

Frontier Exploration in Proven Basins

Historically, successful frontier exploration has led to the opening of new plays where large discoveries can be made at relatively high success rates when the elements of the working petroleum system become better understood. As exploration continues, typically discovery sizes become smaller until the play becomes mature. The value of frontier exploration has not been in the frontier discovery itself but in the opportunities created by frontier success. The proportion of frontier wells being drilled by high impact explorers has, however, been declining year on year since 2018 (figure 1). This is a result of low commercial success rates (~7%), limited play volumes, with only one oil play opened since 2006 delivering more than 5bnboe and cycle times from discovery to production averaging 9 years for frontier discoveries. In 2021, Westwood recorded 15 frontier wells drilled globally, a drop of 75% from the 50-60 frontier wells that were drilled each year before the 2014 oil price crash

The recent focus on the energy transition has exacerbated this trend with several companies reducing frontier activity and focusing on their proven heartlands which may offer better commercial success rates, existing infrastructure, and access to existing markets. Whilst companies are moving away from frontier basins, proven basins may still offer frontier opportunities. The commercial success rate for frontier wells in proven basins is 10% compared to 2% in frontier basins. Since 2010, 53 frontier wells have been drilled in Norway resulting in 4 commercial discoveries and a commercial success rate of 8%, in line with the global average.

This presentation will look at how frontier exploration has performed over the last decade in proven and unproven basins and compare the global trends to frontier exploration activity in Norway. It will present examples from around the world where frontier exploration has tested both new geographies and new geological concepts and attempt to identify performance factors that contribute to success in proven basins.

