Block 3: Managing Urban Energy Infrastructures

3. Managing the urban electricity system

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Session overview

- 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
Grid development

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 Especially in the case of (rapidly) growing cities (new connections)
- Grid development is a management challenge and requires proper planning
- But grid development is also a financial challenge (grid usage tariffs being regulated)
Customer relations

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Electricity utility

- 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 to ensure the supply
- And especially to accommodate renewables (e.g., solar, wind energy)
- Requires sometimes even grid reinforcements

- Electricity must be purchased and billed
- Customer complaints must be handled
- Non-paying customers must be managed
- Social tariffs may be applied

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

- Electricity must be purchased, as there is generally no or little self-production
- This is done by way of (long-term) contracts (which carry risks)
- Increasingly also on the power exchange (even more risks)
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.