IRENA
International Renewable Energy Agency

International Energy Workshop

2024 INTERNATIONAL ENERGY WORKSHOP

42nd EDITION

26-28 JUNE 2024

Design Offices, Neuer Bundeskanzlerplatz, 2D 53113, Bonn, Germany

SPONSORS

ECMWF
EUROPEAN CENTRE FOR MEDIUM-RANGE WEATHER FORECASTS

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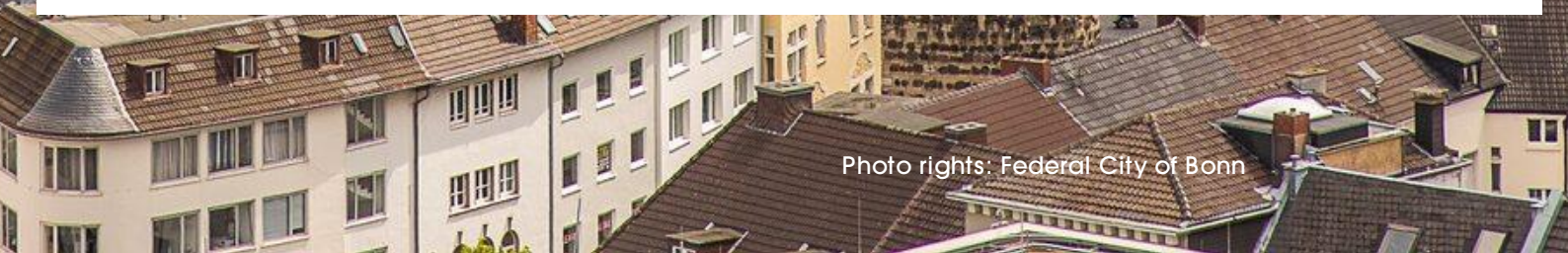
etsap
ENERGY TECHNOLOGY SYSTEMS ANALYSIS PROGRAM



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PROGRAMME OVERVIEW

26 June – Wednesday (Click for detailed agenda)	27 June – Thursday (Click for detailed agenda)	28 June – Friday (Click for detailed agenda)
8:15 – 9:00 **Registration & Coffee** Location: Entrance/Lobby	**8:15 – 9:00** **Registration & Coffee** Location: Entrance/Lobby	**8:15 – 9:00** **Coffee** Location: Lobby
9:00 – 9:30 **Opening Session** **Moderator and Introduction to the 42nd IEW:** Geoffrey Blanford (EPRI) **Opening remarks:** Mr. Francesco La Camera (IRENA) **Presentation:** Dr. Roland Roesch (IRENA) Location: Arena	**9:00 – 11:30** **Plenary Session 2: Policy-Energy Modelling Linkage** **Moderator**: Dr. Ute Collier (IRENA) Dr. Sonia Yeh (Chalmers University) | Prof. Bjarne Steffen (ETH Zurich) | TBD (TBD) Location: Arena	**9:00 – 11:30** **Plenary Session 3: Data Advances in Energy Modelling** **Moderator**: Bob Van der Zwaan (TNO) Mr. Michael Taylor (IRENA) | Dr. Keigo Akimoto (RITE) | Dr. David McCollum (Oak Ridge National Laboratory) Location: Arena
9:30 – 12:00 **Plenary Session 1: Climate-Energy Modelling Linkage** **Moderator**: Massimo Tavoni (EIEE) Prof. Jim Skea (IPCC) (Virtual) | Dr. Carlo Buontempo (ECMWF) | Dr. Delavane Diaz (EPRI) | Dr. Stelios Pesmajoglou (UNFCCC) Location: Arena	**11:35 – 12:35** **Parallel Session 3:** Hydrogen Trade | Land Availability | Towards Low Carbon Transport | Modelling Methodologies I | Climate Policy I	**11:35 – 13:05** **Parallel Session 7:** Hydrogen Economy | Energy & Environmental Justice I | Storage for the Energy Transition | Circular Economy | Roads to Net Zero I
12:00 – 13:15 **Lunch & Lunchtime Seminar** **IRENA Event: Participatory processes for national long-term energy scenario development** Location: Lobby & Arena	**12:35 – 13:50** **Lunch & Lunchtime Seminar** **ETSAP Event – Book launch "Aligning the energy transition with SDGs"** Location: Lobby & Arena	**13:05 – 14:20** **Lunch & Lunchtime Seminar** **IRENA team poster session** Location: Lobby
13:20 – 15:00 **Parallel Session 1:** Addressing Flexibility in Energy Systems | Energy Access & Poverty | Infrastructure for the Energy Transition | A Spatial Perspective on Energy Modelling | Transition Pathways – Case Studies I	**13:55 – 15:35** **Parallel Session 4:** Sector Coupling | Energy Transition Economics | Linking Mobility & Electricity Sectors | Addressing Uncertainty in Scenarios | Climate Policy II	**14:25 – 16:35** **Parallel Session 8:** Prospects for VRE | Energy & Environmental Justice II | Decarbonizing the Residential Sector | Modelling Methodologies II | Roads to Net-Zero II
15:00 – 15:25 **Coffee Break** | Location: Lobby	**15:35 – 16:00** **Coffee Break** | Location: Lobby	**16:35 – 17:00** **Farewell Coffee** | Location: Lobby
15:30 – 17:10 **Parallel Session 2:** Role of Bioenergy | Socio-Economic Impacts | Decarbonizing Steel Industry | Incorporating Climate Impacts in Energy Modelling | Energy Transition in the Global South	**16:05 – 17:20** **Parallel Session 5:** Technology Change | Critical Materials | Hard-to-abate industrial emissions | Transition pathways - Case studies II | Energy Policy I	
17:15 – 18:15 **ECMWF Event: Environmental data to support energy modelling** Location: Arena	**17:25 – 18:40** **Parallel Session 6:** Hydropower | Cost of Hydrogen | Power-to-X | Carbon Dioxide Removal I Energy Policy II	
19:30 – 20:30 **Welcome Reception** Location: Bonn Old Town Hall (Altes Rathaus)	**19:15 – 21:00** **Dinner hosted by IRENA** Location: Parkrestaurant RheinAue	

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ABOUT THE INTERNATIONAL ENERGY WORKSHOP

The International Energy Workshop (IEW) is one of the leading conferences for the international energy modelling research community. In a world of environmental and economic constraints, energy modelling is an increasingly important tool for addressing the complexity of energy planning and policy making.

