The environmental performance and policy direction of biomass densified solid fuel for heating in China

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Abstract

China has a large amount of agricultural and forestry residues that can be used as energy, and biomass densified solid fuel (BSDF) is an important pathway to use them as energy, especially for heating. One of the challenges facing the development of BSDF is that its environmental performance, including conventional air pollutants emissions and greenhouse gas (GHG) emission, is still doubted because previous studies have not yet reached a consensus. The aim of this manuscript is to evaluate the GHG emissions and conventional air pollutants emissions of BSDF for heating by Life Cycle Assessment (LCA) method, and propose policy suggestions for BSDF development. In this study, a 3E (energy, environment and economy) inventory model is established and applied to a recently commercialized case of BSDF for heating, and data quality is ensured by plenty of on-site survey. The results indicate that BSDF for heating can realise clean and environment friendly heating production in the investigated cases, and it is suggested to further deploy BSDF for heating, especially in industrial heating area where this technology can be competitive in the market compare to coal, natural gas and electricity for heating.