

# POWER TRADE AMONG SAARC COUNTRIES – OPPORTUNITIES AND CHALLENGES

**Dr. Sandip Shah**

Vice President & Country Director  
Statkraft International Hydropower  
Nepal

June 26, 2014



# The Statkraft Group

- ▶ Europe's largest renewable company
- ▶ Environment-friendly power generation : 17,000MW / 56 TWh
- ▶ Gross operating revenues 2013 : MUSD 8,315
- ▶ Total assets 2013 : MUSD 25,783
- ▶ 3,600 employees in more than 20 countries

## STRATEGIC DIRECTIONS

Flexible  
Generation

Trading &  
Origination

International  
Hydropower

Wind Power

District  
Heating



# SAARC COUNTRIES – ELECTRICITY SUPPLY SITUATION



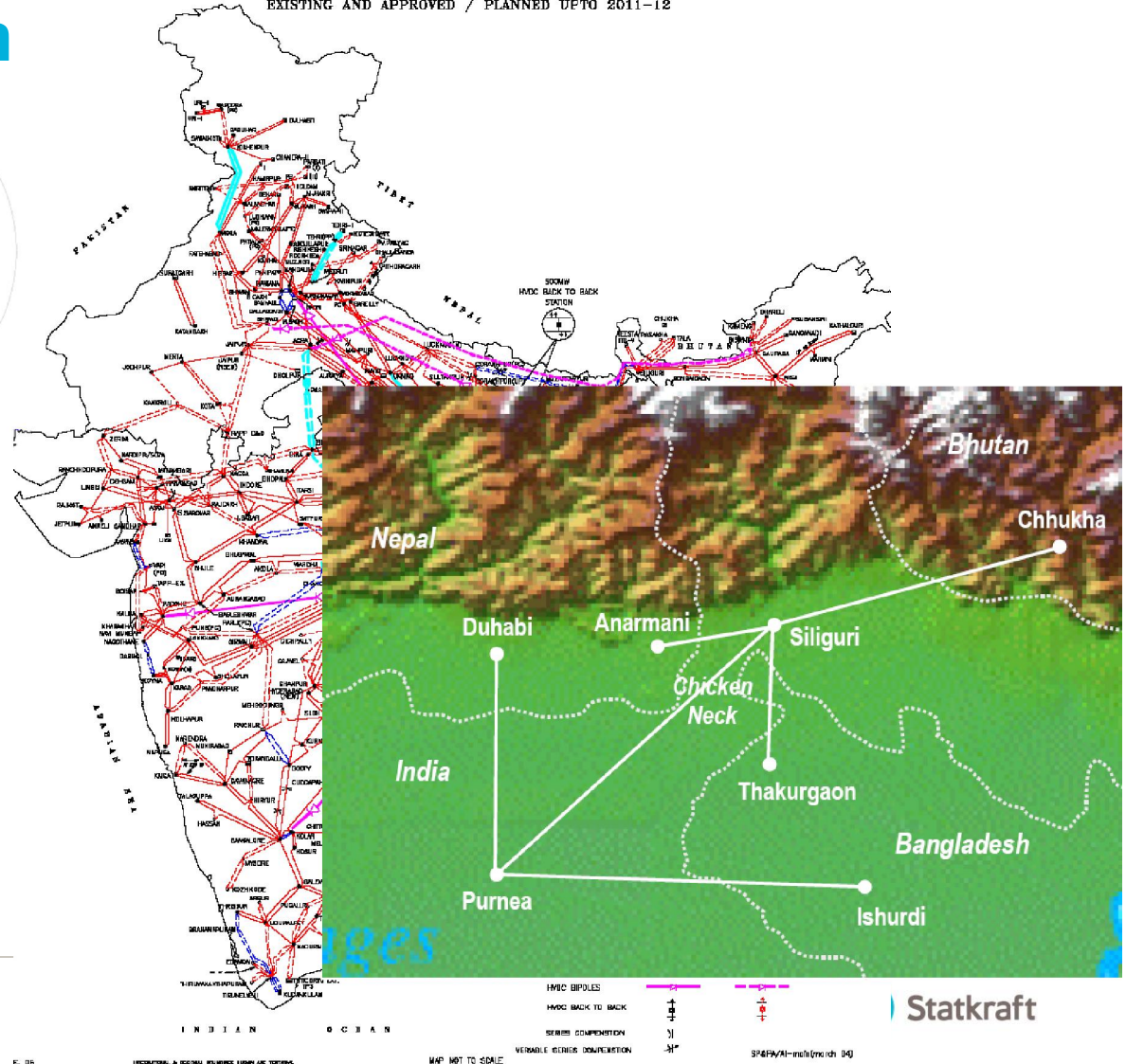
# South Asia Region



## MAJOR TRANSMISSION NETWORK OF INDIA

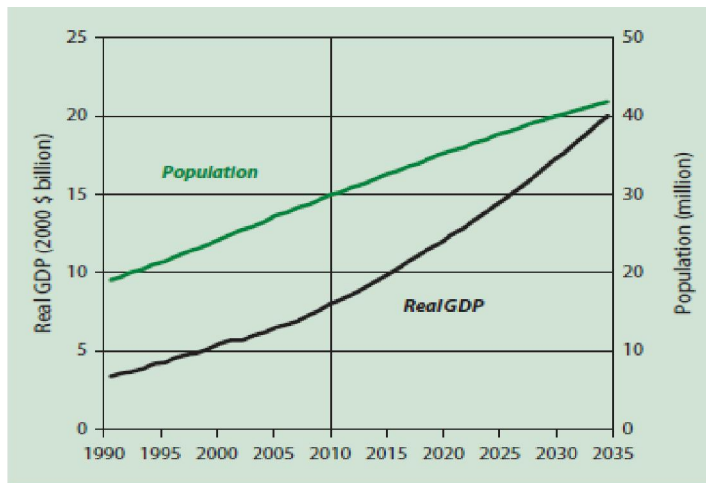


400kV AND ABOVE  
EXISTING AND APPROVED / PLANNED UPTO 2011-12

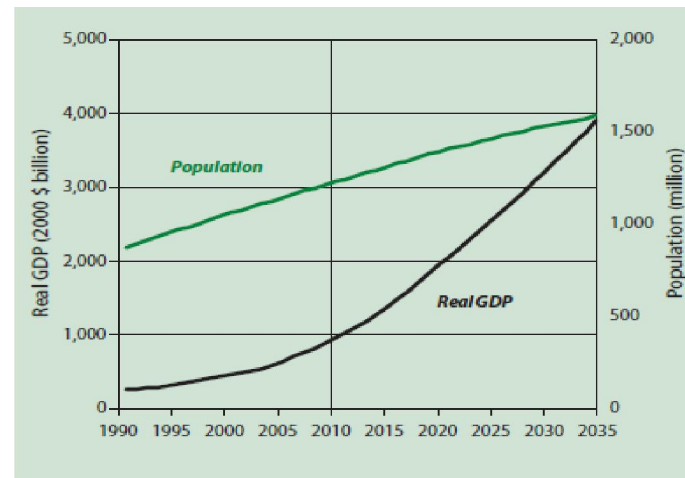


