



SE4ALL INITIATIVES IN BHUTAN

Investor Forum
10th ACEF, Manila
16th June 2015

Tilak Sunwar
Department of Renewable Energy
Ministry of Economic Affairs
Royal Government of Bhutan

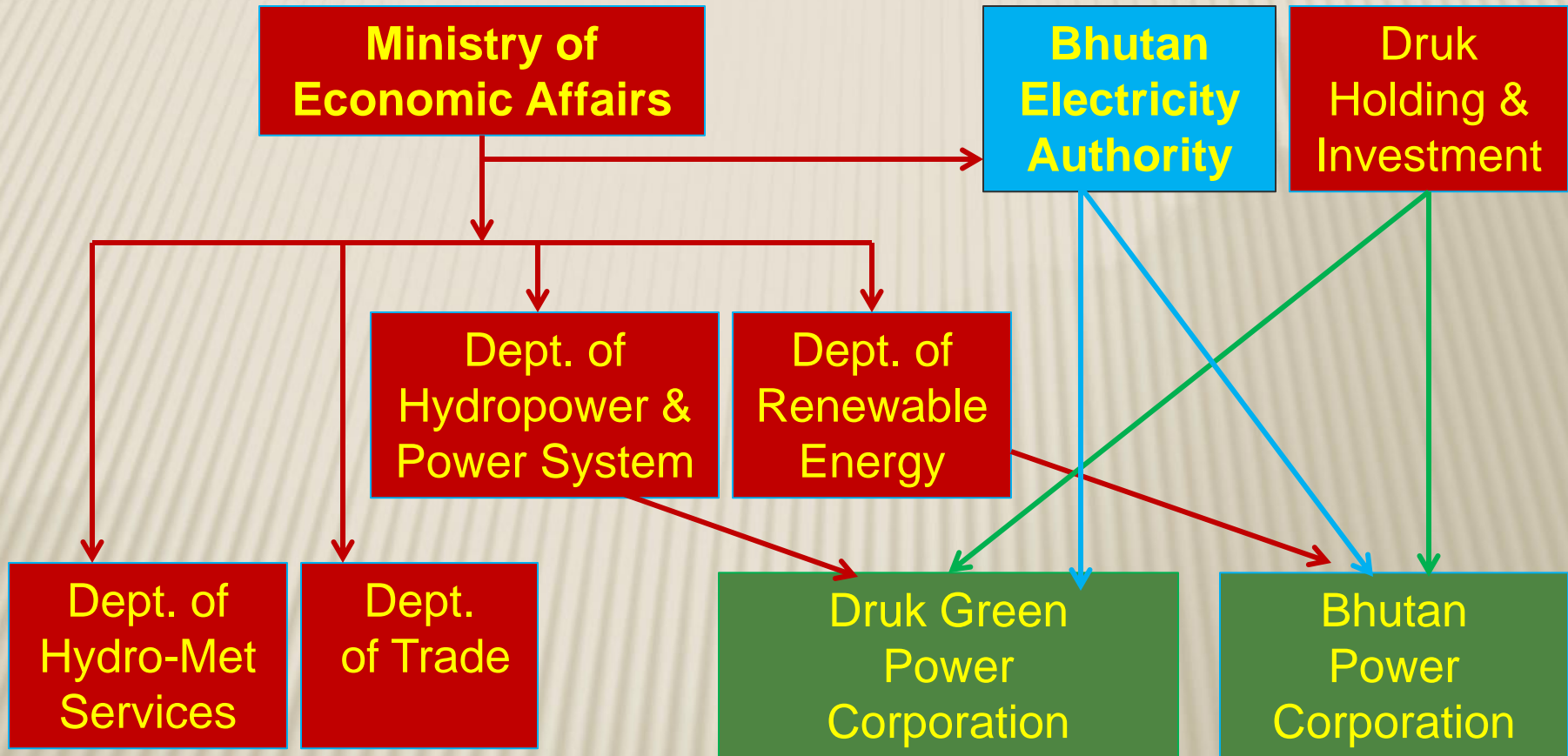


OUTLINES

- Overview on Energy Sector
- Energy Policies
- Energy Situations
- Status of SE4All Initiatives & Status
- Investment Opportunities



OVERVIEW OF ENERGY SECTOR IN BHUTAN



Colour Legend:

Policy directives

Investment Directives

Regulatory Directives



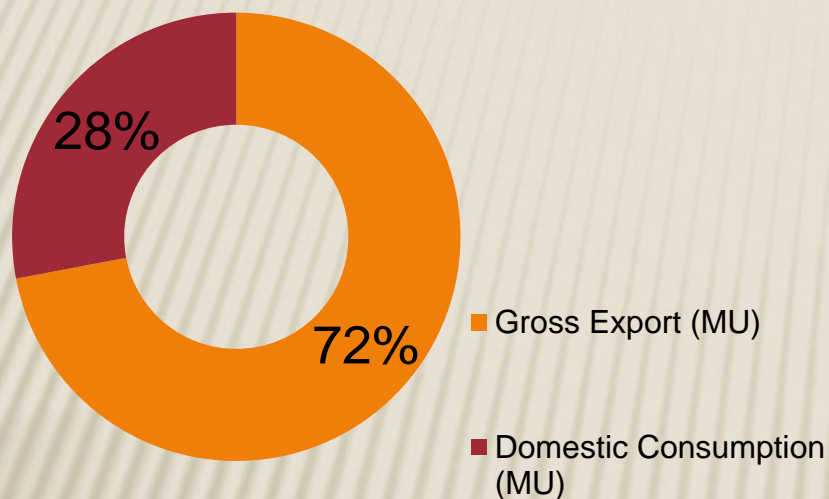
ENERGY RELATED POLICIES

- Electricity Act of Bhutan, 2001.
- Economic Development Policy of Bhutan, 2010.
- Sustainable Hydropower Development Policy 2008.
- Alternative Renewable Energy Policy 2013.
- Foreign Direct Investment Policy, 2010.



ENERGY SITUATION IN BHUTAN

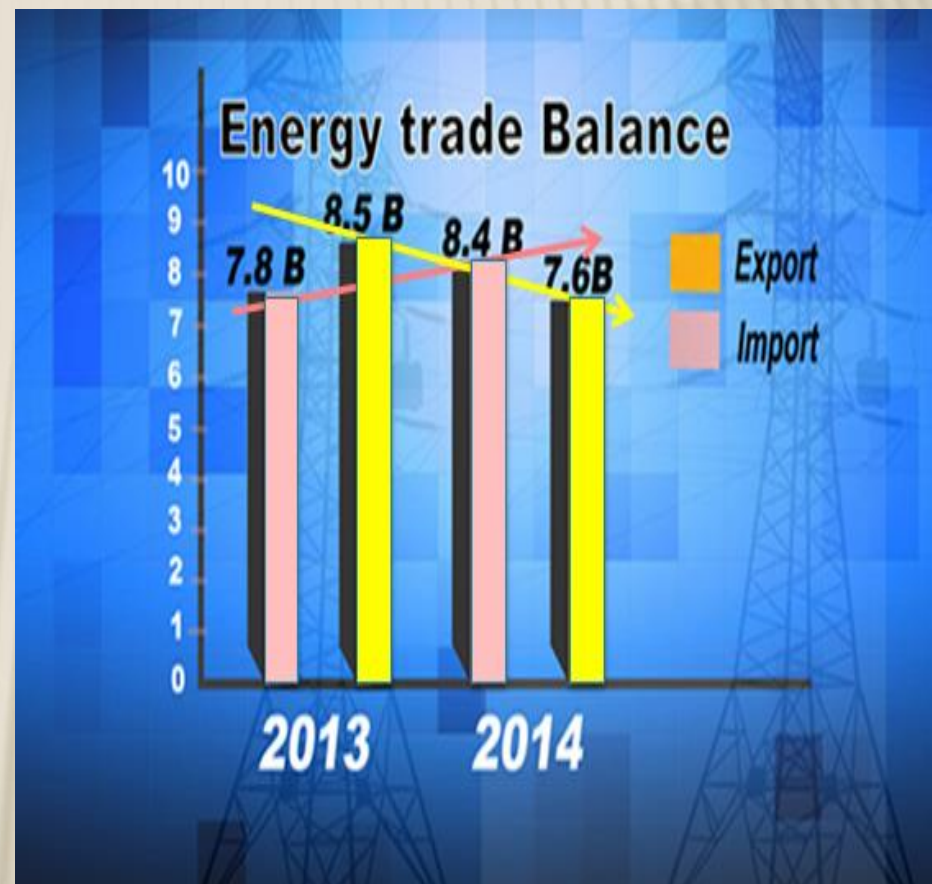
Electricity Consumption & Export (2014)



