CHARCOAL INJECTION IN BLAST FURNACE (PART II): ECONOMICS OF CHARCOAL MAKING AND DEPLOYMENT

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Abstract
Following the first part of this work, a cost objective function has been used to measure the impact on iron production of biochar substitution in highly fuel efficient BF among the top 9 hot metal producers; estimations are based on cost determinants in ironmaking. This contribution aims to shed light on a strategic question: under which conditions can be economically attractive to implement Bio-PCI?. Results indicate a potential CO2 mitigation of 18 - 40 % with respect current emission rates; on the economic assessment findings show that biochar cannot solely on price compete with fossil coal, thus lower biochar cost or the introduction of carbon taxes are necessary to increment the competitiveness of Bio-PCI. Based on actual prices of raw materials, electricity and carbon taxes, biochar should be between 130.1 – 236.4 USD/t and carbon taxes 47.1 – 198.7 USD/t CO2 to facilitate Bio-PCI substitution in examined countries. Our analysis leads to conclude that the use of residual biomass (e.g. agricultural and forestry residues) may significantly reduce the production cost in comparison to primary woods sources, this naturally increment the economical attractiveness of Bio-PCI substitution.

Keywords: Bio-PCI; Biochar; Pulverized Carbon Injection (PCI); residual biomass

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