

A methodology for assessment of deep decarbonisation pathways for manufacturing industries in Ireland

Kirestena Saeed
Department of electrical and electronic
engineering
Technological university of Shannon
limerick ,Ireland
kirestena.saeed@lit.ie

Dr.John Cosgrove
Department of electrical and electronic
engineering
Technological university of Shannon
Limerick, Ireland
John.Cosgrove@lit.ie

Dr.Frank Doyle
Department of electrical and
electronic engineering
Technological university of Shannon
Limerick, Ireland
Frank.Doyle@lit.ie

Abstract

Industrial development has an important role in the economic growth, along with this development, industrial sector has been one of the fastest growing sources of greenhouse gas emissions this growth has been driven by the increase of intensive industry subsectors including cement, iron and steel, chemicals, and aluminum, and because of a socio-economic and population growth. industrial sector is accounts of 30% of greenhouse gas emissions and around 37% of global energy consumption. In agreement with the 2015 united nation conference of parties, (COP21) to reduce the global temperature to reach low than 2 °C by the year 2050 , 197 participating countries agreed to take measures to reduce greenhouse gas emissions .Achieving this target requires overall changes of the universal economy and may be possible if the level of carbon dioxide (CO₂) in the environment remains below 450 part per million , however the concentration of carbon dioxide₂ continue to increase which is need to a new policies and technologies to reduce the industrial emissions between 29%-41% by the year 2030. Rapid and deep decarbonisation of industry is needed to reduce emissions through many pathways, replacing fossil fuels with renewable technologies such as wind, solar, developing of new technologies and materials coupling with improving energy efficiency and electrification of high temperature heating. This research will investigate the existing information, scope, methodologies, and toolkit relating to deep decarbonisation and will intend a methodology to validate measures towards decarbonisation that are relevant to the Irish context. The research will focus on the greenhouse emissions from Irish manufacturing industries and will set an energy efficiency and energy reduction metric and will propose a methodology for the validation of deep decarbonisation pathways for manufacturing industries in Ireland.

Keywords: Industrial decarbonization, Renewable technology, Energy efficiency

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