

Long-Term Energy Scenarios (LTES) for developing national energy transition plans in Asia.

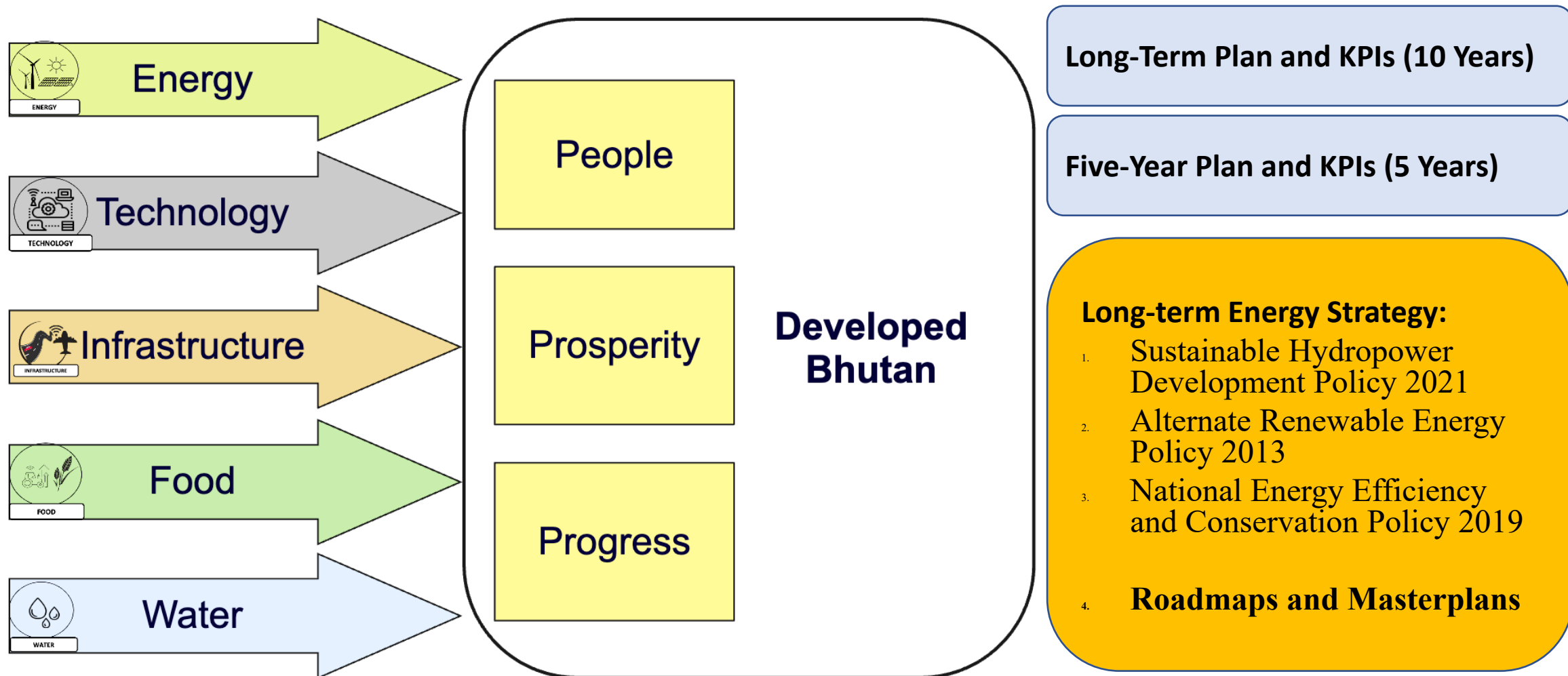
Webinar series

Bhutan's Energy Plan

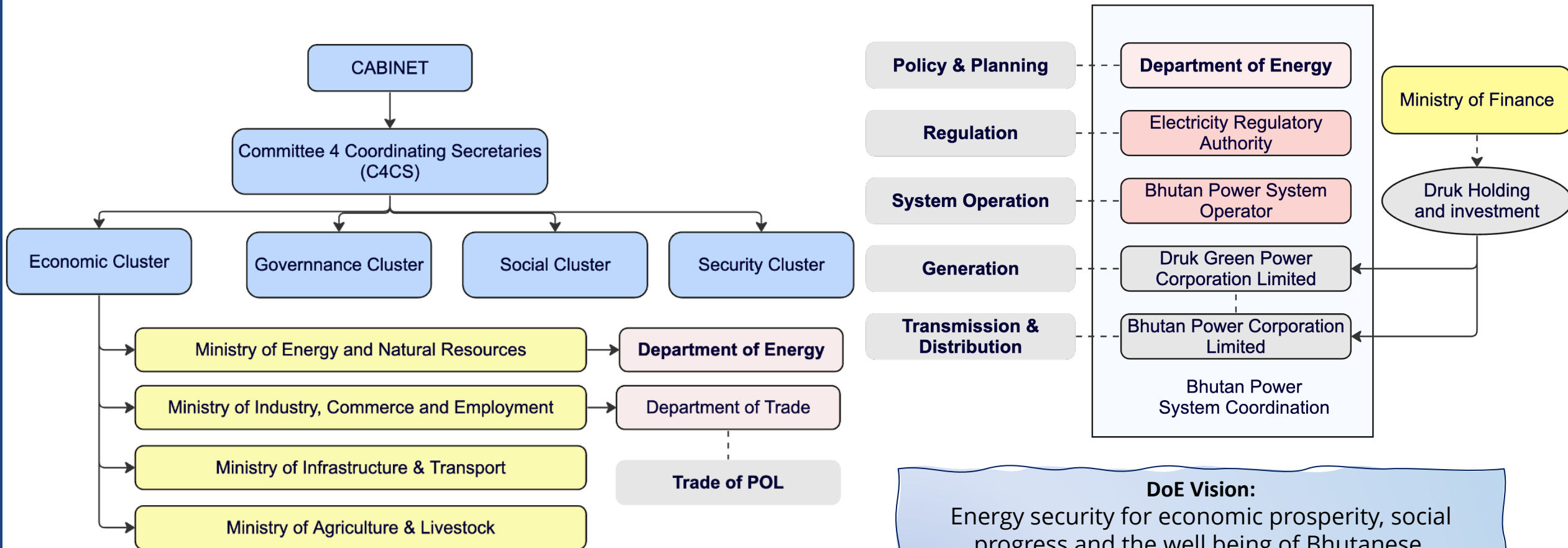
Dawa Chhoedron
Department of Energy
Ministry of Energy and Natural Resources
Royal Government of Bhutan
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Long-Term Planning Approach



Institutional Arrangement and Governance Structure



DoE Vision:
Energy security for economic prosperity, social progress and the well being of Bhutanese.

DoE Mission:
Achieve energy security by harnessing green energy resources, and adoption of transformative and innovative technological solutions.

Long-Term Energy Scenario Development

Generation

Generation Forecasting: Long-term 10-20 Years

Power System Master Plan 2040
(hydropower development)

Renewable Energy Master Plan 2032
(hydropower, solar, wind and biomass)

National Hydrogen Roadmap (draft)

National Biogas Implementation Strategy

Tools: Microsoft Excel

Demand

Demand Forecasting: Long-term 10-20 Years

Import Forecasting

Tools: Microsoft Excel

Infrastructure

National Transmission Grid Masterplan
(2040)

Tools: PSS/E

Long-Term Energy Scenario Uses

- *policy making and holistic approach (all energy forms including fossil fuels)*
- *regulatory landscape*
- *market design including tariff projection*
- *align energy strategies with National Goals and Visions*
- *set targets for Renewable Energy Development*
- *prioritization of targets and national initiatives (pumped storage, solarization, decarbonization of transport sector, etc)*
- *plan energy infrastructure development*
- *identify gaps and needs*
- *identify new opportunities (green hydrogen, hybrid and multipurpose systems, etc)*
- *Sensitization of energy intensive consumers*
- *Energy efficiency initiatives*
- *Investment planning and resource mobilization*

