



## Bergen Energy Lab NEWSLETTER FALL 2019

This fall we have covered several topics and disciplines, ranging from carbon capture, to hydropeaking and energy security. In this newsletter you will find a short summary of a couple of our meetings, in addition to the thoughts of one of our master's students who got the opportunity to continue working with her project on ocean wind after finishing her masters, and an outlook on the semester to come.

**Bergen Energy Lab** has hosted 13 lunch meetings and one additional lunch meeting in collaboration with the CET-center. Most of them have been in our usual Helland-Hansen meeting room at the GFI, but we have also had a few at Høgskulen på Vestlandet, and at the Department of Social Sciences.

As of now, the group planning the lunch meetings are Kristin Gulbrandsen Frøysa, Siddharth Sareen, Ignacio Herrera Anchustegui, Endre Bjørndal, Andreas Grimen, Richard J. Grant and Jørund Vedøy.



## Overview of the lunch meetings this spring

September 10 <sup>th</sup>	<u>Aerodynamical optimization of airfoils and winglets for wind turbine application</u>
September 17 <sup>th</sup>	<u>Nanofluids for Solar Energy</u>
September 18 <sup>th</sup>	<u>Recent Developments in U.S. Energy Law and Policy:</u>
September 24 <sup>th</sup>	<u>CCUS: the design and production of sustainable and biocompatible polymers</u>
October 1 <sup>th</sup>	<u>Higher-order-statistics for characterization of a wind turbine wake</u>
October 15 <sup>th</sup>	<u>Net-Zero: Energy security and the future of natural gas in the UK</u>
October 29 <sup>th</sup>	<u>CCUS: Storage - challenges and solutions</u>
November 5 <sup>rd</sup>	<u>Hydropeaking (effektkjøring) in BKKs hydropower plants</u>
November 12 <sup>th</sup>	<u>DeWindSea: Designing a refined legal framework for offshore wind in the North Sea basin</u>
November 19 <sup>th</sup>	<u>New generation of solar cell technologies</u>
November 26 <sup>th</sup>	<u>Optimisation of wind and tidal turbine farms</u>
December 3 <sup>th</sup>	<u>Prospects for powering past coal</u>



## Renewable Energy Alumni

**Maylinn Haaskjold Myrtvedt****Tell us a bit about your background?**

I have a bachelor's degree in mechanical engineering from HiOA (renamed OsloMet), and a master's degree from UiB in renewable energy with specialization in offshore wind.

**Why did you choose to study the master in energy at UiB and how did you choose your specialization?**

I always wanted to study something that could be used to help people in some way, and I thought that technology was the correct direction to go, as it is so important for the society. I joined UiB to study renewable energy to gain knowledge so that I could contribute to turning around the current path of climate change. I selected offshore wind as my specialization because it is an up-and-coming renewable energy source which will be important to make the green transition happen.

**What was your master thesis about?**

I have investigated the importance of wind field modelling for dynamic response of bottom fixed and floating turbines. The main goals were to generate turbulent wind fields based on standard wind field formulations used by the industry and to compare it with wind fields generated based on offshore measurements. Further, the aim was to investigate how turbulence and atmospheric stability impact the turbine response.

The wind fields "pushed" through two turbines are performed in the simulation program SIMA where aerodynamic loads were computed. From this I investigated bending moments at the bottom of the tower and at one blade root.

**What advice would you give to current master students at UiB?**

Ask questions and don't be afraid of being stupid. It takes a while to understand what you are really going to do in your master thesis, but it is smart to start writing from the beginning even so. It can also be smart to keep track of challenges you meet on the way and what worked well so you can show good reflection of your work.

**How do you think your master studies can be used in your future career?**

My master studies pushed my motivation to take action on climate change, and I'm now looking for jobs that can meet this interest.. Self-picked subjects the first year and the work with my master thesis have created a solid base of analytical skills and how to find and process information. I have gained a lot of knowledge, which I am certain I can use in my future career.

