

Energy poverty alleviation and climate change mitigation: Is there a trade off?

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Abstract

Energy poverty alleviation has become an important political issue in the most recent years. Several initiatives and policies have been proposed to deal with poor access to modern sources of energy in many developing countries. Given the large number of people lacking basic energy services, an important question is whether providing universal access to modern energy could significantly increase energy demand and associated CO₂ emissions. This paper provides one of the few formal assessments of this problem by means of a simple but robust model of current and future energy consumption. The model allows mapping energy consumption globally for different classes of energy use, quantifying current and future imbalances in the distribution of energy consumption. Our results indicate that an encompassing energy poverty eradication policy to be met by 2030 would increase global final energy consumption by about 7% (roughly 20 EJ). The same quantity of energy could be saved by reducing by 15% energy consumption of individuals with standards above current European levels. The additional energy infrastructure needed to eradicate energy poverty would produce 44–183 GtCO₂ over the 21st century and contribute at most 0.13 °C of additional warming.