

## **Sensitive sensor for drone measurement of methane release from small lakes, wetlands and other springs**

### **Background**

Only seven per cent of the Danish agricultural area constitutes of peatland while fifty per cent of the CO<sub>2</sub> emission comes from peatlands. The Climate Change Committee has suggested to impose a duty on emission of greenhouse gases from peatlands, and the Danish Society for Nature Conservation suggests that the entire seven per cent (171.000 ha) are converted into wetland. At the moment, our knowledge on the amount of methane released from re-established wetlands is minimal, and the few measurements that we have vary a lot from one area to another, which makes it difficult to generalise. Thus, being able to measure methane release from larger areas in an easy, precise and inexpensive way can have a positive societal impact.

### **The project**

Together with University of Copenhagen, scientists from University of Southern Denmark are developing an innovative drone for measurement of methane release from small lakes, wetlands and other springs. The measuring principle is based on flying the drone in fixed lanes and measuring the position, wind direction, wind velocity, temperature, air humidity and methane concentration. The flight may take place with such speed that it covers a large area within 10-20 minutes to create a cohesive image of the methane release from large areas.

### **Purpose**

The subsidy from the COWI Foundation will be used for purchase of an exact, very sensitive and fast reacting sensor for measurement of methane in the atmosphere. The sensor must be mounted on a drone in which the air intake takes place via a tube above the rotors that does not disturb the measurement of the wind velocity, temperature and air humidity as well as the methane concentration during the suction.

### **Expected results**

There is great uncertainty about the methane release from various natural and man-made sources. Measurements of these sources are not necessary in order to ensure a specific image of the national methane release. Measurements that cover larger areas are particularly necessary. Our objective is to use the equipment to scale the measurements of the methane flux to cover the entire surface of small and large lakes as well as larger wetland areas in river valleys in order to obtain a better overview.