

添付資料 10-4-2

第3回ワークショッププレゼンテーション資料

**THE 3rd WORKSHOP
ON THE MASTER PLAN STUDY
ON**

**PUMPED STORAGE POWER PROJECT
AND OPTIMIZATION
FOR PEAKING POWER GENERATION**

Venue: Fuji A, 2nd floor, Hotel NIKKO HANOI
25 February, Wednesday

1

Objectives of the JICA Study

1. Optimization of Peaking Power Sources Development
2. Formulation of Master Plan of Peaking Power Sources
3. Contribution to Balancing of Electricity Demand and Supply in Vietnam

2

Particular conditions in Vietnam

1. Slender geography
2. Rapid increase in demand
3. Demand profile changes
4. Fluctuation of supply capability
5. Energy security

3

(1) Slender geography

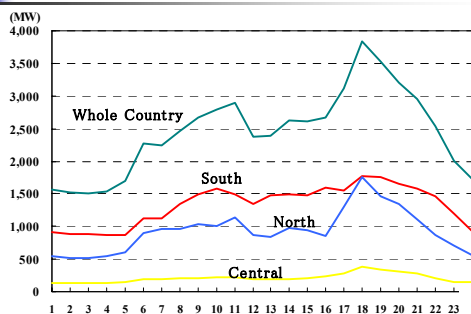


Regional differences

- Demand scale and profiles
- Power sources composition

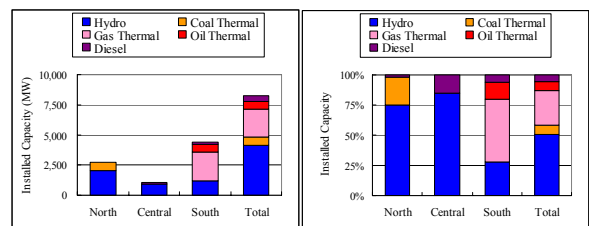
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Demand scale and profiles



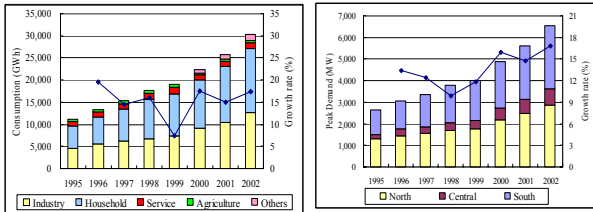
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Power sources composition



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(2) Rapid increase in demand

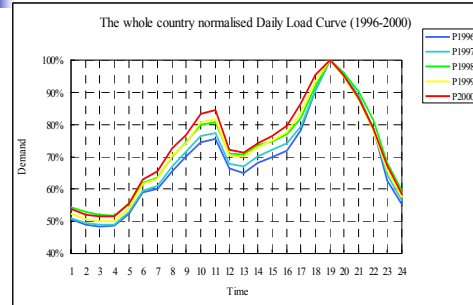


Energy Consumption

Peak Demand

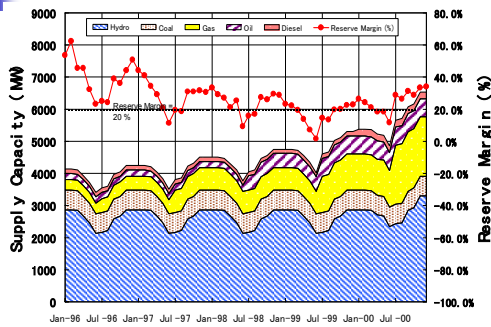
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(3) Demand profile changes



8

(4) Fluctuation of supply capability



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(5) Energy security

	Potential (upper:measured) (lower:inferred)	Exploitation Volume (2000-2020)	Residual Quantity	Exploitable years after 2020
Coal (mil. tons)	4,500	435	4,075	≥ 100
	10,000		9,575	≥ 200
Gas (bil. m ³)	330	162	168	≤ 10
	617		455	≤ 30

Based on the each primary energy reserve potential and exploitation plan

10

Contents of Presentation

- [0] Introduction
- [1] Demand analysis & forecasts
- [2] Master plan on optimization for peaking power supply
- [3] Optimization study on network planning
- [4] Financial study
- << Lunch Break >>
- [5] PSPP potential study
- [6] Optimization study on conventional hydropower plants
- [7] Possibility of installation of coal thermal power plant in the south
- [8] Environmental considerations
- [9] Demand side management
- [10] Conclusions

11

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[1] Demand Analysis
& Forecasts

Japan International Cooperation Agency (JICA)

2

Study Components

- Part I : Confirmation of existing forecasts
- Part II : Forecasts of daily demand profile

