Block 3: Managing Urban Energy Infrastructures

2. Understanding urban electricity systems

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Session overview

Electricity has become, over time, the most critical infrastructure of cities.
In this session you will learn about the main elements of urban electricity systems.
In particular, you will learn about:

- Electricity infrastructures and operators
- Electricity consumption and consumers
- Electricity production and producers
- Electricity intermediaries and other actors
Energy infrastructures in cities (transmission)

- Above ground cable (medium voltage)
- Underground cable (medium, low voltage)
- Distribution cable (above and underground; low voltage)
- Transformer
- Utility (as grid operator)
Energy consumption

- Distribution cable (above and underground; low voltage)
- Above ground cable (medium voltage)
- Underground cable (medium, low voltage)

Utility (as grid operator)

Industrial/commercial consumer

Household
Energy production or generation

- **Self-generation**
- **Household**
- **Distribution cable (above and underground; low voltage)**
  - **transformer**
  - **Back-up generation**
  - **Above ground cable (medium voltage)**
    - **transformer**
  - **Underground cable (medium, low voltage)**

**Generation power plant**

- **Industrial consumer**
- **Self-generation**
- **Self-generation**

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Intermediaries and other actors (financial flows)

- **Traders**
- **Other resellers**
- **Generation power plant**
- **Utility as resellers**

Flow paths:
- Distribution cable (above and under ground; low voltage)
- Above ground cable (medium voltage)
- Underground cable (medium, low voltage)
- Transformer
- Self-generation
- Household
- Back-up generation
- Energy services companies (ESCOs)
- Energy services companies (ESCOs)
- Industrial/commercial consumer
- Other resellers

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Conclusion

- In this session I have presented how the urban electricity system works.
- In the next session we will see what this all means for the management of urban electricity systems.