

EMP-E 2020: Modelling Climate Neutrality for the European Green Deal Programme



The fourth conference of the Energy Modelling Platform for Europe (EMP-E) will take place on 6th– 8th October 2020 and will be hosted by the European Commission DG Research & Innovation in Brussels. The conference is put together in co-operation with the H2020 Energy Modelling Group, made up of eight Horizon 2020 projects.

The EMP-E brings together scientists and policy makers working on current energy modelling and energy policy issues, looking at the current and future opportunities for change. This annual conference seeks to bridge the gap between scientific modellers and policy makers at all levels, with the help of European Commission representatives. To reach beyond local, national and regional policymakers, and engage with the widest possible range of stakeholders involved in the EU energy system, modelling and policy insights developed during the conference will be opened up to a peer review process and compiled into an informative report.

Tuesday 6th October		
09:30 - 11:00	Opening - Plenary 1 - Impacts of COVID-19 on the energy system - What are the consequences for future energy modelling?	
11:15 - 12:15	Plenary 2 - Climate Neutral Pathways, scenarios and storylines: Useful lessons learned and strategies for the European Green Deal	
12:15 - 13:30	Lunch Break	
13:30 - 15:00	Focus Group 1 - Climate Neutrality: energy modelling, weather and climate	Focus Group 2 - Circularity and use of raw materials



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Wednesday 7th October 2020		
10:00 – 11:00	Plenary 3 – Socio and economic impacts of the transition	
11:15 – 12:15	Plenary 4 – Sector Integration – Decarbonisation through multi-energy carrier integration	
12:15 – 13:30	Lunch Break	
13:30 – 15:00	Focus Group 3 – Consumer and Citizen Engagement	Focus Group 4 – Smart cities, smart grids and digitalisation: modelling insights and lessons learned

Thursday 8th October		
10:00 - 11:00	Focus Group 5 - Infrastructure for integrating open-source models across spatial and sectoral scales to facilitate open science and transparency	
11:15 - 12:15	Focus Group 6 - How can energy modelling tools from H2020 projects contribute to National Energy and Climate Plans?	
12:15 - 13:30	Lunch Break	
13:30 - 15:00	Focus Group 7 - Transformation of the Energy system: centralisation vs further decentralisation	Focus Group 8 - Uncertainty and modelling: lessons learned and gaps
13:30 - 15:00	Closing Session - Wrap up of focus groups and ideas for 2021	



Plenary 1, Impacts of COVID-19 on the energy system - What are the consequences for future energy modelling?

Date and Time 6th October 2020, 10:00 – 11:00 am (CEST)

Organisers openENTRANCE project

- Jed Cohen, (Energieinstitut JKU Linz),
- Sandrine Charousset (EDF),
- Hans Auer (TU Wien),
- Ingeborg Grabaak (SINTEF)

Session Description

The outbreak of COVID-19 is an unprecedented shock to the global energy system and that may result in long term changes to the structures of energy supply and demand. This session begins the process of incorporating this shock into energy system models by reviewing the ramifications of the shock, showing first efforts at modelling it, and facilitating exchange between modellers, policymakers and stakeholders.

This plenary session puts a clear focus on the adaptation needs in the energy system and climate models to correctly internalize shocks, disruptions and structural changes in society (such as COVID-19) in the modelling approaches. This enables re-evaluation and delivery of robust results of energy sector scenarios and its implications for the climate pathways in a changing world.

Session overview

Moderator: Dr. Jed Cohen, Energy Institute at Johannes Kepler University Linz

Welcome and introduction to the session

The macro-economic and energy system impacts of COVID-19 so far, Prof. Claudia Kemfert, DIW Berlin

Energy system modelling under shocks and disruption, Prof. Reinhard Haas, TU-Wien

Modelling the French power system during COVID-19: Cascading effects from stay-at-home regulations, Dr. Clemence Alasseur, EDF

Transport, mobility patterns and digitalization in Italy during and after COVID-19, Prof. Manfred Hafner, FEEM



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Plenary 2, Climate Neutral Pathways, scenarios and storylines: Useful lessons learned and strategies for the European Green Deal

