## Governance on Carbon Dioxide Emissions in **Africa**

#### Subjects: Environmental Sciences

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The connection linking economic growth (ECG), tourism, and environmental pollution problems has been extensively argued. Extant research has investigated the environmental Kuznets curve (EKC) assumptions from empirical and theoretical perspectives to measure the connection between the environment's quality and economic growth. Environmental issues are quantified by factors such as ECG, tourism (TOUR), governance (GOV), urbanization, energy consumption, and financial development. Furthermore, most studies employed the environmental EKC theory to reveal the significance of the connection of variables foreign direct investment (FDI), TOUR, and ECG to an economy.

governance foreign direct investment tourism CO2 emission economic growth

Africa

# 1. The Connection between Tourism and CO<sub>2</sub> Emissions

Extant research has demonstrated that tourism has expanded steadily during the last decades, accounting for 10% of world job opportunities and 10% of worldwide GDP [1][2]. The tourist industry is forecasted to create significant merits in socioeconomic growth and job avenues worldwide by 2030 [3]. Notwithstanding, these positive impacts of tourism (TOUR) have their corresponding negative environmental impacts. Contemporary TOUR activities are considered the most significant source of CO<sub>2</sub> emissions, posing challenges to most governments. Tourism-associated economic growth is expected to be decoupled from resource consumption, leading to CO<sub>2</sub> emissions <sup>[3]</sup>. The preference for foreign and domestic tourists to use personal automobiles is becoming more prevalent, which significantly affects the environment [4][5][6][7]. The CO<sub>2</sub> footprint of the worldwide TOUR industries revealed that worldwide CO<sub>2</sub> emissions from the tourism industry are presently not adequately evaluated [8]. The researchers determined global tourism-related carbon flows and carbon footprints for 160 countries from both an origin and destination accounting perspective. According to the research result, the tourism industry's worldwide CO<sub>2</sub> footprint soared between 3.9 and 4.5 GtCO2 emissions between 2009 and 2013, accounting for nearly 8% of worldwide GHG emissions, four times higher than previously estimated. The findings revealed that transportation and other energy consumables are significant factors leading to CO<sub>2</sub> emissions. The research indicated that high-income countries might be responsible for the vast majority of this footprint <sup>[8]</sup>.

Furthermore, the United Nations WTO [9] comprehensive analysis of tourism-related transport influence on environmental pollution indicated that, by 2030, transportation-related CO<sub>2</sub> emissions would constitute 5.3% of all artificial CO<sub>2</sub> discharge. Furthermore, between 1995 and 2018, Anser et al. [10] utilized extensive longitudinal research data from 132 nations to analyze CO<sub>2</sub> emission costs in TOUR industries. The findings revealed that inward tourism will probably fall from 19.5% to 16.8% between 2020 and 2028 due to the rise in CO2 emissions and the stringent policies implemented by stakeholders to reduce CO<sub>2</sub> emissions. Tourism-related activities substantially impact climate change, which challenges Africa and the world economy. As a result, tourism and travel, land degradation, and deforestation are closely linked to GHG emissions [11].

The problem of experiencing increases in CO<sub>2</sub> emissions relating to the TOUR industry was portrayed much more grimly in <sup>[12]</sup>. They predicted that the tourist industry would be a significant source of GHGs. Notwithstanding, their findings revealed that many governance policies and practice reforms in travel activities might significantly reduce pollution. Thus, the adaptation of TOUR activities to reduce emissions would be prudent for the development of sustainable long-term goals [12] <sup>[13]</sup>. Despite continued increases in the patronage of TOUR activities, effective governance policies may reduce  $CO_2$  emissions. Moreover, introducing a modern lower-level emission technological system may support and sustain the decrease in  $CO_2$  emissions. This current entry posits that a positive association between tourism and carbon emissions may be established on the basis of the issues presented.