Date Source: DHPS, Analysed by DRE

**Total Energy Generation:
7147.222 MU**

**7% of electricity imported to meet
domestic demand**

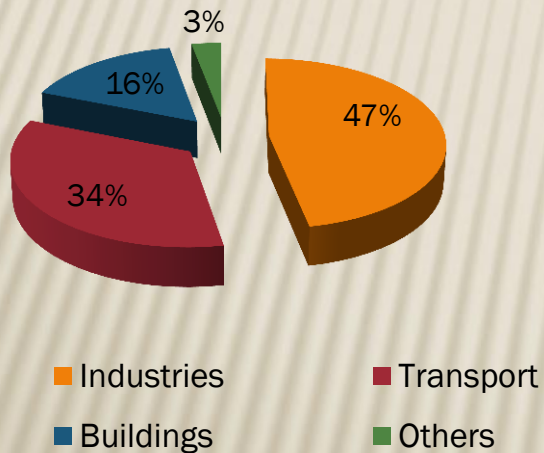


Source: BBS, Feb 2015

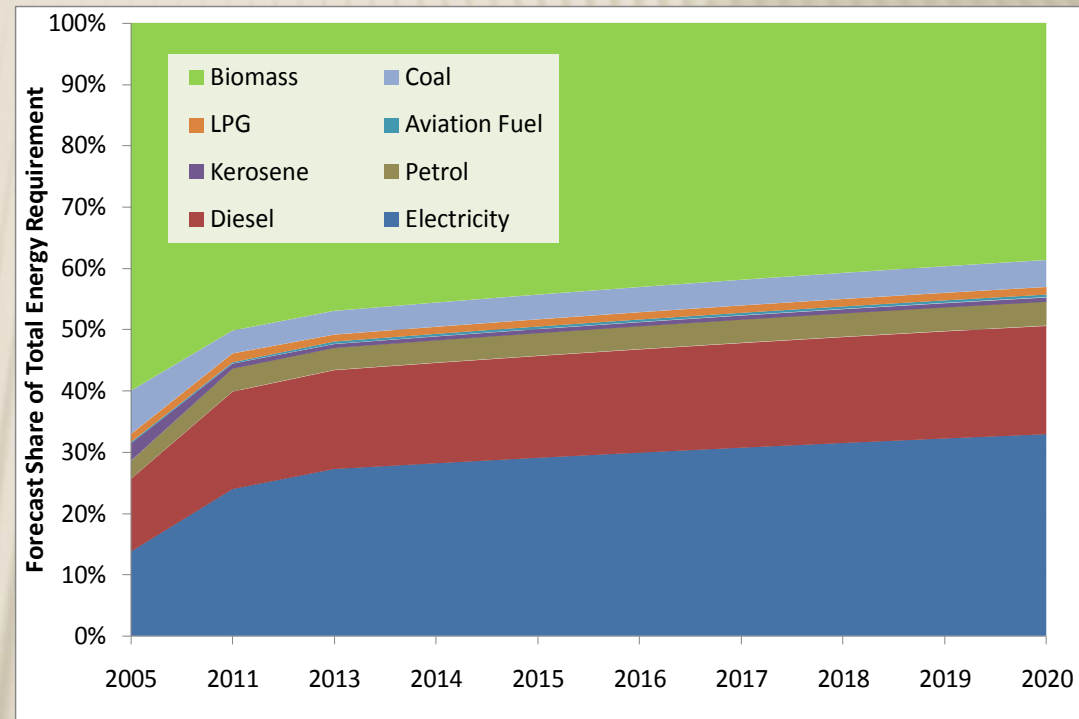


ENERGY CONSUMPTION AND FORECAST

Sector-wise Energy Consumption (2011)



Baseline Forecast until 2020: Structural Change of the Energy mix



Source: ADB Study, 2014



SE4ALL INITIATIVES



- Bhutan joined SE4ALL in 2012 after the Rio Brazil Summit.
- Energy + Cooperation Partnership with funding from Norwegian Govt.
- Rapid Assessment and Gap Analysis study with funding from ADB (2012)

Findings of RA/GA

Energy Access

- No Clear policy targets to address reduced use of fuel wood for cooking and heating
- Require significant capacity building of public and private agencies to develop Bhutan's hydropower potential

Renewable Energy Systems:

- Develop RE roadmap for all RETs and FiT
- DRE needs to strengthen their capacity and gain experience in promoting and developing RE technologies



SE4ALL INITIATIVES.....



