



**Rapid decarbonisation
and its impact on society**

The Paris Agreement aims to limit global temperature rises caused by man-made climate change, but many say that the 2C target does not go far enough. Climate efforts need to be much more ambitious to curb temperature rises and limit the impact of carbon emissions on future generations.

An emerging area of research is rapid decarbonisation, focused on accelerating efforts beyond the baseline Paris target to limit the temperature rise to 1.5°C and so avert climate disaster.

In this special one-day event, IEEE Switzerland PES will investigate the latest positive technological and political developments and outline concrete steps for rapid decarbonisation. By assembling a range of experts we will consider policy, economic, financial and technical perspectives of rapid decarbonisation, and investigate business models that could emerge.

Date: Thursday 07 November 2019

Time: 1030am – 6pm (includes networking apero)

Location:
University of St Gallen, Switzerland



1030 **Welcome coffee**

1100 **Welcome address**

1110 **100% fossil free or 100% climate disaster?**

Elmar Grosse Ruse

Project Leader Climate and Energy, WWF

Elmar Grosse Ruse highlights the necessity of limiting global warming to 1.5 degrees over pre-industrial temperature levels. The estimated carbon budget for any 1.5-degree-scenario is so small that global greenhouse gas (GHG) emissions must be reduced to net-zero within very few decades. In the case of Switzerland that means that – taking into account the principle of global equity – domestic emissions should be net-zero by 2040 the latest. Thus, from now on domestic emissions must be reduced by roughly 4% p.a. This has diverse implications for policy and regulation especially. In fact, it changes the entire mitigation discourse as it implies the complete decarbonisation of (almost) every sector within a very short period of time.

1150 **The impacts of climate change on power networks (adaptation and resilience strategies)**

Dr Ruth Wood

Senior Lecturer in Environ. & Climate Change, University of Manchester, UK

Dr Ruth Wood will investigate the impact of climate change on energy systems and electricity networks, investigating environmental aspects such as flooding, implications for generation, ramifications of mitigation for peak demand and the effects on network operations. She will also discuss resilience planning and adaptation options.

1230 **Zero Emission Construction Sites with Electrified Machines**

Stefan Schneider

CEO SUNCAR HK AG

In his presentation, Stefan Schneider will describe the first local zero emission construction site with a battery driven 55-ton drilling rig and 16-ton excavator.

For decades zero emission vehicles have been mandatory in Swiss mountain resorts like Zermatt, Saas Fee and Rigi. One of the first SUNCAR excavators was delivered to one of these well-known tourist villages. With the urgency for a shift to more sustainability many companies have developed electric solutions for construction sites. Besides different trucks and excavators also many other vehicles and machines are already electrified. But without tendering criterion and restrictions regarding emissions and noise the construction industry prefers conventional machines. Initial investment may be higher, but the lifetime savings and increased quality of life will pay back. Let's be pioneers like the citizens in the mountain villages decades ago by pushing electrified machines and vehicles.

1310 **Networking lunch provided by IEEE Switzerland**

1410 **Shore-to-ship power and port electrification: paving the way to zero emission terminals**

Roberto Bernacchi

Global Product Manager for Grid Interties in ABB Power Grids – Grid Integration

The International Maritime Organization has clearly recognized that reducing greenhouse gas emissions is key to avoid negative impacts on climate coming from shipping sector whereas European Sea Ports Organization has confirmed that air quality in ports is priority number one. This is paving the way for the development of the most efficient emission reduction technologies to be implemented on board and on shore. In this new scenario, electric and hybrid vessels are becoming reality, starting from short sea shipping routes where batteries located onboard can be charged easily during port stopovers. While vessels are sailing towards a zero-emission future, ports are doing the same on land.

Zero emission terminals are now reality and the integration of e-mobility solutions into the port electrical grid means new technical challenges: how to make sure that, in addition to the standard electrical

consumers, such as cranes warehouses and buildings, also electrical trucks, vehicles and vessels are receiving reliable power supply to achieve a smooth 24/7 operation of the terminal?
As a pioneer in sustainable solutions for electrification, the ultimate goal of ABB's Shore-to-ship power and Smart ports is to facilitate the transition of the port concept: from traditional, that is a place of transit of people and goods, to modern and sustainable, that is totally integrated with the surrounding community.

1450 Methane, Meat and Money: Low emission strategies for the Swiss agriculture and food sector.

Daniel Bretscher
Researcher, Agrogroscopy / UNFCC

The agriculture and food sector is responsible for 13 to 21% of greenhouse gas emissions in Switzerland. Around 85% of these emissions can be assigned to livestock husbandry. Emission reductions can be achieved via technical measures on the production side and/or by consumption based measures. While technical measures are often characterised by rather low reduction potentials, tradeoffs, as well as high implementation costs, a shift towards an increasingly plant-based diet accompanied by a respective reorganisation of agricultural land use harbours a great potential.

1530 Coffee

1540 Climate finance and carbon markets as instruments for decarbonisation

Pablo Fernandez
Executive Director, Ecoscurities

The details of this presentation will be confirmed soon.

