Critical raw materials extraction and water stress: an empirical investigation

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Résumé

Electric vehicles, photovoltaic panels and wind turbines are greedy for metals such as cobalt, rare earths, graphics, lithium and copper. The energy transition calls for a radical change in the energy system, with the entry of new players, such as China, DRC Congo, Australia, Chile, South Africa, Mongolia, and Peru, which produce these minerals. However, the extraction and processing of these minerals would require high water demand in these countries. Critical raw materials-CRM- extraction for greener energy transition could therefore become a vicious circle where one is robbing Peter to pay Paul: addressing decarbonization of economies and energy issues raises the water stress. What may be the interactions between the production of CRM and water stress? This paper investigates the potential interactions between the production of critical raw materials and water stress in mineral countries. In a sample of 81 countries, using the Discroll-Kraay fixed effects technique, we find that the production of critical raw materials is associated with water stress in mining countries compared to their counterparts. Suggesting that an increase of CRM is associated with an increase of water stress in CRM producing-countries. Alternative GMM method and using four disaggregated specific CRM validate our baseline results. Our robust results from various sensitivity analyzes call for global reflection on the energy transition roadmap.

Mots-Clés: Critical raw material, energy transition, de, carbonization, water stress, panel data

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