Date and Time 6th October 2020, 11:15 – 12:15 am (CEST)

Organisers

Navigate project

- Jessica Strefler (PIK),
- Panagiotis Fragkos (E3Modelling)

openENTRANCE project

- Pao-Yu Oei (TU Berlin),
- Hans Auer (TU Wien),
- Pedro Crespo del Granado, NTNU

Session Description

To be consistent with the Paris climate target, Europe is discussing to become climate neutral by mid-century. Much more debated than the goal is the means to get there. Carbon dioxide removal from the atmosphere will be necessary to offset unavoidable emissions, but to what extent will this be possible, and which are the best options? To what extent can energy demand be reduced, be it via energy efficiency or lifestyle changes? What is the best mix of direct electrification, hydrogen, and synthetic fuels to decarbonize the energy system? A power system mainly based on intermittent solar and wind power production creates challenges for the stability and reliability of the electric supply system. The means of coping with this problem are temporal balancing through storage and load management and the synthesis of green hydrogen and hydrocarbon fuels, and geographic balancing via long-distance transmission lines.

All these strategies have their drawbacks, whether associated with high costs, uncertain new technologies, sustainability issues, or lack of public acceptance. Finding the right combination of these mechanisms and options will be crucial for ensuring that energy services remain affordable and the European economy strong.

The objective of this session is to outline different strategies for carbon neutral pathways and analyse their preconditions and impacts.



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

EMP-E 2020: Modelling Climate Neutrality for the European Green Deal Programme



Session overview

Moderator: Pao-Yu Oei

Welcome and introduction to the session

Modeling carbon neutral pathways for EU Green deal and climate neutrality, Alessia De Vita, E3Modelling

Quantitative Scenarios for Low Carbon Futures of the pan-European Energy System, Karlo Hainsch, TU Berlin

The path to climate neutrality – residual sector emissions and CDR, Jessica Streffer, PIK

Civil society's Paris Agreement Compatible (PAC) scenario for net zero emissions by 2040, Jörg Mühlenhoff, CAN Europe



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Plenary 3, Socio and economic impacts of the transition

Date and Time 7th October 2020, 10:00 – 11:00 am (CEST)

Organisers

Navigate project

- Evelina Trutnevyte (University of Geneva),
- Panagiotis Fragkos (E3Modelling),
- Jessica Strefler (PIK)

CINTRAN project

- Pao-Yu Oei (TU Berlin),
- Panagiotis Fragkos (E3Modelling)

Session Description

The change of energy systems and energy technologies (from fossil fuels to renewables) will have profound economic and social impacts in the EU member states, especially for regions that are carbon intensive or that are rich in renewable energy sources. This includes distributional implications for GDP, industrial competitiveness and trade, structural changes (i.e. away from fossil fuel and energy intensive industries towards renewable energy, biofuels and construction), changes in employment and labour skills, distributional impacts in low-income households, tax incomes or in general financial requirements and welfare distribution. Reaching a political consensus for a joint European strategy for a European Green Deal is therefore conditional upon the idea of leaving no one behind. Understanding the challenges of a “just transition” is needed to examine how far an incorporation into existing models is possible and needed.

The aim of this session is to create more politically relevant analysis of distributional impacts of various energy transition pathways to allow for higher societal and political acceptance (at the cost of in some cases slightly higher technological costs), while minimizing the negative impacts on most vulnerable regions (i.e. coal regions), income classes, and trade-exposed industries.

The plenary session will give room for the presentations of newest results of H2020 projects (e.g. Navigate, CINTRAN, INNOPATHS, Sentinel, ...). Discussions will focus on the most policy-relevant distributional implications of the transition in the energy-economy nexus:



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

EMP-E 2020: Modelling Climate Neutrality for the European Green Deal Programme



- Modelling policy options to ensure just transition throughout Europe, including carbon intensive regions
- Impacts on and structural changes in local economies, employment and labour skills
- Policy options to limit negative impacts on low-income households and trade-exposed industries
- Financial implications of the clean energy transition
- Modelling green stimulus/recovery programs in post-COVID socio-economic context
- Industrial competitiveness and trade (i.e. border carbon adjustments)
- open topic: based upon answers within the questionnaire

