GREEN HOUSE GAS EMISSIONS REPORTING AND MANAGEMENT IN GLOBAL TOP EMITTING COUNTRIES AND COMPANIES

Edited by Venancio Tauringana and Olayinka Moses

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GREENHOUSE GAS REPORTING AND MANAGEMENT IN TOP EMITTING COUNTRIES AND COMPANIES

Venancio Tauringana and Olayinka Moses

ABSTRACT

This chapter outlines the need for global actions on mitigating greenhouse gas (GHG) emissions and introduces the six chapters contained in this issue. The impact of GHG emissions on the environment undoubtedly exacerbates the consequence of climate change and is not constrained within the borders of the emitting countries and companies. Emitting countries (and companies) export much of the harm created by GHG emissions given that the earth's atmosphere intermixes globally. GHG top emitters are not necessarily the victims of its consequences, since the extent to which each country is affected by adverse weather such as floods depends on the distribution of climate vulnerability rather than jurisdictional emission. Hence, global collective actions are required to find plausible solutions to reduce GHG emissions. This issue consists of one literature review and five empirical chapters. The insight from the literature review highlights the dearth of studies addressing GHG emissions reporting and management in Africa and the Middle East. The first three empirical chapters examine the efficacy of corporate governance in facilitating GHG disclosures and performance in China, the United States and India. The fifth chapter examines the effect of the Paris Agreement on climate change disclosures in South Africa. There is mixed evidence as to how corporate governance affects GHG disclosure, but it is clear that the Paris Agreement had a positive impact on climate change disclosures in South Africa. The sixth chapter examines the social determinants of GHG in top 100 emitting countries and documents evidence that energy use determines the extent of GHG

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emissions in both developed and developing countries. However, the results show that other social determinants such as urbanisation, literacy and corruption contribute in varying ways to GHG emissions in developing countries. Taken together, the collection of chapters in this issue provides incremental understanding to the effect of GHG emissions and necessary actions that can help in mitigating them.

Keywords: Carbon emissions; China; GHG emission; India; Top emitters; United States

INTRODUCTION

The global effort to reverse the adverse consequences of climate change exacerbated by greenhouse gas (GHG) emissions is intensifying with countries implementing policies aimed at achieving decarbonisation (Bebbington & Unerman, 2018; Moses et al., 2022; Moses & Tauringana, 2022). These efforts have focussed the attention of policymakers on climate-related risks with several companies trying to measure, control and eventually reduce direct and indirect emissions (Choi & Luo, 2021; Johnson et al., 2020; Moses et al., 2019; Tang & Tang, 2019). Consequently, the reporting and management of information about GHG emissions has become relevant to areas of policy and academic discourse aimed at seeking plausible solutions (Bebbington et al., 2017; Bui et al., 2020; Moses et al., 2019). We face increasing global risks linked to GHG emissions and climate change. For example, food shortages, wildfires and respiratory diseases are on the rise consequent of extreme events due, in several respects, to climate change (IPCC, 2014; Tauringana & Chithambo, 2015). Although spatially localised environmental issues such as river or city pollution result in GHG emissions, the most damaging and long-lasting consequence of global climate change is not constrained within the border of the emitting country (IPCC, 2014). By polluting the earth's atmosphere with GHG emissions through fossil fuel combustion, deforestation and agricultural activities, top emitting countries and companies degrade the world's climate system and our common shared resource (Betts, 2008; Stocker et al., 2013). These countries (and companies) export much of the harm created by GHG emissions as the earth's atmosphere intermixes globally. The extent to which there is inequity between GHG emitting countries and countries affected by the resulting climate change depends on the distribution of climate vulnerability.

GHG is the leading contributor to climate change through trapping of heat leading to extreme weather such as droughts and cyclones. The demand for accountability in GHG measurement and management is growing and is an eminent concern. This is because global GHG emissions are not equally created, and actions to address them must consider the idiosyncratic activities and practices of countries and companies. Undoubtedly, the solutions to global emissions are collective in nature (Moses et al., 2020; Moses & Hopper, 2022; Moses & Tauringana, 2022; United Nations, 2015), nonetheless top emitters must demonstrate appropriate commitment relative to the weight of the global burden.

That said, it is somewhat surprising that empirical insights on GHG leading emitters is relatively sparse in the extant literature, despite their significant impact in resetting carbon management practices. However, to succeed in this space, attempts to address excessive GHG emissions must have commitments of leading emitting countries and companies, which is crucial given the magnitude of these emitters in proportion to others. For instance, the combined aggregate GHG emissions of the world's top 10[1] emitting countries from 1970 to 2021 accounted for about 62.4% of total global CO_2 emissions (see Fig. 1).

