenue from export of power continue to grow thereby contributing to the Royal Government's goal of achieving economic self reliance.

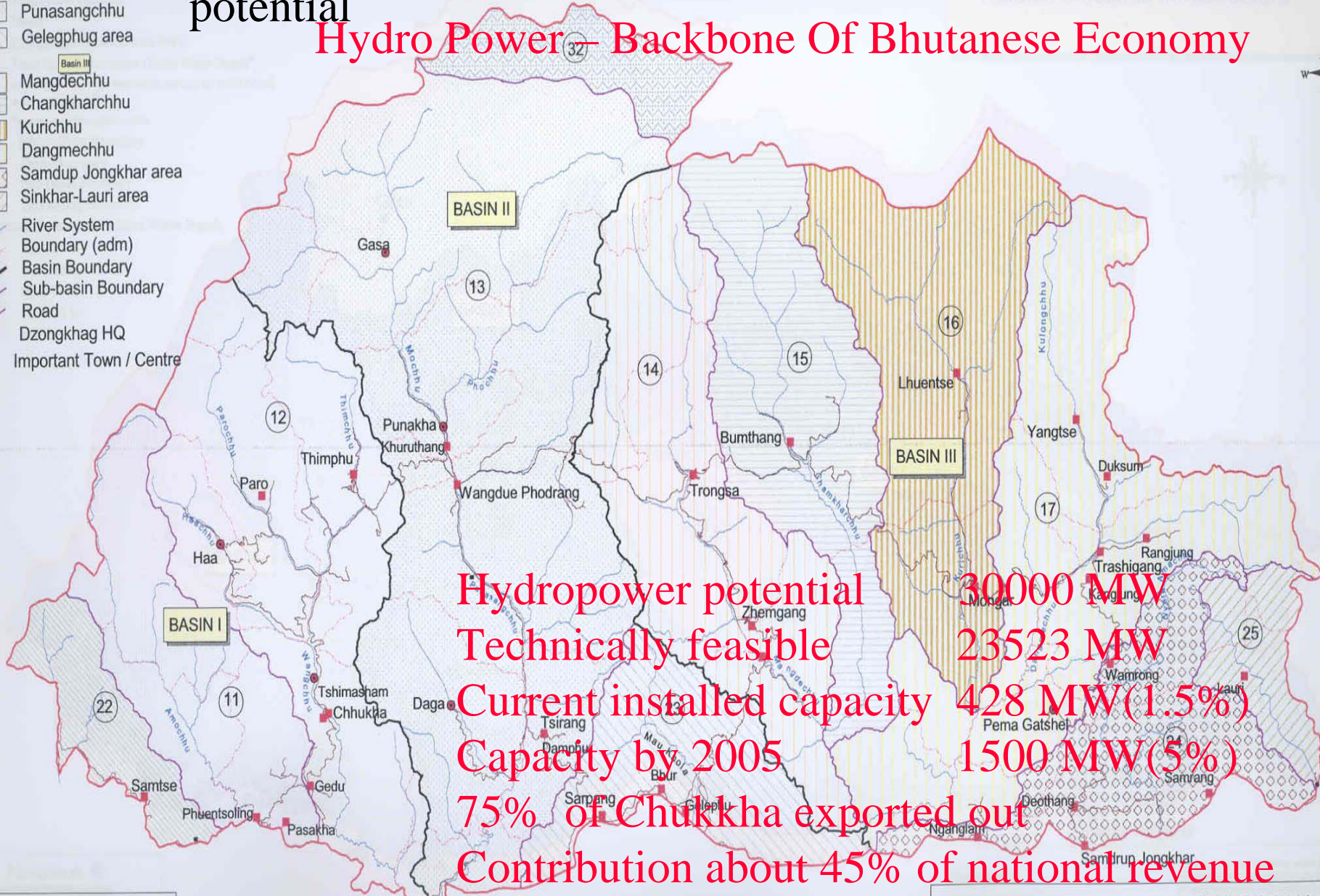
# REFORMS IN THE POWER SECTOR (With effect from 1<sup>st</sup> July 2002)



# Summary of hydropower potential

## Hydro Power – Backbone Of Bhutanese Economy

- (22) Samchi area
- (11) Amochhu
- (12) Wangchhu
- Basin I**
- (32) Drainage to China
- (13) Punasangchhu
- (23) Gelegphug area
- Basin II**
- (14) Mangdechhu
- (15) Changkharchhu
- (16) Kurichhu
- (17) Dangmechhu
- (24) Samdup Jongkhar area
- (25) Sinkhar-Lauri area
- River System
- Boundary (adm)
- Basin Boundary
- Sub-basin Boundary
- Road
- Dzongkhag HQ
- Important Town / Centre



