Applications of robotic technologies in the upstream and downstream sector

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1. Theme Description

According to the [2017 edition of the BP Energy Outlook](#) the world economy will double over the next 20 years with an annual growth of 3,4% drive by China and India. Oil, gas and carbon will account for more than 75% of energy supplies in 2035, despite of the use of renewable resources will increase. In this context gas will overtake coal becoming the second fuels source in 2035 with an annual growth of 1,6 %.[1] Focus on oil demand, it reached 94,4 Mbbl/day in 2015 and it is expected to overtake 100 Mbbl/day in 2021.[2] Therefore oil companies have started to explore new unconventional reservoirs such as tight and heavy oil, shale gas etc. with the aim to increase the production.[3] However these new oilfields are in desert, artic, deep water zones and require specific technologies to be extracted. In last fifty years several accidents occurred such as Exxon Valdez oil spill in 1989[4] or Deepwater Horizon oil spill in 2010[5]. In this scenario robotic technologies can have a key role in increasing safety, efficiency, productivity and minimize risks. Therefore, in the following sections their applications in the oil and gas sectors are described.
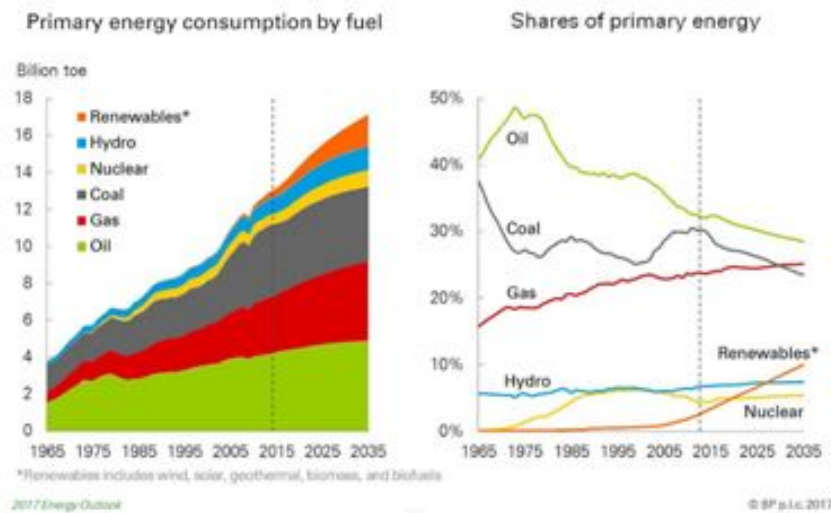
Figure 1 — Energy Consumption from 1965 up to 2035.

[1] https://www.bp.com/content/dam/bp/pdf/energy-economics/energy-outlook-2017/bp-energy-outlook-2017.pdf

[2] https://www.iea.org/publications/freepublications/publication/MTOMR2016.pdf

[3] http://www.unconventionalenergyresources.com/

[4] https://www.britannica.com/event/Exxon-Valdez-oil-spill

[5] https://www.britannica.com/event/Deepwater-Horizon-oil-spill-of-2010

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