

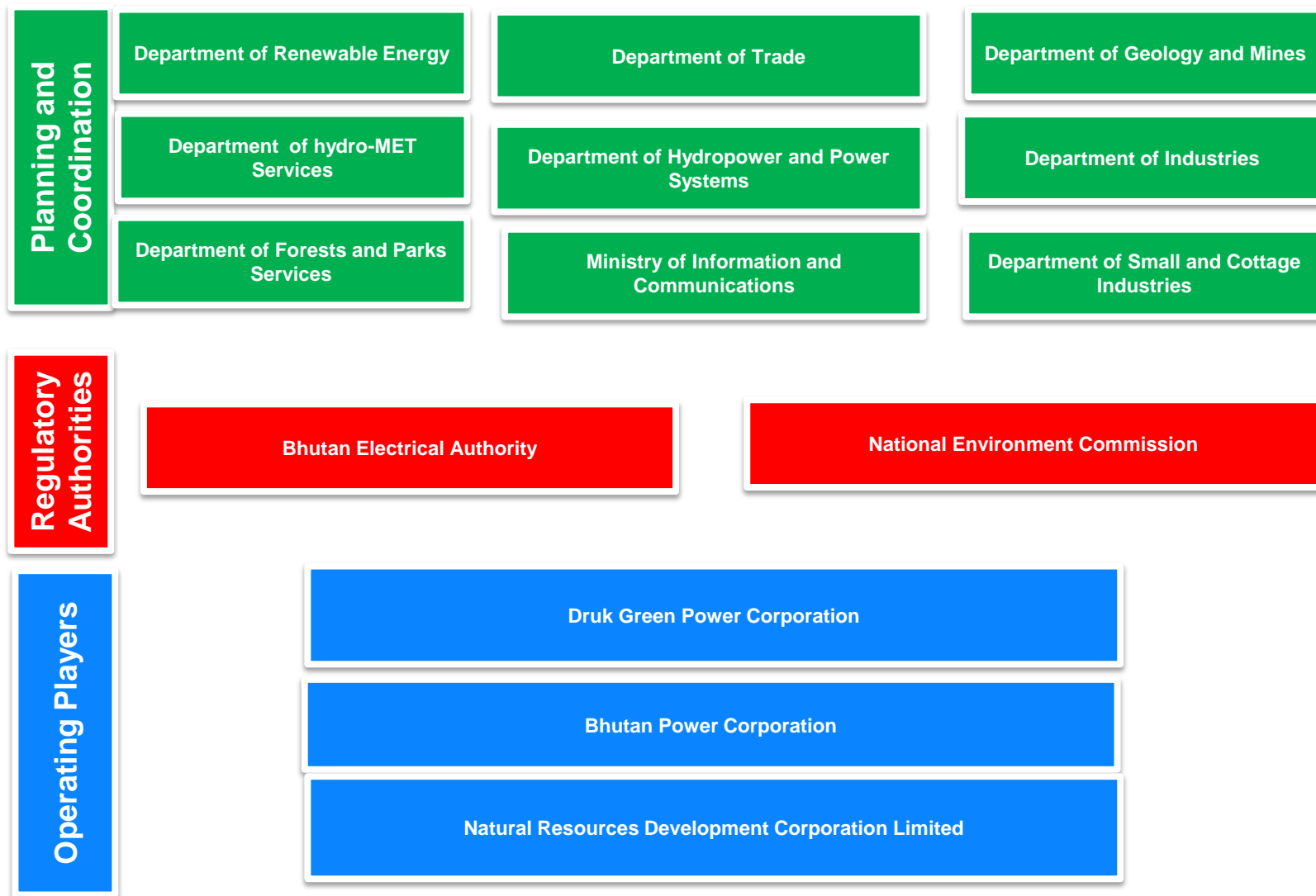
# WASTE-TO-ENERGY INITIATIVES IN BHUTAN

Deep Dive Workshop on Waste-to-Energy  
7 June 2016, Manila, Philippines

