Hole cleaning is one of major considerations for both the design and execution of drilling operations. In particular, especially in wells that have high inclination, if the fluid velocity is lower than a critical value, a stationary bed may be developed, which may cause several problems, such as a higher probability of stuck pipe, getting stuck, high drag, and higher hydraulic requirements.

To avoid such problems, generated any cuttings will have to be taken out from the wellbore through the help of a drilling fluid. Factors that influence cutting transport include drilling fluid type, flow rate, drilling fluid viscosity, drilling fluid weight, and drilling fluid type of drilling fluid, as well as the hole size, rotational speed, eccentricity, penetration rate, and cutting size. Efficient cutting transport is presumed to be achieved when the pump flow rate above exceeds a critical flow rate value. An inadequate pump flow rate may bring cause cuttings to fall back to the bottom of the hole. In inclined highly-vertical and horizontal wells, cuttings beds occur frequently, i.e., fall-back fallen cuttings that pile up on the surface of the wellbore.

A lot of several cutting-transportation model's have been developed. Nowadays, it was common to recognize a couple of main common approaches: include an empirical approach, and as a mechanistic approach [6]. However, these three study employed three models, developed through an empirical approach, i.e., Rudi–Shindu’s model [7], Hopkins’ model [8], and Tobenna’s model [9]. In 1995, Hopkins listed all variables that are required to determine the minimum flowing rate. After several years, several years later, Rudi–Shindu introduced the slip velocity, and correction factors for the to the drilling fluid weight, and the for the angular inclination. Tobenna developed a model in 2010 to calculate the critical flow rate being for deviated wells based on Bernoulli’s method. The models were compared to case study wells. Two exemplary wells that mimic critical operational conditions are considered.