The IEW provides a venue for analysts to compare quantitative energy projections, to understand the reasons for diverging views of future energy developments, and to observe new trends in global energy production and consumption.

The annual conference typically includes three plenary sessions and more than 100 presentations in parallel sessions focusing on a wide array of topics, including energy supply and price forecasts, energy savings and efficiency, renewable and innovative energy technologies, environmental and climate policy, and the intersection between energy analysis, economics, and the natural sciences.

The first International Energy Workshop was organised in Palo Alto in 1981 by Stanford University's Alan S. Manne, one of the founding fathers of energy economics. With the cooperation of Leo Schrattenholzer, a leading energy technology systems specialist at the International Institute of Applied Systems Analysis (IIASA), the workshop became an annual conference, first alternating between IIASA and the United States, and more recently expanding to other locations in Europe, Asia and Africa.

Throughout the history of IEW, a number of organizations have contributed to the success of these annual conferences, including notably the Energy Modeling Forum (EMF), the Electric Power Research Institute (EPRI) and the International Renewable Energy Agency (IRENA).

From 1981 to 1997 the IEW published annual editions of the IEW Poll, which became an important part of the Morita Database, compiled as basis for the IPCC Special Report on Emission Scenarios (SRES). From 2006 to 2008, the IEW was organized by co-directors Leo Schrattenholzer and Joseph E. Aldy.

In June 2009 three new co-directors were elected by the IEW Steering Committee to run the International Energy Workshop:

- Geoffrey Blanford, Electric Power Research Institute (EPRI), USA
- Massimo Tavoni, Fondazione Eni Enrico Mattei (FEEM), Italy
- Bob van der Zwaan, Netherlands Organisation for Applied Scientific Research (TNO), Netherlands

IRENA
International Renewable Energy Agency

International Energy Workshop

ABOUT IRENA

The International Renewable Energy Agency (IRENA) is a lead global intergovernmental agency for energy transformation that serves as the principal platform for international cooperation on the topic, supports countries in their energy transitions, and provides state of the art data and analyses on technology, innovation, policy, finance and investment.

IRENA drives the widespread adoption and sustainable use of all forms of renewable energy, including bioenergy, geothermal, hydropower, ocean, solar and wind energy in the pursuit of sustainable development, energy access, and energy security, for economic and social resilience and prosperity and a climate-proof future.

IRENA's membership comprises 168 countries and the EU. Together, they decide on the Agency's strategic direction and programmatic activities, in line with the global energy discourse and priorities to accelerate the deployment of renewables-based energy transitions worldwide.

IRENA support includes the provision of data and statistics, advice on best practices and policies, insights on financial mechanisms, technological expertise, and capacity-building programmes, along with a large and growing range of publications and tools on renewable energy.

These include knowledge products:

Energy Transition Outlooks: Global, regional and national roadmaps indicating the realistic potential to triple renewable capacity by 2030, a key step in mitigating climate change;

Renewable Energy Costs: Reliable data on the cost and performance of all forms of renewable energy;

Global Atlas for Renewable Energy: An online tool mapping renewable energy resources, country by country, to aid in renewable energy project development;

Renewable Energy Benefits: Detailed analysis on the socio-economic impact of renewable energy deployment.

IRENA's work also includes country, regional and global programmes:

Renewables Readiness Assessments: Country-led holistic evaluations and recommendations for action to accelerate renewable energy deployment;

Energy Transition Accelerator Financing (ETAF) Platform & Regional Investment Forums: Inclusive, multi-stakeholder climate finance platforms to advance the energy transition across developing markets;

Long-term energy scenarios (LTES) network and energy planning support: a global platform to exchange knowledge and good practices in the use and development of model-based LTES, and receive capacity building support from IRENA;

Multilateral partnerships: Leading international cooperation on offshore wind, geothermal, industry decarbonization, clean cooking and SIDS.

Established in 2011, IRENA is the only international agency with an exclusive mandate for renewable energy and the first global intergovernmental organisation to be headquartered in the Middle East. Its establishment signalled the international community's commitment to the transition to renewables.

SPONSORS

ECMWF is the European Centre for Medium-Range Weather Forecasts. We are both a research institute and a 24/7 operational service, producing global numerical weather predictions and other data for our Member and Co-operating States and the broader community. The Centre has one of the largest supercomputer facilities and meteorological data archives in the world. Other strategic activities include delivering advanced training and assisting the WMO in implementing its programmes.

We are a key player in Copernicus, the Earth Observation component of the European Union's Space programme, offering quality-assured information on climate change (Copernicus Climate Change Service), atmospheric composition (Copernicus Atmosphere Monitoring Service), flooding and fire danger (Copernicus Emergency Management Service), and through the EU's Destination Earth initiative, we are developing prototype digital twins of the Earth.

The Energy Technology Systems Analysis Programme (ETSAP) is an Implementing Agreement of the International Energy Agency (IEA), first established in 1976. It functions as a consortium of member country teams and invited teams that actively cooperate to establish, maintain, and expand a consistent multi-country energy/economy/environment/ engineering (4E) analytical capability.

Its backbone consists of individual national teams in nearly 70 countries, and a common, comparable and combinable methodology, mainly based on the MARKAL / TIMES family of models, permitting the compilation of long term energy scenarios and in-depth national, multi-country, and global energy and environmental analyses. ETSAP promotes and supports the application of technical economic tools at the global, regional, national and local levels. It aims at preparing sustainable strategies for economic development, energy security, climate change mitigation and environment.

The Electric Power Research Institute, Inc. (EPRI) conducts research, development and demonstration (RD&D) relating to the generation, delivery and use of electricity for the benefit of the public. An independent, nonprofit organisation, EPRI brings together scientists and engineers as well as experts from academia and the industry to help address challenges in electricity, including reliability, efficiency, affordability, health, safety and enviroment.

EPRI's work spans nearly every area of electricity generation, delivery and use, management and environmental responsibility, and provides both short- and long-term solutions in these research areas for the electricity industry, its customers and society. Since its beginnings in 1972, the Electric Power Research Institute's membership has grown to represent approximately 90% of the electricity generated in the United States and extends to more than 30 countries internationally.