### 2. The Connection between Economic Growth and CO<sub>2</sub> Emissions

Studies have indicated that  $CO_2$  emissions also increase from industrial and domestic use when pursuing economic growth [14][15]. Environmental Kuznets curve (EKC) serves as a model for the interaction of economic expansion, energy consumption, and environmental pollution issues <sup>[16]</sup>. The World Bank Development Report on EKC in 1992 revealed that "increased economic activities invariably impacted the environment and premised on rigid suppositions concerning advanced technologies, preferences, and investment opportunities". Moreover, "as income increases, the demand for enhanced environmental standards would keep rising, and so would the available resources for investment" <sup>[16][17]</sup>. With the assumption that growth in an economy is inevitably accompanied by carbon emissions, this research adopts the EKC theory in anticipation of getting varied or dynamic results from the various studies analyzed relating to the role played by governance in reducing  $CO_2$  emissions of TOUR, ECG, and FDI activities within selected African countries. This approach can validate or refute the EKC assumption on the basis of the roles played by the governments of the specified countries.

In most sub-Saharan African countries, ECG grew from a minimal base of about 6.7 million in 1990 to 33.8 million in 2012, enhancing the economy's growth <sup>[18]</sup>. For instance, the tourist industry accounted for 44% of aggregate GDP growth within the Seychelles and 16% of GDP in Mauritius <sup>[19]</sup>. Studies have established the link between ECG and CO<sub>2</sub> emissions in some sub-Saharan African nations <sup>[20]</sup>. The research revealed that, while the effects differ by nation, in the long term, high consumption of energy-related products and economic prosperity are connected with higher environmental pollution within many countries. The findings indicated further that long-term economic growth would result in minimal CO<sub>2</sub> emissions and the ECG demonstrated that the absence of environmental pollution measures might affect their economies. Furthermore, the research revealed bidirectional causation between ECG and CO<sub>2</sub> emissions in Gabon and Congo. The findings revealed that Benin, the Ivory Coast, South Africa, Togo, Nigeria, and Senegal are affected by high CO<sub>2</sub> emission adopting the ARDL approach revealed that countries are cointegrated into the long-term association, giving credence to the EKC hypothesis in Zimbabwe, Kenya, and Congo <sup>[21]</sup>. This current research proposes that a positive connection between economic growth and carbon emission may be established on the basis of the critical issues presented.

### 3. The Connection between FDI and CO<sub>2</sub> Emissions

FDI is the acquisition of a share in a company by a corporate entity or investment firm based outside of the entity's territory. In the broad sense, FDI alludes to a commercial decision to acquire a major stake in or purchase a foreign corporation entirely to expand its operations into a new environment <sup>[22][23]</sup>. Causal relationship analysis among CO<sub>2</sub> emissions, ECG, and FDI for 54 nations from 1990 to 2011 revealed that bidirectional causation exists between ECG, FDI inflows, and FDI and CO<sub>2</sub> in the selected nations' panel estimations <sup>[24]</sup>. Investigations concerning the connection linking FDI and governance revealed a plethora of resources essential to implementing FDI policies <sup>[25]</sup>. Minimal focus is geared toward host nations' governance for foreign investment policy implementation <sup>[25]</sup>. An investigation in sub-Saharan African countries demonstrated that various aspects of governance contribute to the major attraction of FDI <sup>[26][27]</sup>. Nevertheless, political instability and corruption negatively influence FDI, whereas enhancing political and institutional structures affirmatively impact FDI flows <sup>[26]</sup>.

Furthermore, the capacity of governments and institutions to implement and facilitate FDI is constrained by the goals of such investments within the various economic sectors <sup>[28]</sup>.

Additionally, studies have shown that  $CO_2$  is mainly increased due to FDI activities in certain nations while having the reverse effect in others <sup>[21]</sup>. Thus, normally, a country's pace of capital formation dictates the speed of economic expansion <sup>[29]</sup>. Economic growth is essential in generating FDI amongst emerging nations <sup>[30][31]</sup>. Thus, studies have indicated that the causation for both ECG and FDI is influenced by nation-specific characteristics <sup>[32][33]</sup>. Research has found that FDI significantly impacts Africa's and China's rising  $CO_2$  emissions <sup>[20][34]</sup>. FDI and  $CO_2$  emissions in diverse countries have a positive association. However, not all studies back up the conclusion <sup>[21][35]</sup>. Notwithstanding, it has been argued that FDI could help countries attain sustainable development goals (SDGs) (OECD, 2019). Thus, governments must explore how to combat the problems of attaining economic growth without environmental pollution <sup>[36]</sup>. Studies have portrayed that FDI helps host countries improve their energy efficiency and reduce  $CO_2$  emissions <sup>[37][38]</sup>.

