Benchmarking as a Regulatory Management System

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Conceptual Approach

Revolutionary Approach

Evolutionary Approach

Baseline Market

Reformed Electricity Market

Actual Experience in many countries

Goal

Step-1

Step-2

Baseline Market

Reformed Electricity Market
Alternative Approach

- Get data in order and operationalise license management system
- Understand performance of companies through national and international benchmarking
- Build relationship with companies by providing them performance report regularly, motivate through information and recognition, and create readiness for tariff reform
Definition

- Benchmarking is a system of comparative performance grading
- It is an Information-based approach for creating performance incentives
- Can empower regulators against politics of inefficiency
- Properly designed benchmarking program can create incentive for continual improvement like the competitive forces of efficient markets
Benchmarking

- **If:** Regulation is imperfect and likely to remain so for long time
- **Then:** Benchmarking is able to give the Regulator the tools necessary to develop
  - Efficiency, fairness, reliability
  - Transparency; visibility of economic practices
  - Sustainable regulatory regime
Regulatory management through benchmarking

- Organizes financial, legal and operational data within a unified framework and a single database

- Applies data for analyzing compliance with licenses, generating performance reports for companies and electricity sector, and estimating tariffs and conducting other market analysis
Final Result

• Generate performance reports at unit, station, company and sector levels using a standardized format and on a regular basis

• Contributes to efficiency gains in regulated companies, thereby leading to
  • Availability of more power
  • Sustainable regulatory regime
  • Enhanced environment for investment
Key Tasks

• Training (data organization, root cause analysis, report preparation, communication strategies)

• Provide computer tools and databases

• Institute processes and procedures that would ensure continuity of the program
Benchmarking Process

- Data through licenses
- Benchmarking analysis and reports
- Discuss report with companies
- Incorporate feedback into final report

- Phase 1: Produce annual benchmarking report
- Phase 2: Generate report on bi-annual basis
- Phase 3: Generate quarterly reports
Financial Performance Indicators: Applies to Generation, Transmission and Distribution Companies

Financial Performance
1. Fixed Assets per Sent Energy
2. Inventory per sent energy (LE/Mwh)
3. Total assets per sent energy
4. Wages & salaries per sent energy
5. Total expenses per sent energy
6. Cost of fuel per sent energy
7. Total production cost per sent energy
8. Net Profit Margin
9. Profit Margin
10. Accounts receivable per sent energy
11. Coverage Ratio
12. Average sale price
13. Net profit per sent energy
14. Total Owners Equity to Assets (%)
15. Return on Equity (%)
16. Current Ratio (#)
17. Quick Ratio (#)
18. Return on Assets (%)
19. Debt to Total Asset Ratio (%)

Performance Indicators: Generation Companies

Operational/Technical Efficiency

1. Forced outage rate for unit (%)
2. Forced outage rate for group of units (%)
3. Equivalent Forced outage rate for unit (%)
4. Equivalent Forced outage rate for group of units (%)
5. Scheduled outage factor for unit (%)
6. Scheduled outage factor for group of units (%)
7. Forced outage factor for unit (%)
8. Forced outage factor for group of units (%)
9. Equivalent Forced Outage Rate Demand (%)
10. Average Run Time (hr)
11. Gross Capacity Factor (%)
12. Net capacity factor (%)
13. Gross output factor (%)
14. Net output factor (%)
15. Service factor for unit (%)
16. Service factor for group of units (%)
17. Fuel Consumption Rate (Thermal Plants) (gm/kWh)
18. Water Consumption Rate (Hydro Plants) (m^3/kWh)
19. Quality (%)
20. Self Consumption (%)
Performance Indicators: Distribution Companies

Operational/Technical Efficiency

1. Distribution Losses Percentage (%)
2. Customer per Distribution Circuit (Cus/km)
3. System Average Interruption Frequency Index (SAIFI) ((No)/1000 Cus)
4. Customer Average Interruption Duration Index (CAIDI) (Min/1000 Cus.)
5. System Average Interruption Duration Index (SAIDI) (Min/1000 Cus)
6. Energy Sales per Circuits (MWh/km)
Transmission Performance Indicators

Operational/Technical Efficiency
1. Transmission Losses (%)
2. Load/customer (MVA/Customer)
3. Load/Labor (MVA/Labor)
4. Transmission Labor Productivity (MWh/Labor)

Reliability
1. Capacity Factor (transmission) (%)
2. Load Factor (transmission) (%)
Analysis of Performance

1. Explanation of indicator and its purpose
2. Comparative charts
3. Basic statistics
4. Narrative on performance
5. Financial implications analysis
6. Data quality issues
7. Root cause analysis
8. Identification of further information needs
9. Company’s feedback
10. Identification of best practices
11. Discussion of future target and actions by company
Egyptian Electricity Sector: Regulatory Management System
REGULATORY MECHANISMS FOR OVERSIGHT OF GOVERNMENT-OWNED POWER SECTOR

- Licenses
- Performance Agreements
- Tariffs
- Contracts
- Standards & Codes
- Benchmarking
- Market Design
- Training
Comparative Analysis: Company Level

Return to Equity (%): Generation Companies

Return to Equity (%): Distribution Companies

Weighted Average
Comparative Analysis at Station Level

Availability (%): Stations in a Generation Company

Weighted Average

76.54
78.80
84.00
85.16
88.00
89.00
91.00
93.14

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Comparative Analysis at Unit Level

Availability (%): Units in a Generation Company

| Weighted Average | 69.35 | 76.61 | 77.08 | 90.58 | 91.12 | 95.39 | 95.96 | 96.60 | 97.61 | 98.08 | 98.54 | 98.85 |

Weighted Average
Example of Operational Efficiency and Financial Performance Relationship

Return on Equity (%) vs. System Average Interruption Frequency Index (SAIFI) ((No)/1000 Cus)
Key Findings

- Considerable variation in performance at company level
- Considerable variation in performance within a company
- Weak relationship between technical performance and financial indicators
Copies available

- Information available on web site after June 30, 2003  www.webstersomes.com

Thank you.