PROGRAMME COMMITTEE

Geoffrey Blanford
Electric Power Research Institute (EPRI)
IEW Co-Director

Massimo Tavoni
Fondazione Eni Enrico Mattei (FEEM)
IEW Co-Director

Bob van der Zwaan
Netherlands Organisation for Applied Scientific Research (TNO)
IEW Co-Director

Roland Roesch
International Renewable Energy Agency (IRENA)

Chiara Cagnazzo
European Centre for Medium-Range Weather Forecasts (ECMWF)

Asami Miketa
International Renewable Energy Agency (IRENA)

Ute Collier
International Renewable Energy Agency (IRENA)

ORGANISING COMMITTEE

Asami Miketa
International Renewable Energy Agency (IRENA)

Karen Grajeda
International Renewable Energy Agency (IRENA)

Larissa Nogueira
International Renewable Energy Agency (IRENA)

Daniel Russo
International Renewable Energy Agency (IRENA)

Marko Emersic
International Renewable Energy Agency (IRENA)

Ling Ling Federhen
International Renewable Energy Agency (IRENA)

KEYNOTE SPEAKERS

Keigo Akimoto

received Ph.D. degree from Yokohama National University in 1999. He joined Research Institute of Innovative Technology for the Earth (RITE) to work with the Systems Analysis Group in 1999. Currently he is the Leader of the Group and a chief researcher at RITE. From November 2022, he is a specially appointed professor, Institute of Innovative Research, Tokyo Institute of Technology. He was a Lead Author for the Fifth and Sixth Assessment Report of IPCC and is a member for several advisory bodies including advisory committee for natural resources and energy. His scientific interests are in modeling and analysis of energy and environment systems.

Carlo Buontempo

is the director of the Copernicus Climate Change Service at ECMWF. In this capacity he leads a team of scientists and technical experts to ensure the service can meet the needs of its large and diverse global community of users. Carlo has been working on climate science and services since the early 2000s, first as a post-doc and then as leader of the climate services team at the Hadley Centre. Carlo has led international projects on climate services, contributed as author to the last IPCC WG1 report and is an associated editor to the Journal of Climate Services.

Sonia Yeh

is a professor of transport and energy systems at Chalmers University of Technology, Sweden, and a co-director of the area of advanced energy. Her academic interests encompass energy economics, system modeling, and sustainable transportation. She has served as a Senior Editor for the *Energy Policy* Journal since 2018. She is on the advisory board of several journals, including *Joule*, *Progress in Energy*, and *Nature in Sustainable Mobility and Transport*. Dr. Yeh's scholarly contributions include her work on the Transport Chapter of the IPCC Sixth Assessment Report. She has been a member of the Swedish Government's Transport Analysis Scientific Council since 2024.

Bjarne Steffen

is Assistant Professor and the head of ETH Zurich's Climate Finance and Policy Group, an interdisciplinary research group concerned with the governance of the low-carbon energy transition. He is the principal investigator of the ERC Starting Grant project GREENFIN: Effective Green Financial Policies for the Low-Carbon Transition. Bjarne holds a Master's in economics from the University of Mannheim and a PhD in energy economics from the University of Duisburg-Essen. He formerly worked at the World Economic Forum and for many years in strategy consulting, focusing on energy and infrastructure industries.

Delavane Diaz

is a Principal Team Lead in the Energy Systems and Climate Analysis Group at EPRI where her research focuses on the implications of climate and energy policy on the electric sector, resiliency and risk management strategies, and the social cost of carbon. She returned to EPRI from pursuing her doctorate at Stanford University, where she worked as a research assistant for the Energy Modeling Forum. Her dissertation examined the representation of climate impacts, adaptation, and mitigation technology costs in integrated assessment models, with a focus on coastal vulnerability and sea level rise. Before joining EPRI, she served as an Air Force acquisitions officer, working on a space surveillance radar program.

Stelios Pesmajoglou

is the Manager of the Mitigation sub-division at the UNFCCC Secretariat that deals with mitigation ambition, nationally determined contributions (NDCs), long-term low emissions development strategies (LT-LEDs), sectoral approaches (including emissions from international aviation and maritime transport), and the assessment of response measures. Stelios has been working on climate change since the mid-1990s and has been involved with the negotiations on the Kyoto Protocol, the Paris Agreement and the ICAO Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

David McCollum

is a Distinguished R&D Staff in the Mobility and Energy Transitions Analysis (META) Group at Oak Ridge National Laboratory, and holds a Joint Faculty Appointment at the University of Tennessee's Baker School of Public Policy. David's research attempts to inform state, national and global energy and environmental issues on matters related to, among others, deep decarbonization, net-zero emissions pathways, energy-transport-climate policies, electric sector planning, end-use sector electrification (transport, buildings, industry), Sustainable Development Goals (including inter-dependencies), financing needs for the energy system transformation, and human dimensions of climate change.

Michael Taylor

Michael Taylor has 30 years' experience in energy modeling, the economic analysis of energy sector issues and energy policy development. He is responsible for IRENA's analysis of renewable technologies cost and performance and those that facilitate the energy transition. He is the author of IRENA's *Renewable Power Generation Costs* series and numerous other publications since 2012 at IRENA. He provides cost data and advice to IRENA's member states, industry, researchers, policy makers and others (incl. the World Bank, IEA, REN21, etc). Prior to IRENA Michael has worked for the New Zealand and UK governments, and at the IEA as one of the lead authors of the groundbreaking series *Energy Technology Perspectives: Scenarios and Strategies to 2050*.

GENERAL INFORMATION

Conference Venue

The 42nd Edition of the International Energy Workshop will be held at the Design Offices building in Bonn Neuer Kanzlerplatz.

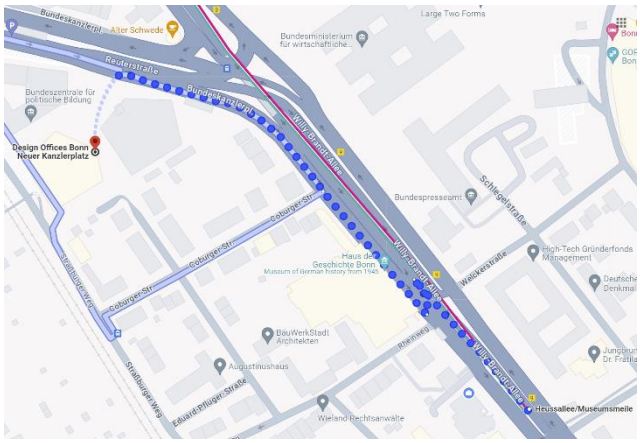
Address:
Design Offices
Neuer Bundeskanzlerplatz 2D
53113 Bonn
Germany

How to reach the venue:

From Bonn, take **tram #16 or #66** towards Bad Godesberg.

Alight at Hausallee/Museummeile tram station; exit at House of the History of the Federal Republic of Germany; Design office is located at the Neuer Kanzlerplatz; approximately 550 meters / 5 minutes' walk from the House of History Museum.

