



# **Incentive Regulation in German Energy Markets**

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# Structure

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# 1. Legal framework and basic approach (1)

- **Efficiency:** sect. 21( 2) EnWG
  - Efficiency in cases of structural comparability
  - Competition analogy
- **Incentives:** section 21 a ( 5) Energy Industry Act (EnWG)
  - Stipulation of price or revenue paths
  - achievable and surpassable

**Incentive regulation** sets the prices or revenues of a company not rigidly according to its costs but allows inefficient companies lower and efficient companies higher returns.

⇒ Incentive for **increasing efficiency** in companies

Economic background of regulation: **information asymmetry**

- **Cost-plus regulation:** Individual costs with an incentive to overcapitalise
- **Cap regulation:** Periodic decoupling of revenue from costs
- **Yardstick competition:** Complete exogenisation of the price/revenue level



# 1. Legal framework and basic approach (2)

## ■ Revenue cap

- First regulatory period: duration of three years
- Second regulatory period: duration of three to five years
- Guided by section 23a EnWG, the base level is set at the audited costs for the last completed business year

⇒ Objective of the first two periods:

reduction of the existing large differences in efficiency

## ■ Yardstick competition

- From the third regulatory period: duration of two years
- Best possible simulation of competition for yardstick competition
- Requirements for revenue reduction will be set entirely on the basis of a comparison with other companies (analogous to competition)



## 2. Core elements of cap regulation

### Methods for setting revenue caps

According to section 21a ( 2) EnWG:

Level of network access charges

Overall revenue from network access charges

**Price cap (PC)**

**Revenue cap (RC)**

$$PC_t = PC_{t-1} * (1 + RPI - X_{gen} - X_{ind}) \pm Q \pm Z$$

$$RC_t = RC_{t-1} * (1 + RPI - X_{gen} - X_{ind} + [EF]) \pm Q \pm Z$$



### 3. Efficiency benchmarking (1)

Methods

$$1 + \text{RPI} - X_{\text{gen}} - X_{\text{ind}}$$

Determination of individual efficiency requirements by means of a **complementary efficiency comparison**

- The individual efficiency requirements are based on the relative efficiency of each system operator, which is determined on the basis of suitable procedures for efficiency benchmarking. To achieve this, the Federal Network Agency (BNetzA) envisages both **parametric** and **non-parametric procedures** while also recommending the additional use of **analytical cost models**.
- **Parameters for comparison** are determined by analysing qualitative, analytical and statistical studies.
- For a regulatory implementation of these efficiency results, the Agency envisages the **calculation of averages or a best-off solution** in favour of the affected system operator.



### 3. Efficiency benchmarking (2)

#### Efficiency requirements

- Consultation on data and efficiency benchmarking with affected business circles, national regulatory authorities and the Federal Ministry of Economics even before the incentive ordinance enters into force
- BNetzA defines data and requests these from all companies
- Setup of a database at the offices of the BNetzA, to which the federal states will have access
- Regulatory cost review by responsible regulatory authority
- Result of this review forms consolidated basis for implementation of efficiency benchmarking
- Standardised calculation of efficiency values and efficiency targets
- Determination of or decision on efficiency requirements and revenue caps are taken by the ruling chambers of the BNetzA or the national regulatory authorities (section 54 (2) sentence 1 no. 2 EnWG)
- In this connection, and on request, review of individual special requirements to the extent required



### 3. Efficiency benchmarking (3)

#### Efficiency requirements

- Efficiency requirements must be set at a level that each system operator can achieve and surpass by implementing possible and reasonable measures.
- **Reasonableness**
  - Using all rationalisation reserves, companies must be able to achieve revenues that are on a par with or exceed their costs
- **Achievability and Surpassability**
  - The efficiency comparison reveals that there are efficient companies that realise an appropriate cost/performance ratio
- Upon request individual aspects are taken into account on the basis of **individually distinctive parameters** and explanations by the system operator during a hearing
  - But: It is not the responsibility of the BNetzA to show each company which concrete measures to take in order to meet the efficiency requirements





## 4. Ensuring quality of supply (1)

Incentive-based regulation **aimed exclusively at increasing efficiency** could lead to **cost reductions** at the **expense of quality of supply**.

