Tutorial 2

From carbon accounting to climate change: data-driven strategies for greener grid management

Background

The transition to a climate-neutral energy system presents distribution system operators with the challenge of implementing sustainability strategies without losing sight of supply security and economic efficiency. The assessment and reduction of emissions in all three scopes (1, 2, and 3) play a central role - especially in scope 3, which includes indirect emissions from supply chains, equipment manufacturing, and infrastructure.
This tutorial provides practical insights into strategies and methods for the systematic assessment of greenhouse gas emissions in electricity grids and the development of effective decarbonization paths based on the experiences of the cooperation between the research organization Energy Institute of the JKU Linz and Netz OÖ, the local grid operator in Upper Austria.

Aim of the tutorial

The goal of this tutorial is to provide expertise in integrating sustainability principles such as Life Cycle Assessment (LCA), circular economy, and data-driven carbon accounting into network planning and assessment. Participants will learn how to identify, quantify and integrate especially the scope 3 emissions, which are usually not very tangible into strategic decisions with a focus on infrastructure development, digitalization and material efficiency to effectively support emission reduction measures and net-zero strategies.

Content

1. Basics on identifying relevant scope 1-3 emissions from electricity grid installations and operations
2. Methods for preparing a GHG inventory according to CSRD and ESRS E1
3. Sourcing representative emission factors based on material and energy consumption from databases and alternative strategies
4. Challenges for Life Cycle Analysis of grid components and infrastructure
5. Practical example and learnings: Cooperation with Netz OÖ as grid operator in the province of Upper Austria
6. Emission reduction measures and net-zero strategies derived from the survey of the actual status
7. Digitalization: real-time CO_2 monitoring and LCA twin models – a short market overview of tools
8. Integration of flexibility, storage solutions and renewable energy – actual research work in the field

Expected benefits

Participants gain an improved understanding of the following:

- A structured understanding of how to assess GHG emissions from grid infrastructure and operation
- Tools and methodologies for conducting GHG inventories
- Insights into the actual regulatory framework (CSRD, ESRS)
- Practical examples of enforced integration of sustainability topics into network operations and planning
- Strategies for deriving concrete measures to reduce emissions and move towards net-zero strategies

Who should attend

- Future experts in carbon accounting, LCA and corporate sustainability
- Procurement and infrastructure planning managers of distribution system operators and local grids
- Utilities operators with sustainability ambitions
- Producer of electrical operating equipment
- Regulators and decision makers on net-zero strategies
- Research institutions with a focus on emission reduction measures and net-zero technologies

Support material

An electronic version of all presentation materials will be made available to participants.

About the presenters

Speaker 1 : lindorfer@energieinstitut-linz.at

Dipl.-Ing.(FH) Johannes Lindorfer
Key Researcher, Energy Institute, Johannes Kepler University Linz, Austria:
Johannes Lindorfer is project manager and key researcher at the Energy Institute at the JKU Linz. He has been working for many years in the field of environmental process and product assessment, in particular the assessment of scope 1-3 emissions in the energy sector.

Speaker 2 : betriebsleitung-strom@netzooe.at

Dipl.Ing. Dr. Andreas Abart
Head of Electricity Grid Operations, Netz Oberösterreich GmbH: Andreas Abart is a seasoned expert in grid operations and leads applied research on sustainable transformation at Netz Oberösterreich. With a strong background in operational network planning, he provides valuable insights into integrating sustainability into the daily operations of a grid operator.