

The decline of the world's energy intensity

José Goldemberg*, Luiz Tadêo Siqueira Prado
Institute of Electrotechnics and Energy, University of São Paulo, São Paulo, Brazil

Energy intensity of the total primary energy supply (TPES), total final energy consumption (TFC) and LOSSES in the conversion from TPES to TFC were analyzed for the World, OECD and Rest of the World (ROW) countries. LOSSES increased significantly for all groups of countries due to the increase of electricity production from coal in the period studied (1971–2008). Electricity share final consumption almost doubled, increasing from 8.8% to 17.2% in the period studied. However the energy intensity of LOSSES remained practically constant, which reflects the fact that the efficiency of electricity generation from coal (the main source of electricity) remained practically constant in that period.

Despite the attractiveness of end-use devices running on electricity such as computers, which is typical of modern societies, the CO₂ emissions are bound to increase unless coal is replaced by less carbon emitting sources such as natural gas, renewables and nuclear energy.