

# **Block 3: Managing Urban Energy Infrastructures**

## **3. Managing the urban electricity system**

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- Traditionally the above described, integrated urban electricity system was managed by the so-called (urban) utility
- In most countries this is exclusively an electricity (managing) utility
- But in some other countries the local utility manages also gas, water, cable, and others more
- The utility is generally a public entity, owned by the municipality; as of recently some tasks are being outsourced to private operators
- In this session we will present the four main management tasks of an urban utility, namely:
  - Operations and maintenance of the grid
  - Grid development
  - Customer relations
  - Energy purchasing

# Operations and maintenance

- Balancing demand and supply
- The task is exacerbated by self-generation
- And especially self-generation through renewables (e.g., solar production) (intermittency)
- Requires sometimes even grid reinforcements

Electricity utility

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- Grid development is a management challenge and requires proper planning
- But grid development is also a financial challenge (grid usage tariffs being regulated)

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- Electricity must be metered and billed
- Customer complaints must be handled
- Non-paying customers must be managed
- Electricity theft must be addressed
- Sometimes social tariffs

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# Energy purchasing

- Balancing demand and supply
- The task is complex
- And especially with renewables (e.g., solar, wind)
- Requires sometimes even grid reinforcements

Technical

- Electricity must be produced and billed
- Customers must be billed
- Network must be managed
- Electricity must be sold
- Sometimes social tariffs

Social  
Political

- Especially in the case of (rapidly) growing cities (new connections)
- Grid development is a challenge and requires investment
- But grid development is a financial challenge (grid usage tariffs being regulated)

Technical  
Economic

Electricity

- Electricity must be purchased, as there is generally no production
- The purchase is done through contracts (with various terms)
- Increasingly, there is an energy exchange (even more risks)

Economic  
Environmental

# Conclusion

- In this session I have presented the four main management functions of an urban electricity system
- While these functions will always continue to exist, all of them have to evolve as a result of broader changes and challenges
- But these may well also be new opportunities