- ➔ Quality of supply is of paramount importance in the EnWG and ordinances
  
- ➔ **Quality regulation** was provided for in the Agency's concept of incentive-based regulation right from the start
  - Regulation via quality parameters
  - Regulation with a view to investments



## 4. Ensuring quality of supply (2)

Four dimensions

### **Safety**

Preventing damage/injuries to people and property of a third party (technical safety)

### **Product quality**

Technical minimum requirements for transmitted energy (e.g. voltage fluctuation; Wobbe index)

### **Network reliability**

Ability of a supply network to deliver energy without interruptions

### **Service quality**

Relationship between system operator and network customer (e.g. complaints management)



## 4. Ensuring quality of supply (3)

### Regulation via quality parameters

- Guaranteed customer standards for service quality
  - Standardised penalty of 50 Euro when a guaranteed customer standard is not met
  - Guided by international practice for setting limits: e.g. reconnection after cut-off due to outstanding payments within 1 working day
- Guaranteed customer standards for network reliability
  - Standardised penalty of 100 Euro when a guaranteed customer standard is not met
    - In the case of a single interruption lasting 12 hours (electricity and gas)
    - In case of two interruptions lasting three hours or three interruptions lasting two hours (electricity only)

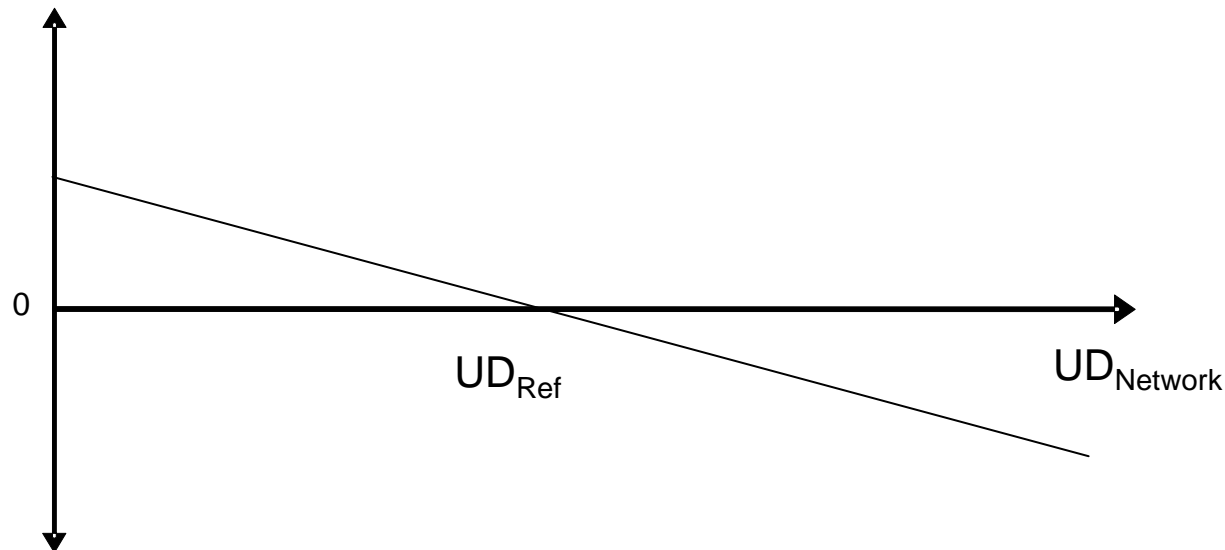


## 4. Ensuring quality of supply (4)

Regulation via quality parameters

$$1 + \text{RPI} - X_{\text{gen}} - X_{\text{ind}} + [\text{EF}] \pm Q$$

Bonus/penalty system for above/below-average supply quality (frequency and duration of supply interruptions, non-supplied energy and loads not covered )



- symmetric excess proceeds/deficiency in proceeds
- stochastic, non-systematic supply interruption must not unduly affect the system operator's business.



## 4. Ensuring quality of supply (5)

### Regulation via quality parameters

- Economic assessment of supply quality by means of representative customer surveys.
  - Customer surveys on service quality (response time for enquiries and complaints, handling of enquiries regarding invoices, adherence to deadlines, execution of routine work etc.) are easy to conduct.
  - Customer surveys on network reliability are more complex, they must be representative and cover a large range of **different customer segments**
- Internationally (Great Britain, Netherlands, Italy) experiences with customer surveys have been good.
- Additionally: publication of quality parameters



## 5. Regulation with a view to investments (1)

Consideration of the changed supply function and of **expansion and restructuring investments**

- In the case of distribution system operators:
  - Long-term changes caused by expansion of the supply function are taken into account by applying expansion factors when calculating the revenue cap:

$$1 + RPI - X_{\text{gen}} - X_{\text{ind}} + [EF] \pm Q$$

    - size of the area supplied/of the geographical area
    - number of connecting points per network level
    - load per network level
  - Short-term fluctuations in volume, e.g. due to severe winter temperatures, are buffered by a regulatory account, thus avoiding price fluctuations



