Tagungsband

21. KLIMATAG

Clash of Cultures?
Klimaforschung trifft Industrie!

12. bis 13. April 2021, Online

Veranstalter

Climate Change Centre AUSTRIA

Ort
Online Abhaltung via Zoom-Konferenz
Finden Sie bitte alle Details auch direkt unter
www.ccca.ac.at/klimatag.

Posterprämierung
Der Posterpreis wird auf Basis der Bewertungen durch die Teilnehmer_innen des Klimatags von einer Jury vergeben.
Kriterien für den Posterpreis sind:

- Das Poster ist optisch ansprechend aufbereitet und die Botschaft klar verständlich.
- Der Inhalt des Posters ist von hoher wissenschaftlicher Qualität und innovativ.
- Der Inhalt des Posters hat hohe wissenschaftliche und gesellschaftliche Relevanz.

Die 3 Poster mit den meisten Stimmen erhalten einen Preis: der 1. Platz erhält ein Preisgeld von 500 Euro, der 2. und 3. Platz erhalten jeweils ein Buch. Jedes Poster sollte bei der Preisverleihung am 13. April 2021 durch zumindest eine_n Autor_in bzw. eine Stellvertretung vertreten sein. Die Abstimmung zum CCCA Posterpreis ist während der Tagung sowie einige Tage davor möglich.

CCCA-Nachwuchspreis
Am 21. Klimatag wird der CCCA-Nachwuchspreis für die Jahre 2020 und 2021 verliehen. Das CCCA möchte mit dem Nachwuchspreis die wissenschaftlichen Leistungen von Jungforscher_innen ins Rampenlicht rücken und honorieren. Die Einreichung erfolgt über eine wissenschaftliche Publikation, die von renommierten Wissenschafter_innen bewertet wird. Jede_r Einreicher_in erhält ein schriftliches Feedback zum eingereichten Paper. Das beste Paper wird am Klimatag mit einem Preis in der Höhe von 1.000 Euro prämiert.

Organisationskomitee
Mitwirkende Personen von Seiten der Montanuniversität Leoben (MUL):
Hanno Bertignoll
Anna Meyer
Omar Szabo
Sabrina Frühauf

Mitwirkende Personen von Seiten des Klima- und Energiefonds:
Ingmar Höbarth (Geschäftsführung)
Gernot Wörther (Projektmanager und Controller)
Hartmut Graßl (ACRP Steering Committee)

Mitwirkende Personen von Seiten der Kommunalkredit:
Biljana Spasojevic (Abteilung Klima und Umwelt)

Mitwirkende Personen von Seiten des Projekts UniNEtZ:
Ulrike Payerhofer (Uni AK)
Ingeborg Schwarzl (SDG13)

Gesamtkoordination & Projektmanagement
CCCA-Geschäftsstelle:
Claudia Michl, Alexandra Göd, Lea Pamperl, Lisa Waldschütz, Ingeborg Schwarzl

CCCA-Servicezentrum:
Heide Spitzer, Katrin Brugger, Angelika Wolf, Martha Stangl

Programmkomitee
Herbert Formayer (BOKU)
Katharina Gugerell (MUL)
Marc Olefs (ZAMG)
Alexander Passer (TU Graz)
Anke Schaffartzik (BOKU)
Eva Maria Stadler (Uni AK)

Impressum:
Verantwortlich für den Inhalt:
Programm- & Organisationskomitee
Layout: Sabine Tschürtz
Tagungshomepage: Igor Skoric
Die Abstracts wurden aus der Datenbank als pdfs übernommen (Stand per 17.03.2021).

April 2021

Inhaltsverzeichnis

ACRP21_11 Securing Austria's Electricity Supply in times of Climate Change (SECURES)

Gustav Resch[1], **Franziska Schöniger**[1], Demet Suna[2], Gerhard Totschnig[2], Nicolas Pardo-Garcia[2], Herbert Formayer[3], Barbara König[3]

1 Technische Universität Wien, Energy Economics Group (EEG)
2 Austrian Institute of Technology (AIT)
3 University of Natural Resources and Life Sciences, Vienna (BOKU)

Beitragsart: Beitrag für ACRP-Session
Förderprogramme: ACRP, klima_und_energiefonds
Projektakronym: SECURES
Call: ACRP 12th Call
Laufzeit: 09 2020 - 08 2022
Kontakt: schoeniger@eeg.tuwien.ac.at