Relatedly, the Climate Accountability Institute report revealed that the top 20[2] emitting companies in the world collectively generated about 35% of global fossil fuel and cement emissions since 1965 (Climate Accountability Institute, 2020). The emissions jointly produced by the top emitters (i.e. countries and companies) provide a glimpse of their impact on the global environment and, more importantly, the implications they pose for achieving net zero by 2050. Therefore, research that advances our knowledge with regards to extant accountability and management of GHG emissions by top emitting countries at macro level and companies at micro level is vital for global policy formulation and the consequent reduction of global GHG emissions levels.[3] This is what this special issue addresses through the contributions of authors based on empirical insights from the leading GHG emitters.

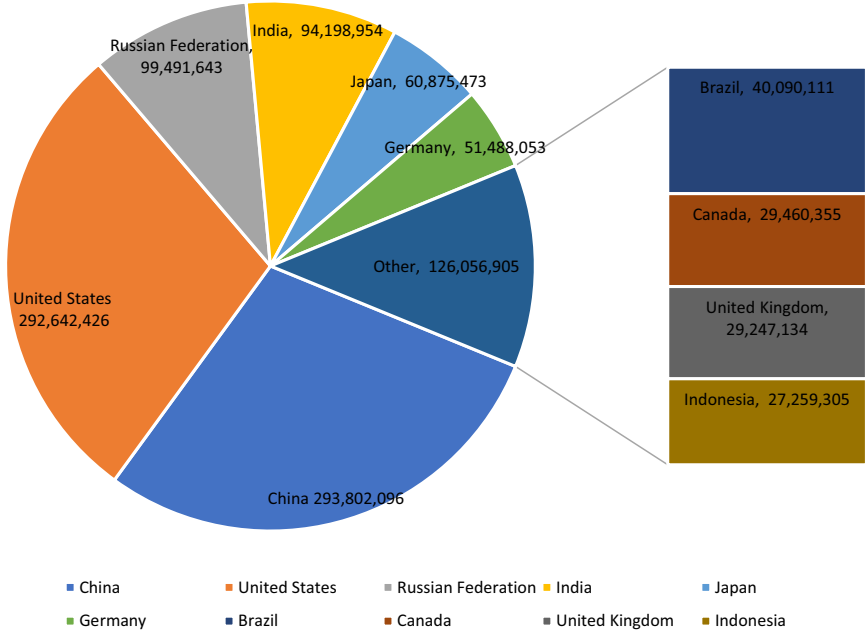

Fig. 1. Top 10 Emitting Countries' CO_2 Emissions in kt (1970–2021).

THE ISSUE

This *Issue* documents new evidence of the extent of GHG emissions reporting and management by governments of top emitting countries and companies alike. Given the magnitude and scale of the problem at hand, we believe that empirical contributions of this nature are crucial towards reducing global temperature and accomplishing a climate-neutral world by 2050. Albeit significant attempts have been made by prior studies to address emission-related issues (Bui et al., 2020; Chithambo & Tauringana, 2014, 2017; Depoers et al., 2016; Johnson et al., 2020; Kim et al., 2015; Moses et al., 2022; Tang & Tang, 2019; Tauringana & Chithambo, 2015), we have limited accounting and environmental management understanding of top emitters' contributions to the problem (solution) of GHG emissions globally. Interestingly, not much has been explored in terms of the specific accounting and environmental management practices of top emitters despite the threat their activities pose to global sustainability (Parvez et al., 2019). Some extant studies have focussed on selected countries (and companies), including those outside the leading emitters (Choi & Luo, 2021; Comyns, 2018; Faisal et al., 2018; Hollindale et al., 2019; Mahmoudian et al., 2021; Moses et al., 2022; Parvez et al., 2019). Advancing the understanding of GHG emissions reporting and management globally in the top emitting countries is important. DEFRA (2009) hints at the existence of a link between environmental measurement, reporting and management as only 'what gets measured gets managed'. Consistent with this view, empirical evidence shows that GHG measurement and reporting are likely to reduce emissions, especially when large emitters proactively manage their environmental impacts (DEFRA, 2010; Tauringana & Chithambo, 2015).

Collectively, the research contained in this issue contributes to extant accounting and environmental management accounting research in several ways. First, it synthesises the research on GHG emissions published in top journals. Second, the issue documents the efficacy of corporate governance mechanisms such as state ownership and board interlocks on GHG disclosures and performance. Third, the issue, for the first time, provides evidence of how the Paris Climate Change Agreement impacted climate change disclosures. Finally, the issue contributes by providing evidence of how social factors determine the extent of GHG emissions.