# Macroeconomic Parameters

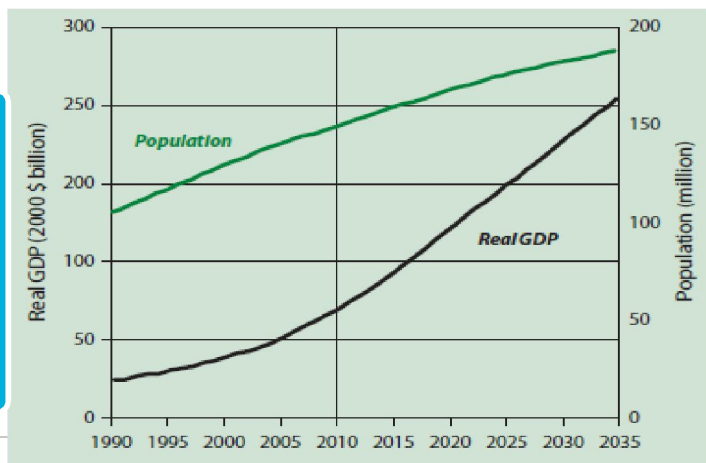
Nepal



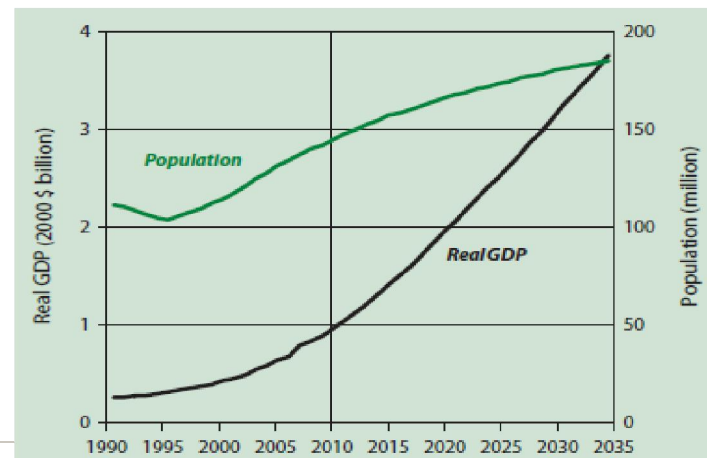
India



Bangladesh



Bhutan



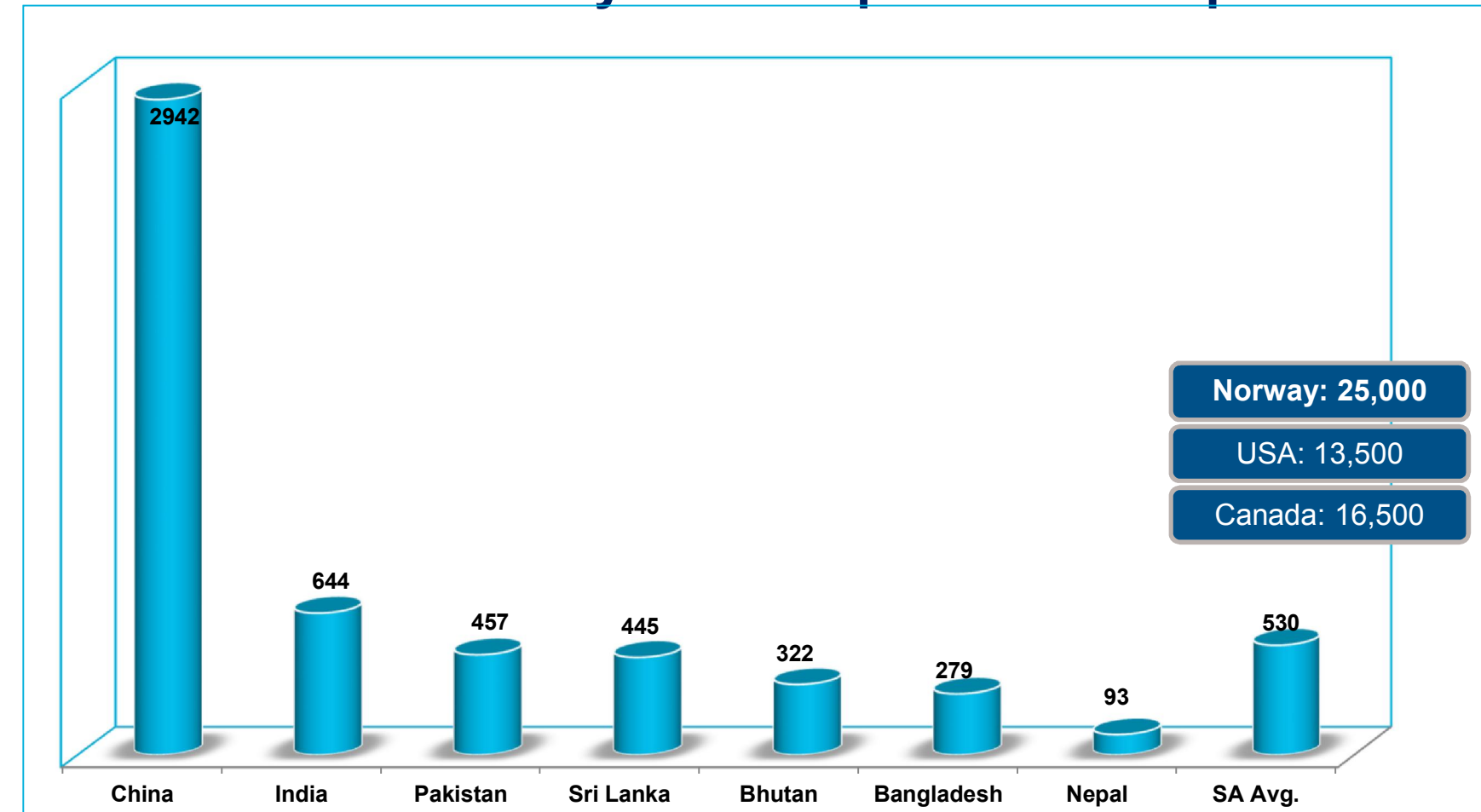
Source: ADB Energy Outlook 2013

## Macroeconomic Data

|                                | Nepal | India   | Bangladesh | Bhutan  |
|--------------------------------|-------|---------|------------|---------|
| GDP, BUSD                      | 18.3  | 1,989.4 | 118.9      | 1.8     |
