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1	Study on the changes of the decoupling indicator between
2	energy-related CO ₂ emission and GDP in China
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6	Abstract: The decoupling analysis is a useful method to study the relationship between economic
7	growth (GDP) and energy consumption or environment issue. However, no paper has paid
8	attention to why does decoupling indicator changes over time? Based on the Log-Mean Divisia
9	Index (LMDI), this paper provides a new way to study the changes of C-G (CO ₂ emission-GDP)
10	decoupling indicator in China. The changes of C-G decoupling indicator are decomposed into
11	C-EF (CO ₂ emission-Fossil energy consumption) decoupling indicator effect, EF-E (Fossil energy
12	consumption-Total energy consumption) decoupling indicator effect, E-G (Total energy
13	consumption-GDP) decoupling indicator effect. The main results as follows: (1) In China,
14	energy-related CO_2 emission increased to 8858.47 Mt in 2013. (2) During the study period, coal
15	accounted for more than 67% of total primary energy consumption. (3) The curve of energy
16	intensity has the same trend as the CO_2 emission coefficient. (4) Over the study period, only three
17	decoupling statuses occurred in the C-G decoupling. (5) During the study period, the E-G
18	decoupling effect played an important role in the change of C-G decoupling indicator. However,
19	the C-EF decoupling effect played a minor role in the change of C-G decoupling indicator over
20	1996-2013.

21 Keywords: CO₂ emission; Decouple indicator; LMDI method; China

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