**Could you tell us a bit about your current job?**

I currently work as a scientific assistant at UiB to write an article based on my master thesis together with my supervisors. We aim to publish this offshore wind research at EERA DeepWind'2020. The work is going to be presented at the EERA Deep wind conference in

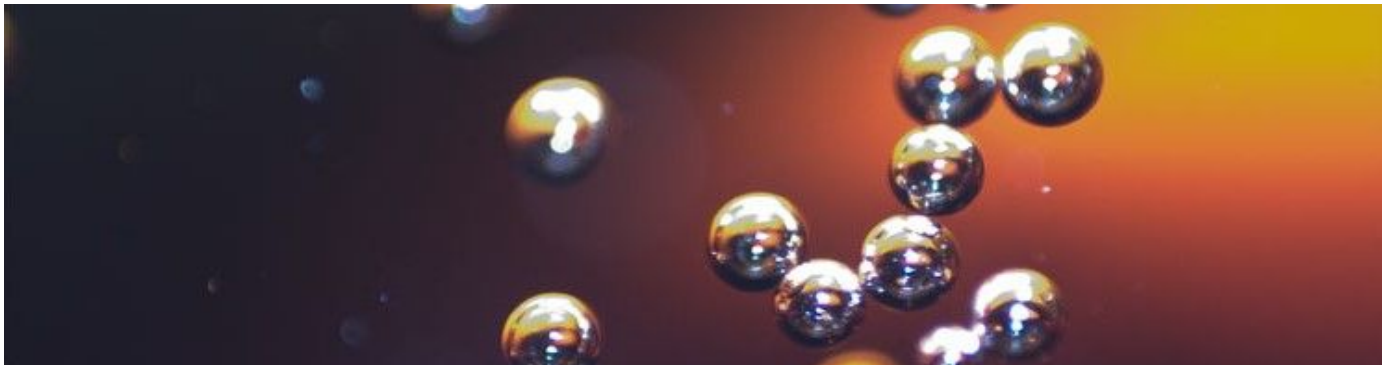
January to contribute to the solutions needed to further develop offshore wind.



## Lunch meetings, 24th of September and 29th of October

### CCUS: Carbon Capture, Utilization and Storage

We've had two lunch meetings concerning carbon capture, utilization and storage this fall. The first one focused on the utilization, and the second on storage.



#### The design and production of sustainable and biocompatible polymers

The 24th of September, Mali Husby Rosnes from the Department of Chemistry, UiB, shared her research on the possibility of using captured CO<sub>2</sub> to produce polymers. Today, we are highly dependent on the petroleum industry for plastic production, but what if plastic production could instead be based on captured carbon? Through such a process, two goals are achieved: CO<sub>2</sub> is hindered from being released into the atmosphere, and the need to extract petroleum is reduced. Rosnes and the team at the Department of Chemistry are designing specialised catalytic systems to produce sustainable and biocompatible polymers based on CO<sub>2</sub> and epoxides from biorenewable resources. This technology may be an important contributor to a change in how we think about resources and production in a more sustainable manner.