| Population, Million            | 27.8  | 1,252.1 | 156.6      | 0.8     |
| GDP Growth rate                | 3.7%  | 4.6%    | 6.0%       | 8.1%    |
| Per Capita Income - USD        | 654.1 | 1,542.3 | 848.7      | 2,361.4 |
| Electricity Demand Growth rate | 10%   | 3.0%    | 3.2%       | 0.7%    |

Source: GI - 2013

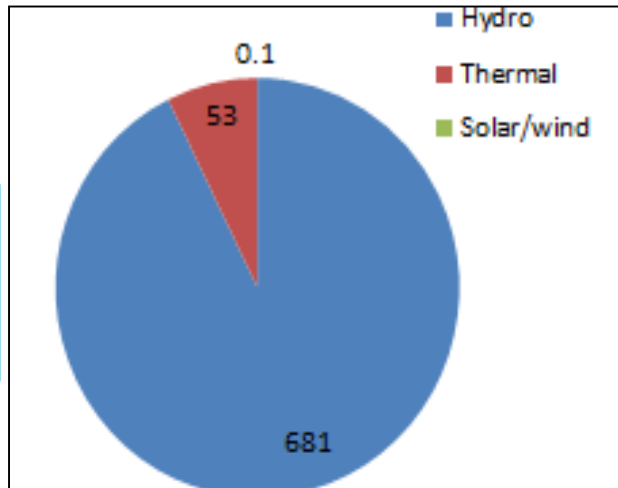
## Status: Electricity Consumption kWh/Capita



