

JICA Training and Dialogue
Program on Energy Policy in Tokyo,
Japan (April 5 to April 25, 2009)

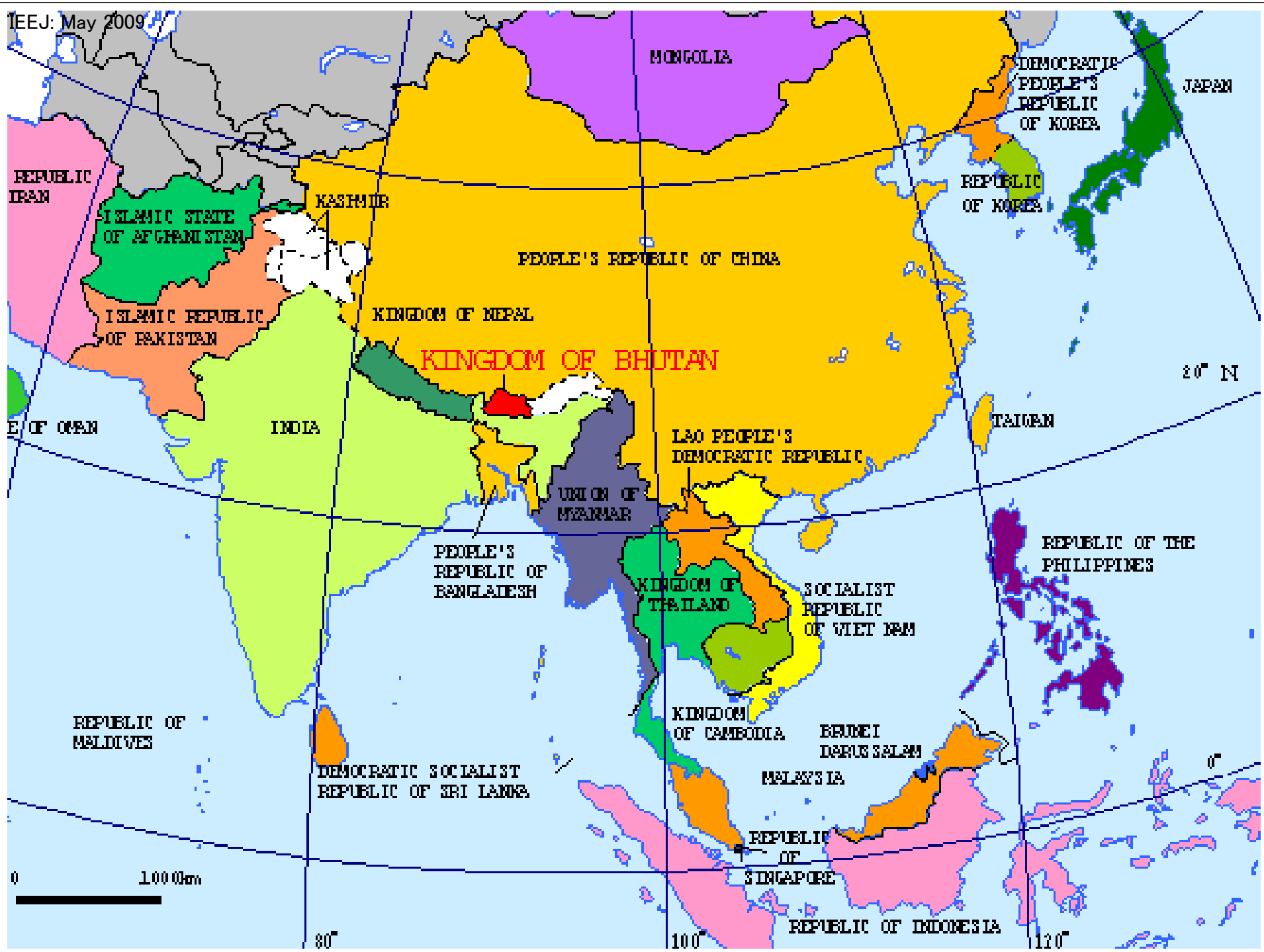
Presentation of Country Report of
BHUTAN

