Structural decomposition analysis for greenhouse gas emissions from the Construction sector in Australia

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This research assesses the greenhouse gas (GHG) emissions arising from the Australian Construction sector with changes in Australian economic system in the post-financial-crisis era. The Australian Environmental-Economic Accounts are combined with Australian input-output tables to construct the environmentally-extended input-output (EEIO) tables for GHG emissions. It illustrates the relationships between economic activities and GHG emission in the Construction sector. Although the total economic output of the Construction sector has increased by 34.78% from 313634 million $AUD in 2009â€“10 to 422706 million $AUD in 2014â€“15, both the direct and indirect effects of GHG emissions in the Construction sector have decreased by 24.62% and 31.44%. On the basis of EEIO, the structural decomposition analysis (SDA) method is applied to estimate the driving forces for the changes of GHG emissions from 2009â€“10 and 2014â€“15. The Australian Construction sector has been divided into four sub-sectors: Residential Building Construction, Non-Residential Building Construction, Heavy and Civil Engineering Construction, and Construction Services. The Construction Services sector had generated the largest amount of GHG emissions during the period, and the Residential Building Construction sector has the largest total effect for GHG emission. The growth of GHG emissions in these four sub-sectors between 2009â€“10 and 2014â€“15 was mainly affected by the Final demandâ€™s overall level of economic activity (the level effect). The level effect of Final demand results in the largest increase of GHG emissions in the the Construction Services sector by about 1068 Giggrams. The novelty of the paper is that the SDA method has conducted enabled analysis for the drivers of the change of GHG emissions from these four sub-sectors disaggregated from the Australian Construction sector. Consequently, the detailed analysis for sub-sectors would lead to a better understanding of the causes of GHG emissions. It benefits the policy-makers to design pertinent strategies for the reduction of GHG emissions in the Australian Construction sector.