



RESEARCH AREA 5

USER CASE AND INNOVATION



WHAT IS THIS RESEARCH AREA ABOUT?

Researchers and user partners will collaborate to learn from each other - and create new knowledge. They will present and discuss existing knowledge base and preliminary research results. The collaboration ensures the involvement of the user partners, and facilitates relevant innovation activities.

We will have around ten use cases defined jointly by the user partners and the researchers. Each case lasts for one to two years, and is led by one or two researchers. Sometimes we work closely with other FMEs. User partners offer pilots which reflect on ongoing and planned activities in the energy sector, and which are of general interest to those involved.

SINK OR SWIM FOR THE CLIMATE...

“This is important work for the energy transition and the climate. And we are doing it together with our user partners.”



(Photo: Vibeke Ann Petersen/NTRANS)

“The cooperation with our partners is in a good flow. We have had a lot of workshops together, and we have completed two use cases in 2021,” says Senior Researcher Ragnhild Freng Dale at Western Norway Research Institute (VF). She heads NTRANS research area 5, Use cases and innovation. Ragnhild Freng Dale also works a lot with climate issues in addition to energy research. “It’s very connected,” she says.

LEARNING EACH OTHER’S LANGUAGES

The researchers in NTRANS come from different fields, and the multidisciplinary angle and scope requires a lot of cooperation – and also co-understanding. We are

joining the partnership with our different backgrounds and perspectives. We need to learn each other’s languages, so to speak,” says Ragnhild Freng Dale.

“It was really fruitful to eventually meet up, face to face, with researcher colleagues at Brimi in the autumn of 2021. We worked closely together on a few selected topics, and also made a new 10 step method for improving our outcome.

UPPING THE TEMPO IN RESEARCH SPRINTS

“In spite of the Corona situation, there has been a lot of activity in the use cases throughout the year. Two of



Ragnhild Freng Dale, Western Norway Research Institute (VF)
(Photo: Silje Nårstad/NTRANS)

them were more or less completed during 2021: number 3a and 1.

Local development of the low-emission society is the topic for use case 1, which is led by researchers Pernille Seljom (IFE) and Marius Korsnes (NTNU). They have been very motivated, and have collaborated with many of our user partners in research sprints. This form of sprinting is a new way of cooperating – invented by NTRANS researchers – where user partners and researchers work closely together to solve problems faster.

ELECTRIC CARS AS POWER BANKS?

In 2021 use case 1 has been looking into, among other things, vehicle to grid (V2G) and vehicle to building (V2B). In the future it may be possible to use the electric car as a "powerbank".

V2G is a transmission between the electric car and the electricity grid, where electricity from the electric car can be a resource when needed. This is also known as "two-way charging", and is at a trial stage, but NTRANS researchers worked with several partners to find good and feasible, local solutions to provide good societal benefits.

See more in this newsarticle from November 2021 (in Norwegian).

THE CHICKEN AND HYDROGEN EGG ...

Use case 3a has focused on the role of hydrogen in the maritime sector, and has been very active, with several

workshops and a lot of cooperation with user partners. This work resulted in the report "Solving the chicken and egg problem in maritime hydrogen value chains in Western Norway".

Initially transport was just one use case, but it was split into three.

"The transport sector use cases have different focus areas that all deserve attention. By separating the cases it was possible to address them more accurately," says Ragnhild Freng Dale.

"We aim to complete in total 10 use cases within the NTRANS centre".

NEW CASES DEFINED WITH PARTNERS

On day 2 of the annual conference 2021 (9 December) there were four separate use case workshops for partners. One of them was dedicated for planning new use cases, and several new NTRANS cases were defined together with user partners.

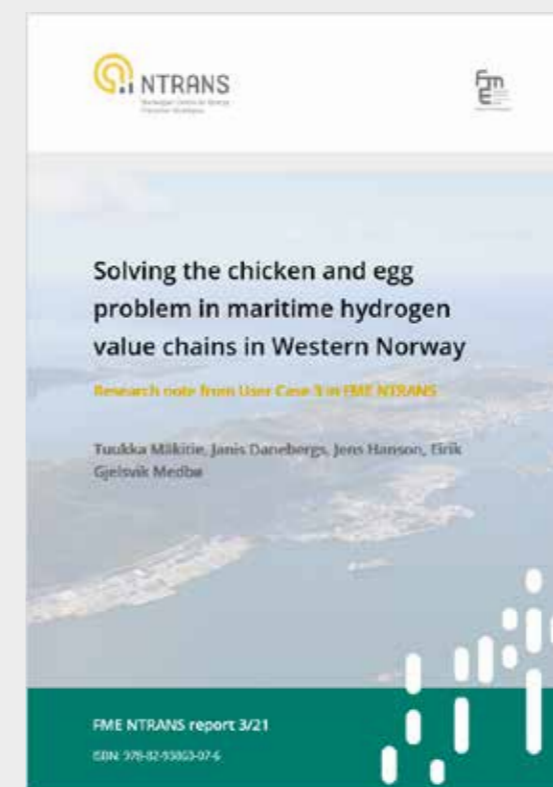
One of them was case 6, which focuses on societal aspects of offshore wind. This case is a cooperation between FME NTRANS and FME NorthWind.

"Our user partners are showing great interest in the use cases, and our researchers are really eager to continue the work and cooperation. Hopefully we can meet up in person for next year's conference. It would be great to be able to work together in the same room with all our partners!"

USE CASES IN NTRANS

- Use case 1: Building the future societies (WP 5.3 UC1)
Lead by: Pernille Seljom, IFE and Marius Korsnes, NTNU (Completed)
- Use case 2: Renewable power development and its potential uses (WP 5.4 UC2)
Lead by: Ingeborg Graabak and Stephan Jaehnert, both SINTEF
- Use case 3a: Transport sector: the role of hydrogen in the maritime sector (WP 5.5 UC3).
Lead by: Tuukka Mäkitie with assistance from Markus Steen, both SINTEF (Completed)
- Use case 3b: Decarbonisation of freight transport between big cities (WP 5.6 UC4). Lead by: Steffen J. Bakker, NTNU. Co-leader is Kari Espegren (IFE)
- Use case 3c: Transport within cities (WP 5.7). Led by Astrid Bjørgen, SINTEF, and Kristin Ystmark Bjerkan, SINTEF
- Use case 4: Carbon Capture and Storage (WP 5.8 UC5)
Lead by: Asgeir Tomasgard, NTNU
- Use case 5: Sustainable development of innovation districts. Lead by: Pernille Seljom, IFE and Marius Korsnes, NTNU
- Use case 6: Societal aspects of offshore wind. Lead by Tomas Moe Skjølvold and Sara Heidenreich, both NTNU
- Use case 7: Integrated markets for energy and flexibility. Lead by Stian Backe, SINTEF Energy
- Use case 8: Energy projection, scenarios and climate goals: Lead by Kari Espegren, IFE
- FME forum for innovation and cooperation with the 8 technological FMEs (WP 5.2).
Lead by: Eirik Gjelsvik Medbø, NTNU

THE CHICKEN AND THE HYDROGEN EGG



The report from use case 3a: [Solving the chicken and egg problem in maritime hydrogen value chains in Western Norway](#).



This is a short [summary with recommendations from NTRANS](#) (in Norwegian). See also [Policy Brief in English](#)