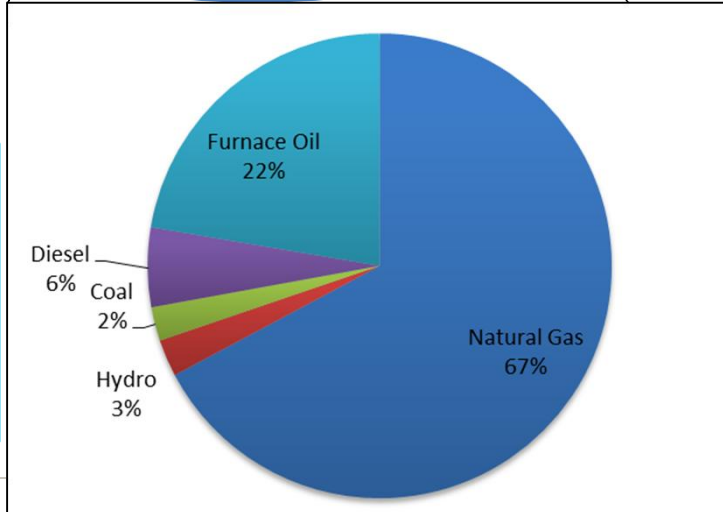
Key World Energy Statistics, IEA 2012

# Electricity Generation Mix

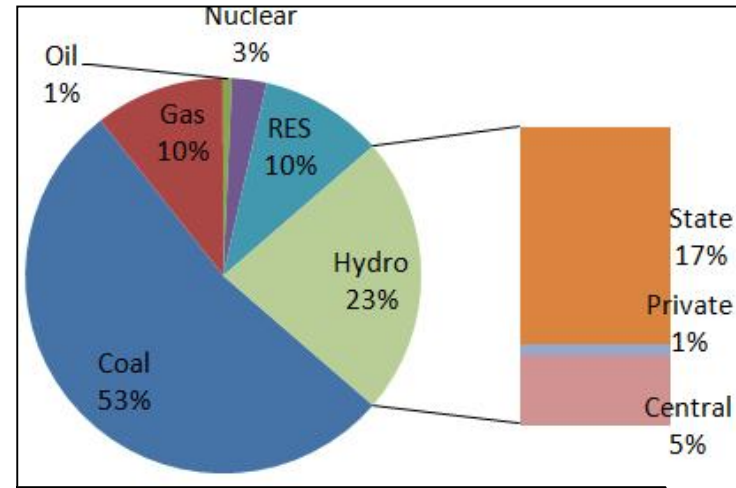
Nepal