Hydropower potential 30000 MW  
 Technically feasible 23523 MW  
 Current installed capacity 428 MW (1.5%)  
 Capacity by 2005 1500 MW (5%)  
 75% of Chhukha exported out  
 Contribution about 45% of national revenue

# Electricity demand scenario

- 105 MW and 664 mu in 2002-03 from 70 MW and 345 mu in 1995-96 (11% growth)
- 9<sup>th</sup> Plan about 12% growth mainly on increased coverage and industrial demand.
- By 2006, 1500MW capacity, firm 293MW.
- 12MW per annum to be added during the 9<sup>th</sup> Plan to avoid reduction in export.
- Electricity for all by 2020 (USD 130 m)
- Have a clear strategy so that domestic demand does not eat into export.

# Projected electricity demand of Bhutan

Year	2002	2005	2007	2010	2012	2014	2017	2020
Demand (mu)	664	932	1169	1473	1718	1967	2410	2533
Peak D (MW)	105	152	190	240	280	320	393	413

Assumption : 02-07, 12%; 07-12, 8%; 12-17, 7%; 17-22, 6%. 7

# DOMESTIC DEMAND IMPLICATIONS

- Based on existing demand forecast, there will be no power available for export by 2012 during the lean season.
- Import will become necessary.
- Direct revenue from export of power will reduce thereby putting pressure on the RGoB for funding social sectors.
- Domestic tariff would go to export levels, effecting power intensive industries.
- Need to add at least 12 MW firm power per annum during the 9<sup>th</sup> Plan to meet domestic demand without effecting export.

# GENERATION TARGETS UPTO 2024

S/N	Plant name	Y.O.C	Capacity (MW)	Firm power (MW)	Energy (MU)	D/E
1	Chukkha	1986	336	84	1700	D/E
2	Kurichu	2001	60	24	400	D/E
3	Basochhu u/s	2002	24	5	105	D
4	Basochhu l/s	2004	40	10	186	D
5	Tala	2006	1020	170	4865	D/E
6	Punatsangchu 1	2012	870	160	4330	E
7	Mangedchu	2014	360	94	2000	E
8	Punatsangchu 2	2017	990	165	4667	E
9	Chamkarchu 2	2022	670	113	3207	E
10	<b>Chamkarchu 1</b>	<b>2023</b>	<b>570</b>	<b>95</b>	<b>2713</b>	<b>E</b>
11	<b>Kholongchu</b>	<b>2024</b>	<b>326</b>	<b>61</b>	<b>1506</b>	<b>E</b>
	<b>Total</b>		<b>5476</b>	<b>981</b>	<b>26519</b>	

# Power Dilemma

- Should we encourage power intensive industries? If so up to what level of generation.
- 1 MW increase in domestic demand results in about Nu 14.89 million loss in direct cash to the RGoB by virtue of opportunity cost of domestic consumption.
- On the other hand bringing domestic tariff closer to export would make power intensive industries unviable ?
- How can we have a win win situation – i.e domestic tariff remains affordable while at the same time export earnings continue to grow ?

# POLICY INTERVENTIONS

- 15% of energy from export gencos allocate for domestic use.
- Whole sale rate to BPC fixed at Nu 0.30 per unit for the time being.
- Introduction of bulk supplier.
- Wheeling charges from export as subsidy for rural electrification.
- No CIT on domestic power tariff.

# Power availability for domestic consumption

S/N	Plant name	Y.O.C	Capacity (MW)	Firm power (MW)	Energy (MU)	Domestic	
						MU	MW
1	Chukkha	1986	336	84	1870	280	36
2	Kurichu	2001	60	24	400	400	24
3	Basochhu u/s	2002	24	5	105	105	5
4	Basochhu l/s	2004	40	10	186	186	10
5	Tala	2006	1020	170	4865	730	93
6	Punatsangchu 1	2012	1080	160	5000	750	95
7	Mangedchu	2014	360	94	2000	300	38
8	Punatsangchu 2	2017	990	165	4667	700	88
9	Chamkarchu 2	2022	670	113	3207	481	61
10	<b>Chamkarchu 1</b>	<b>2023</b>	<b>570</b>	<b>95</b>	<b>2713</b>	<b>407</b>	<b>52</b>
11	<b>Kholongchu</b>	<b>2024</b>	<b>326</b>	<b>61</b>	<b>1506</b>	<b>226</b>	<b>27</b>
	<b>Total</b>		<b>5476</b>	<b>981</b>	<b>26519</b>	<b>4564</b>	<b>529</b> <sub>2</sub>