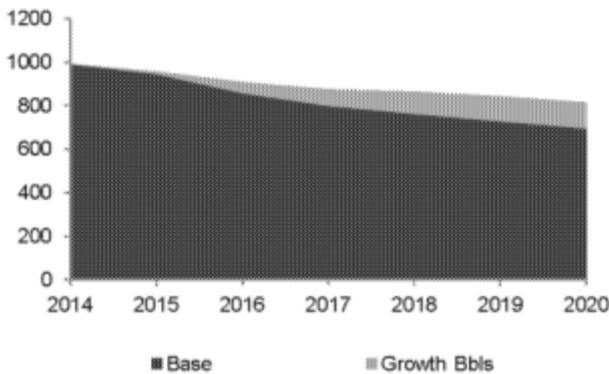




Colombia

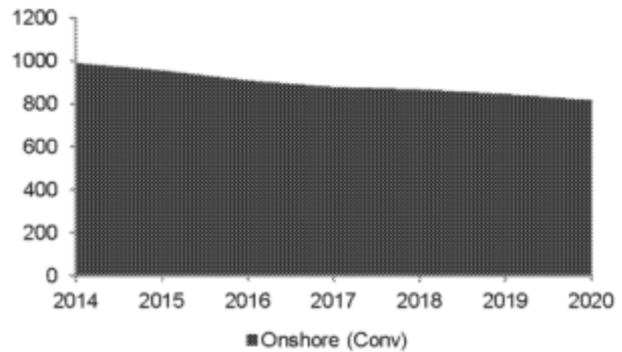
In our view, Colombia's upstream sector is significantly challenged amidst a backdrop of low oil prices, a low reserve life at existing fields, high field operating costs, transportation bottlenecks, security concerns, and corruption charges involving Colombia's largest oil producer. From 2004 through 2008, oil production hovered around a stable 550 mboe/d before ramping aggressively in 2009 and peaking in 2013 at over 1,000 mboe/d; chiefly driven by production from the heavy oil fields of the Llanos basin. The majority of the remaining commercial oil reserves in Colombia is in the Llanos Basin where three fields in particular (Castilla, Rubiales, and Quifa) represented ~40% of 2014 oil production. However, with the fields in decline, and production growth having largely outpaced needed infrastructure re-investment, we expect Colombia oil production to decline in our forecast period. We model a long-term decline rate of ~5% (assumed upside from EOR projects) resulting in a decline in production of ~200 mboe/d from 2013 peak levels by 2020.

Figure 88: Colombia Production Outlook, 2014-2020e (Mb/d)



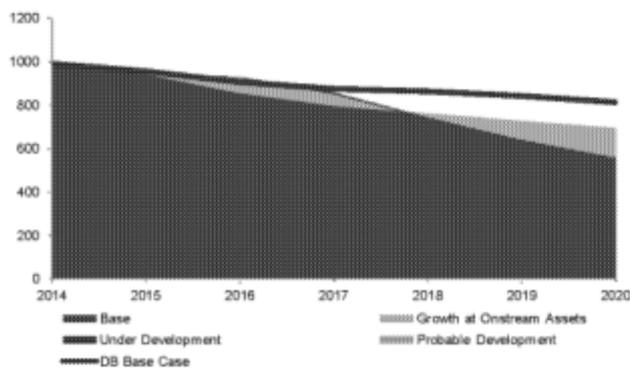
Source: Deutsche Bank, Wood Mackenzie, IEA

Figure 89: Production by type (area chart of onshore vs. shallow vs. deepwater (Mb/d)



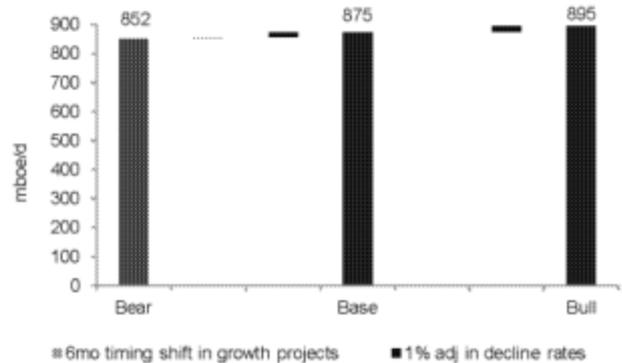
Source: Deutsche Bank, Wood Mackenzie, IEA

Figure 90: Crude volume growth outlook by project status (Mb/d)



Source: Deutsche Bank, Wood Mackenzie, IEA

Figure 91: 2017 Production Swing (Bear vs. Bull) of ~40 Mb/d (Mb/d)



Source: Deutsche Bank, Wood Mackenzie, IEA