

# MEMORANDUM OF UNDERSTANDING

## THE PARTIES

The three industry clusters Energy Valley NCE Energy Technology, NCE Smart Energy Markets and the Norwegian Solar Energy Cluster (Arena Solenergiklyngen) (hereinafter named: the industry partners), and the four academic institutions University of Oslo UiO:Energy, BI Norwegian Business School, Institute for Energy technology (IFE), SINTEF (hereinafter named: the academic partners) have on the day of signature entered into this Memorandum of Understanding (MoU).

### **Energy Valley NCE Energy Technology**

Energy Valley is Norway's largest competence- and industry-cluster, and appointed Norwegian Centre of Expertise for Energy Technology. The cluster has close to 200 active member companies in the capitol region of Norway. The members represent a broad competence base within subsea technology development and engineering of large scale, complex and safety critical systems. The largest member companies provide world-class products and services to the global energy market supported by a strong and diversified local supplier base. Employing about 31 000 primarily highly skilled professionals, the cluster generates a total value add of more than 50 billion NOK per year.

### **NCE Smart Energy Markets**

The NCE Smart Energy Markets cluster has been led by research company Smart Innovation Norway since 2009. The NCE cluster has grown from a local energy-trade initiative to a key national innovation player within the fields of Smart Energy, Smart Cities and Digitalization. The cluster boasts many IT companies and academic environments, including most of Norway's leading expertise in Big Data Analytics and digital technologies, which are the drivers behind smart energy innovation. The technology, which is generic, has huge transference potential to other industries and business clusters. Transference further facilitates favorable conditions for innovation and transition in Norwegian businesses, which are currently undergoing radical change.

### **The Norwegian Solar Energy Cluster**

The Solar Energy Cluster is a national cluster for the solar energy sector in Norway. Activities are focused both on the Norwegian as well as the international energy markets. The cluster has close to 90 partners. The Solar Energy Cluster has identified six marked areas with growth potential and special competence in the cluster: Floating solar parks, Off-grid solutions, Building-integrated solutions, Sustainable production of materials, Energy Systems & storage and Solar heating.

### **UiO:Energy**

UiO:Energy is one of three interdisciplinary, strategic initiatives at the University of Oslo (UiO). It was formally established as a priority area in 2012, focusing on advancing new ways of using energy to reduce global climate change and environmental challenges. The initiative has a clear aim to strengthen sustainable energy research and education in collaboration with partners in the Oslo

region, and this MoU thus fits very well with this long-term strategy. The initiative has a catalytic role in promoting new initiatives, as well as a coordinating function for institutional, national and international collaboration. In addition, UiO:Energy has a general responsibility for outreach activities within relevant fields. Two interdisciplinary courses on sustainable energy systems, one at the master level and one at the PhD level, are also facilitated by UiO:Energy. Finally, the initiative administrates several internal support schemes, including mobility, internationalization and seed money for proposals and projects. Energy research at UiO encompasses a large range of different disciplines, including social science, humanities, law, natural science and technology. Four prioritized areas have been identified: (1) Materials for Energy, (2) Energy systems, (3) Energy Transition and Sustainable Societies and (4) Carbon Capture and Storage. This broadness of themes implicates many possible topics of common interest between the partners.

### **Institute for Energy Technology - IFE**

Institute for Energy Technology is an independent non-profit research organization with a high international reputation and recognition in research within the areas of energy and safety, covering fossil, renewables and nuclear technology and providing new technical solutions for industry and governmental agencies in more than 30 countries. IFE is the host for the international OECD Halden project. IFE has 30 years of experience with the integration of and impact of digitalisation and real time control & decision. The understanding of digitalization and on how the control and decision processes depend on the integration of digitalization tools and systems is a core competence area in IFE. The experience includes work on optimized resource management through implementation of novel technology as well as novel application of existing technology. IFE also have expertise at the international forefront on the understanding of risk and risk management. This cooperation fits very well within IFE's strategy, where the transformation of organizations and the implementation of new technology made necessary by the rapid changes in the energy sector is a key element.

### **BI Norwegian Business School**

BI is a private non-profit foundation dedicated to research and education. BI is Europe's second largest business school with a long record of accomplishment in research and education in the energy sector. BI is one of the few business schools in the world that is "triple crown" accredited, holding the most significant accreditations in the US, UK and EU. This collaboration will be anchored in BI's Centre for Energy, which draws on front-running practice and experiences from industry, regulators and policy makers in petroleum, electricity and green energy. The Centre works with leading global energy clusters as well as outstanding Nordic, European and North-American initiatives and academic institutions. The Centre is anchored at BI's Department of Law and Governance.

### **SINTEF**

SINTEF is one of Europe's largest independent research institutions, with a vision of 'technology for a better society'.

To help meet the UN Sustainability Goals, SINTEF performs world-leading energy research in multiple fields. This covers renewable energy, energy storage, smart grids and power components, energy system software and analysis, policy and economics, energy efficiency, CCS (carbon capture and storage), subsea technology, and low emission oil and gas.

Working closely with industry in Norway and Europe, SINTEF provides value-added solutions and services to our clients. This includes cutting-edge digital solutions and world class lab infrastructure for testing.

Commercialisation of research is part of SINTEF's role in society, achieved by means of licensing and creating new companies based on technologies developed as part of our research activities.

SINTEF consists of the following legal entities: SINTEF AS, SINTEF Energi AS, SINTEF Manufacturing AS and SINTEF Ocean AS.

## **THE AMBITION:**

**Bringing pioneers and enablers of the global energy transition together.**

**Creating an eco-system for energy business and technology in the capital region of Norway.**

Together the parties aim to work towards achieving:

- 1) Collaboration between the industry partners on the development and transition of the energy industry towards more sustainable and efficient operations.
- 2) Collaboration between the academic partners on the creation and execution of research in the area of energy and management of energy resources.
- 3) Collaboration between both the industry and academic partners on impact of technology and digitalization, sharing of knowledge, new business models and organizational patterns in the energy sector, growth and advancement of sustainable societies as well as value creation.
- 4) Promotion of the region's position as global energy hub, nationally and internationally.
- 5) Collaboration on events, seminars, conferences and increasing network capacities.
- 6) Establishment of a strong alliance between the partners representing the energy sector as a whole, with global impact and particular focus on energy transition and sustainability.
- 7) Building a foundation for advanced collaborative projects between industry and academia by identifying solutions, develop strategies and possible realization of pilot projects.
- 8) Creation of a network for founders, investors and other stakeholders for innovative business models and startups playing a key role in the energy transition.
- 9) Collaboration on stakeholder dialogue and expert mediation between stakeholders in industry, academia, politics and society and their varied interest.
- 10) Acceleration of the energy transition towards more sustainable societies.

## **NON-BINDING**

This MoU is a non-binding statement of the Parties' mutual understanding of their proposed collaboration framework.

The MOU is not intended to create any legally enforceable rights or obligations in respect of either Party.

## **DURATION**

This MoU will be valid for five, – 5 –, years from its signing.

## **SIGNING**

We, the undersigned, hereby agree to the terms in this MOU and commit to ensuring that the intent of this MOU is carried out.

Oslo 22<sup>nd</sup> August 2019

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