Themenstellung / Topic

The transition of Austria's electricity system towards a safe and sustainable future in times of climate change brings a broad range of challenges and opportunities into the policy debate where timely decisions on the way forward are of key relevance. On the one hand, energy demand in general and especially electricity demand will undergo significant changes through new demand patterns impacted by climate change and increased sector coupling. On the other hand, the supply side of the system has to undergo a major transformation process. Austria's electricity sector has to comply with ambitious decarbonisation targets, for example concerning the domestic expansion of renewable energy sources (RES) where the Austrian government aims for generating renewable electricity by 2030 to the extent that the national total electricity consumption is fully covered (at a yearly balance) – cf. the Austrian Climate and Energy Strategy (#Mission2030) and the National Energy and Climate Plan (NECP). Austria's electricity sector will consequently have to deal with increasing flexibility needs because of high shares of non-dispatchable renewable energy sources. Moreover, electricity generation patterns of hydro, wind, solar PV as well as thermal power plants will be increasingly affected by changing weather conditions caused by ongoing climate change in the future. The overarching goal of SECURES is to provide targeted support to Austrian policy makers by taking a closer look at the challenges and opportunities arising for Austria's electricity system in future years, acting as a safeguard for securing a reliable, sustainable and cost-efficient electricity supply in times of climate change. SECURES enables Austrian policy makers and stakeholders to overcome and solve conflicts in policy targets for security of energy supply, the need for decarbonisation and the consequences for the Austrian economy, all increasingly affected by impacts arising from climate change.

Methode / Method

The work within SECURES rests on three methodological pillars: The first one is a thorough analysis of changing patterns in weather, electricity demand and supply driven by climate change and the required decarbonisation. Here, we analyse changing patterns in weather conditions that can be expected in times of climate change in Europe. This serves for deriving key parameters that determine the potential and operational conditions of the future power plant fleet (incl. temperature, wind speed, precipitation and corresponding hydro flows) in a timely and geographically high resolution. Apart from changing supply patterns driven by climate change, we analyse expected developments and changes in electricity demand,

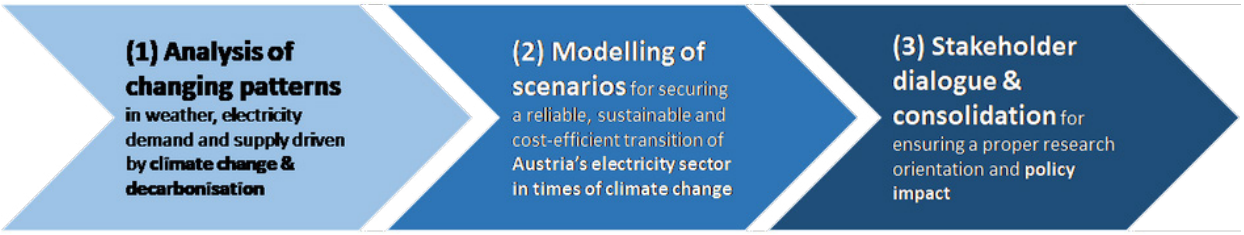

Fig.: Work structure - the three methodological pillars of SECURES

driven by climate change & decarbonisation. The second pillar is the modelling and the corresponding analysis of prospective scenarios. Thus, building on the assessment of changing patterns we undertake a model-based analysis of Austria's future electricity sector. The basket of scenarios incorporates all identified key options on both supply and demand of electricity including the relevant sectors like electric cooling & heating, electric transport, and decarbonisation of the industry: For the supply side, we consequently assess distinct technology portfolios and supply patterns (reflecting climate impacts) in line with (2030 and beyond) policy targets. Concerning demand, we build on the detailed analysis of future demand trends, reflecting decarbonization needs and climate change impacts. Since the overall assessment focuses on supply security, assessed scenarios will incorporate the identified changes in weather conditions, and we will take a closer look at extreme circumstances (i.e. expected droughts, floods, dark doldrums). The third pillar concerns our way to enhance the decision-making process, facilitating a sound and transparent stakeholder dialogue and the provision of targeted support for Austria's policy makers. Thanks to the being established open model and database platform we will then also openly share our outcomes and assumptions, enhancing stakeholder feedback and stipulating the public discourse.

Ergebnisse / Results

We aim for identifying scenarios that allow for securing a reliable, sustainable and cost-efficient transition of Austria's electricity sector to cope well with the expected changes. Since SECURES started in September 2020, there are no results at the current status of the project. There are three main activities planned for the first part of the project where draft results are expected to be available during the first half of 2021: the analysis of sector coupling (e-cooling, e-heating, e-transport, e-industry) on the electricity demand in future years, of changing weather patterns in times of climate change, and of state-of-the-art methods for assessing supply security assessments. An expected result is the summary of current and future expected techno-economic characteristics of flexibility options and the identification of most promising methodologies and useful indicators for the subsequent analysis of the most critical system points for Austria. This includes e.g. increased electricity demand through cooling needs because of rising temperatures, through heat pumps driven by the decarbonisation of the heating system, and through power-to-X applications like hydrogen as a reaction to flexibility needs in the electricity system.