1620 The path to decarbonisation – Example from the city of Basel

Markus Balmer
Head of Sales and member of the Executive Board, IWB

Since October 2017, the new energy law sets the path to decarbonization in the Canton of Basel-Stadt. The goal is to reduce the CO₂-emissions to a maximum of 1 ton per capita a year by 2050. Any replacement of fossil heating systems is strongly restricted. Therefore, the local utility IWB is planning a transformation of the heating system. The central district heating system will be densified and expanded, the gas supply system will gradually be decommissioned and several decentralized district heating systems based on renewable heat sources will be developed. With the product «Wärmebox», IWB provides also a renewable heating solution for individual households. By defining a strategic gas grid that remains for the future, IWB plans to secure the supply of gas needed for industrial processes and back-up systems

1700 Closing keynote (details to be confirmed)

Rolf Wüstenhagen
Academic Director, Executive Education Programme in Renewable Energy Management (REM-HSG)

The details of this presentation will be confirmed soon.

1740 Closing remarks

1800 Networking apero

2000 Event close

Biographies of speakers



Elmer Grosse Ruse
Project Leader Climate and Energy, WWF

Elmar Grosse Ruse is project manager for energy and climate policy at WWF Switzerland. He has been working on energy policy and climate change at the German, Swiss and European level for several years. He studied psychology with a major in environmental psychology and environmental economics in Bonn, Edinburgh and Bochum.



Ruth Wood
Senior Lecturer in Environ. & Climate Change, University of Manchester

Dr Ruth Wood is a Senior Lecturer in Environment and Climate Change, a Research Fellow with the Tyndall Centre for Climate Change Research and Co-Director of the EPSRC Power Networks Centre for Doctoral Training. Her research interests include developing and applying emissions and energy accounting methods to different sectors and spatial scales; the development of scenario tools for use in interdisciplinary projects; the relationship between society and infrastructure and its effect on both resource demand and resilience to future climate change impacts.



Stefan Schneider
CEO SUNCAR HK AG

Stefan Schneider received a MSc. in mechanical engineering at ETH Zurich in 2015. At 2011 he worked in a student project converting a Lotus Evora to a battery electric supercar. Since then he focussed his study on electrifying vehicles and machines. As an entrepreneur he leads the SUNCAR HK AG, founded in 2015, which mainly converts construction machines, utility and municipal vehicles from diesel engine to a battery electric drivetrain. For the first battery electric 16t excavator, developed by SUNCAR HK AG, he received the Swiss and European solar prize.



Roberto Bernacchi
Global Product Manager for Grid Interties in ABB Power Grids – Grid Integration

Roberto Bernacchi, Global Product Manager for Grid Interties in ABB Power Grids – Grid Integration business unit, is one of the most experienced professionals in electrification solution for green and sustainable ports. During his ten years long career in ABB, he has been a key person in developing static frequency converter based innovative solutions for various applications: from shore-to-ship power to battery energy storage, utility and industrial grid connection solutions, MVDC and power quality systems. Roberto Bernacchi joined ABB as Area Sales Manager for Power Conversion business and has held various sales and business development roles since then.

He has a Masters degree in Electronics Engineering from Politecnico di Milano in 1999 and he is now responsible for solution development and portfolio management for ABB Grid Interties, including sustainable transportation solutions in ports.



Daniel Bretscher
Researcher, Agroscope / UNFCCC

Daniel Bretscher holds a degree in Biology from the University of Basel, with a specialisation in Climate Change Biology. He furthered his education with courses in sustainable agriculture in South America and joined various international cooperation projects. He is currently employed at Agroscope, the research institute of the Swiss Ministry for Agriculture, where he is responsible for the greenhouse gas inventory of Swiss agriculture. In this function he also serves as agricultural expert for the UNFCCC.



Pablo Fernandez
Executive Director, Ecorescurities



Pablo Fernandez holds a MSc diploma in Energy and Environmental Planning at UFRJ, Brazil and an MBA at Business School Lausanne (BSL), Switzerland. He has over 15 years of international experience on climate change, carbon markets and climate finance. During this period he worked and lived in South America, South East Asia and Europe supporting project developers and investors.

EcoSecurities is a company with more than 20 years on carbon markets, climate policy and environmental finance. EcoSecurities works with companies in developing and industrialising countries to create carbon credits from projects that reduce emissions of greenhouse gases. EcoSecurities has experience with projects in the areas of renewable energy, agriculture and urban waste management, industrial efficiency, and forestry. EcoSecurities support the project development with technical and financial services.



Rolf Wüstenhagen
Academic Director, Executive Education Programme in Renewable Energy Management (REM-HSG)

Dr. Rolf Wüstenhagen is Professor for Management of Renewable Energies at the University of St. Gallen. Prior to his academic career he has been working with one of the leading European energy venture capital funds. He has held visiting faculty positions at University of British Columbia in Vancouver, Copenhagen Business School, National University of Singapore and Tel Aviv University. From 2008-2011 he served as a lead author of the Intergovernmental Panel on Climate Change (IPCC) special report on the role of renewables in climate change mitigation. From 2011-2015, he was a member of the advisory board of the Swiss Federal Government for their Energy Strategy 2050, which was adopted by 58% of the population in a May 2017 referendum. Dr. Wüstenhagen is the academic director of the executive education programme in Renewable Energy Management (REM-HSG).

<http://www.iwoe.unisg.ch/en/LehrstuhlManagementEE>
<http://www.es.unisg.ch/rem>



Markus Balmer
Head of Sales and member of the Executive Board, IWB

Markus Balmer is responsible for the business area Sales at IWB (account management, product management & development, energy consulting, digital business) and member of the executive board. He holds a PhD in energy economics and a master's degree in environmental sciences both from ETH Zurich.