Below is the walking map:



Registration and Information Desk

The Registration and Information Desk will be open at the building entrance during these hours:

Wednesday, 26 June 8:15 – 17:00.
Thursday, 27 June 8:15 – 17:00.
Friday, 28 June 9:00 – 16:00.

If you have any questions, please feel free to visit the Registration and Information Desk, or contact the workshop secretariat:

Secretariat email: iew@irena.org

Ling Ling Federhen, lfederhen@irena.org, +491722966213 (Germany)

Participant Identification

All participants are required to wear the IEW 2024 badge at all
times.

Attendees with participant badges will have access to all plenary sessions, parallel sessions, welcome reception on Wednesday, social event on Thursday night, as well as the coffee breaks and lunches. Companion badges exclude any entry to technical session admission.

GENERAL INFORMATION (CONT'D)

Lunches and Coffee Breaks

Lunch and coffee will be served in the lobby area on the ground floor of the building. For the lunchtime seminars, participants are invited to bring their lunch into the Arena room.

Welcome Reception

26 June 2024, 7:00 p.m. – 8:00 p.m.

A welcome reception is scheduled at the Bonn Old Town Hall on the first day of the conference (Altes Rathaus, Markt 2, 53111 Bonn, Germany). Finger food and refreshments will be served.

Social Event

27 June 2024, 7:00 p.m. – 8:00 p.m.

IRENA will be hosting a social event on the second day of the conference at the Parkrestaurant RheinAue (Ludwig-Erhard-Allee 20, 53175 Bonn, Germany). Finger food and refreshments will be served.

Transportation to Bonn

Please note that participants will be responsible for organizing their own transportation to and from the venue.

The distance between Cologne-Bonn Airport (CGN) and Bonn city centre is approximately 25 km (25 minutes) and costs EUR 50-65 by taxi.

Alternatively, the Airport Express bus SB 60 operates every 30 minutes on weekdays between Bonn city centre and the airport, and every 30 or 60 minutes on Saturdays and Sundays. The bus journey to the airport takes 25-30 minutes. One-way tickets cost EUR 7.70.

From Frankfurt Airport (FFM), take the long-distance ICE train from Fernbahnhof Frankfurt Flughafen to Siegburg. Train duration will take 45 mins. From Siegburg, you take the tram 66 to Bonn city center, the tram ride will take around 25 mins.

Useful Information

Climate: June in Bonn is warm with temperatures averaging between 20-25 °C (68-77 °F). However, air conditioning can make it relatively chilly indoors, so it is advisable to dress accordingly.

Electrical Current: 220 volts

Currency: The local currency in Germany is Euro.
EUR 1 = USD 1.09

Time Zone: Central European Summer Time (UTC+2)

Telephone Use: We advise you to consult with your telephone operator to verify that your mobile phone device works in Bonn. Most major cell phone operators have full mobile and data service.

CONFERENCE FORMAT

Background and Structure

The 42nd edition of the IEW includes three plenary sessions and more than 130 presentations in 40 parallel sessions, focusing on a wide array of topics. In addition, two lunchtime seminars and one evening seminar will be organised during the three days. The ETSAP regular workshop will take place preceding the IEW on 24-25 June.

Instructions to Chairpersons

Each session will be assigned a chairperson. Every session has two to five papers, and each paper has a total time slot of 25 minutes. This includes a presentation of 20 minutes followed by 5 minutes for questions and discussion. The chairpersons are kindly requested to observe the start and closure time of each session, and to be strict on the time allocation as a way to give equal opportunity to all speakers.

All rooms are equipped with a projector and a laptop computer for PowerPoint presentations. A host will be assigned to each room to ensure that presentations are loaded and ready to run. The chairperson should arrive at least 5 minutes before the start of the session.

Instructions to Speakers in Parallel Sessions

Speakers have 20 minutes for the paper presentation, followed by 5 minutes of questions and discussion. Speakers are kindly requested to strictly adhere to the allocated time in consideration of other speakers and participants, and to maintain smooth running of the sessions.

All conference rooms will be equipped with a projector and computer for PowerPoint presentations. Each room will have a host to provide basic support. Speakers should arrive 5 minutes before the session begins and make contact with the host and the chair of the session.

We kindly request that your presentation be sent to the IEW@IRENA.ORG email no later than 21 June. This will ensure that time is not lost loading presentations during the sessions.

DAY 1 – WEDNESDAY, 26 JUNE 2024

Go Back to Programme Overview
8:15 – 9:00 **Registration & Coffee** | Location: Entrance/Lobby
9:00 – 9:30 **Opening Session** **Moderator and Introduction to the 42nd IEW:** Geoffrey Blanford (EPRI) **Opening remarks:** Mr. Francesco La Camera (IRENA) **Presentation:** Dr. Roland Roesch (IRENA) Location: Arena
9:30 – 12:00 **Plenary Session 1: Climate-Energy Modelling Linkage** **Moderator**: Massimo Tavoni (EIEE) Prof. Jim Skea (IPCC) (Virtual): *Importance of energy modelling in the IPCC process* Dr. Carlo Buontempo (ECMWF): *Presentation Title TBD* Dr. Delavane Diaz (EPRI): *Presentation Title TBD* Dr. Stelios Pesmajoglou (UNFCCC): *Presentation Title TBD* Location: Arena
12:00 – 13:15 **Lunch & Lunchtime Seminar** **IRENA LTES Event: Participatory processes for national long-term energy scenario development** Location: Lobby & Arena
13:20 – 15:00 **Parallel Session 1:** Addressing Flexibility in Energy Systems | Energy Access & Poverty | Infrastructure for the Energy Transition | A Spatial Perspective on Energy Modelling | Transition Pathways – Case Studies I
15:00 – 15:25 **Coffee Break |** Location: Lobby
15:30 – 17:10 **Parallel Session 2:** Role of Bioenergy | Socio-Economic Impacts | Decarbonizing Steel Industry | Incorporating Climate Impacts in Energy Modelling | Energy Transition in the Global South
17:15 – 18:15 **ECMWF Event: Environmental data to support energy modelling** Location: Arena
19:30 – 20:30 **Welcome Reception** Location: Bonn Old Town Hall (Altes Rathaus)