- Strengthening of the capacity of private sector to implement RE systems and financial institutions to finance RE systems
- No specific budget prepared for developing RE

Energy Efficiency:

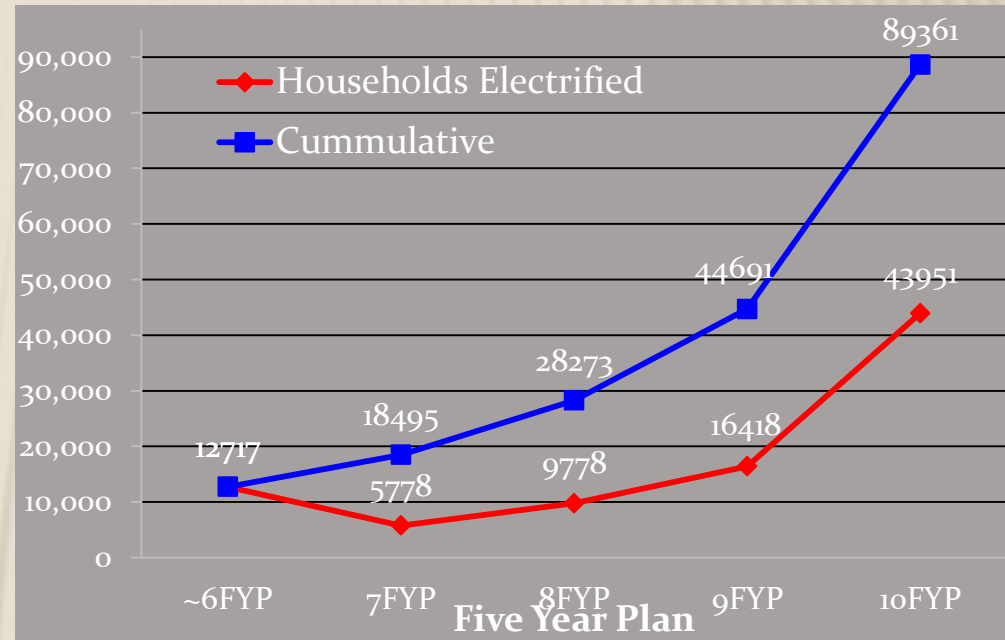
- No detailed studies of the potential of EE in the country have been undertaken nor EE specific programs developed
- No Energy Efficiency and Conservation Policy (No financing estimate)
- Private Sector to play an important role in implementing EE



GOAL 1: ENERGY ACCESS “ELECTRICITY FOR ALL”

RE Target:

- ✓ As per VISION 2020 – electricity for all by 2020
- ✓ The JICA 2005 – roadmap to achieve electricity for all by 2017
- ✓ DPT 2008 – electricity for all by 2013
- ✓ >96% electrified