Thus, FDI inflows responsive to laws elevate international shareholding of FDI to local shareholding [39][40][41]. Studies have shown that collective good governance actions may enhance FDI inflows [42][43][44]. Thus, factors that improve investors' regulatory quality, including tax exemptions or reductions and flexible regulations, support the implementation of legal policies to safeguard the natural environment from uncontrolled exploitation of resources and pollution. Different studies have highlighted the essence of effective governance adherence to a precise selection of policies to achieve sustainable environment policies in enhancing good practices relating to FDI and governance interaction mechanisms. Similarly, institutions and stakeholders need to play an essential role in increasing efficient governance systems to support the environmental protection agencies that regulate environmental pollution issues [45]. Furthermore, empirical results have revealed that FDI inflows contribute to pollution and a corresponding increase in CO<sub>2</sub> emissions, corroborating the pollution haven theory. They concluded that reducing fossil-fuel usage and promoting an ecologically friendly economic growth approach in emerging countries will benefit their overall wellbeing and may further support the presence of the EKC theory [46]. This present research posits that a positive association between FDI and carbon emission may be established on the basis of the core issues presented.

#### 4. The Nexus between Governance and CO<sub>2</sub> Emission

Governance refers to the institutional and traditional frameworks that allow a nation's supreme powers to be enforced <sup>[47]</sup>. These institutions and traditions comprise the nation's procedures to elect, monitor, and re-elect governments, the government's capacity to judiciously formulate and implement prudent actions, the condition of institutional bodies that govern economic and social interconnections, and citizens' respect for the authorities. Moreover, political stability and the fight against corruption invariably favor regionalism. In reality, conformance to groups of well-selected governments would facilitate a stable and sound regulatory framework and macroeconomic policies that motivate investors <sup>[25]</sup>. According to Ederington et al. <sup>[48]</sup>, the rule of law supports environmental protection and attracts FDI and trade. Studies have demonstrated that institutional development, expediting compliance with laws, and minimizing corruption may reduce a nation's risk of CO<sub>2</sub> emissions and boost the attractiveness of FDI <sup>[49][50]</sup>. Notwithstanding, limited studies have investigated the role of governance in the connection between CO<sub>2</sub> emissions and FDI <sup>[28]</sup>.

Governance is an essential element that positively facilitates and regulates the activities of FDI and TOUR to reduce CO<sub>2</sub> emissions <sup>[28][51][52][53][54]</sup>. Governance ensures that a country's resources are used efficiently by providing those activities geared toward economic productivity and can sustain environmental quality processes. Governance also strengthens access to tourism and FDI by implementing decarbonization measures <sup>[55][56][57]</sup>. As a result, this research posits that governance helps strengthen or lessen the interdependence of tourism, FDI, and CO<sub>2</sub> emissions. Thus, researchers have applied several indicators in measuring governance functions in FDI inflows, economic prosperity, and CO<sub>2</sub> emissions in diverse jurisdictions. This research employs governance (GOV) indicators comprising governance effectiveness, political stability, the rule of law,

regulatory quality, the voice of accountability, and control of corruption for analysis  $^{[25][47][58]}$ . According to the above development, it is evident that researchers have not paid great attention to the functions of governance in successfully implementing decarbonization policies that ensure zero emissions from FDI. Therefore, the authors of this research hypothesize that effective governance may play a significant part in regulating the reduction in CO<sub>2</sub> emissions.