Session overview

Moderator: Evelina Trutnevyte and Pao-Yu Oei

Welcome and introduction to the session

Presentation of results from registration-questionnaire, Diana Süsser, IASS Potsdam

Tackling social drivers and constraints of the energy transition in energy modelling,
Diana Süsser, IASS Potsdam

Socio-economic and competitiveness impacts of EU Green deal and climate neutrality,
Leonidas Paroussos, E3Modelling

Regional impacts of electricity system transition in Central Europe until 2035, Jan-Philipp Sasse, UNIGE

Addressing issues of inequality, Johannes Emmerling, CMCC



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Plenary 4, Sector Integration – Decarbonisation through multi-energy carrier integration

Date and Time 7th October 2020, 11:15 – 12:15 am (CEST)

Organisers

MAGNITUDE project

- Jack Corscadden (Euroheat & Power),
- Regine Belhomme (EDF SA)

Planet project

- Mariapia Martino (Politecnico di Torino)
- Kostas Kanellos (VaasaETT)

Session Description

Sector integration refers to the integration of electricity, gas and heat networks leading to energy system optimisation. To date, Europe has made significant progress in decarbonising electricity production, but progress has been slower in other sectors, and fossil fuels dominate energy use in transport, industry, buildings and agriculture. To achieve the goals of decarbonisation and climate neutrality, different aspects of the energy system need to be integrated and the resulting synergies exploited.

An optimized and integrated energy system offers new routes for the deployment of renewable energy resources and reduces primary energy demand, thus increasing the resilience of the overall system. Electrification allows variable renewable sources to penetrate the transport and heating and cooling sectors, via electric cars and heat pumps. The enhanced integration of different energy networks brings increased circularity to the energy system, through cogeneration and the capture of waste heat. The cogeneration of heat and electricity demonstrates the efficiency and cost benefits that sector integration can deliver. In the industrial sector, waste heat can be used to cover low-medium industrial process heat while renewable hydrogen can be used to supply high temperature applications.

By increasing the synergies between electricity, gas and heat networks, multi-energy carrier integration can support RES development by preventing the curtailment of variable renewable electricity. During times of high supply, when the price is low, surplus electricity can be integrated into gas networks through power-to-gas technologies and heat networks through heat pumps and thermal storage, thus providing a source of low-carbon heat to buildings.



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

EMP-E 2020: Modelling Climate Neutrality for the European Green Deal Programme



This session will cover the different opportunities offered by multi-energy carrier integration to support the cost-effective development of RES, provide system-level efficiency and facilitate decarbonisation (with insights from EU projects Magnitude, Planet, ...). Market and regulatory barriers to sector integration, modelling approaches, optimisation strategies and policy recommendations will be discussed.

Session overview

Moderator: Alessandro Provaggi (Euroheat & Power / DHC+ Technology Platform)

Welcome and introduction to the session

Sector integration from the multi-energy system operator and aggregator perspective, Christophe Gutschi, cyberGRID

The network operator perspective, Marco Badami, Politecnico di Torino

PLANET Project: A Network Orchestration Tool to Simulate the Synergies in Energy Systems

Sector coupling aspects for the European energy system, Dieter Most, Siemens



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Focus Group 1, Climate neutrality: energy modelling, weather and climate

Date and Time 6th October 2020, 13:30 – 15:00 pm (CEST)

Organisers

SENTINEL project

- Stefan Pfenninger (ETH Zürich),
- Laura Booth (ETH Zürich),
- Anthony Pattv (ETH Zürich)

Session Description

It is clear that by mid-century Europe has to be climate neutral with respect to its use of energy. That will likely demand the transition to an energy system based on 100% renewable electricity and fuels. Given the environmental limitations to expanding hydropower production, and the likely high costs of geothermal energy over most of the continent, the primary source of energy is likely to be intermittent solar and wind power production. It is well known that this creates challenges for the stability and reliability of the electric supply system. The means of coping with this problem are temporal balancing through storage and load management, geographic balancing making use of long-distance transmission lines, and utilizing overcapacity in the power generation system to synthesize hydrogen and hydrocarbon fuels. Each of these has its drawbacks, whether associated with high costs or lack of public acceptance. Finding the right combination of these mechanisms will be crucial for ensuring that energy remains affordable and the European economy strong.