Parallel Session 1: 13:20 – 15:00 - WEDNESDAY

Parallel A: Room TBD	Parallel B: Room TBD	Parallel C: Room TBD	Parallel D: Room TBD	Parallel E: Room TBD
Addressing Flexibility in Energy Systems Chair: TBD	**Energy Access & Poverty** Chair: TBD	**Infrastructure for the Energy Transition** Chair: TBD	**A spatial perspective on Energy Modelling** Chair: TBD	**Transition pathways - Case studies I** Chair: TBD
Modelling system flexibility in the context of energy transition CHRISTOPH KOST (Fraunhofer ISE, Germany)	Comprehensive Energy Solution Planning (CESP) framework: an evidence-based approach for sustainable energy access projects in developing countries RICCARDO MEREU (Politecnico di Milano, Italy)	The Emissions Impact of Grid-Based Hydrogen Production in India MALINI NAMBIAR (Princeton University, US)	Decarbonization of cement industry in China: a spatially explicit analysis SHIYAN CHANG (Tsinghua University, China)	Evaluation of sub-sectorial GHGs emissions abatement costs through bottom-up energy system modeling: an Italian case study MATTEO NICOLI (Politecnico di Torino, Italy)
Flexible resource planning for high-renewable energy system using a multi-model method YA-HSUAN CHIU (Industrial Technology Research Institute, Taiwan)	Does energy poverty influence decarbonisation through electrification of the heating sector? MERCEDES BURGUILLO (CSIC, Spain)	Accelerating transmission capacity expansion by using advanced conductors in existing right-of-way EMILIA CHOJKIEWICZ (UC Berkeley, US)	Spatial modeling of the decarbonization of long-distance road freight in the Scandinavian-Mediterranean corridor ANTONIA GOLAB (TU Wien, Austria)	Evaluating Bolivia's Nationally Determined Contribution using a power system model with hydro cascade integration ALIZON HUALLPARA (Universidad Mayor de San Simón, Bolivia)
What is the value of EV flexibility when different smart charging strategies are adopted? FRANCESCO SANVITO (TU Delft, Netherlands)	Closing electricity access gap in West Africa – Role of battery storage and mini-grids THIERRY ODOU (IRENA, Germany)	Integrated energy modelling and multi-value transmission planning to assess interprovincial transmission benefits in Canada MADELEINE MCPHERSON (University of Victoria, Canada)	Stuck in the energy transition: a spatial analysis of transport poverty in the Netherlands. FRANCESCO DALLA LONGA (TNO, Netherlands)	Reducing emissions through electricity purchase conditions: A Danish case study LISSY LANGER (DTU, Denmark)
Study on residential load to maximise demand side management ALISON HUGHES (University of Cape Town, South Africa)	How have the post-pandemic recovery and the war in Ukraine affected energy poverty? PABLO DEL RIO (CSIC, Spain)	Modelling African Power Systems: Storage and Transmission for Renewable Energy Integration NICOLO' STEVANATO (Politecnico di Milano, Italy)	Unraveling spatial aspects in the energy system modeling, a systematic review KOMAR JAVANMARDI (Utrecht University, Netherlands)	Five-dimensional assessment of China's centralized and distributed photovoltaic potential: From solar irradiation to CO2 mitigation TIANTIAN WANG (Renmin University, China)

Parallel Session 2: 15:30 – 17:10 - WEDNESDAY

Parallel A: Room TBD	Parallel B: Room TBD	Parallel C: Room TBD	Parallel D: Room TBD	Parallel E: Room TBD
Role of Bioenergy Chair: TBD	**Socio-Economic Impacts of the Energy Transition** Chair: TBD	**Decarbonizing Steel Industry** Chair: TBD	**Incorporating Climate Impacts in Energy Modelling** Chair: TBD	**Energy Transition in the Global South** Chair: TBD
The Role and Implications of BECCS in Ireland's Energy System Decarbonisation Transition WEIPENG XIE (UC Cork, Ireland)	Fit-For-55 and beyond: European power system transition and its social impacts ALICE DI BELLA (Politecnico di Milano, Italy)	Decarbonizing Steel Production: Evaluating DRI Plant Strategies in Diverse Economic Environments SIMON KAMMERER (TU Dortmund, Germany)	Representative and Hazardous Future Climate Event Selection for Power System Modeling SHENG LUN CAO (Carnegie Mellon University, US)	Quantifying the local economic supply chain impacts of renewable energy investment in Kenya CANDISE HENRY (RTI International, US)
Diversity of biomass usage pathways to achieve emissions targets in the European energy system MARKUS MILLINGER (Chalmers University, Sweden)	Passenger transport decarbonisation under equity and sustainability considerations DIRK-JAN VAN DE VEN (Basque Centre for Climate Change, Spain)	The impact of decarbonising the iron and steel industry on European power and hydrogen systems DERCK KOOLEN (European Commission, Belgium)	Multi-channel, climate and non-climate damages in an integrated assessment model KOJI TOKIMATSU (Tokyo Institute of Technology, Japan)	Reaching Zero Carbon Emissions: Is there an Affordable Way for Developing Countries? THUY DOAN (Fulbright University, Vietnam)
The controversial role of energy crops in the future German energy system: The trade offs of a phase-out and allocation priorities of the remaining biomass residues HARRY SCHINDLER (Helmholtz Centre for Environmental Research, Germany)	The impacts of phasing out coal plants on local labor markets: Evidence from the creation of a coal capacity reserve in Germany VAIOS TRIANTAFYLLOU (Cornell University, US)	Operational Uncertainty in Blast Furnace CO2 Emissions ELINA HOFFMANN (Carnegie Mellon University, US)	Exploring the Role of Structural Transformation in Addressing Climate Change JOHANNES KOCH (PIK, Germany)	Mobility scenarios for the Global South: Developing an evidence-based framework for a large-scale IAM ANKITA GAUR (UC Cork, Ireland)
An Assessment of the Renewable Natural Gas (RNG) Economic Supply in the United States and Its Potential Contribution to a Clean Energy Transition JEFFREY PETRUSA (RTI International, US)	Employment creation potential from European industrial hydrogen demand: insights for just transition planning KATE LONERGAN (ETH Zurich, Switzerland)	Assessing the Economic Viability of Applying Green Hydrogen for Decarbonization in the Brazilian Steel Industry SABRINA MACEDO (University of Sao Paulo, Brazil)	High-ambition climate action in all sectors can achieve 65% greenhouse gas emissions reduction in the United States by 2035 ADRIANA BRYANT (University of Maryland, US)	Integrated energy access and agricultural supply chain planning: A many-objective optimisation of a rural energy, transport and food system in Uganda across 7 different Sustainable Development Goals PHILIPP TROTTER (University of Oxford, England)