#### References

- 1. Zafar, A. Mauritius: An economic success story. In Yes, Africa Can: Success Stories from a Dynamic Continent; World Bank Publications: Washington, DC, USA, 2011; pp. 91–106.
- 2. Chaudhary, M.; Sodani, P.R.; Das, S. Effect of COVID-19 on economy in India: Some reflections for policy and programme. J. Health Manag. 2020, 22, 169–180.
- 3. UNWTO; ITF. Transport-Related CO2 Emissions of the Tourism Sector; UNWTO: Madrid, Spain, 2019; ISBN 9789284416660.
- 4. Black, W.R. Sustainable mobility and its implications for tourism. In Tourism and Transport; Lumsdon, L.M., Page, S.J., Eds.; Routledge: London, UK, 2007; pp. 72–83. ISBN 0080519407.
- 5. Gössling, S. Global environmental consequences of tourism. Glob. Environ. Chang. 2002, 12, 283–302.
- 6. Gössling, S.; Hansson, C.B.; Hörstmeier, O.; Saggel, S. Ecological footprint analysis as a tool to assess tourism sustainability. Ecol. Econ. 2002, 43, 199–211.
- 7. Høyer, K.G. Sustainable tourism or sustainable mobility? The Norwegian case. J. Sustain. Tour. 2010, 8, 147–160.
- 8. Lenzen, M.; Sun, Y.-Y.; Faturay, F.; Ting, Y.-P.; Geschke, A.; Malik, A. The carbon footprint of global tourism. Nat. Clim. Chang. 2018, 8, 522–528.
- 9. UNWTO. Greener Tourism: Greater Collaboration Needed to Tackle Rising Emissions. Available online: https://news.un.org/en/story/2019/12/1052791 (accessed on 8 August 2021).
- 10. Anser, M.K.; Yousaf, Z.; Awan, U.; Nassani, A.A.; Abro, M.M.Q.; Zaman, K. Identifying the carbon emissions damage to international tourism: Turn a blind eye. Sustainability 2020, 12, 1937.
- 11. Amusan, L.; Olutola, O. Climate Change and Sustainable Tourism: South Africa caught in-between. Afr. J. Hosp. Tour. Leis. 2017, 6, 1–12.
- 12. Scott, D.; Peeters, P.; Gössling, S. Can tourism deliver its "aspirational" greenhouse gas emission reduction targets? J. Sustain. Tour. 2010, 18, 393–408.
- 13. Weaver, D. Can sustainable tourism survive climate change? J. Sustain. Tour. 2011, 19, 5–15.
- 14. Tunç, G.I.; Türüt-Aşık, S.; Akbostancı, E. A decomposition analysis of CO2 emissions from energy use: Turkish case. Energy Policy 2009, 37, 4689–4699.
- 15. Chen, W.; Wu, Z.; He, J.; Gao, P.; Xu, S. Carbon emission control strategies for China: A comparative study with partial and general equilibrium versions of the China MARKAL model. Energy 2007, 32, 59–72.
- 16. Stern, D.I. The environmental Kuznets curve. In Oxford Research Encyclopedia of Environmental Science; Oxford University Press: Oxford, UK, 2017.
- 17. Stern, D.I. The rise and fall of the environmental Kuznets curve. World Dev. 2004, 32, 1419–1439.