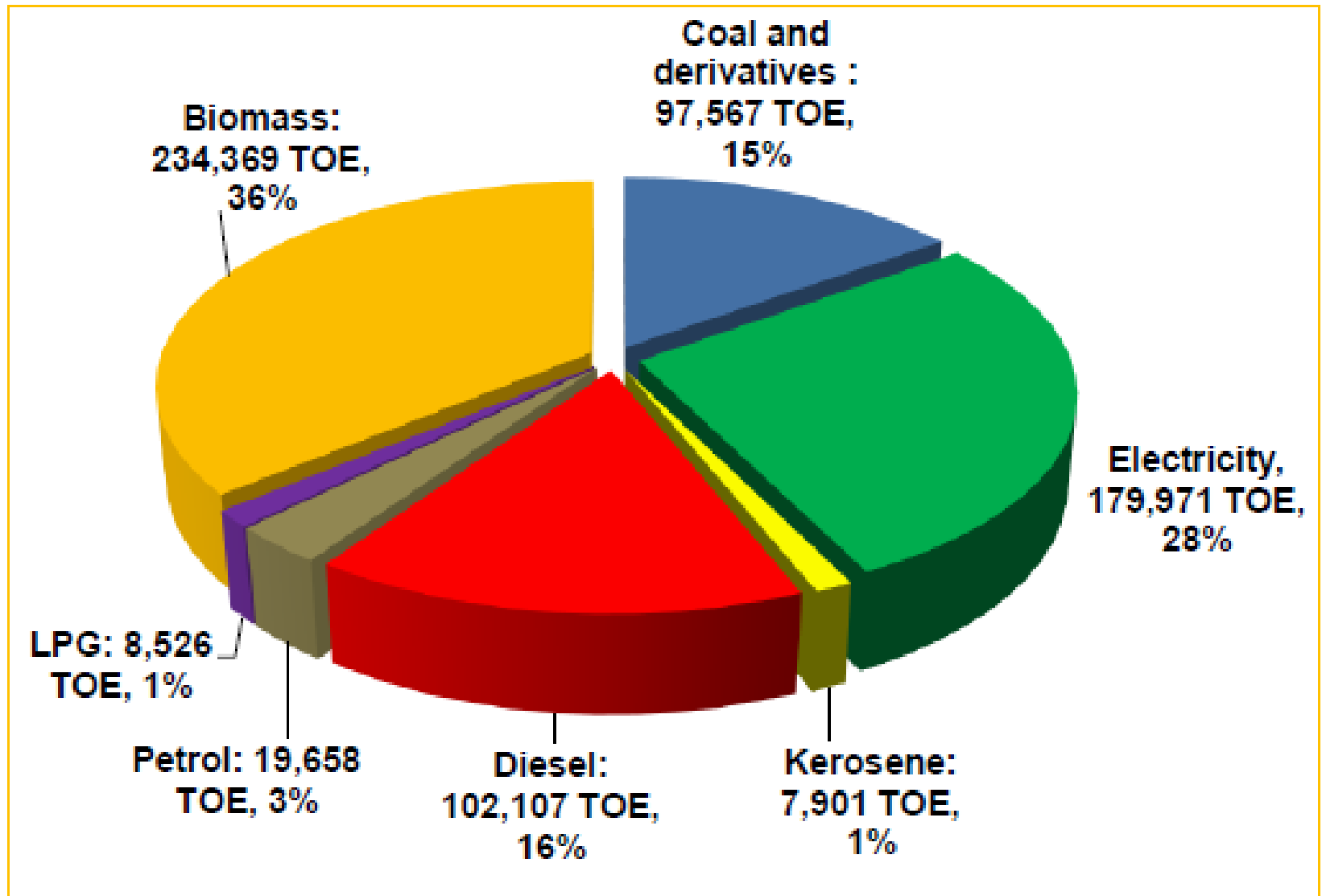


Presenter: **UGYEN**  
*Executive Engineer*  
*Department of Renewable Energy*  
*Bhutan*