Coordination & Communication

- *Supply-Demand forecast done annually and shared within energy sector (Business Intelligence Dashboard planned).*
- *Scenario assumptions development in consultation and coordination with utilities, industries and generators.*
- *Energy targets incorporated in Government Plans and activities.*
- *Masterplans, Roadmaps, Strategy documents and Long-term tariff projection published in Ministry website.*
- *Collaboration with regional/ international entities and programmes (SAREP, BIMSTEC, SAARC, World Bank, ADB, etc) for long-term forecasting.*

Long-Term Energy Scenario: The Future

Future Outlook of LTES	Capacity Building
<ul style="list-style-type: none"> ➤ Rich Renewable Energy endowment (33 GW Hydro, 12 GW Solar, wind, biomass) provides avenue for ambitious target setting ➤ Significant presence in regional energy scene: Huge regional market opportunity leveraging on established cross-border transmission links and market access – potential to enhance regional energy security, energy transition and climate goals through collective LTES Planning ➤ Use of Models for LTES development incorporating influences to/by other economic and social variables in the LTES. ➤ Market-based approach ➤ Leverage innovation and embrace transformative interventions/initiatives (green hydrogen economy, pumped storage schemes, etc) 	<ul style="list-style-type: none"> • In-house excel-based scenario planning model used for long-term forecasting of supply-demand. • Models such as LEAP, World Banks EPM being explored. • Working groups and technical committees instituted under the directives of the Bhutan Power System Coordination Committee to assess emerging energy security threats at national level. • Capacity building workshops/trainings are project-based and specific to needs.

Thank you for your attention



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