Vietnam’s Power Sector: An Overview

Richard Spencer
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Outline

- Vietnam’s power sector
- The reform program
- Investment planning
Who Does What in the Power Sector

- Office of Government
- Ministry of Industry and Trade
  - Sector policy
  - Sponsor of EVN
  - Sponsor of Institute of Energy
- Ministry of Planning and Investment
- Ministry of Finance (and VDB)
- Ministry of Natural Resources and Environment
- State Bank of Vietnam
- Provincial, District and Commune People’s Committees
Demand is Growing!

Electricity Production and Consumption
1976 - 2009

Per Capita and Total Consumption
1976 - 2009

Electricity consumption (GWh)

Years

Consumption
Generation

Total consumption, GWh
Per capita consumption, kWh

Electricity production and consumption (GWh)

Years

Consumption
Generation
How It’s Being Met is Changing

2004
9,989 MW

EvN Owned 85%

Hydro 4,121 41%

Coal 1,205 12%

Oil and gas 3,161 32%

Owned by others 15%

Other 42

2010
19,735 MW

EvN Owned 69%

Hydro 7,420 38%

Coal 2,285 12%

Oil and gas 3,461 18%

Owned by others 31%

Other 1

EvN Owned 69%

Hydro 4,027 20%

Coal 725 4%

Oil and gas 4,027 20%

Other 1,024 5%
So Is Where It’s Being Used

Power Consumption by Sector, 2000 and 2010 Compared, TWh

- Industry and construction: 32 TWh (37%)
- Agriculture, Forestry and Aquaculture: 0.4 TWh (2%)
- Residences and Administration: 11 TWh (49%)
- Commerce, Hotels and Other: 8.2 TWh (10%)
- Commerce, Hotels and Other: 0.9 TWh (1%)

2010:
- Industry and construction: 44.4 TWh (52%)
- Agriculture, Forestry and Aquaculture: 9.1 TWh (41%)
- Residences and Administration: 1.9 TWh (8%)
- Commerce, Hotels and Other: 1.9 TWh (8%)
- Commerce, Hotels and Other: 0.4 TWh (2%)
- Industry and construction: 0.9 TWh (1%)

• Increasing size of investment program not matched by tariff increases, risking a spiral of higher borrowing and debt service, further reducing ability to finance own investments

• Capitalization of National Power Transmission Company (too low)

• High proportion of foreign debt requiring revaluation because of exchange rate depreciation

• Vietnam’s own macro instability in 2007 (before financial crisis) increasing costs not matched by tariff increases
Key Challenges

Above all: improving the quantity and quality of electric power for economic growth, inclusion and the environment

- Surging demand – 15% annual growth
- Limited financing
- Reducing energy security
- Increasing carbon intensity
- Substantial State involvement

A major reform program
The Reform Program

Aimed at ensuring that there is adequate financial resource to support continued growth in demand

- **Key legislation – Electricity Law**
  - Started preparation in 1998, passed in 2004
  - Move to competition in electricity sector
  - Planning process retained but oversight shifted to MoIT
  - Creation of ERAV

- **Roadmap for Market Development**
  - Three phases (see adjacent diagram)
  - Two step ‘trial and implement’ approach in each phase

- **Restructuring of actors**

*Consensus driven – slow but sure*
Market Design

BOTs
IPPs
Joint Stock Generation companies
Strategic Multi-purpose hydropower (SMHPs)

MO
Dispatch schedule
Market Payment

SO
Wholesaler / Single Buyer (SB)
Payment

Transmission Operator (TNO)
Power

Power Distribution Companies (PCs)

Power Generation Unit
Service Providers Unit
Wholesale Unit
Distribution and Retail Unit
The Planning System

- Political Orientation 2011 - 2030
  - Every 20 years
- Socio-Economic Development Strategy 2011 - 2020
  - Every 10 years
- Socio-Economic Development Plan 2011 – 2015
  - Every 5 years
- Power Master Development Plan 7 2011 – 2020
  - Every 5 years
- Various sub-plans e.g. Hydro Master Plan Province Power Plans
  - Every 5 years
Power Master Development Plan 7

• Prepared by IoE on behalf of MoIT: still ‘Master Plan’ for VCGM, not yet indicative

• Two somewhat conflicting objectives
  – Investment planning
  – Investment approval

• Principles
  – Least economic cost for a given level of reliability
  – Limit impact on security of supply of transmission reliability (build generation in N, C and S)
  – Diversify power sources, in particular start to build coal
  – Accelerate regional integration (Lao and Cambodia)
  – Plan for renewables
Power Master Development Plan 7

- Planning tools:
  - WASP III (with limits on hydro simulation)
  - Strategist (optimizes expansion)
  - PDPAT (treats system as interconnected subsystems and simulates operation of expansion system)
  - Slow!

- Load forecasting based on GDP, regional/province plans, sector plans