## 5. Regulation with a view to investments (2)

- In the case of transport system operators: Approval of investment budgets
  - Investment budgets should not be approved as an overall budget but as individual budgets, assigned to specific measures aimed at resolving weaknesses and achieving network development targets.
  - The approval of investment budgets should entail the following elements:
    - creation of scenarios relevant to planning
    - definition of required investment projects based on scenario calculations
    - presentation of investment plans by the system operators
    - review of these investment plans by the BNetzA, taking into account analytical cost models, surveys of market players as well as an international (or in the case of TSOs (gas) also a national) comparison of the efficiency of capital costs for individual fixed assets.
    - application of a menu approach and a graduated payment of interests (sliding scale) in order to provide an incentive for companies to state their actual investment needs and to subsequently even undercut this by taking steps to increase efficiency.



## 5. Regulation with a view to investments (3)

### Issues relating to the replacement of capital assets:

- Age structure– Cases where companies are at different stages of their "investment cycle";
  - Depreciation policy– Cases where companies have, in the past, depreciated their assets over different periods of time;
  - Capitalisation policy – Cases where companies capitalise different measures and then depreciate those over an extended period of time, and vice versa.
  - Example: If company A, with an old capital stock and low calculated capital costs, is compared with company B, having a young capital stock and high calculated capital costs, then company A achieves a better benchmarking result. Company A also has little incentive for making investments, since that would lead to a deterioration of its benchmarking result.
- ➔ A detailed explanation of the proposed solutions for ensuring the replacement of capital assets can be found in the report.





## 5. Regulation with a view to investments (4)

### Ensuring **replacement of capital assets**:

- Calculating comparability of capital costs in the efficiency comparison by applying parallel annual cost accounting, using standard costs as replacement values for fully depreciated or not capitalised but still operational fixed assets - this means that companies making investments are not at a disadvantage
- However, calculated cost accounting is upheld – which means that a company not making investments starts at a lower base level
- Monitoring of a system operator's investments by the BNetzA based on a techno-economical register of assets
- Introduction of quality management systems
  - Focus of the system operators' processes on sufficient consideration of supply quality
  - Graduation of requirements for system operators, depending on the number of customers connected



## 6. Special requirements for TSO (1)

### Special role of Transport System Operators

- Due to statutory requirements TSOs for both gas and electricity must take on a considerable number of additional functions.
  - Electricity: Expansion of international cross-border coupling points, expansion of wind energy
  - Gas: Expansion of LNG facilities, shifting sources of revenue and transport flows
- ➔ For that reason, **investment budgets** are to be approved for necessary expansion and restructuring investments.
- Transport system operators are also subject to **revenue cap regulation** for their existing network operations - provided these operators are not TSOs (gas) involved in pipeline competition.



## 6. Special requirements for TSO (2)

### Revenue-cap regulation of the existing network operations

- Incentive formula similar to that for DSOs; however, due to the investment budgets intended for expansion investments, the expansion factor that otherwise automatically takes into account the development of demand for energy is not included here
- Other cost elements considered non-controllable:
  - investment budgets for measures already implemented.
- $X_{ind}$  is calculated by means of an **efficiency benchmarking**:
  - national efficiency benchmarking based on a reference system analysis (relative benchmark)
  - international efficiency benchmarking based on parametric or non-parametric procedures.

(In the case of TSOs (gas) also national efficiency benchmarking based on these methods.)



## 7. Timeframe for the introduction of incentive regulation

- On **June 30th, 2006**: Handover of report to BMWi (Federal Ministry of Economics and Technology)  
=> Presentation of a comprehensive concept after extensive consultation
- **Ideally in 2006**:  
Presentation of ordinance to the cabinet
- **Early 2007**:  
Ordinance with approval by the German Federal Council
- **By mid-2007**:
  - Collection of data on the basis of this ordinance
  - Federal Network Agency (BNetzA) determines interest rate for equity
- **Late 2007**:
  - Approval of revenue caps for the years 2008, 2009 and 2010
- **From January 2008**:  
=> Network charges based on incentive regulation



## 8. Conclusion

- Report contains a comprehensive concept that was subjected to extensive consultation
- Immediate transposition into ordinance possible
- Rapid introduction of incentive-based regulation is in the best interests of both consumers and companies



**Thank you for your attention!**

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