Spatially and temporally highly resolved energy and power system models being developed through H2020 funding are increasingly being used to investigate credible designs for this future European energy system. Because weather-dependent renewable electricity is likely to play such a key role, a particularly important aspect of this research area is the linking of energy, meteorology, and climate models. Representing weather parameters at highly resolved temporal and spatial scales is crucial for projecting wind and solar power production and variability. The changing climate will be a major driver of hydropower production on the one hand, and heating and cooling demand on the other. State-of-the-art models can operate over a wide range of geographic coverage, from local and potentially energy self-sufficient communities to an entire fully integrated European energy system. Ultimately the results from these models form the basis for developing scenarios to identify the pathways to achieve such a system in the time available.



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

EMP-E 2020: Modelling Climate Neutrality for the European Green Deal Programme



In this session, we will examine the state of the art of spatially and temporally resolved energy system models, the kinds of questions they have recently answered and still need to answer, what the weather and climate community is ready to provide for energy applications, and what critical issues remain open at this intersection.

Session overview

Moderator: Stefan Pfenninger

Welcome and introduction to the session

Key insights from the most recent generation of spatially and temporally resolved energy system models, Tim Tröndle, IASS Potsdam

Energy-relevant weather and climate data through the Copernicus Climate Change Service (C3S) and related initiatives, Alberto Troccoli, WEMC

Critical questions at the intersection of weather, climate, and energy models, David Brayshaw, University of Reading

Questions & Discussion

Synthesis



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Focus Group 2, Circularity, and Raw Materials

Date and Time 6th October 2020, 13:30 – 15:00 pm (CEST)

Organisers

SENTINEL project

- Cristina Madrid López (ICTA-UAB),
- Laura Talens Peiró (ICTA-UAB)

Session Description

The aim of this session is to discuss about the nexus between raw materials and energy technologies and learnt about how some energy systems models (ESM) are working to integrate raw materials in their models. This is a topic that has progressively gained more importance in the past years, especially since the EU commitment for decarbonization of the EU, and the publication of several list of critical raw materials for the EU and the EU circular economy action plans.

During the session, a particular focus will be given to renewable energy sources (RES) technologies and how the availability and supply of raw materials could affect the RES targets set by the European Commission (EC). The session will start with a presentation about the ongoing work in the area of raw materials and circularity, as this is a topic quite novel within the ESM community. The session will continue with two examples about how raw materials can be embedded in ESM. Then the participants will be split in several discussion groups (10-15 people) to discuss about one of the topics proposed. The session will conclude with a wrap up from each of the discussion groups and the identification of aspects relevant for the EMP-E. The objective of the session is to present the topics ‘raw materials’ and ‘circularity’ and give examples of Energy System Models (ESM) that are already working to integrate these aspects in their models. The discussion will be around examples, the potential limitations and the challenges for the ESM community.



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Session overview

Moderator: Laura Talens Peiró

Welcome and introduction to the session and recap of survey results

2020 list of CRMs for the EU and JRC foresight study on CRMs in strategic sectors, Prof. Gian Andrea Blengini, European Commission, DG JRC

Mineral requirements associated to energy transitions: the MEDEAS approach to identify availability risks, Iñigo Capellán-Pérez, University of Valladolid

Development of an environmental and Bio-economic assessment for Energy System models: the case of ENVIRO, Cristina Madrid López, ICTA-UAB, SENTINEL project

Discussion in four breakout sessions

Group A: Data availability to account for raw materials and circularity in Energy System Models - What data are available? Open or pay-fee data? How can data be made available for ESM?

Group B: Computation of raw materials and circularity in Energy system models

Group C: Policy harmonization to ensure a sustainable and just energy transition - What are the policy needs? Which are the questions due to be answered?