DAY 2 – THURSDAY, 27 JUNE 2024

Go Back to Programme Overview
8:15 – 9:00 **Registration & Coffee** Location: Entrance/Lobby
9:00 – 11:30 **Plenary Session 2: Policy-Energy Modelling Linkage** **Moderator**: Dr. Ute Collier (IRENA) Dr. Sonia Yeh (Chalmers): *Presentation Title TBD* Prof. Bjarne Steffen (ETH): *Presentation Title TBD* TBD (TBD): *Presentation Title TBD* Location: Arena
11:35 – 12:35 **Parallel Session 3:** Hydrogen Trade | Land Availability | Towards Low Carbon Transport | Modelling Methodologies I | Climate Policy I
12:35 – 13:50 **Lunch & Lunchtime Seminar** **ETSAP Event – Book launch "Aligning the energy transition with SDGs"** Location: Lobby & Arena
13:55 – 15:35 **Parallel Session 4:** Sector Coupling | Energy Transition Economics | Linking Mobility & Electricity Sectors | Addressing Uncertainty in Scenarios | Climate Policy II
15:35 – 16:00 **Coffee Break |** Location: Lobby
16:05 – 17:20 **Parallel Session 5:** Technology Change | Critical Materials | Hard-to-abate industrial emissions | Transition pathways - Case studies II | Energy Policy
17:25 – 18:40 **Parallel Session 6:** Hydropower | Cost of Hydrogen | Power-to-X | Carbon Dioxide Removal I Energy Policy II
19:15 – 21:00 **Dinner hosted by IRENA** Location: Parkrestaurant RheinAue

Parallel Session 3: 11:35 – 12:35 - THURSDAY

Parallel A: Room TBD	Parallel B: Room TBD	Parallel C: Room TBD	Parallel D: Room TBD	Parallel E: Room TBD
Hydrogen Trade Chair: TBD	**Land Availability** Chair: TBD	**Towards Low Carbon Transport** Chair: TBD	**Advancing Modelling Methodologies I** Chair: TBD	**Climate Policy Mechanisms I** Chair: TBD
Feasibility of hydrogen trade between Europe and North Africa Victor Guillot Mines Paris, France	The land squeeze: A review of how Integrated Assessment Models capture dynamics between energy food and land systems DOORGESHWAREE JAGGESHAR (UC Cork, Ireland)	Role of biofuels, electro-fuels, and blue fuels in the energy transition of the shipping sector. FAYAS MALIK KANCHIRALLA (Chalmers University, Sweden)	Inter-annual variations in energy systems modeling of future energy systems SIMON ÖBERG (Chalmers University, Sweden)	Co-benefits of the Irish carbon tax and the European Emissions Trading System on outdoor air pollution in Ireland CAGACAN DEGER (ESRI, Ireland)
Implications of Hydrogen and Ammonia trade between Europe and MENA Amir Fattahi TNO, Netherlands	Limited land availability complicates infrastructure development for India's net-zero energy transition GANESH HEGDE (Princeton University, US)	Driving energy and emissions: the built environment influence on car efficiency CHRIS TEN DAM (Utrecht University, Netherlands)	Changing patterns in a future green steel sector: technology, circularity, and trade JAKOB DUERRWAECHTER (PIK, Germany)	Installation, Production and Global Trade of Clean Energy Technologies: A Macroeconomic Modelling Approach to Assess the Risks of Low Carbon Leakage LUTZ CHRISTIAN (GWS Osnabrück, Germany)

Parallel Session 4: 13:55 – 15:35 - THURSDAY

Parallel A: Room TBD	Parallel B: Room TBD	Parallel C: Room TBD	Parallel D: Room TBD	Parallel E: Room TBD
Sector Coupling Chair: TBD	**Energy Transition Economics** Chair: TBD	**Linking Mobility & Electricity Sectors** Chair: TBD	**Addressing Uncertainty in Climate & Energy Scenarios** Chair: TBD	**Climate Policy Mechanisms II** Chair: TBD
Electricity- and Hydrogen-Driven Energy System Sector-Coupling in Net-Zero CO2 Emission Pathways BOB VAN DER ZWAAN (TNO, Netherlands)	Capital Adjustment Costs and the Low-Carbon Transition: How Cost-Effective are Net Zero Commitments? ANNA-MARIA GOETH (World Bank, Germany)	Modelling the Grid Impacts of Electric Vehicle Uptake in British Columbia KAMARIA KULING (Simon Fraser University, Canada)	Beyond Delayed Transition: imperfect foresight puts climate targets out of reach BRIERA THIBAULT (CIRED, Belgium)	Modelling the economy-wide effects of unilateral CO2 pricing under different revenue recycling schemes in Austria - Potentials for a triple dividend CLAUDIA KETTNER (WIFO, Austria)
Sector-coupled, spatially resolved modelling for assessing energy transition pathways in German federal states HANNAH NOLTE (Fraunhofer ISE, Germany)	Fair Cost Allocation in Cross-Border Power Transmission: A Cooperative Game Theory Approach for Bangladesh –Bhutan-India-Nepal Subregion PADAM ADHIKARI (Tribhuvan University, Nepal)	Electric carsharing: impacts on a future renewable energy-dominated power system ADELINE GUÉRET (DIW Berlin, Germany)	Strengthening energy system resilience planning under uncertainty using optimization models and regret MASHAEL YAZDANIE (EMPA, Switzerland)	Empirical Study of the Prefectural Emission Trading System in Japan KAITOH HIDANO (NUS, Singapore)
Green Energy Transition: A Co-Optimized Approach for Integrated Electricity and Hydrogen Planning LARISSA NOGUEIRA (IRENA, Germany)	Global energy investments and supply chain implications of reaching a 1.5 °C target KIMON KERAMIDAS (European Commission, Belgium)	Interaction between Electricity and Mobility Sectors for Decarbonizing the Indian Energy System TARUN SHARMA (IIT, India)	What are we likely on track for? The use of Monte Carlo Analysis in an integrated global energy system and temperature modeling framework. MAHMOUD MOBIR (Rhodium Group, US)	Carbon pricing or installation ban - how to decarbonise space heating in the EU? ROBIN HASSE (PIK, Germany)
Freight transport decarbonisation crossroads: Cross-sectoral implications of electrification, biofuel and e-fuel strategies JONAS FORSBERG (Luleå University, Sweden)	A review of macroeconomic modelling tools for analysing industrial transformation AHMED ELBERRY (TNO, Netherlands)	Impacts of EV charging strategies on low-voltage grids THERESE LUNDBLAD (Chalmers University, Sweden)	Probabilities of reaching required capacities of granular energy technologies in European countries NIK ZIELONKA (University of Geneva, Switzerland)	Trade War to Cooperation: Scrutinizing China's Strategies to the EU Carbon Border Adjustment Mechanism SIGIT PERDANA (EPFL, Switzerland)