CONTRIBUTIONS TO THIS SPECIAL ISSUE

The research contained in this volume documents important findings of national and corporate practices of the top jurisdictions and emitting entities. Opening the volume is the work by Michael et al. (2023), in which the authors undertake a structured literature review to investigate GHG reporting practices at firm and country levels. Based on the 75 articles identified, the findings indicate the underrepresentation of Africa and the Middle East and the prevalence of quantitative-based research methods. The chapter recommends more research on

GHG reporting practices in Africa, the Middle East and countries with high annual emissions. Therefore, to an extent, the current issue is timely as it focusses on top emitting countries, as Michael et al. (2023) recommended.

Chen et al. (2023) contribute by investigating how government ownership in China affects the likelihood of a firm disclosing GHG information based on the top 300 listed firms. Relying on the lens of stakeholder–agency theory and using binary logistics regression analysis, the results indicate that there is a negative relationship between state ownership and GHG disclosure. The implication of the findings is that state-owned enterprises are less likely to disclose GHG information. According to the authors, the findings could be a consequence of managerial, political self-interest, economic and policy-oriented decision-making processes and the power differential between the government and state-owned enterprises. Evidence of the likelihood of state-owned enterprises disclosing GHG emissions is particularly useful given that China is the world's highest emitter of GHG.

The contribution by Bananuka et al. (2023) documents how corporate governance variables (board size, non-executive directors, ownership concentrations and insider ownership) affect GHG disclosures in the United States, the second highest emitter of GHG in the world. The study is based on a sample of 168 firms listed on the New York Stock Exchange (NYSE) for the period 2017–2020. The findings suggest that board size has a significant positive impact on GHG disclosure while ownership concentration and insider ownership have a significant negative influence. The percentage of non-executive directors is found to have no significant influence on the extent of GHG emissions.

Abang'a and Simbi (2023) examine the impact of different interlocks in board compositions on carbon emissions performance in India. Using a sample of 63 of top 200 Bombay Stock Exchange (BSE) listed companies for the period 2013–2020, the study shows that CEO and women on board interlocks contribute to GHG reduction, especially in top emitting developing jurisdictions. One likely plausibility could be due to the opportunity that CEOs serving on other boards get to leverage on their experiences to respond to environmental challenges. The study provides us with evidence about women's commitment to environmental issues and their efforts in mitigating carbon emissions akin to their sensitivity and ethical values (Liao et al., 2015; Liu, 2018; Nuber & Velte, 2021). This study, through the lens of resource dependency theory, demonstrates the impact interlocks in boards could have in the journey towards decarbonisation among emitters in the globe, especially in a developing country such as India that accounts for a substantial portion of global GHG emissions.

Despite the Paris Climate Agreement (PCA) being one of the most notable Conference of Parties (COP) in nearly 30 years, there has not been much research that has examined its impact, especially on disclosure. The contribution by Herbert et al. (2023) is, therefore, timely. The chapter's novel aspect compares the disclosure of climate information three years before and two years after the PCA. The noted finding of positive relationship between the PCA and climate change disclosures means that the PCA increased the reporting of climate change information. The chapter is a significant contribution to the literature given that

it is the first treaty negotiated in 25 years that envisages all countries participating in climate action and has been adopted by 195 countries. Therefore, the PCA is considered a turning point for climate action, particularly since, under the Kyoto Protocol, only 35 countries were prepared to limit their GHG emissions.

The final contribution in this issue by Tauringana et al. (2023) examines the social determinants of GHG emissions in the top 100 emitting countries. Investigating the determinants of GHG emissions is important because it has policy implications. For example, the finding that fossil fuel use is leading to global warming has already led to policies and, in some cases, legislation aimed at reducing reliance on fossil fuels. Tauringana et al.'s (2023) chapter focusses on social determinants and this is based on the reasoning that most extant studies are focussed on either environmental (energy use) or economic (gross domestic product [GDP]) determinants of GHG emissions. The chapter by Tauringana et al. (2023) also makes an important contribution as it divides the sample of the top 100 into developed and developing countries which yields further insights. The findings for all top 100 countries and developing countries show that urbanisation and corruption are significantly positive and negative determinants of GHG emissions, respectively. Literacy is also a significant positive determinant of GHG emissions in developing countries but not in the top 100 countries. Population is not significant in the top 100, developed and developing countries. The results for the control variables suggest that primary energy consumption is a significant positive determinant of GHG emissions in the top 100, developed and developing countries. However, GDP is not.