Group D: Understanding of the supply chain of energy technologies and the possible bottlenecks that may limit their implementation - which Circular Economy strategies might be more relevant for ESM? Are there some existing examples? How can information on CE strategies be included in ESM?



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Focus Group 3, Consumer and Citizen Engagement

Date and Time 7th October 2020, 13:30 – 15:00 pm (CEST)

Organisers

openENTRANCE & SMARTEES project

- Jed Cohen, (Energieinstitut JKU Linz),

SENTINEL project

- Diana Süsser, IASS Potsdam

Session Description

Topics dealing with consumer choices, human behaviour, and communities of actors in energy: How are these aspects represented in system models and how do these stakeholders engage with models?

1. Modelling human behaviour in energy system models and the potential application of agent-based methods to system-level models. What aspects of human behaviours in energy form-critical parameters/assumptions in energy system models? What are the current approaches to consumer research in energy? How could agent-based approaches be adapted in energy system models? Insights from multiple agent-based modelling teams from the SMARTEES H2020 project.

2. How can citizens and other stakeholders (e.g. policymakers) be engaged with energy modelling? For sources of system data that rely on citizen acceptance, how to engage the citizens in the collection and use of these data, and how to gain their acceptance for data usage?



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

EMP-E 2020: Modelling Climate Neutrality for the European Green Deal Programme



Session overview

Moderator: Jed Cohen (introduction) & Diana Süsser

Welcome and introduction to the session and the survey results

Current topics in citizen engagement with energy, social science research, and how this can be tied to energy system modelling, Christian Klöckner, SMARTEES

User needs of energy modelling: Your questions, your engagement, Hannes Gaschnig, SENTINEL

ABM background and theory, Bertha Guijarro-Berdiñas, SMARTEES

Linking ABM with energy system models: Feasibility, scale and scope, Gary Polhill, SMARTEES



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Focus Group 4, Smart cities, smart grids and digitalization: modelling insights and lessons learned

Date and Time 7th October 2020, 13:30 – 15:00 pm (CEST)

Organisers

MAGNITUDE project

- Regine Belhomme (EDF SA),
- Edoardo Corsetti (RSE)

Planet project

- Mariapia Martino (Politecnico di Torino)
- Konstantinos Kanellos (VaasaETT)

Session Description

Cities are at the forefront of the decarbonisation challenge and represent living labs for the study of innovative smart grid technologies and initiatives.

In this session, it is proposed to address the following main topics:

- Multi-energy systems (e.g. district heating/cooling systems, industrial sites, campuses, public and commercial buildings) in their urban environment
- Renewables and flexibility resources in the cities - how to integrate and exploit them?
- Electrification of transportation at city-level
- Evolution of the role of distribution system operators.

The priority will be given to the presentation and discussion of real-life case studies and how the technical outcomes of these projects can inform policy.

The following aspects will be considered: strategies and modelling, market and regulatory issues, data management and digitalisation, and policy recommendations



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

EMP-E 2020: Modelling Climate Neutrality for the European Green Deal Programme



Session overview

Welcome and introduction to the session

Multi-energy systems in their urban environment, Edoardo Corsetti, RSE, H2020 MAGNITUDE project

Renewables and flexibility resources in the cities - how to integrate and exploit them? Vittorio Verda, Polito, H2020 RE-COGNITION project – missing bio!

Electrification of transportation at city level, Cristiana Botta, Links Foundation, H2020 INCIT-EV project

Evolution of the role of distribution system operators - Gianluigi Migliavacca, RSE, H2020 FlexPlan project

Presentation of survey results

Discussion in breakout sessions

Discussion in sub-groups: the participants will be split in four sub-groups corresponding to the above 4 topics. The discussions in each sub-group will be moderated respectively by Edoardo Corsetti, Vittorio Verda, Cristiana Botta and Gianluigi Migliavacca. The moderators will collect the main results of the discussions, as well as possible proposals or recommendations from the sub-groups.