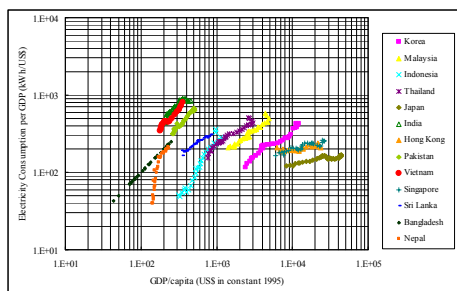
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Part I

Confirmation of existing forecasts

4

Statistics of neighboring countries



5

Process of analysis

1. Identification of regression function
2. Calculation of GDP/capita based on GDP and population forecasts
3. Estimation of EI by regression function
4. Calculation of Consumption (EI x GDP)
5. Comparison with existing forecasts

6

Methodology

- Time trend analysis with quadratic function

$$e = \alpha + \beta y + \chi y^2 + (\lambda_1 D_1 + \lambda_2 D_2 + \dots + \lambda_{n-1} D_{n-1})$$

e = log of electricity per \$ of GDP
Electricity Intensity (EI)

y = the log of GDP per capita

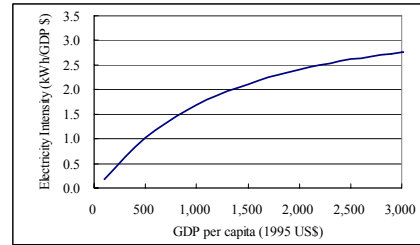
D_i = the dummy variable for country i

n = the number of countries considered

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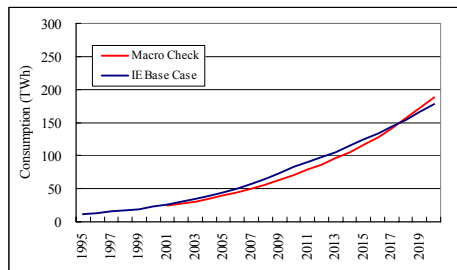
Results: Regression Function

$$e = -0.368 y^2 + 2.83 y - 1.95$$



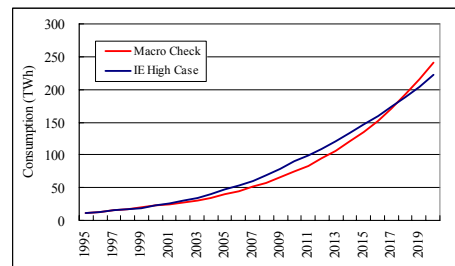
8

Macro-check: Base Case



9

Macro-check: High Case



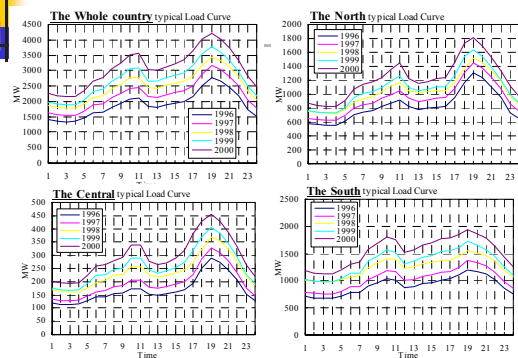
10

Part II

Forecasts of daily demand profile

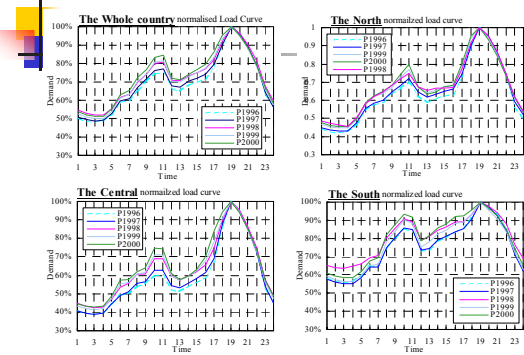
11

Demand profile: Past changes (1/2)



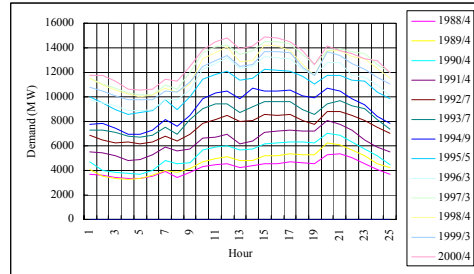
12

Demand profile: Past changes (2/2)



