Joint Workshop
Modeling of a global zero-emission industry sector
ETSAP WS Modeling of the industry sector and material efficiency

Modeling of the industry sector and material efficiency

Universität Stuttgart
IER Institut für Energiewirtschaft und Rationelle Energieanwendung

LULEÅ UNIVERSITY OF TECHNOLOGY

VTT

JÜLICH Forschungszentrum

Supported by:

Federal Ministry for Economic Affairs and Climate Action

on the basis of a decision by the German Bundestag

The Energy Technology Systems Analysis Program (ETSAP) is one of the longest running Technology Collaboration Programs (TCP) of the International Energy Agency (IEA). The TCP functions as a collective of member country and invited teams that actively cooperate to establish, maintain, and expand open-source solutions for energy scenario modelling.

The **Follow-ETSAP** project aims to support the TCP ETSAP by contributing to the modeling needs of emission-free energy sources for the industry sector. A particular emphasis is placed on the competition of emission-free technologies against the background of material efficiency and the concept of circular economy. In addition to that, the role of new industries is analyzed. The findings are modeled with the ETSAP TIAM energy system model, which will be applied to advance the understanding of the interrelationships between the aforementioned factors.

The project **Modeling a global zero-emission industry sector** aims to support the TCP ETSAP by contributing to the modelling of material efficiency strategies for industrial sector in energy systems.

The research consortium is constituted by the Institute of Energy Economics and Rational Energy Use (IER), the VTT Technical Research Centre of Finland and the Luleå University of Technology in Sweden. Together, a contribution to the global energy transition shall be created.

With its focus on the most impactful emerging trends in the areas of future industry technologies and material efficiency measures, **this workshop series aims** to contribute to advancing the modeling of the circular economy in the future industry sector. Subsequently, the contributions to the workshop will be subjected to open discussion, with a view to identifying further research needs and questions.

The focus areas of the three workshops are:

- Contribution of circular economy and material efficiency to the decarbonization in the global energy system
- Future of critical raw materials: Security of Supply for batteries
- Transformation pathways in the industrial sector

Join Workshop
Follow-ETSAP WS Modeling of a global zero-emission industry sector
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5th June 2025

Contribution of Circular Economy and Material Efficiency in the global Energy System

Place: IER – University of Stuttgart, Heßbrühlstraße 49A, 70565 Stuttgart
+ Online-Streaming

Registration link: https://terminplaner.dfn.de/WS-Series-Follow-ETSAP-IER

Password: Follow-ETSAP

Topic motivation

Decarbonizing the industrial sector is a major challenge in achieving the well-below 2 °C target. This workshop explores the value of material efficiency and the circular economy in mitigating emissions across select energy-intensive industries.

Indicative program (CET):

Time	
13:30	Introduction - Prof. Markus Blesl, IER
14:00	Need for critical mineral substitution and recycling in clean energy transition and to meet the 1.5 °C target – Tiina Koljonen (VTT, Finland)
14:30	Decarbonization of industries – Will new industrial supply-chains alter where industries are located? - Anna Krook-Riekkola (Luleå University of Technology, Sweden)
15:00	Circular Economy and Material Efficiency Potentials for Bulk Materials in Buildings and Vehicles – Insights from the EU CIRCOMOD – Prof. Stefan Pauliuk University Freiburg
15:30	Coffee Break
16:00	Investigation of material efficiency and circular economy potentials for the chemical industry in order to achieve the net zero target – IER
16:30	Keynote – Prof. Markus Blesl, IER
17:00	Discussion
18:00	Wrap-up of the results

Moderators:

Prof. Dr. Markus Blesl, IER
Prof. Dr. Thomas Hamacher, TUM-ENS
Prof. Dr. Heidi Heinrichs, Jülicher Systemanalyse (ICE-2)

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