Overview of Energy Policies of Bhutan

Department of Energy
Ministry of Economic Affairs
BHUTAN

Outline of the Presentation

1. Country Profile
2. Preview of Energy Sector
3. Energy Supplies mix of Bhutan
4. Energy Demand
5. Energy Policies
6. Challenges



REPUBLIC OF IRAN

ISLAMIC STATE OF AFGHANISTAN

ISLAMIC REPUBLIC OF PAKISTAN

INDIA

KINGDOM OF NEPAL

KINGDOM OF BHUTAN

UNION OF MYANMAR

PEOPLE'S REPUBLIC OF BANGLADESH

KINGDOM OF THAILAND

LAO PEOPLE'S DEMOCRATIC REPUBLIC

SOCIALIST REPUBLIC OF VIET NAM

KINGDOM OF CAMBODIA

BERNEI DARUS SALAM

MALAYSIA

REPUBLIC OF SINGAPORE

REPUBLIC OF INDONESIA

MONGOLIA

DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

JAPAN

REPUBLIC OF KOREA

TAIWAN

REPUBLIC OF THE PHILIPPINES

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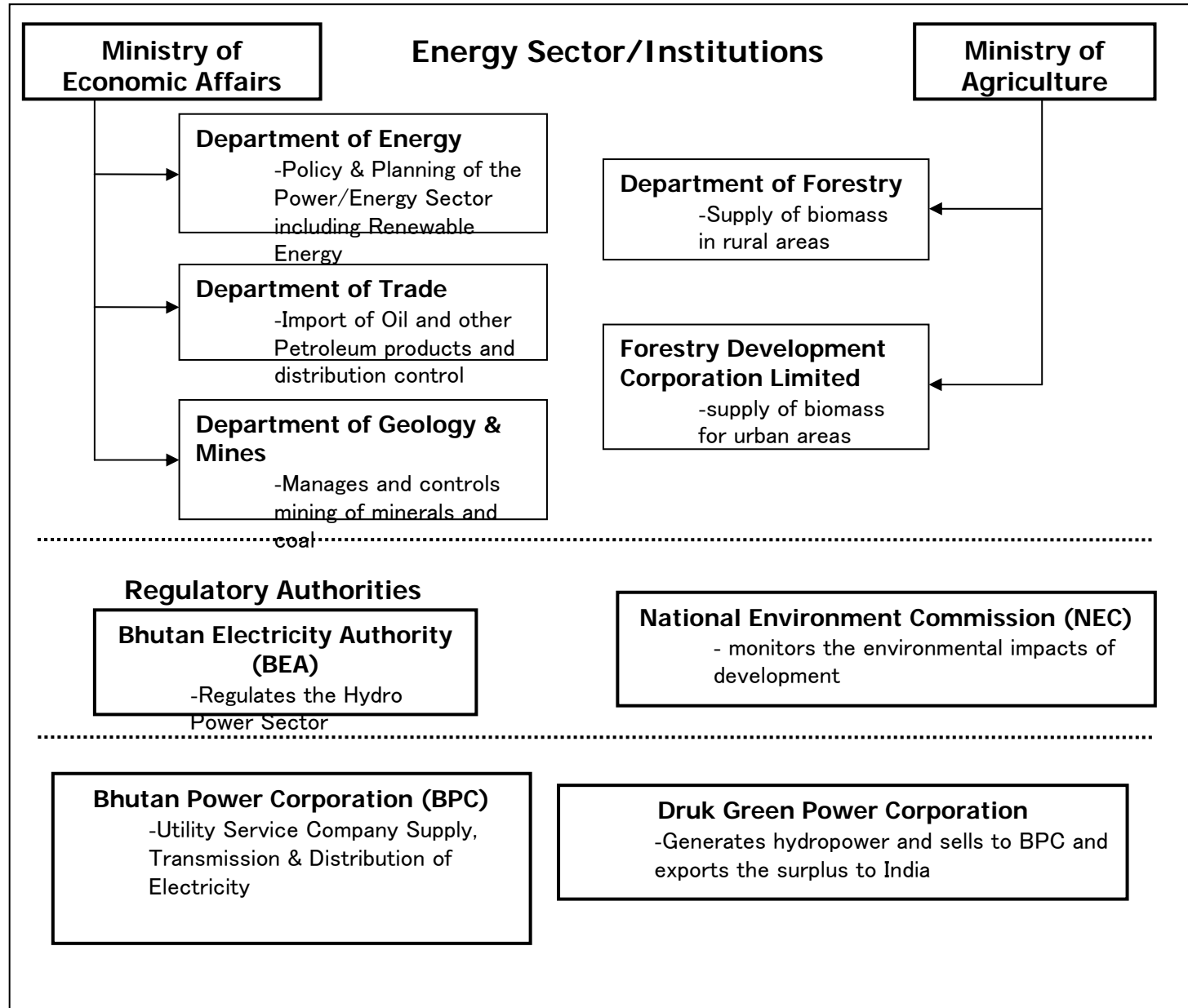
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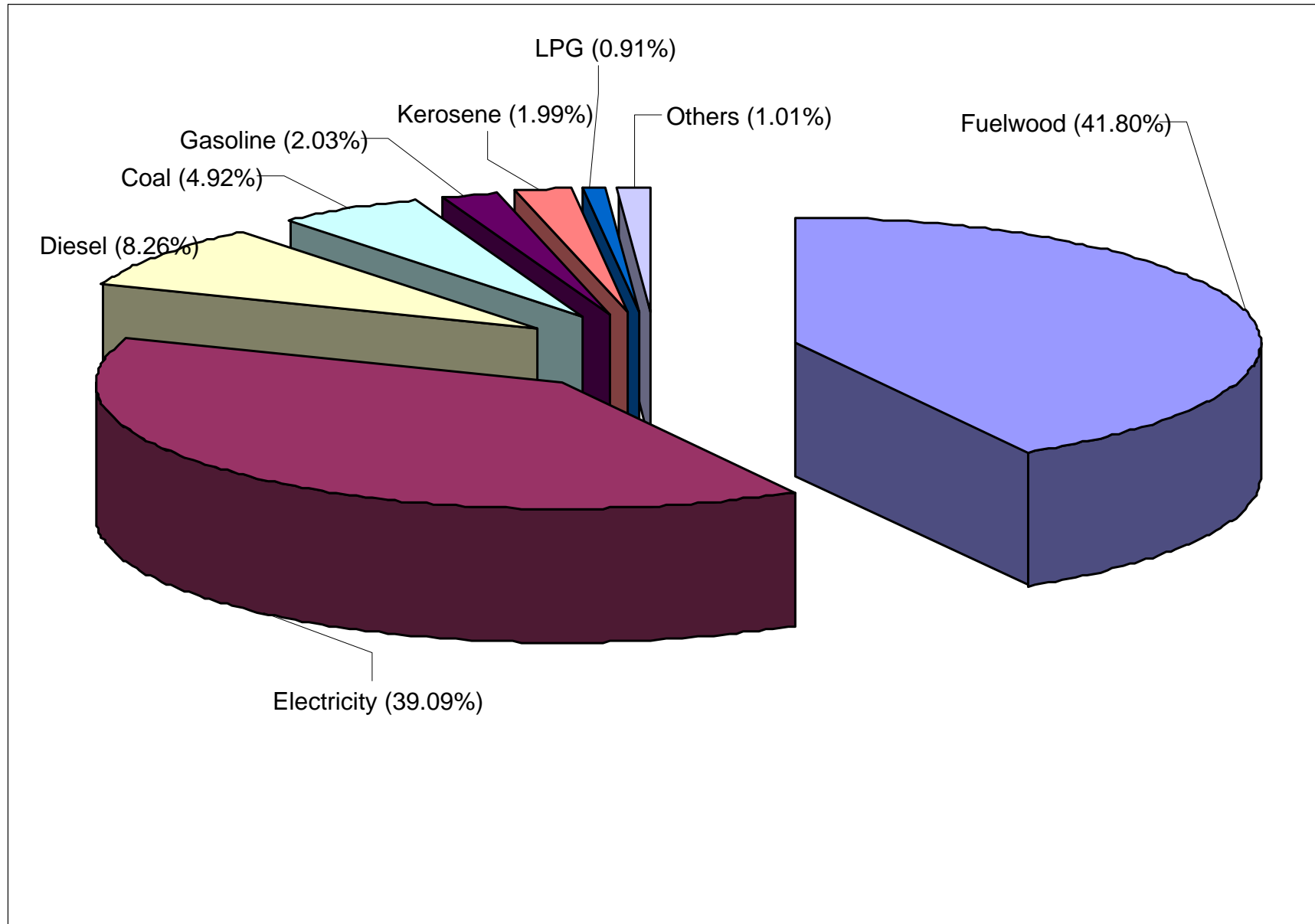
Bhutan: Salient Features

