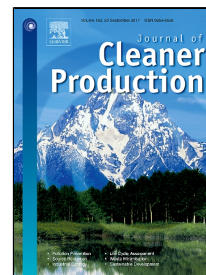


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Revisiting China-Africa trade from an environmental perspective

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Abstract: International trade patterns can be seen as ways to redistribute natural resources and manufactured products, by means of convergence and divergence pathways, in support of production and consumption processes worldwide. By making needed resources to potential users (individuals and economies) trade acts as a driver of resource extraction, processing, degradation, especially if this is facilitated by market dynamics in which prices are determined by contingent factors that have no links to the environmental dynamics of resource generation and do not match the real quality of natural capital and ecosystem services involved. A fair trade relationship should take these aspects into proper account, in so promoting additional criteria for resource value and, as a consequence, towards efficient resource use and cleaner production processes. A comprehensive cost and benefit evaluation to consider the economic and ecological impacts is therefore a much needed prerequisite for a balanced trade relationship. To conduct this evaluation, we firstly choose the trade data of China with South Africa, Sudan, Algeria, Nigeria, Egypt and Morocco in the years 2001, 2004, 2008 and 2012 as sample set. Then we apply the emergy accounting approach to the international trade dynamic between China and above selected African countries to quantify the exchange of natural capital and ecosystem services among partners (including resources that support know-how and technology exchange), as well as to identify benefits and compensation measures that may increase trade balance and equity via the prevention of uncompensated resource exploitation. By accounting for the environmental support embodied in traded resources and their capability to support an economic process, the emergy approach applied in this study provides a complementary tool to economic evaluation, which enables a more comprehensive understanding of trade, beyond the monetary terms of trade. In terms of the total emergy exchange, the investigated African countries (with the exception of South Africa and Sudan) receive more emergy from China over the investigated period, which appears to suggest a reversal of the typical trend in which

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