CONCLUSION

This issue of *Advances in Environmental Accounting and Management* (AEAM) is dedicated to GHG reporting and management in top emitting countries and companies. GHG emissions reduction is perhaps the greatest challenge that the world is facing today due to the effects of global warming that is mostly attributed to the concentration of GHG in the atmosphere. Overall, the research in the six chapters is based on company and country levels. While the company-based research is limited to the companies in top emitting countries, the countries include both developed (China and the United States) and developing (India and South Africa) ones. For example, out of the six chapters, four chapters (Chen et al., 2023), Bananuka et al. (2023), Abang'a and Simbi (2023), and Herbert et al. (2023) are at the company level and investigate how corporate governance and the signing of the PCA on climate change affected the reporting of GHG or carbon emissions performance. Although mixed, evidence suggests that some corporate governance mechanisms are related to GHG emissions reporting and management.

Of the remaining two chapters, Michael et al.'s (2023) literature review chapter covers GHG reporting and management practices based on micro and macro data. The chapter concludes that more research on GHG needs to be carried out in Africa. This is not a surprise given that most of the countries in Africa are

developing and companies are still trying to develop systems that will measure GHG emissions. The last chapter by Tauringana et al. (2023) is at the macro level and examined social determinants of GHG emissions. The interesting feature of the study is that it separately analysed the determinants of GHG emissions from top emitting developed and developing countries. The findings of the chapter suggest that there are differences between the social determinants of GHG in developing and developed countries. However, the finding that energy use is a determinant of GHG emissions in both developed and developing countries suggests that the world needs to come up with policies that will reduce energy use from fossil fuels and encourage the use of renewable sources of energy. Regarding future research, we agree with Michael et al. (2023) that further research needs to be done in Africa and the Middle East to gain a further understanding of GHG reporting and management practices. This is particularly important as the arguments are now shifting to who pays for mitigating the consequences of floods caused by GHG emissions. We conclude that an understanding of GHG reporting, management and determinants is more important than ever and that this issue has started the debate which will hopefully lead to solutions.

NOTES

1. These countries include China, the United States, the Russian Federation, India, Japan, Germany, Brazil, Canada, the United Kingdom and Indonesia (Crippa et al., 2022).
2. The companies include Saudi Aramco, Chevron, Gazprom, ExxonMobil, National Iranian Oil Company, BP, Royal Dutch Shell, Coal India, Pemex, Petróleos de Venezuela, PetroChina, Peabody Energy, ConocoPhillips, Abu Dhabi National Oil Company, Kuwait Petroleum Corporation, Iraq National Oil Company, Total SA, Sonatrach, BHP Billiton and Petrobras.
3. Global GHG reporting and management is a major objective of the Paris Climate Agreement (PCA) 2015 (United Nations, 2015). PCA is a legally binding treaty on climate change adopted by 196 countries in 2015 and entered into force in November 2016. The treaty aims to limit global warming to below 2 but preferably to 1.5 degrees Celsius compared to pre-industrial levels (Comyns, 2018). To achieve this goal, countries have been encouraged to aim to reach global peaking of GHG emissions as soon as possible to achieve a climate-neutral world by 2050.

REFERENCES

Abang'a, A. O., & Simbi, C. (2023). Board interlocks and carbon emissions performance: Empirical evidence from India. *Advances in Environmental Accounting & Management*, *11*, 81–106. https://doi.org/10.1108/S1479-359820230000011005

Bananuka, J., Kasoga, P. S., & Tumwebaze, Z. (2023). Corporate governance and greenhouse gas disclosures: evidence from The United States. *Advances in Environmental Accounting & Management*, *11*, 51–79. https://doi.org/10.1108/S1479-359820230000011004

Bebbington, J., Russell, S., & Thomson, I. (2017). Accounting and sustainable development: Reflections and propositions. *Critical Perspectives on Accounting*, *48*, 21–34. https://doi.org/10.1016/j.cpa.2017.06.002

Bebbington, J., & Unerman, J. (2018). Achieving the United Nations sustainable development goals: An enabling role for accounting research. *Accounting, Auditing & Accountability Journal*, *31*(1), 2–24. https://doi.org/10.1108/aaaj-05-2017-2929

Betts, R. (2008). Comparing apples with oranges. *Nature Climate Change*, *1*, 7–8. https://doi.org/10.1038/climate.2007.74

