Block 3: Managing Urban Energy Infrastructures

4. Challenges and opportunities

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Session overview

- Challenges and opportunities to managing urban electricity systems arise from three different angles
- Each of these challenges affects the four management functions differently
- In this session, we will address three such challenges, namely:
  - Electricity markets liberalization
  - Environmental challenges, especially climate change
  - The Information and Communication Technologies (ICTs)
Electricity market liberalization

In many countries electricity markets have been liberalized or are being liberalized (unbundled)

Producers are now competing for customers

Electricity purchasing:
- Retail prices become competitive and customers switch
- Electricity purchasing must be professionalized
- Offer new energy services (incl. energy savings)

Customer relations:
- Shrinking customer base (especially lucrative customers)
- Sometimes metering and billing is also liberalized
- Customers must now be treated differently and managed more actively
- Non-paying customers must be disconnected
- Social tariffs must be compensated

Grid management
- Increased complexity because of unbundling
In order to reduce GHG emissions (and mitigate climate change),
- the overall consumption of fossil fuels (including for electricity production) must be reduced
- overall energy and electricity consumption must be reduced

### Operations and maintenance:
- More intermittent production because of renewables (more balancing needed)

### Grid development:
- Because of self-production grid reinforcements become necessary
- Less electricity consumption due to energy efficiency measures (grid costs)

### Customer relations:
- Consumers also become producers (prosumers)
- Which business model for energy savings?

### Energy purchasing:
- Pressure to purchase electricity from renewables
As seen in the first block, the ICTs …
• Can make infrastructure usage more efficient
• Can involve the users into the management of urban infrastructures
• Can lead to new services

Operations and maintenance:
• Commercializing balancing energy
• Making system more resilient

Grid development:
• ICTs as a means to increase energy efficiency
• reduce the need for grid development

Customer relations:
• More flexible pricing
• Opportunity to offer new energy-related services (such as managing one’s own electricity consumption)

Energy purchasing:
• Consumers become producers (at least of balancing energy)
Conclusion

- In this session we have seen how some new trends affect the traditional management functions of urban electricity systems.
- Let us now hear the point of view of a practitioner