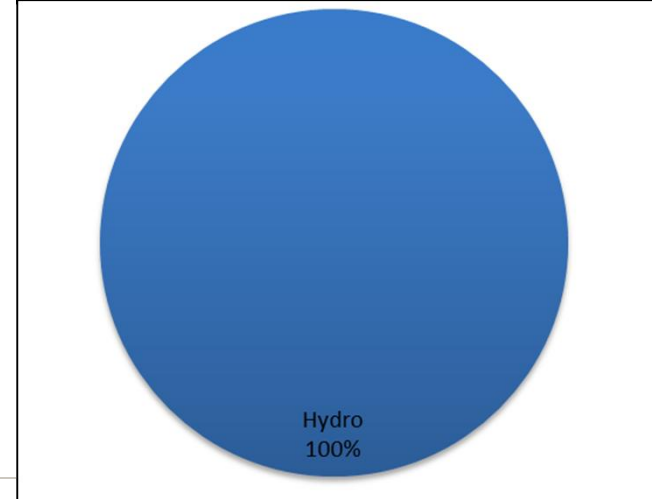
Bangladesh



India

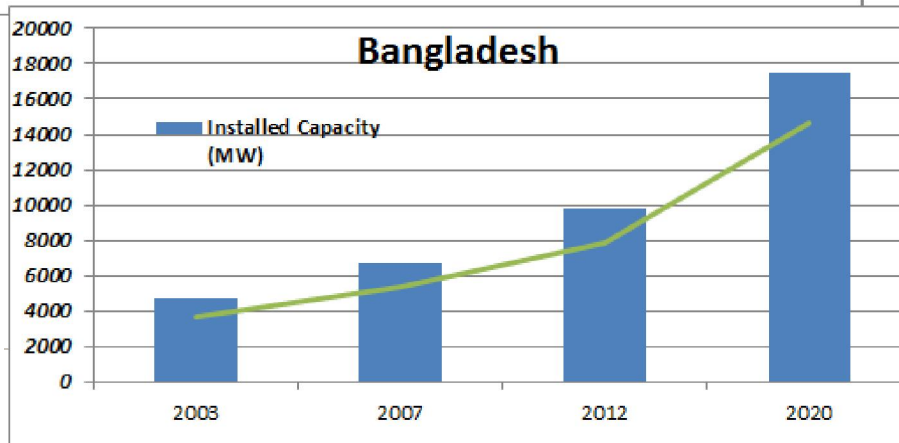
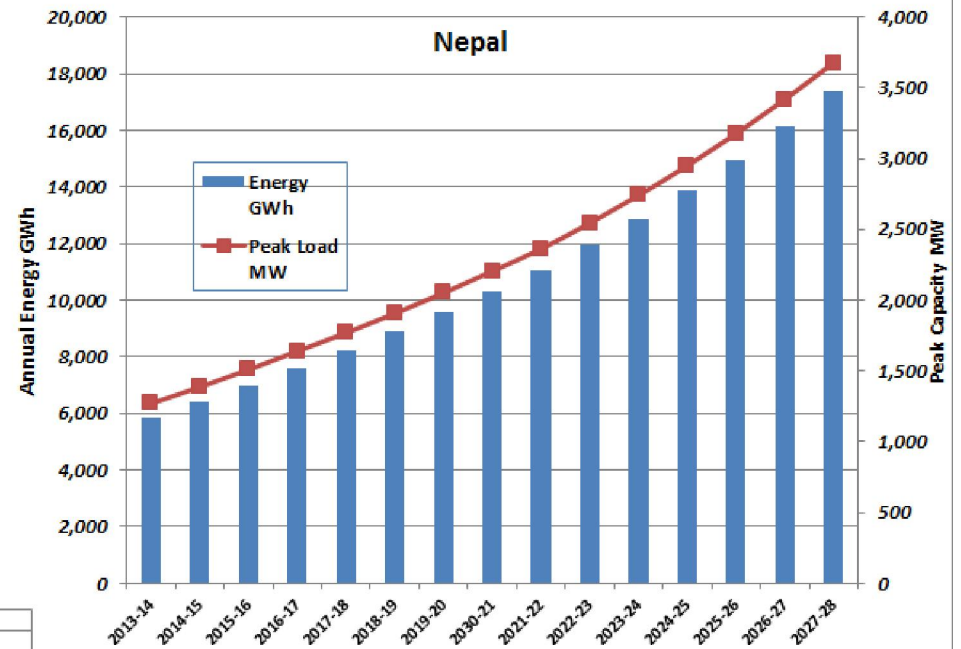
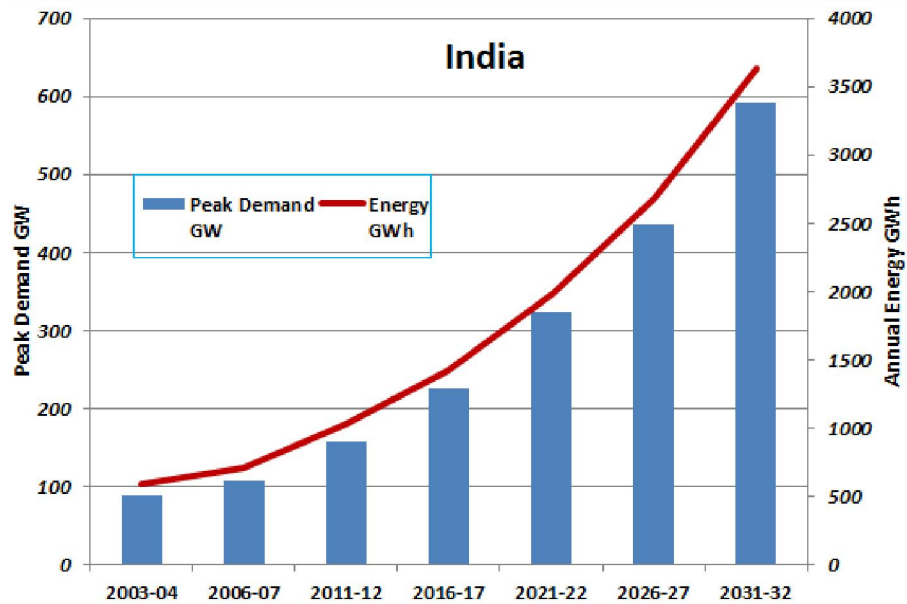