Source: DRE

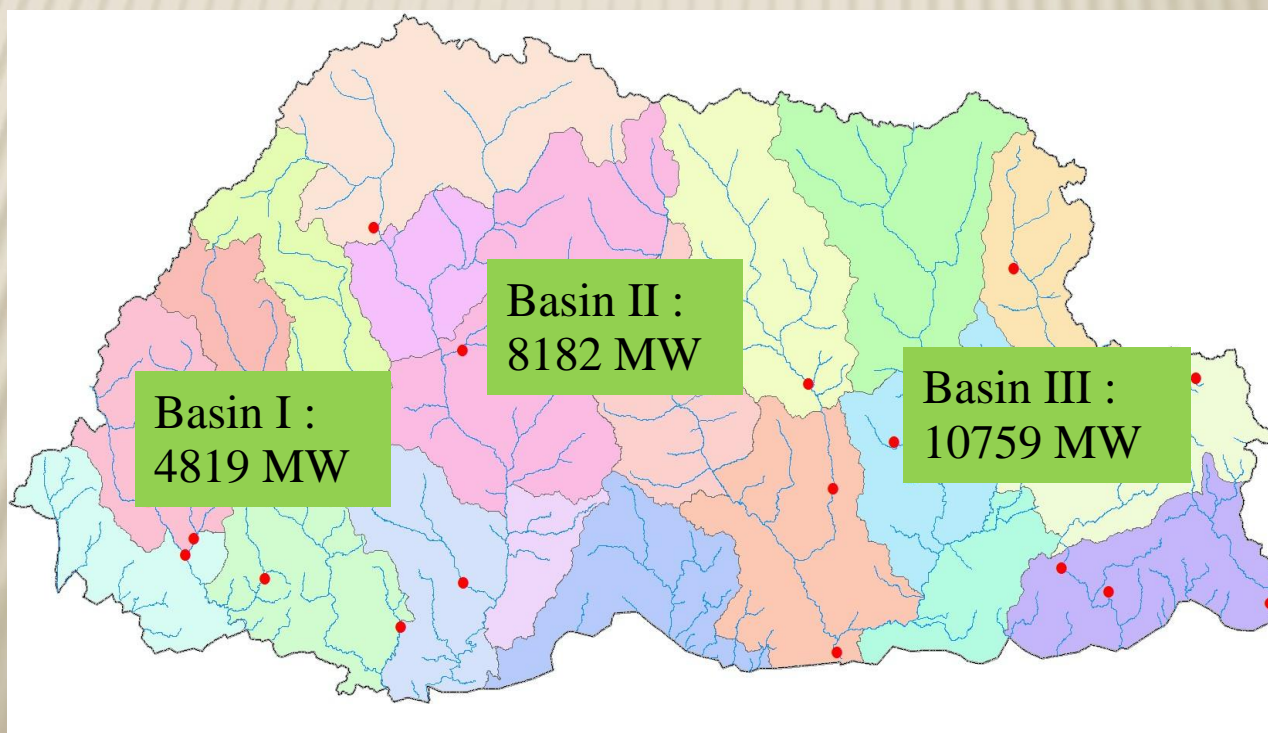




GOAL 2: RENEWABLE ENERGY

Large Hydropower

•Hydropower Potential:	30,000 MW
•Technically Feasible:	23,760 MW
•Current Installed Capacity:	1,606 MW (6.8 %)
•Target by 2020:	10,000 MW
•Under Construction:	2940 MW





SOME PPP HYDRO PROJECTS

Dagachhu HPP

Commissioned: Feb 2015

PPP :

DGPC (59% equity,
Tata Power Company Ltd, India (26%) &
NPPF (15%)

