Carbon Capture in Point Lisas Estate – Trinidad

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ABSTRACT

To identify the best suited method of implementation of carbon capture (CC) technology in the Point Lisas estate area located in south Trinidad, examining and surveying available carbon capture methods and technologies, weighing the advantages and disadvantages of each, as well as how various countries/nations worldwide implement and use the CCS technologies was conducted. CC technologies investigated included post-combustion, pre-combustion and oxyfuel combustion capture methods which are directly from the emission source and direct air capture (DAC), (not at emission source). These capture methods employ the use of either liquid solvent (typically amine solution) to absorb CO_2 or solid sorbent materials/filters (adsorption). Factors concerning CC such as barriers to implementation (i.e., cost, transportation and storage) and factors affecting costs were addressed. Various CCS facilities/pilot plants researched were Quest, Carbon engineering (located in Canada), Sleipner and Snohvit facilities (Norway), Climeworks (Switzerland), Illinois Industrial Carbon, Petra Nova and many more in U.S.A. From the research conducted, it was deduced that post combustion capture method utilising liquid/chemical solvents for capture of CO_2 is the best suited method/direction for the implementation of CC in the Point Lisas estate, Trinidad in the near future. Post combustion CC offers the greatest feasibility compared to oxyfuel, pre-combustion and direct air capture as it can be easily retrofitted into the existing plants and use of chemical solvent is familiar and allows for reusability. The captured CO_2 can then be separated and supplied for use in methanol and/or ammonia synthesis.