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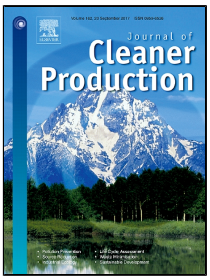

Selection of biomass thermochemical conversion technology in the Netherlands: a Best Worst Method approach

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Abstract

This paper studies the technology battle for biomass conversion in the Netherlands. Three types of technologies are currently fighting the battle for standard dominance: combustion, pyrolysis, and gasification. Twelve relevant factors for standard dominance were found: 'financial strength', 'operational supremacy', 'learning orientation', 'technological superiority', 'compatibility', 'flexibility', 'pricing strategy', 'distribution strategy', 'previous installed base', 'regulator', 'effectiveness of the format development process', and 'network of stakeholders'. Applying expert opinions and the Best-Worst Method (BWM), the relative importance (weights) of these factors were calculated. The weights were then used to evaluate and rank the technologies. The results show that biomass gasification has the highest chance of achieving standard dominance and that technological superiority is the most important factor affecting standard success. The weights per factor were explained and theoretical contributions and areas for future research were discussed.

Keywords: standards; standards battles; best-worst method; BWM; biomass conversion; biomass gasification

1. Introduction

Biomass has always been a major source of energy for mankind. After the industrial revolution, interest in biomass declined due to heavy exploration and relatively low costs of fossil fuels. However, after the 1970 oil crisis, interest in renewable energy revived (Kamp, 2002), and the use of fossil fuels started to raise many political, economic, and environmental concerns. Interest in renewable energy continued on a small scale in developed areas such as