- 18. Christie, I.; Fernandes, E.; Messerli, H.; Twining-Ward, L. Tourism in Africa: Harnessing Tourism for Growth and Improved Livelihoods; World Bank Publications: Washington, DC, USA, 2013.
- WTTC. Travel & Tourism Economic Impact 2013 Sub Saharan Africa. Available online: https://documents1.worldbank.org/curated/zh/723511468102894381/pdf/814680WP0P13260Box0379837B00PUBLIC (accessed on 9 August 2021).
- 20. Ngonadi, J.C.; Huaping, S.; Okere, J.; Oguegbu, C. Examining the Impact of Foreign Direct Investment (FDI) on Offshore CO2 in the Sub-Sahara. Eur. J. Bus. Manag. Res. 2020, 5, 1–6.
- 21. Kivyiro, P.; Arminen, H. Carbon dioxide emissions, energy consumption, economic growth, and foreign direct investment: Causality analysis for Sub-Saharan Africa. Energy 2014, 74, 595–606.
- 22. Duce, M.; de España, B. Definitions of Foreign Direct Investment (FDI): A methodological note. Banco De Esp. 2003, 6, 43–49.
- 23. Piana, V. Foreign Direct Investment. Economics WEB Institute. Retrieved from 2005. Available online: http://www.economicswebinstitute.org/glossary/fdi.htm (accessed on 8 August 2021).
- 24. Omri, A.; Nguyen, D.K.; Rault, C. Causal interactions between CO2 emissions, FDI, and economic growth: Evidence from dynamic simultaneous-equation models. Econ. Model. 2014, 42, 382–389.
- 25. Hadj, T.B.; Ghodbane, A. A Moderated Mediation Model of the Effect of Foreign Direct Investments on CO2 Emissions: Panel Data Evidence from GCC Countries. J. Knowl. Econ. 2021, 13, 904–925.
- 26. Asiedu, E. Foreign direct investment in Africa: The role of natural resources, market size, government policy, institutions and political instability. World Econ. 2006, 29, 63–77.
- 27. Asiedu, E. Foreign Direct Investment in Africa: The Role of Natural Resources. In Market Size, Government Policy, Institutions and Political Instability; WIDER Working Paper Series RP2005-24; World Institute for Development Economic Research (UNU-WIDER): Helsinki, Finland, 2005.
- Muhammad, F.; Khan, A.; Razzaq, N.; Karim, R. Influence of tourism, governance, and foreign direct investment on energy consumption and CO2 emissions: A panel analysis of Muslim countries. Environ. Sci. Pollut. Res. 2021, 28, 416–431.
- 29. Onyinye, N.G.; Idenyi, O.S.; Ifeyinwa, A.C. Effect of capital formation on economic growth in Nigeria. Asian J. Econ. Bus. Account. 2017, 5, 1–16.
- 30. Kalandarovna, A.G.; Ugli, R.D.J. Theoretical principles of attracting foreign investment to the country's economy. Asian J. Multidiscip. Res. 2020, 9.
- Anyanwu, J.C.; African, F.; Bank, D. Factors Affecting Economic Growth in Africa: Are There any Lessons from Factors Affecting Economic Growth in Africa: Are There any Lessons from China ? Afr. Dev. Rev. 2018, 26, 468–493.
- Gupta, P.; Singh, A. Causal nexus between foreign direct investment and economic growth. J. Adv. Manag. Res. 2016, 13, 179–202.
- 33. Levine, R. Does foreign direct investment accelerate economic growth? Academia 2002, 195, 220.
- 34. Huang, Y.; Chen, X.; Zhu, H.; Huang, C.; Tian, Z. The Heterogeneous Effects of FDI and Foreign Trade on CO2 Emissions: Evidence from China. Math. Probl. Eng. 2019, 2019, 9612492.
- 35. Li, Z.; Dong, H.; Huang, Z.; Failler, P. Impact of foreign direct investment on environmental performance. Sustainability 2019, 11, 3538.