- *Located in the Himalayas*
- *Area – 38,394 Sq. Km*
- *Population – 650,000*
- *69 % population lives in rural areas*
- *Altitude range from 100 – 7500 m*
- *Stretches 170 Km North-South and 340 km East-West*
- *70% Vegetation cover*
- *Climate – Wet Summer and Cool Dry Winter*
- *GDP per capita, 2006: 1400 US\$*
- *GDP growth, 2006: 7.5%*
- *Overall National Electrification Coverage: ~60%
(~40% of rural areas still non-electrified)*
- *Religion: Buddhism*

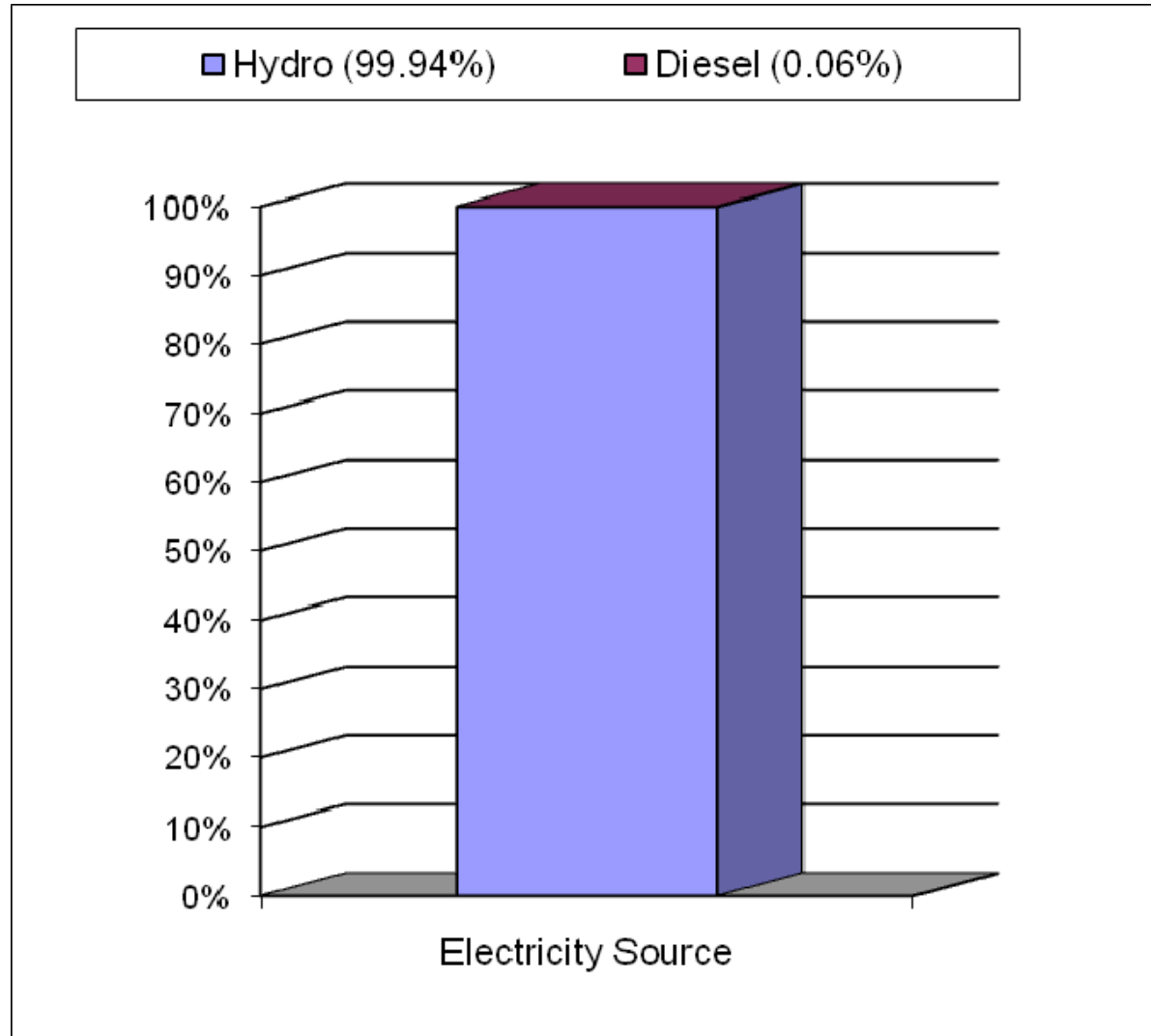


Sources of Energy

- Primary Energy – Bio-mass (1.2 million m³ per annum consumption, 1.8 m³ per capita) for cooking and heating
- Import of Kerosene (12545 kl), Diesel (51,440 kl), Petrol (13,775 kl), LPG (4472 MT) – for transportation, lighting and cooking
- Solar PV Installed – 343 kW for lighting
- Diesel Power Installed Capacity – 16.404 MW for far flung and off grid electrification
- Hydroelectric Installed Capacity – 1500 MW (5% of Total Potential is developed)
- Wind Power: Nil



Tokyo, Japan (April, 2009)



Renewable Energy dominates the electricity generation in the country

Tokyo, Japan (April, 2009)

Status of Hydropower Energy

Sl. #	Hydro Plant	MW/GWh	Remarks
1.0	Chukha	336/1860	1988
2.0	Kurichhu	60/400	2001
3.0	Basochhu I	24/106	2001
4.0	Basochhu II	40/186	2004
5.0	Tala	1020/4866	2006
6.0	Mini/Micro	4/20	1967-2008
	Total:	1484/7438	~5% of total potential of 30000MW

Energy Demand

Country	GDP per Capita (2000 US\$)*	Per Energy Capita Supply (TOE)	Per capita energy Consumption (TOE)	Per Electricity capita Supply (kWh)	Per capita electricity Consumption (kWh)*
Bangladesh	402	0.16	0.15	140	127.70
Bhutan	695	0.87	0.62	3,971	942.07
India	538	0.53	0.50	457	434.80
Nepal	231	0.34	0.32	69	67.90
Pakistan	566	0.49	0.44	425	407.80
Sri Lanka	962	0.49	0.42	345	325.10