Presentation of outcome



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Focus group 5, Infrastructure for integrating open-source models across spatial and sectoral scales to facilitate open science and transparency

Organisers:

Horizon 2020 projects

- OpenENTRANCE
- SENTINEL
- Spine

Open Energy Platform (Reiner Lemoine Institute)

Session Description

As energy systems are becoming increasingly integrated, the analysis of energy systems needs to better consider the interlinkages in time, space as well as between energy carriers (sector integration). It is often advantageous to use separate tools and models to accurately represent particular scope of energy systems, therefore we see a need to enable communication between models of different scope. This focus group will present ongoing efforts in four large projects and discuss how to improve platforms going forward, focusing on two domains:

Data exchange formats between open models, understood as open-source modelling frameworks together with complete open-access input data to run them (including parametrization, configuration, etc.)

Infrastructure to facilitate the integration of open models (including databases, comparison and analysis tools, efforts to develop a common ontology/nomenclature)



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

EMP-E 2020: Modelling Climate Neutrality for the European Green Deal Programme



Session overview

Introductory presentations by the organizing consortia on complementary aspects of their infrastructure and modelling platform solutions (45 minutes)

The OEP data model (Sarah Berendes, OEP/Reiner Lemoine Institute)

Serving different models from the same database (GAMS & Julia) (Juha Kiviluoma, Spine/VTT)

A data package for linking models from different fields (Stefan Pfenninger, SENTINEL/ETH Zürich)

Packages to build scripted workflows between models and the openENTRANCE platform (Daniel Huppmann, openENTRANCE/IIASA)

Break-out groups

A common data model for data exchange

Workflows for passing data between tools/models/platforms

Summary by break-out group moderators and further steps



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Focus Group 6, How can Energy modelling tools from H2020 projects contribute to National Energy and Climate Plans?

Date and Time 8th October 2020, 11:00 – 12:15 (CEST)

Organisers

Plan4res project

- Sandrine Charousset (EDF)

openENTRANCE

- Ingeborg Graabak (SINTEF)

Session Description

The objective of this session is to enhance exchanges and discussions between H2020 funded projects and national authorities in charge of National Energy and Climate Plans, regarding “How can EC funded projects support national policy makers”.

1. What are the models needed of national authorities for assessing progress in implementation of measures in their NECPs for the period 2021-2030?
2. What are the models needed of national authorities for development of next generation of NECPs (2031-2040)?
3. What are the available tools from EC funded projects that could be useful for national modelling exercises?



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

EMP-E 2020: Modelling Climate Neutrality for the European Green Deal Programme



Session overview

Welcome and introduction to the session

Description of the processes of building the NECPs, Clement Serre, European Commission, DG ENER

NECP in Bulgaria, Zhecho Stankov, Deputy Minister of Energy, Bulgaria

NECP in Spain, Miriam Bueno Lorenzo, Deputy Directorate General of Prospective, Strategy and Regulation on Energy, Ministry for the Ecological Transition and the Demographic Challenge, Spain

NECP in Regione Piemonte, Silvio De Nigris, Public Officer at the Sustainable Energy Sector of Piemonte Region.

Presentation of survey results and tools

Presentation of tools

- *Plan4res*
- *Magnitude*
- *Tepes*
- *GENeSYS-MOD*
- *EMPIRE*
- *EXIMOD*
- *REMES*
- *(HERO, OSCARS, Fresh.com)*

Discussion in breakout groups



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Focus Group 7, Transformation of the Energy system: centralization vs further decentralization

Date and Time 8th October 2020, 13:30 – 15:00 pm (CEST)

Organisers

Aures II project

- Jasper Geipel (TU Wien)

Plan4res project

- Nadia Oudjane (EDF)

PLANET project

- Kostas Kanellos (VaasaETT)
- Mariapia Martino (Politecnico di *Torino*)

Session Description

Deep decarbonisation of the European energy system requires the holistic transformation of the European electricity system enabling the large-scale integration of decentralized variable renewables and new electricity uses (mobility, heating, ...) via sector coupling. The aim of this session is to provide insights and to deliberate with the audience on how to reconcile the need for a truly coordinated on the European level with the ever-increasing degree of specialisation in decision making.