Parallel Session 5: 15:55 – 17:10 - THURSDAY

Parallel A: Room TBD	Parallel B: Room TBD	Parallel C: Room TBD	Parallel D: Room TBD	Parallel E: Room TBD
Technology Change Chair: TBD	**Critical Materials** Chair: TBD	**Hard-to-abate industrial emissions** Chair: TBD	**Transition pathways - Case studies II** Chair: TBD	**Energy Policy I** Chair: TBD
Demand-side mitigation potentials: An integrated modeling perspective on mobility and technological shifts in the transport sector JARUSCH MUESSEL (PIK, Germany)	Assessing the critical materials requirements for China's solar photovoltaics towards 2060 with consideration of uncertainties WANG YANHUA (Renmin University, China)	Learning curves for low-carbon olefins production technologies DANIELA TORIBIO RAMIREZ (University of Amsterdam, Netherlands)	Impacts of the Transition in the Irish Economy through Electrification AYKUT MERT YAKUT (ESRI, Ireland)	How do we successfully transform energy analysis into Government policy? BRIAN O GALLACHOIR (UC Cork, Ireland)
Emerging clean technologies: policy-driven cost reductions, implications and perspectives MOHAMED ATOUIFE (Princeton University, US)	Critical Minerals, Electric Goods, and the Global Energy Transition EMILSON SILVA (University of Auckland, New Zealand)	Mapping the techno-economic landscape for the hard-to-electrify sectors CLARA BACHORZ (PIK, Germany)	Planning Long-Term GHG Mitigation Pathways in GCC Countries: The Case of Qatar PANKAJ KUMAR (Environment and Energy Research Institute, Qatar)	Heterogeneous Effects of Government Energy Assistance Programs: Covid-19 Lockdowns in the Republic of Georgia ANNA ALBERINI (University of Maryland, US)
Assessing the implications of hydrogen blending on the European energy system towards 2050 KONSTANTIN LÖFFLER (TU Berlin, Germany)	Analysis of critical mineral demand under different scenarios for net-zero emissions AYAMI HAYASHI (RITE, Japan)	The Cooperative Emission Reduction Efforts of Japan, South Korea and China: The Evaluation of 2030 NDC Targets and Impacts on Chemical Sector DAHYUN KANG (RITE, Japan)	Trade-offs between direct and indirect electrification of German transport sector defossilization pathways NIKLAS WULFF (DLR, Germany)	Modeling of Policy Mixes for an Effective, Just, and Public Budget Conscious Household Energy Transition in Switzerland ALEXANDRE TORNÉ (University of Geneva, Switzerland)

Parallel Session 6: 17:25 – 18:40 - THURSDAY

Parallel A: Room TBD	Parallel B: Room TBD	Parallel C: Room TBD	Parallel D: Room TBD	Parallel E: Room TBD
Hydropower for the Energy Transition Chair: TBD	**On the cost of Hydrogen** Chair: TBD	**Power-to-X** Chair: TBD	**Carbon Dioxide Removal** Chair: TBD	**Energy Policy II** Chair: TBD
The role of hydropower in renewable-rich energy systems under climate change ENRICO ANTONINI (CMCC Foundation, Italy)	Green H2 is Expensive but Important for India's Energy Transition UTKARSH PATEL PATEL (CSEP Research Foundation, India)	Offshore power and hydrogen networks for Europe's North Sea PHILIPP GLAUM (TU Berlin, Germany)	Assessing the impact of CDR on the EU ETS SEBASTIAN OSORIO (PIK, Germany)	Assessing the Willingness to Adopt E-motorbikes and Government Policy Interventions to Enhance Uptake in Kenya ALOIS MBUTURA (EED Advisory, Ethiopia)
Coupling a power system model with a hydrological model improves the representation of hydropower flexibility LAURE BARATGIN (CIRED, Belgium)	The Economic Effect of Hydrogen Production Development in Saudi Arabia using Input Output Analysis MUHAMMAD AKIMAYA (King Fahd University, Saudi Arabia)	Will hydrogen and synthetic fuels energize our future? Their role in Europe's climate-neutral energy system and power system dynamics WOUTER NIJS (University of Groningen, Netherlands)	Future CO2 Supply and Demand for Carbon Capture and Utilization (CCU) and the potential role of DAC TOBIAS BUCHMANN (ZSW, Germany)	Energy Transitions Post-Russia-Ukraine War: Challenges and Policy Implications in Germany and Italy YEONG JAE KIM (KDI, South Korea)
Flexible Hydropower for Enhanced Wind Integration TODD LEVIN (Argonne National Laboratory, US)	On the cost competitiveness of blue and green hydrogen FALKO UECKERDT (PIK, Germany)	Technological representation of Power to Hydrogen in long-term planning ALEXANDER HOOGSTEYN (KU Leuven, Belgium)	Provincial-Level Assessment of Carbon Dioxide Removal to Meet China's 2060 Carbon Neutrality Goal HANWOONG KIM (Pacific Northwest National Laboratory, US)	The interaction effect of decarbonisation policy measures: quantifying the impact on energy and CO2 emissions FIONN ROGAN (UC Cork, Ireland)

DAY 3 – FRIDAY, 28 JUNE 2024

Go Back to Programme Overview
8:15 – 9:00 **Coffee** Location: Lobby
9:00 – 11:30 **Plenary Session 3: Data Advances in Energy Modelling** **Moderator**: Bob van der Zwaan (TNO) Mr. Michael Taylor (IRENA): *Presentation Title TBD* Dr. Keigo Akimoto (RITE): *Presentation Title TBD* Dr. David McCollum (Oak Ridge National Laboratory): *Presentation Title TBD* Location: Arena
11:35 – 13:05 **Parallel Session 7:** Hydrogen Economy | Energy & Environmental Justice I | Storage for the Energy Transition | Circular Economy | Roads to Net Zero I
13:05 – 14:20 **Lunch & Lunchtime Seminar** **IRENA team poster session** Location: Lobby
14:25 – 16:35 **Parallel Session 8:** Prospects for VRE | Energy & Environmental Justice II | Decarbonizing the Residential Sector | Modelling Methodologies II | Roads to Net-Zero II
16:35 – 17:00 **Farewell Coffee |** Location: Lobby