Myanmar	-	0.28	0.27	104	101.10
China	1,323	2.36	1.11	2,140	1,378.50
Norway	39,005	6.50	5.81	22,859	23,195.80
USA	36,655	7.82	7.63	12,187	13,243.00

Energy Policy

- Rationale:
 - Most essential input for socio-economic development activities
 - Required for cooking, lighting, heating/cooling, transport, for income generating activities such as agricultural, commercial, industrial, etc
 - Energy, environment and economic are interlined and play important role in sustainable development of a nation
 - Demand for energy reached limits where conventional sources can no longer be sufficient to sustain global economy
 - Bhutan has large hydropower potential (30k MW)

Energy Policy cont...

- **Vision:**
 - To be a dynamic, high performing government agency, that effectively promotes hydropower development to achieve economic self-reliance and that fosters the sustainable use of other forms of renewable energy in the Kingdom and ensures energy security of the Nation
- **Mission:**
 - To govern and facilitate integrated development of a sustainable and robust energy sector that drives the national economy and meets the demand for quality modern energy services of the Bhutanese society

Energy Policies

- Rural Electrification Policy in Place
- Bhutan Sustainable Hydropower Development Policy 2008 in place
- Renewable Energy Policy by 2010
- Captive Power Generation Policy by 2009
- Industrial Policy (under formulation)

Challenges

- Ambitious Target “Electricity for All” but RE works are in difficult areas (access and cost-wise)
- Huge Resource Gap for development of 10000 MW hydro projects
- Climate Change – fear of Dutch Disease/all eggs in one basket

**THANK
YOU**

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Tokyo, Japan (April, 2009)