

## Power System Flexibility Campaign

### Hydrogen and the role of synthetic fuels in power system flexibility

18<sup>th</sup> March 2021 from 13:00 to 14:30

#### Background

Driven by favourable policy frameworks and technology advancements, variable renewables are increasingly gaining ground in power generation. According to the IEA Sustainable Development Scenario, electricity is expected to increase in its share of total final energy demand from 18% in 2018 to above 30% by 2030. Renewables are expected to make up for the largest share, with 52% of global electricity generation, notably solar PV and wind at 29%. In order to realise these projections that set the world to reach net-zero by 2070, power system flexibility will become a cornerstone of electricity security. Moreover, reaching net-zero, according to the WEO 2020 special net-zero by 50 scenario, will require even greater shares of VRE deployment and thus flexibility.

Over the last three years, the Power System Flexibility Campaign (PSF) has engaged substantially in topics of power plant flexibility, market design, digitalisation and sector coupling. During this time, focus has been placed on solutions for short to very short-term flexibility, where the usefulness of various resources such as, flexible VRE, grids, battery storage and demand-flexibility, and policy options to activate them can be more easily conveyed to key decision makers in policy and industry.

As more countries implement long-term net-zero goals, reliant on high shares of renewables, it becomes evident that the need to address flexibility requirements in the weeks to season or annual horizons will become increasingly important. At higher shares of renewables, the production of synthetic fuels, such as hydrogen or green gas, is coming to the fore as a cost-competitive option to use surplus VRE output and serve the longer-term flexibility needs of the power system or other integrated sectors of energy demand. However, there remains a gap between the conceptual understanding of the importance of sector coupling and actual solutions that, in the foreseeable future, may contribute to power system flexibility, along with the policy measures to enable them.

This PSF senior expert webinar, organised in the framework of the 2021 Berlin Energy Transition Dialogue aims to highlight a few promising technological approaches and discuss near-term policy priorities to enable scalability.

#### Session format

What is next for sector-coupling technologies and power system flexibility?	
13h30	<p>The first section of the session will present a range of technological approaches for sector coupling that can contribute to power system flexibility along with their role in power systems with high shares of VRE. This is particularly important as an increasing number of long-term energy scenarios rely on synthetic, storable, energy carriers that enable power system decarbonisation, while retaining a set level of dispatchable flexibility embedded both in plant conversion or new assets.</p> <p>The objective of this session will be to shed light on technological opportunities that are 'close to market' and draw a direct link to the system's flexibility needs they might serve.</p> <p>Scene-setting presentation</p> <ul style="list-style-type: none"> <li>• Overview on the interlinkages between hydrogen and power system flexibility/energy system decarbonisation, IEA</li> </ul>

	<ul style="list-style-type: none"> <li>• Emerging integrated hybrid solutions: Henrik Bach Mortensen, Siemens Gamesa Renewable Energy</li> <li>• Current picture of co-firing and future prospects for hydrogen-rich fuels: Coal and Ammonia (MHPS – TBC)</li> <li>• Current picture of co-firing and future prospects for hydrogen co-firing: (GE/Siemens Energy/MHPS) Driving demand for clean hydrogen in industry and prospects for flexibility: Hybrit project in Sweden</li> </ul>
<p>Panel discussion 14h00</p>	<p>Tipping the scale for energy systems integration: (TBC)</p> <ul style="list-style-type: none"> <li>• What considerations are necessary to make sense of the role of hydrogen in an increasingly decarbonised, flexible power system?</li> <li>• What conditions are necessary to scale-up solutions that are close to market-maturity?</li> <li>• What are the options for market instruments or other remuneration sources that go beyond the power sector and enable wider energy system decarbonisation?</li> </ul>