Bhutan

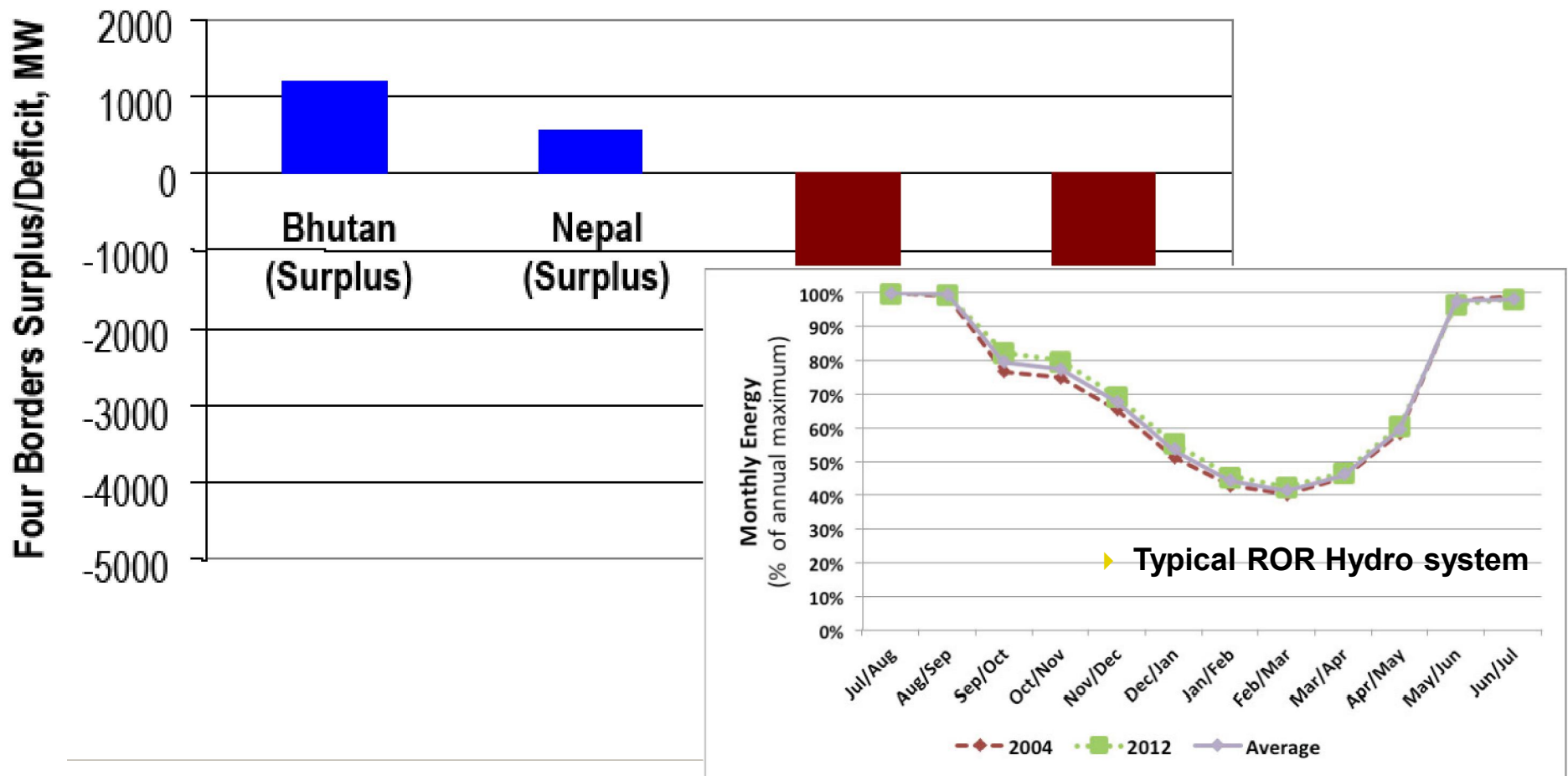




# Electricity Demand Forecast



# Electricity Demand-Supply Forecast



# Issues in Electricity Sector

- ▶ All countries of region are facing major deficit in electricity supply
- ▶ Seasonal imbalances in supply and demand of electricity
- ▶ Some countries resort to long hours of blackouts to manage electricity supply systems
- ▶ Others resort to diesel generation to meet peak-time shortages
- ▶ State electricity utilities are facing major financial difficulties
  - Capacity addition, T&D strengthening and reduction of technical and non-technical losses are affected
- ▶ Power sector reforms started in all countries
- ▶ Need for privatization of generation, transmission and distribution with a transparent regulatory regime is changing electricity market dynamics

# Assessment of Electricity Supply Situation

- ▶ Electricity is generated through different sources – coal, oil, gas, nuclear, hydro, wind, solar, biomass and other renewables
- ▶ Resources are concentrated in certain areas in different countries; hence requirement of pooling resources
- ▶ Integration of electricity systems required to:
  - To achieve balanced electricity supply system with affordable cost of electricity with generation mix from various electricity supply sources.
  - Cost of unserved energy, climate change, safety in production are which are impacting the way the electricity supply industry will grow
- ▶ Due to inherent nature of electricity supply resources and country specific demands, regional cooperation for electricity supply security is a must.

# Existing Arrangements

## ▶ **Bhutan- India**

- Power export from Bhutan to India for 10,000 MW through PTC India
- GoI to support development of 10,000 MW hydros in Bhutan
- India to support development of TLs

## ▶ **Bangladesh-India**

- First 500MW HVDC line built
- 500 MW power export from India to Bangladesh
- GoI to support development of more TLs
- Modality for more TLs set

## ▶ **Nepal- India**

- Limited power exchange from 14 locations
- First 1200MW X-Border line being built
- Second 3000MW X-Border line being planned
- Power Trade Agreement being discussed