-25-year sales agreement with Tata Power
trading company

-15% royalty energy

-Loans were taken from ADB, Raiffeisen
Bank, Austria and NPPF

100% DGPC subsidiary Company,
SPV established in 2014

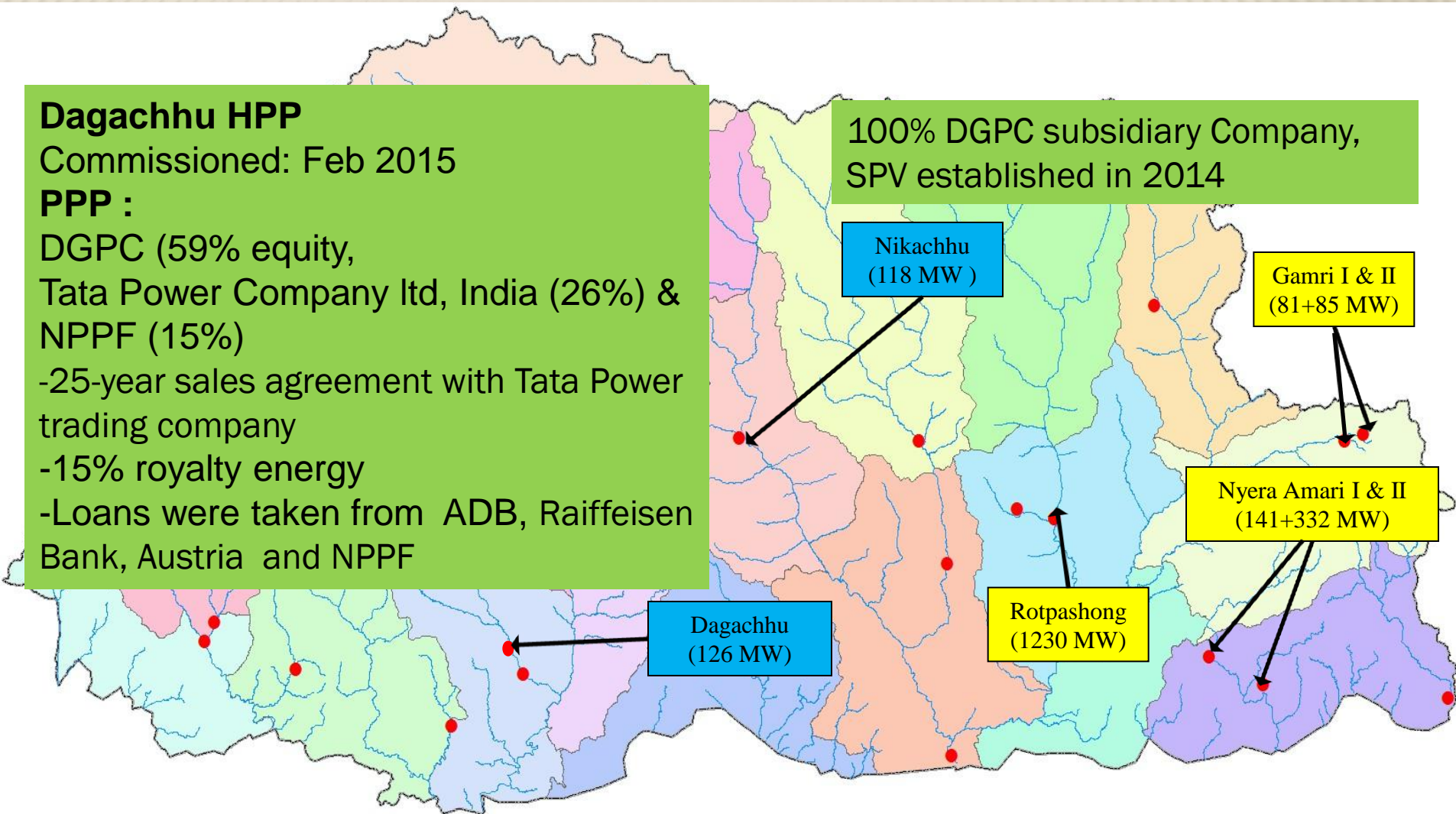
Nikachhu
(118 MW)

Gamri I & II
(81+85 MW)

Nyera Amari I & II
(141+332 MW)

Rotpashong
(1230 MW)

Dagachhu
(126 MW)





DIVERSIFYING ENERGY SOURCES

Alternative Renewable Energy Policy 2013

Minimum Target of 20 MW by 2025 excluding SHP

- Small hydropower (up to 25MW)
Total installed capacity – 8MW

- RE Master Plan & RE Road Map to be completed by end of 2015
- FiT Framework to be adopted

•Improved Cook Stoves:

- Target by 2020: 15,500
- Achieved May 2015: 6000

•Biogas Plants

- Tech-economic feasible: 16,000
- Target by 2020: 4420
- Achieved: 1700

•Wind Energy

- 600 kW pilot wind power project under implementation by ADB & RGoB – Nov'2015 schedule for Commission

•Solar Energy

- Over 0.25 MW installed (stand alone systems)
- Resource potential of 4.2 to 6 kWh/m²/day
- 8 Solar Water Heating Systems (500-1000L) piloted
- Proposed to install 0.5 MW size grid interactive solar power plant



GOAL 3: ENERGY EFFICIENCY IMPROVEMENT

Energy Efficiency & Conservation Policy- Under formulation

- 40 Industries
- Building Sectors
- Transport Sector
- Appliances & Equipment Survey

- S&L Program
- DSM through efficient lighting systems (LED lights)

- Energy Audit Outcome:
Significant Energy Saving Potential !



Continuous awareness program on EE conducted





INVESTMENT OPPORTUNITIES IN BHUTAN

- Investment opportunities on RE & EE will open up after the completion of Preparatory studies
- 1-2 large HPP to be implemented under PPP/IPP in the 11th FYP.

Further Information: www.moea.gov.bt



TASHI DELEK