Exemplarily, the integration of intermittent renewable electricity sources raises new constraints on the distribution grid that could be alleviated by local flexibilities provided by prosumers (smart charging, demand-response) or multi-energy systems. The energy transition thus involves decision making at different geographical and institutional scales (European, country, region, town, consumer...) as regards the expansion of generation capacities, reinforcement of the transmission or distribution grids, use of local flexibilities. In this context, it is critical to determine appropriate mechanisms (incentives, constraints, auctions ...) that allow to coordinate local decisions in the overall energy framework.



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Focus Group 7 will consider three particular aspects of this issue

- European RES Auctions in order to coordinate renewable investments
- Quantifying the impact of decentralization on investment decisions
- Investments and operation for local energy systems in coordination with the wider energy system

Session overview

Welcome and introduction to the session

European Auctions for renewable support, Jasper Geipel, TU Wien

Auction schemes for the allocation of support for renewable electricity sources (RES) have been advancing rapidly across Europe. They have succeeded to bring down support levels and increased planning capability for RES deployment and state budgets. Until now however, those auctions have been solely organised by single Member State or as a jointly conducted cross border auction by two Member States. In the RED II, the European Commission has announced that it will implement European wide RES auctions serving as a gap-filler to avoid that Europe falls short of its 2030 RES share target. In this workshop, we will present scenario results and policy implications on our model-based assessment of European RES auctions carried out within the AURES II project. We assessed different scenarios (varying auction design, size of the EU-wide gap) all embedded in the policy discussion on the 2030 RES target.

Quantifying the impact of decentralization on investment decisions, Nadina Oudjane, EDF

Decarbonisation of the European energy system induces investment decisions at different geographical scales involving several actors (European, country, region,...) to better integrate decentralized variable renewables. We present how Plan4Eu model could be used to quantify the impacts of decentralization of investment decisions on the global investment cost and operational cost of the electrical system. The objective is to discuss how to exploit these results to bring relevant recommendations as for the coordination to set up in order to minimize de-optimizations of the system.



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Planning and Operational Tools for Optimal Flexibility Exploitation in Integrated Local Energy Systems, Vasiliki Katsiki, Hypertech Energy Labs

PLANET H2020 project develops a Decision Support System for planning operational synergies between different energy carriers for energy flow optimisation and vRES penetration maximisation in the electrical distribution grid. It evaluates the potential for leveraging e-network bottlenecks through the flexibility provided by energy conversion units, e.g. PtG & Pth, against traditional solutions of grid reinforcement and expansion. In a similar approach but focusing on BESS as enabling technology, MERLON H2020 project investigates an innovative energy system "clustered" structure comprising multiple local energy systems. Each of them is equipped with a holistic flexibility optimization platform and they are able to operate both autonomously and integrated with the upstream distribution network.

Discussion in breakout sessions/ World Café

Presentation of outcomes of sessions, polls on proposals, discussion



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Focus Group 8, Uncertainty and modeling: lessons learned and gaps

Date and Time 8th October 2020, 13:30 – 15:00 pm (CEST)

Organisers

openENTRANCE

- Prof. Sara Lumbreras

Plan4Res

- Dr Danny Pudjianto

Session Description

This session will revolve around:

- State-of-the art solution algorithms for dealing with uncertainty in energy planning and system operation. It may include the following topics:
 - Scenario building
 - Techniques to incorporate uncertainty
 - Scenario reduction
 - Acceleration techniques and cloud computing
- Case studies and the main findings highlighting the key policy messages and recommendations to deal with the uncertainty. Topics may include:
 - Transmission planning under uncertainty (project: plan4res)



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.

Session overview

- Welcome including explanation of the structure of the session, discussion of the results of the survey (Sara Lumbreras, Danny Pudjanto)
- Senior expert presentation of state-of-the art methods (Prof Tomasgard Asgeir - Director FME NTRANS, Director NTNU Energy Transition Initiative)
- Transmission Investments Under Long-Term Uncertainty in the European Electricity System (Paola Falugi)
- Accounting for uncertainty in power system planning - The OSMOSE approach (Jean-Yves Bourmaud)
- Discussions (Q&A, moderated by Sara Lumbreras).



The EMP-E 2020 is co-organised by the Horizon 2020 Projects listed here.