

# Chapter 21

## Technology Gap: Information and Communication Technology Trade and Sustainability Issues in India

**Ritu Rana**

 <https://orcid.org/0000-0002-2241-0807>

*National Institute of Technology Hamirpur, India*

**Manoj Sharma**

*National Institute of Technology Hamirpur, India*

**Ajay Singh**

*Indian Institute of Technology Jammu, India*

### ABSTRACT

*This chapter extends the authors' previous research work in which an examination of causality was conducted between foreign direct investment (FDI), economic growth (GDP), and the environment (CO<sub>2</sub> emissions and energy consumption [EC]) in the Indian context. Two more important variables (i.e., trade openness and technology gap) were also added. The chapter further examines the effects of information and communication technology (ICT) trade on both GDP and the environment of India. The results of previous model show that FDI is neither causing GDP nor is it bridging the technology gap. The results also indicate the existence of pollution haven hypothesis (PHH) in India as FDI is causing both CO<sub>2</sub> and EC. Also, FDI is, though not causing the GDP directly, doing so indirectly through CO<sub>2</sub> validating the existence of PHH. FDI is causing trade openness in India, but that openness is again causing more FDI, which is doing no good for India. The results of ICT trade model indicate that both GDP and ICT exports cause CO<sub>2</sub> in India. Also, both the GDP and ICT exports are consuming energy in India.*

DOI: 10.4018/978-1-7998-8678-5.ch021

## INTRODUCTION

Globalisation of businesses has made economic activities cross all the boundaries. Economic activities are routed to achieve extreme economic growth. India is one among the developing countries that are framing policies to help achieve economic growth by encouraging and promoting a huge amount of business activities. At the same time, these activities become the cause of what is known as the green house gas (GHG) emissions. Reducing these GHG emissions from the highly polluting emerging economies without limiting the pace of their economic development is one of the most popular debates that have attracted global attention.

Four basic factors are involved in the process of economic development i.e., human and natural resources and building up of capital and technology (Hitam and Borhan, 2012). The developing countries rely mostly on the foreign capital and technology for their economic development. Over the last two decades, FDI flows have considerably increased all around the world (Seker et al., 2015). As per Bokpin (2017), it is largely considered that FDI influences the economic prospects of recipient nation positively. Vu et al. (2006) also found that FDI has statistically significant positive effects on economic growth operating directly and through labor productivity.

It is also considered that technology transfer provided by developed countries contributes to the productivity growth in developing countries (Xu, 2000). In the words of Borensztein et al. (1998), FDI is an important vehicle for the transfer of technology, contributing relatively more to growth than domestic investment. Although FDI is expected to increase long-run growth in the host country via technological upgrading and knowledge spillovers, the extent to which FDI is growth-enhancing depends on the degree of complementarity and substitution between FDI and domestic investment (De Mello, 1999).

Several relaxations in taxes, environmental standards and regulations are being provided to foreign investors to increase the level of economic activities which, ultimately, are expected to bring economic growth. Markets are thus made open to the global investors through trade liberalisation for the sake of economic growth.

Hence, the idea of promoting and encouraging huge amounts of investments in business activities is considered good for any developing country like India, but there exist negative effects of such activities on the natural environment of the host country as several manufacturing processes make misuse of the natural resources. Investors from developed countries exploit the resources of developing countries as these countries have free trade policies and relaxed environmental laws. Shao (2018) found that dirty foreign investments flow to low-income countries. The reason for this he found is that in the absence of FDI-attracting factors such as infrastructure and skilled labor, low-income countries use lax environmental regulations and these low-income countries emerge as innocent pollution havens because they cannot afford the costs of implementing and monitoring environmental regulations. As per Elliot and Shimamoto (2008), there are concerns that less developed countries could competitively undercut each other's environmental regulations to attract FDI. This may result in these countries becoming "pollution havens", where multinational corporations (MNCs) locate operations in order to save on environmental related costs (Blanco et al., 2011). In this scenario, the MNCs that have more to gain from relocating are those in the most pollution-intensive industries e.g. in Iron and Steel, Non-Ferrous Metals, Industrial Chemicals, Pulp and Paper, and Non-Metallic Mineral Products.

India is one among those countries that strive for increase in their economic growth. For this purpose, Indian government continues to emphasize on creating favourable operating environments for both domestic and foreign investors through tax reductions/ exemptions, relaxed labour laws and natural environmental

22 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/technology-gap/286424](http://www.igi-global.com/chapter/technology-gap/286424)

## Related Content

---

### Forecasting Practices in Textile and Apparel Export Industry: A Systematic Review

Adeel Shah, Rizwan Matloob Ellahi, Urooj Nazir and Musawir Ali Soomro (2022). *International Journal of Circular Economy and Waste Management* (pp. 1-17).

[www.irma-international.org/article/forecasting-practices-in-textile-and-apparel-export-industry/288501](http://www.irma-international.org/article/forecasting-practices-in-textile-and-apparel-export-industry/288501)

### Channel Conflict and Management of O2O Network Marketing Model Under E-Commerce Exploration of Ideas

Rafia Sber (2022). *International Journal of Circular Economy and Waste Management* (pp. 1-4).

[www.irma-international.org/article/channel-conflict-and-management-of-o2o-network-marketing-model-under-e-commerce-exploration-of-ideas/312227](http://www.irma-international.org/article/channel-conflict-and-management-of-o2o-network-marketing-model-under-e-commerce-exploration-of-ideas/312227)

### The Arts, Civic Engagement, and Urban Youth

Amy M. Grebe (2019). *Socio-Economic Development: Concepts, Methodologies, Tools, and Applications* (pp. 703-728).

[www.irma-international.org/chapter/the-arts-civic-engagement-and-urban-youth/215755](http://www.irma-international.org/chapter/the-arts-civic-engagement-and-urban-youth/215755)

### The Relative Importance of Trade vs. FDI-Led Economic Growth in Thailand

Sailesh Tanna, Kitja Topaiboul and Chengchun Li (2018). *Foreign Direct Investments (FDIs) and Opportunities for Developing Economies in the World Market* (pp. 105-122).

[www.irma-international.org/chapter/the-relative-importance-of-trade-vs-fdi-led-economic-growth-in-thailand/198806](http://www.irma-international.org/chapter/the-relative-importance-of-trade-vs-fdi-led-economic-growth-in-thailand/198806)

### Online to Offline-based e-waste "Internet + Recycling" pattern building: Online to Offline-based e-waste

(2022). *International Journal of Circular Economy and Waste Management* (pp. 0-0).

[www.irma-international.org/article/311052](http://www.irma-international.org/article/311052)