## ▶ **Sri Lanka - India**

- High Capacity Submarine cable link planned

## ▶ **Pakistan - India**

- Discussions on power import from India

## ▶ **Common focus - India**

- Supply to or supply from India



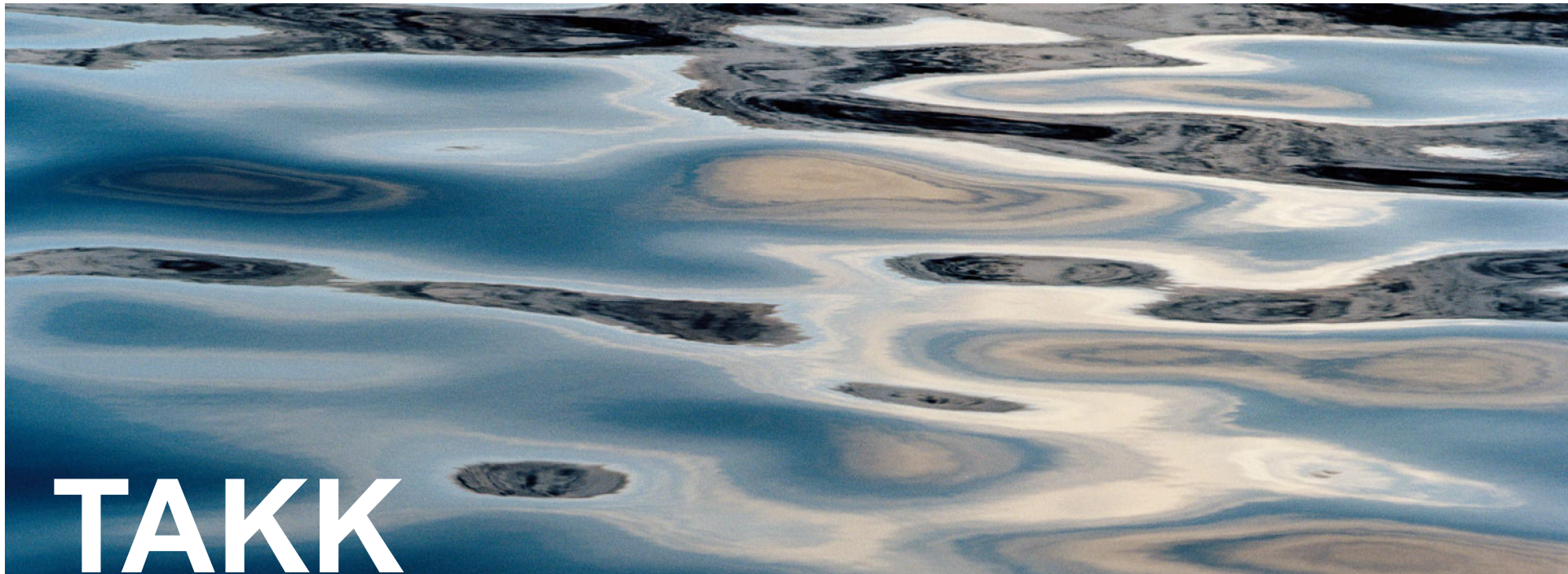
# Way Forward for Securing Electricity Supply Security

- ▶ Plan and build high voltage high capacity transmission lines with a regional perspective sufficient redundancy
- ▶ Integrate and synchronize electricity grids of the countries through links
- ▶ Set up regional power trade agreements that define:
  - Technical parameters for grid stability
  - Load dispatch rights
  - Open access on transmission lines – short and long-term
  - Recognize importance of different sources of electricity
  - Market access:
    - ❖ Bilateral long-term
    - ❖ Power exchanges
    - ❖ Eliminate restrictive practices
- ▶ Techno-economic Clearances
- ▶ Common regulatory framework for region

## Conclusions

- ▶ Power Trade is required among SAARC countries for optimum utilization of electricity generation resources for economic growth
- ▶ Regional High Capacity Transmission Infrastructure and Open Access
- ▶ Removal of Trade Barriers
- ▶ Adopting a Capacity, Energy and Transmission pricing structure
- ▶ Risk mitigation covering market and financial risks (demand, counterparty credit etc.)
- ▶ Setting up of Regional Electricity Regulator
- ▶ Finalization of a Regional Power Trade Agreement
- ▶ A lot of Confidence Building Measures (CBMs) at Political and Bureaucratic level

**Electricity follows laws of physics;  
economics rather than politics should be directing electricity flow!**



# TAKK



**Statkraft**  
REN ENERGI

[www.statkraft.no](http://www.statkraft.no)