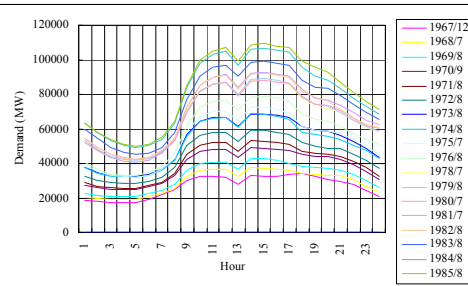
13

Demand profile: Thailand



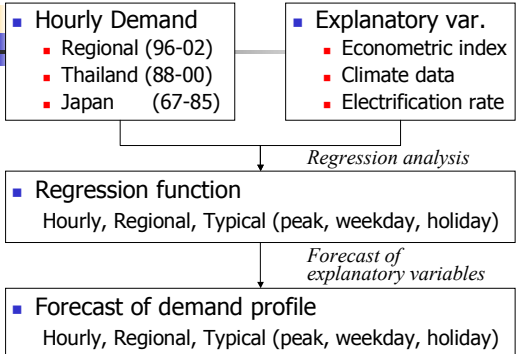
14

Demand profile: Japan



15

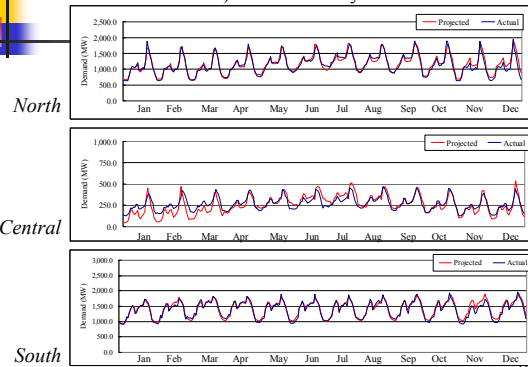
Forecast methodology



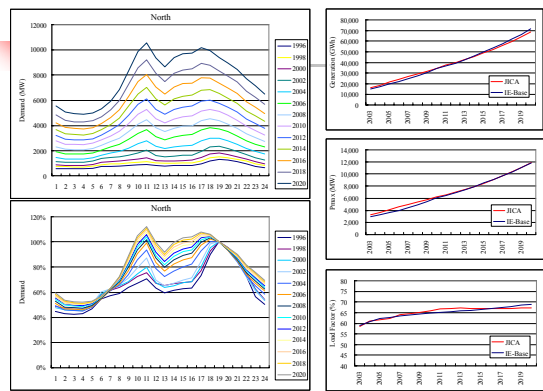
16

Results: Regression analysis

Ex) 1999 Peak day

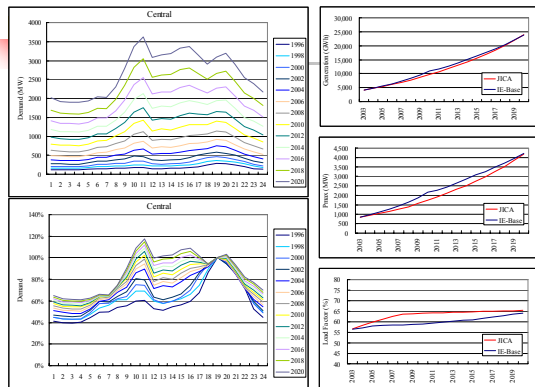


Forecast results: North Region



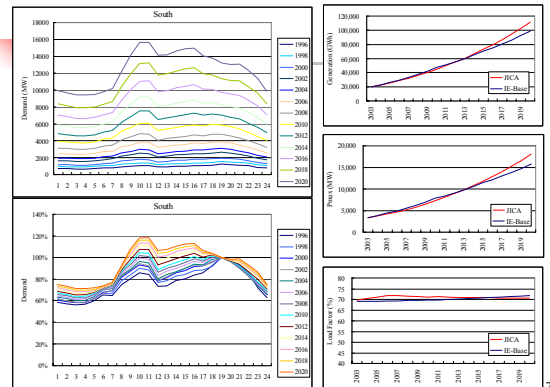
18

Forecast results: Central Region



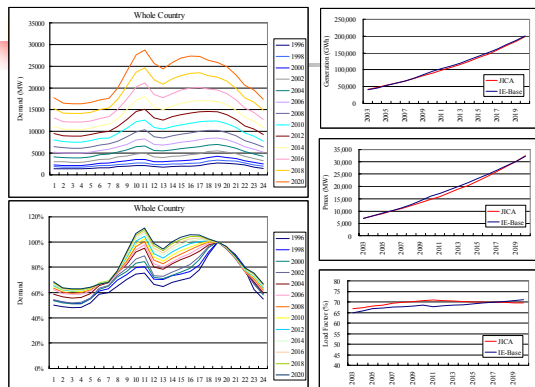
19

Forecast results: South Region



20

Forecast results: Whole Country



21

Thank you for your attention.

22