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INFORMATION AND COMMUNICATION TECHNOLOGY AND THE BATTLE FOR ENVIRONMENTAL POLLUTION: A GLOBAL PERSPECTIVE

The positive and negative environmental impacts of information and communication technologies (ICTs) are widely debated. In theory, ICT is among the sources contributing to the increasing levels of CO₂ emissions in terms of production of ICT machinery and devices, energy consumption, and recycling of electronic waste. For example, E-waste is one of the main sources of harmful toxic pollutants such as polyvinyl chlorides, polychlorinated biphenyls, lead, mercury and cadmium among others. E-waste also represents a potent source of valuable metals such as gold, silver, palladium, and copper. However, it is expected that ICT will help us to reduce CO₂ emissions on a global scale by developing smarter cities, transportation systems, electrical grids, industrial processes, and energy saving gains. These two effects work in opposite directions, creating an inverted-U relationship between ICT and CO₂ emissions.

Given that global warming is a global issue, it is necessary to look at this relationship in countries at all levels of development. To this end, we use a panel data set consisting of 147 economies, over the period 1996–2015. The results of our empirical study confirm that the relationship between ICT and CO₂ emissions is an inverted U-shaped relationship. Moreover, while for the sample of developing countries, the ICT turning point is well above the mean value, the opposite is true for the sample of developed countries. This implies that many developed countries have already attained the level of ICT development, at which CO₂ emissions decrease as the level of ICT development improves further.

Biography

Farid Shirazi has graduated from the University of Cape Town in Information Systems. He is a Senior Researcher at the Institute for Innovation and Technology Management at Ryerson University, Toronto, Canada. He is currently an Associate Director and an Associate Professor of the Ted Rogers School of Information Technology Management. Dr. Shirazi's research focuses mainly on the impact of ICTs on social and economic development. His main research interests are IT-enabled sustainability and development, Cloud Computing, Bigdata Analytics, E-government strategies, Green IS management as well as the ethical and security perspectives associated with the introduction and use of ICTs.

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