Bui, B., Moses, O., & Houqe, M. N. (2020). Carbon disclosure, emission intensity and cost of equity capital: Multi-country evidence. *Accounting and Finance*, *60*, 47–71. November 2018. https://doi.org/10.1111/acfi.12492

Chen, Z., Liu, Y., Hu, Y., & Zhang, L. (2023). Impact of state ownership on greenhouse gas emissions disclosures in China. *Advances in Environmental Accounting & Management*, *11*, 29–50. https://doi.org/10.1108/S1479-359820230000011003

Chithambo, L., & Tauringana, V. (2014). Company specific determinants of greenhouse gases disclosures. *Journal of Applied Accounting Research*, *15*(3), 323–338. https://doi.org/10.1108/JAAR-11-2013-0087

Chithambo, L., & Tauringana, V. (2017). Corporate governance and greenhouse gas disclosure: A mixed-methods approach. *Corporate Governance*, *17*(4), 678–699. https://doi.org/10.1108/CG-10-2016-0202

Choi, B., & Luo, L. (2021). Does the market value greenhouse gas emissions? Evidence from multi-country firm data. *The British Accounting Review*, *53*(1), 100909. https://doi.org/10.1016/j.bar.2020.100909

Climate Accountability Institute. (2020). *Carbon majors 2020 dataset*. Carbon Majors. https://climateaccountability.org/carbonmajors.html

Comyns, B. (2018). Climate change reporting and multinational companies: Insights from institutional theory and international business. *Accounting Forum*, *42*(1), 65–77. https://doi.org/10.1016/j.accfor.2017.07.003

Crippa, M., Guizzardi, D., Banja, M., Solazzo, E., Muntean, M., Schaaf, E., Pagani, F., Monforti-Ferrario, F., Olivier, J. G. J., Quadrelli, R., Risquez Martin, A., Taghavi-Moharamli, P., Grassi, G., Rossi, S., Oom, D., Branco, A., San-Miguel, J., & Vignati, E. (2022). *CO2 emissions of all world countries*. JRC/IEA/PBL 2022 Report. https://doi.org/10.2760/07904

DEFRA. (2009). *Guidance on how to measure and report your greenhouse gas emissions*. Department for the Environment, Food and Rural Affairs.

DEFRA. (2010). *Review of the contribution of reporting to GHG emission reductions and associated costs and benefits*. Department for the Environment, Food and Rural Affairs.

Depoers, F., Jeanjean, T., & Jérôme, T. (2016). Voluntary disclosure of greenhouse gas emissions: Contrasting the carbon disclosure project and corporate reports. *Journal of Business Ethics*, *134*(3), 445–461.

Faisal, F., Andiningtyas, E. D., Achmad, T., Haryanto, H., & Meiranto, W. (2018). The content and determinants of greenhouse gas emission disclosure: Evidence from Indonesian companies. *Corporate Social Responsibility and Environmental Management*, *25*(6), 1397–1406. https://doi.org/10.1002/csr.1660

IPCC. (2014). In C. B., Field, V. R., Barros, D. J., Dokken, K. J., Mach, M. D., Mastrandrea, T. E., Bilir, M., Chatterjee, K. L., Ebi, Y. O., Estrada, R. C., Genova, B., Girma, E. S., Kissel, A. N., Levy, S., MacCracken, P. R., Mastrandrea, & L. L., White (Eds.), *Climate change 2014: Impacts, adaptation, and vulnerability. Part A: Global and sectoral aspects*. Cambridge University Press. papers2://publication/uuid/B8BF5043-C873-4AFD-97F9-A630782E590D

Herbert, S., Mongie, C., & Willows, G. (2023). The impact of the Paris climate change agreement and other factors on climate change disclosure in South Africa. *Advances in Environmental Accounting & Management*, *11*, 107–125. https://doi.org/10.1108/S1479-359820230000011006

Hollindale, J., Kent, P., Routledge, J., & Chapple, L. (2019). Women on boards and greenhouse gas emission disclosures. *Accounting and Finance*, *59*(1), 277–308. https://doi.org/10.1111/acfi.12258

Johnson, J. A., Theis, J., Vitalis, A., & Young, D. (2020). The influence of firms' emissions management strategy disclosures on investors' valuation judgments. *Contemporary Accounting Research*, *37*(2), 642–664. https://doi.org/10.1111/1911-3846.12545

Kim, Y.-B., An, H. T., & Kim, J. D. (2015). The effect of carbon risk on the cost of equity capital. *Journal of Cleaner Production*, *93*, 279–287. http://linkinghub.elsevier.com/retrieve/pii/S0959652615000104