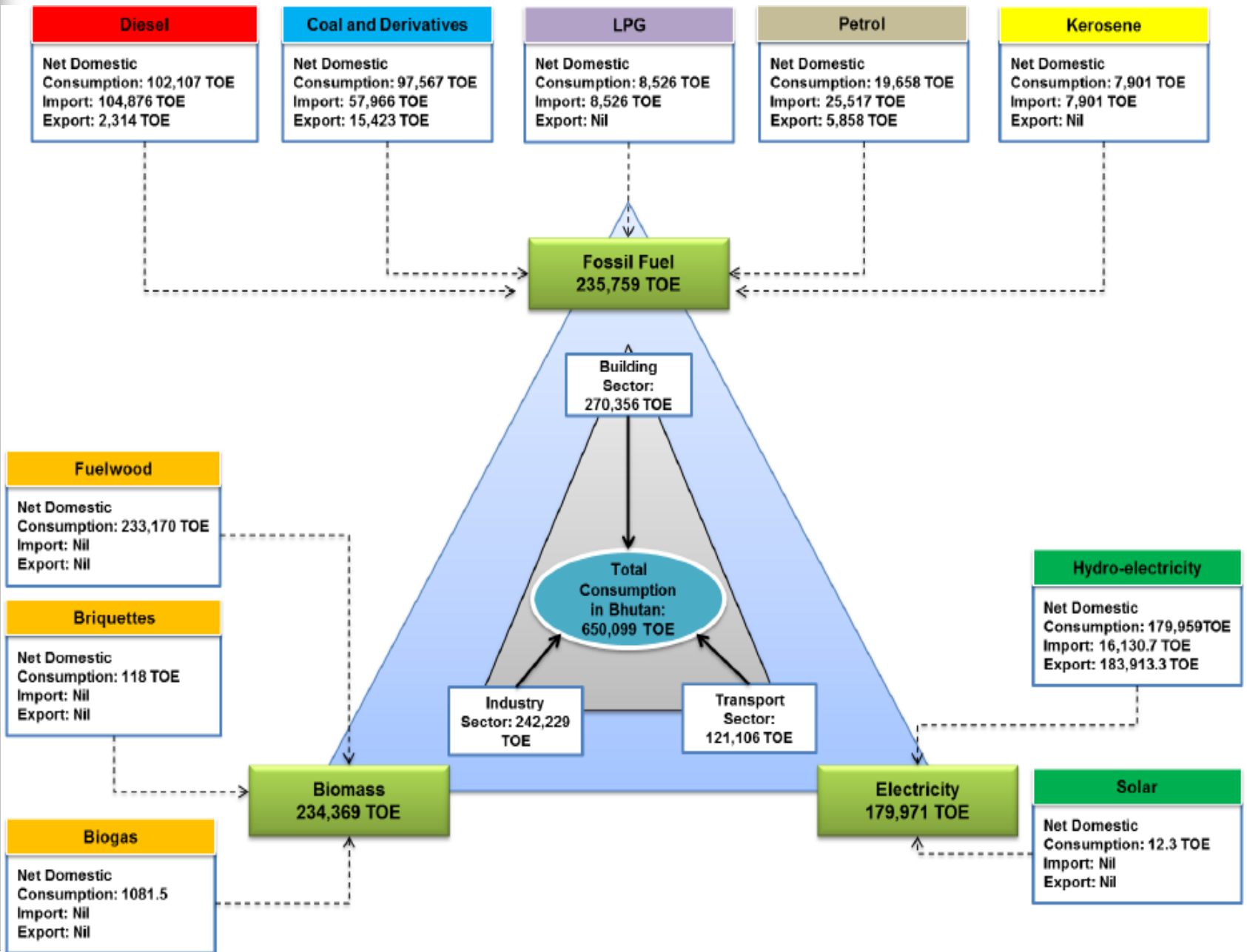
# Overview of Energy Sector



# Energy Consumption in 2014



# Energy forms and flows:



# Waste-to-Energy Initiatives

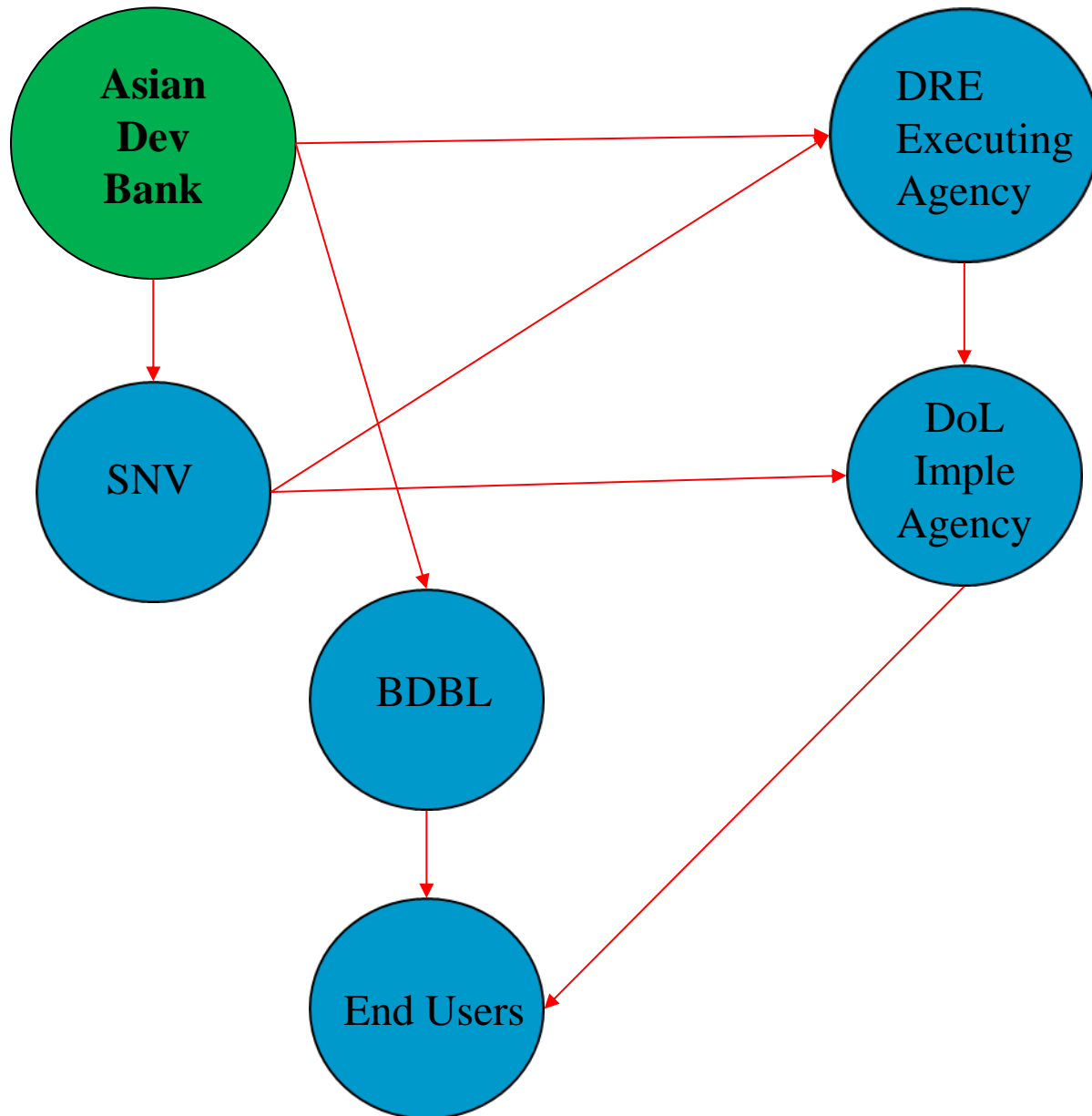


Bhutan Biogas Project (BBP)  
funded by ADB



Bhutan Sustainable Rural  
Biomass Energy (SRBE)  
Project funded by UNDP and  
GEF

# Project Structure - BBP





# Objectives

- To contribute to national aim of reducing poverty levels by improving livelihoods & quality of life of rural farmers.
- To reduce impact of biomass resource depletion.
- To support national goals of food production and livestock development.



# Project Details:

- Project Duration: 2011-2016 (Six Years)
- Project Coverage: 16 Districts out of 20
- Target: 3,600 Family Sized Biogas Plants benefiting about 15,400 people directly
- Project Budget: US\$ 3.3 Million
- Main Impact Areas: Energy, Agricultural Production, Family Health and Sanitation, Employment Generation, Environmental Protection





