



## History of the Bjørnafjorden fjord crossing project

**Mathias Egeland Eidem**

*Norwegian Public Roads Administration, Stavanger, Norway*

Contact: [mathias.eidem@vegvesen.no](mailto:mathias.eidem@vegvesen.no)

### Abstract

This paper describes the development of the fixed-link fjord crossing project for crossing the Bjørnafjord, south of Bergen, in Hordaland county in Norway. The Bjørnafjord is over 5 km wide from shoreline to shoreline, with a maximum depth of close to 600 meters. Today, the fjord is crossed by a ferry-connection between Halhjem, and Sandvikvåg. The ferry-connection is a part of the E39 route between Aalborg in Denmark and Trondheim in Norway.

Over the years, many plans have been made in order to try to get a more efficient coastal highway along the west coast of Norway. As a result of this work, many ferries have been replaced with bridges and tunnels along this route. Most notably, the two floating bridges in Norway, the Bergsøysund bridge and the Nordhordlands bridge. Despite the development of longer suspension bridges as well as floating bridges, the Bjørnafjord has long been considered the too big a challenge to cross with a fixed connection. Earlier plans for connecting the northern and southern part of Hordaland have therefore relied on a long detour around the fjord, in order to avoid building a fixed connection across the fjord.

This paper will describe how the development in offshore technology combined with the development in bridge technology now have made it possible to build a fixed connection across the fjord, as well as the planning-process of the crossing up to the present point in time.

**Keywords:** Fjord crossing, Floating bridge, Submerged floating tube bridge, SFTB, Tension leg platform, TLP, Suspension bridge.

### 1 Introduction

The E39 route runs along the west coast of Norway for 1100 km from Kristiansand in the south, to Trondheim in the north. Along this route, ferries have always been used to transport cars over the many fjords you find there, and even though many ferries have been replaced by bridges and sub-sea rock tunnels, there are still eight remaining ferry connections along the route. Now, the Coastal Highway Route E39 Project, also called "Ferry Free E39 Project" takes aim at replacing these remaining ferries with fixed connections. However, this is not the first time

that the idea of a coastal route have been proposed. This paper tells the history and background of the project on how to cross the 5km wide and 550m deep Bjørnafjord.

### 2 Development of the coastal highway route.

The development of a coastal highway route on the west coast of Norway have seen many different stages. From the first idea was conceived right after world war II, up to the newest proposal in 2013.