#### CCUS: Storage - challenges and solutions

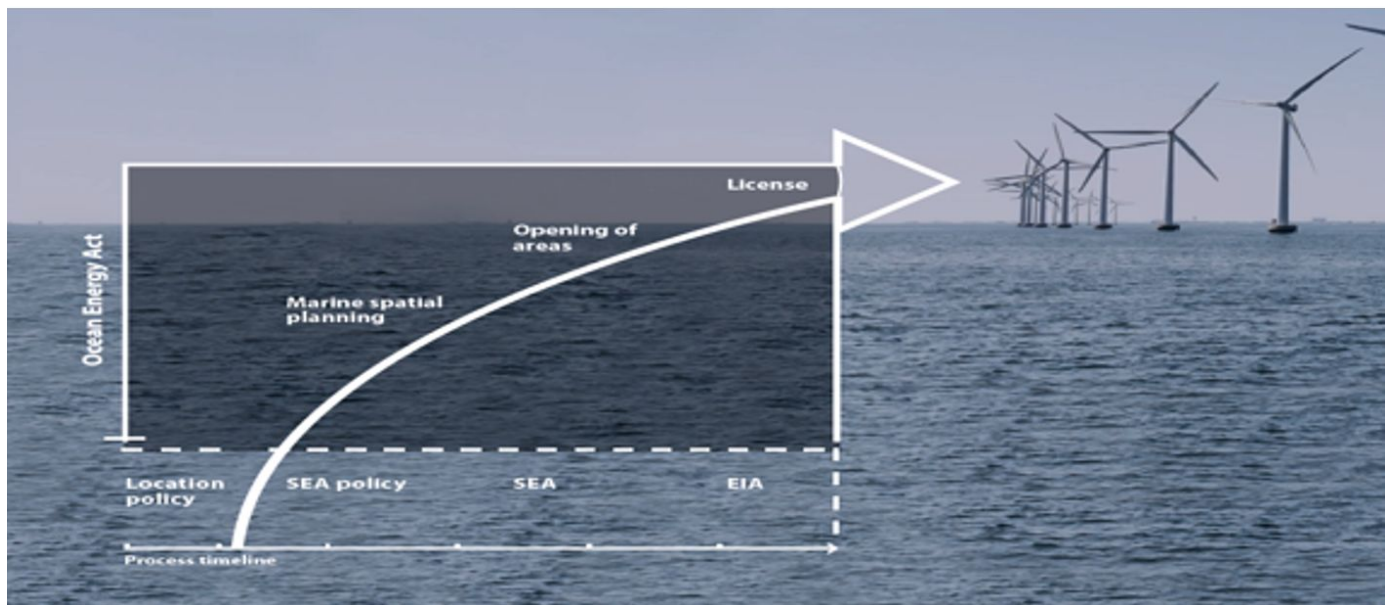
Guttorm Alendal from the Department of Mathematics, UiB, introduced us to aspects related to storage of CO<sub>2</sub> the 29th of October. He emphasized that this is not a new field of technology, and discuss why it is still not widely implemented in the industry. Alendal has focused on offshore storage, and how this can be both cost efficient, as well as secure and sustainable in an environmental perspective.



Lunch meeting, 12th of November

## DeWindSea: Designing a Refined Legal Framework for Offshore Wind in the North Sea Basin

The DeWindSea project aims to provide an efficient legal framework for offshore wind in the North Sea Basin. Sigrid Schutz, professor at the Faculty of Law, UiB, guided us through the need for such a framework, the difficulties in developing it, and which aspects they choose to focus on in their work with this project.



Offshore wind in the North Sea may prove to become a large and important contributor to production of renewable energy. This will help in the reduction of greenhouse gas emissions, provide a large new job market, and the further development of the technology related to offshore wind all contribute to reaching the UN Sustainable Development Goals.

However, the infrastructure related to offshore wind may also harm certain SDG's, such as those related to preservation of ecosystems and aquaculture. Today, a legal framework related to offshore wind is nearly absent. Guidelines are needed before the large scale infrastructure is initiated, which is why a project such as the DeWindSea framework is necessary.



## The spring program 2020

On Wednesday the 18th of December we will have our first meeting where we start planning the program for the coming spring 2020. The program will be announced at the beginning of the semester, so stay tuned for news on the website and our social media channels!



Photo: Pexels





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### Bergen Energy Lab

@BergenEnergyLab

A forum for exchange of information on [#research](#) and activities related to [#renewableenergy](#) [#energytransition](#), hosted by [@geofysen](#) [energylab@uib.no](mailto:energylab@uib.no) [#EnergyLab](#)

 Bergen, Norway

 [uib.no/en/energy](http://uib.no/en/energy)

 Registrerte seg august 2016

## Bergen Energy Lab on social media



In order to extend the distribution of information about our lunch meetings and seminars, we are trying to improve our use of social media! If you want to help us reach a broader audience, you can follow us on Twitter



and Facebook for updates on activities, research and energy related news, and use our hashtag

[#BergenEnergyLab](#) if you would like to tweet about our lunch meetings and seminars.

On our traditional website, the event archive is up to date, and all the presentations from this semester (and previous ones) can be found at the bottom of their respective events.