# Incentives and Supports

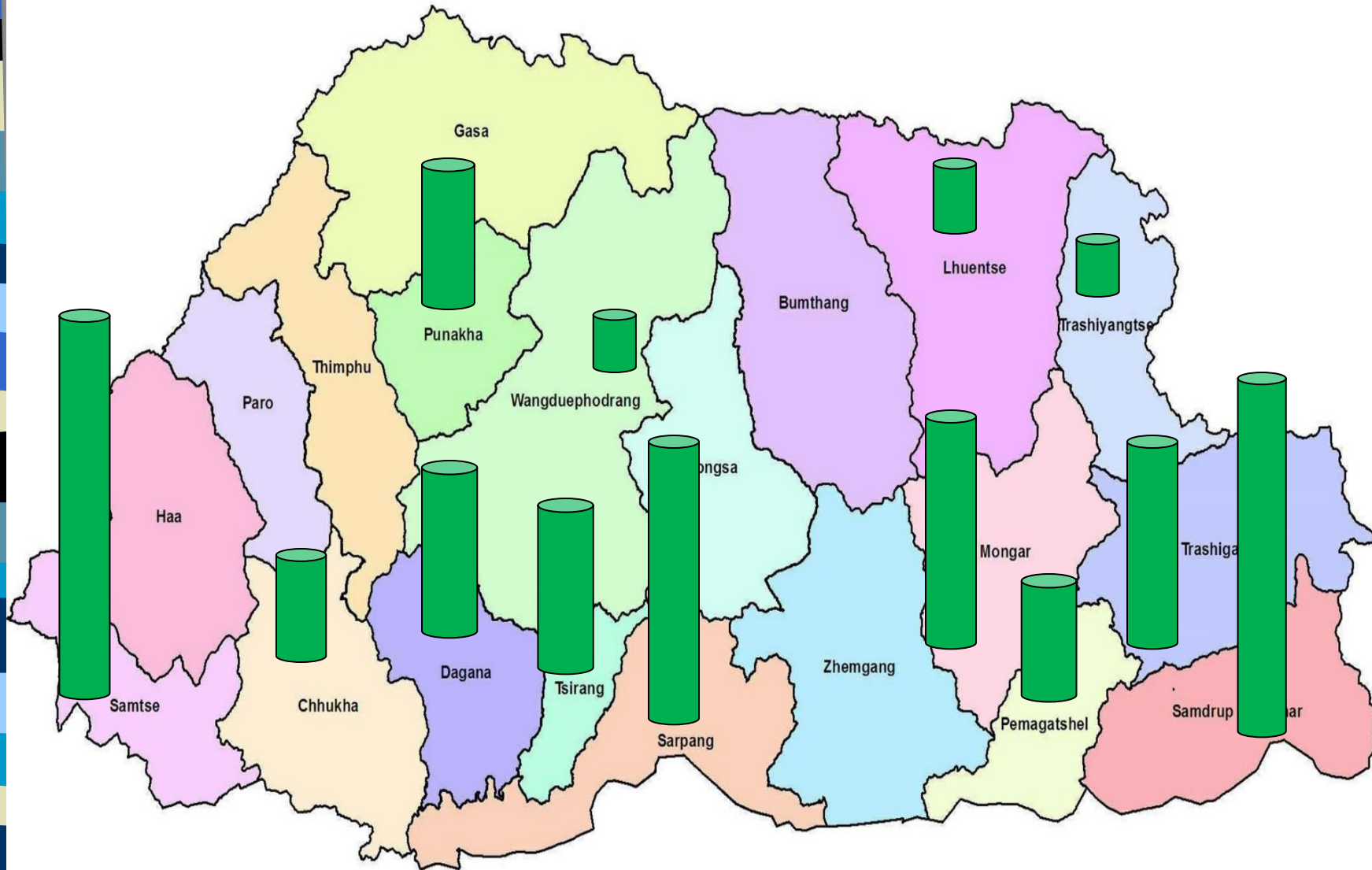
- Subsidy – Flat rate – Nu. 11,700/plant
- Credit through banks – Nu. 20,000/plant
- Technical Back-stopping
  - **Routine visits**
  - **Repair and maintenance (problem solving)**
- Guarantee and After-Sale-Services
  - **Guarantee on biodigester**
  - **Quality enforcement in after-sale-services**
- Research and Development
- Quality Control
  - **Quality control of under-construction biodigester**
  - **Quality control of completed biodigester**
  - **Quality control of After-sale-services**
- Training and capacity building
  - **User's training – instruction booklet**
  - **Training on Effective utilisation of bio-slurry**



# BBP Progress

- Total Constructed plants as of 31<sup>st</sup> March 2016 – 2852 plants
- Under Construction – 232 plants
- Under Process – 437 plants
- Cumulative Total – 3521 plants

# Biogas Distribution





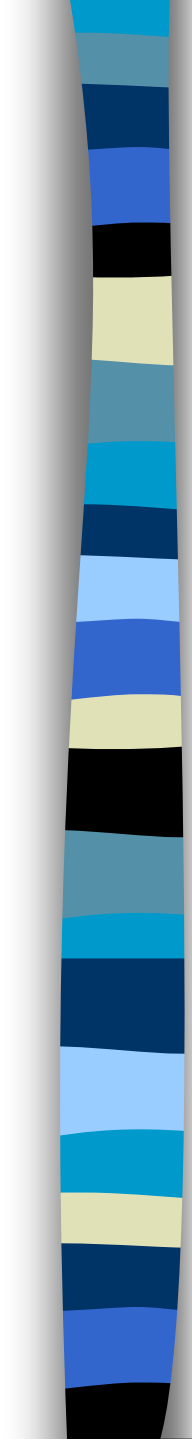
# Impacts

- 15,000+ people directly benefitted
- 3,102 biodigesters are producing 4,900 m<sup>3</sup> of biogas/day
- 4,900 m<sup>3</sup> of biogas is equivalent to 2,205 kg of LPG (158 cylinder of LPG)/day, or, 57,573 cylinder/year
- The saving is Nu. 31.4 millions per year
- Saving of 9,900 tons of firewood per year
- 5000+ CO<sub>2</sub> equivalent GHG reduced



# Biogas and Impacts





# THANK YOU!

Please visit us @ [www.bioenergy.gov.bt](http://www.bioenergy.gov.bt)  
[www.bbp.gov.bt](http://www.bbp.gov.bt)