Parallel Session 7: 11:35 – 13:05 - FRIDAY

Parallel A: Room TBD	Parallel B: Room TBD	Parallel C: Room TBD	Parallel D: Room TBD	Parallel E: Room TBD
Strategies to Advance the Hydrogen Economy Chair: TBD	**Energy & Environmental Justice I** Chair: TBD	**Storage for the Energy Transition** Chair: TBD	**Circular Economy in Energy Models** Chair: TBD	**Roads to Net Zero I** Chair: TBD
One Does Not Simply Walk into the Hydrogen Economy: Charting New Zealand's Course to Net-Zero REBECCA PEER (University of Canterbury, New Zealand)	Towards closing the fairness gap: What is the highest possible ambition for the European Union's pathway towards greenhouse gas neutrality? GUNNAR LUDERER (PIK, Germany)	Effects of Storage Participation on Wholesale Electricity Markets ZHENHUA ZHANG (University of San Diego, US)	A Critical Review of the Integration of Technology Adoption and Energy Consumption Behavior in Energy System Models HANNAH GALSTER (TNO, Netherlands)	The role of indirect emissions in capacity investment decisions for a net-zero European power system REBEKA BÉRES (University of Groningen, Netherlands)
On the Transition towards the Clean Hydrogen Economy in Colombia: an Energy System Model to Inform a National Hydrogen Strategy CESAR BARRAZA-BOTET (Universidad de La Sabana, Colombia)	Air Quality Emissions of Economy-wide Deep Decarbonization: US-REGEN Scenarios QIANRU ZHU (EPRI, US)	Ultra-long-duration energy storage anywhere: methanol with carbon cycling TOM BROWN (TU Berlin, Germany)	The Combined Economic Impacts of Decarbonization and Circular Economy Scenarios in Austria INA MEYER (WIFO, Austria)	From net-zero to gross-zero:Transformation to a fossil-free European energy system by 2050 FELIX SCHREYER (PIK, Germany)
Modeling Demand for 24/7 Carbon-Free Electricity: The Case of the 45V Clean Hydrogen Production Tax Credit GEOFFREY BLANFORD (EPRI, US)	Unequal Income Effects of Home Insulation across Heterogeneous Households: A Microsimulation Analysis for the Netherlands PETER MULDER (TNO, Netherlands)			Energy System Transition for Climate Neutrality: A Country-Level Analysis Using Cumulative Carbon Budgets HANNAH DALY (UC Cork, Ireland)

Parallel Session 8: 14:25 – 16:35 - FRIDAY

Parallel A: Room TBD	Parallel B: Room TBD	Parallel C: Room TBD	Parallel D: Room TBD	Parallel E: Room TBD
Prospects for VRE Chair: TBD	**Energy & Environmental Justice II** Chair: TBD	**Decarbonizing the Residential Sector** Chair: TBD	**Advancing Modelling Methodologies II** Chair: TBD	**Roads to Net Zero II** Chair: TBD
Potential transformation and impacts of solar PV global supply chain CAN CUI (ETH Zurich, Switzerland)	Environmental Justice in the Energy Transition: Challenges in Modeling Capacity Expansion and Air Pollutant Dispersion for Equitable Decarbonization Pathways JORDAN FRENCH (Texas University, US)	From Retrofitting to Renewables: Navigating Energy Transition Pathways for European Residential Space Heating STEVEN SERGIJ SALIM (TNO, Netherlands)	Insights on EU2040 targets - a model intercomparison exercise of EU Climate Neutrality Pathways ROBERT PIETZCKER (PIK, Germany)	Global energy investments and supply chain implications of reaching a 1.5 °C target KIMON KERAMIDAS (European Commission, Belgium)
Multidimensional Analysis of Interlinked Systems of 100% Renewable Energy in Cuba within the Framework of Sustainable Development ANAELY SAUNDERS (University of Turku, Finland)	Macroeconomic and distributional impacts of US electricity decarbonization pathways MAXWELL BROWN (NREL, US)	Is France on track for decarbonizing its residential sector? Assessing recent policy changes and the way forward LOUIS-GAETAN GIRAUDET (CIRED, Belgium)	Multi-Agent Reinforcement Learning for Assessment and Design of Decarbonized Electricity Markets JAVIER JOSE GONZALEZ RUIZ (Politecnico di Milano, Italy)	Productivity scenarios for the Net Zero transition EMILIEN RAVIGNÉ (University of Oxford, England)
Global growth of wind and solar power in light of historical national trajectories AVI JAKHMOLA (Chalmers University, Sweden)	Welfare and inequality impacts of carbon pricing and compensation schemes on different types of fuel poverty VERONIKA KULMER (University of Graz, Austria)	How much do connected households in Sierra Leone value enhanced electricity service reliability? RAFIA ZAMAN (Duke University, US)	Use of emulators for enhancing insights from long-term projections SARA GIAROLA (University of Milan, Italy)	Are the options for European net-zero energy system really diversified? Considering household income level, size of national economy, and distributional justice MEIJUN CHEN (TU Delft, NL)
Future global green value chains: estimating the renewables pull and understanding its impact on industrial relocation PHILIPP VERPOORT (PIK, Germany)	Income inequality and climate policy polarization WALDEMAR MARZ (IFO Institute, Germany)	Decarbonizing the EU Residential Sector: A Modelling Assessment of Current Policies and Future Strategies. LUCAS VIVIER (CIRED, Belgium)	Advancing participatory energy systems modelling CONNOR MCGOOKIN (Simon Fraser University, Canada)	The potential role of different flexibility options to reach net zero emissions ADRIANA MARCUCCI (ETH Zurich, Switzerland)
Assessing the One Sun One World One Grid plan: Could global smoothing of solar power production be cost-effective? LINA REICHENBERG (Chalmers University, Sweden)	Do sufficiency consumption changes drive emissions down ? A production network approach CÉLIA ESCRIBE (CIRED, Belgium)	Regional analysis of building decarbonization scenarios for a net-zero U.S. energy economy by 2050 ANAHI MOLAR-CRUZ (EPRI, US)	Bidirectional coupling of a long-term integrated assessment model REMIND v3.0.0 with an hourly power sector model DIETER v1.0.2 CHEN GONG (PIK, Germany)	Feasibility of peak temperature targets in light of institutional constraints CHRISTOPH BERTRAM (University of Maryland, US)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