- Jialu, S.; Zhiqiang, M.; Mingxing, L.; Agyeman, F.O.; Yue, Z. Efficiency Evaluation and Influencing Factors of Government Financial Expenditure on Environmental Protection: An SBM Super-efficiency Model Based on Undesired Outputs. Probl. Ekorozwoju 2022, 17, 140–150.
- Shahbaz, M.; Balsalobre-Lorente, D.; Sinha, A. Foreign direct Investment–CO2 emissions nexus in Middle East and North African countries: Importance of biomass energy consumption. J. Clean. Prod. 2019, 217, 603–614.
- 38. Keho, Y. Do foreign direct investment and trade lead to lower energy intensity? Evidence from selected African countries. Int. J. Energy Econ. Policy 2016, 6, 1–5.
- 39. Kim, I.J.; Eppler-Kim, J.; Kim, W.S.; Byun, S.J. Foreign investors and corporate governance in Korea. Pac. Basin Financ. J. 2010, 18, 390–402.
- 40. Liu, N.; Bredin, D.; Wang, L.; Yi, Z. Domestic and foreign institutional investors' behavior in China. Eur. J. Financ. 2014, 20, 728–751.
- 41. Covrig, V.M.; Defond, M.L.; Hung, M. Home bias, foreign mutual fund holdings, and the voluntary adoption of international accounting standards. J. Account. Res. 2007, 45, 41–70.
- 42. Younsi, M.; Bechtini, M. Does good governance matter for FDI? New evidence from emerging countries using a static and dynamic panel gravity model approach. Econ. Transit. Inst. Chang. 2019, 27, 841–860.
- 43. Brinkerhoff, D.W.; Goldsmith, A.A. Good governance, clientelism, and patrimonialism: New perspectives on old problems. Int. Public Manag. J. 2004, 7, 163–186.
- 44. Bartels, F.L.; Alladina, S.N.; Lederer, S. Foreign direct investment in Sub-Saharan Africa: Motivating factors and policy issues. J. Afr. Bus. 2009, 10, 141–162.
- 45. Campisi, J.M.; Caprioni, E. Social and Political Risks: Factors Affecting FDI in China's Mining Sector. Thunderbird Int. Bus. Rev. 2017, 59, 709–724.
- 46. Hanif, I.; Muhammad, S.; Raza, F.; Gago-de-santos, P.; Abbas, Q. Fossil fuels, foreign direct investment, and economic growth have triggered CO 2 emissions in emerging Asian economies: Some empirical evidence. Energy 2019, 171, 493–501.
- 47. Kaufmann, D.; Kraay, A. The Worldwide Governance Indicators (WGI) Project Reports Aggregate and Individual Governance Indicators for Over 200 Countries and Territories Over the Period 1996–2020. Available online: http://info.worldbank.org/governance/wgi/ (accessed on 10 March 2022).
- 48. Ederington, J.; Levinson, A.; Minier, J. Footloose and pollution-free. Rev. Econ. Stat. 2005, 87, 92–99.
- 49. Osabutey, E.L.C.; Okoro, C. Political risk and foreign direct investment in Africa: The case of the Nigerian telecommunications industry. Thunderbird Int. Bus. Rev. 2015, 57, 417–429.
- 50. Li, Q.; Resnick, A. Reversal of fortunes: Democratic institutions and foreign direct investment inflows to developing countries. Int. Organ. 2003, 57, 175–211.
- 51. Luo, F.; Moyle, B.D.; Moyle, C.J.; Zhong, Y.; Shi, S. Drivers of carbon emissions in China's tourism industry. J. Sustain. Tour. 2020, 28, 747–770.
- 52. Kousar, S.; Ahmed, F.; López García, M.D.; Ashraf, N. Renewable Energy Consumption, Water Crises, and Environmental Degradation with Moderating Role of Governance: Dynamic Panel Analysis under Cross-Sectional Dependence. Sustainability 2020, 12, 10308.

- 53. Shaheen, K.; Zaman, K.; Batool, R.; Khurshid, M.A.; Aamir, A.; Shoukry, A.M.; Sharkawy, M.A.; Aldeek, F.; Khader, J.; Gani, S. Dynamic linkages between tourism, energy, environment, and economic growth: Evidence from top 10 tourism-induced countries. Environ. Sci. Pollut. Res. 2019, 26, 31273–31283.
- 54. Baloch, M.A.; Wang, B. Analyzing the role of governance in CO2 emissions mitigation: The BRICS experience. Struct. Chang. Econ. Dyn. 2019, 51, 119–125.
- 55. Becken, S. Decarbonising tourism: Mission impossible? Tour. Recreat. Res. 2019, 44, 419–433.
- 56. Gössling, S.; Lund-Durlacher, D. Tourist accommodation, climate change and mitigation: An assessment for Austria. J. Outdoor Recreat. Tour. 2021, 34, 100367.
- 57. Gössling, S.; Scott, D. The decarbonisation impasse: Global tourism leaders' views on climate change mitigation. J. Sustain. Tour. 2018, 26, 2071–2086.
- Kaufmann, D.; Kraay, A.; Mastruzzi, M. Governance Matters VIII: Aggregate and Individual Governance Indicators, 1996–2008; World Bank Policy Research Working Paper No. 4978; Elsevier: Amsterdam, The Netherlands, 2009.

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