

A thematic analysis of the effect of climate change on the South African banking sector

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Keywords

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Abstract

Climate change and its severe economic effects have become a critical issue in South Africa and globally. Both public and private entities are now actively promoting a greener environment, urging individuals and organisations to transition towards a lower-carbon economy. As climate change affects business operations, organisations have begun to assess and disclose the associated risks and opportunities to their stakeholders. While much of the focus in the literature has been on sectors with high greenhouse gas (GHG) emissions, research has shown that many other sectors also contribute to and are affected by climate change. One such sector is banking. The banking sector is both influenced by climate change and contributes to it, particularly through the operations it supports by extending funding. Banks are viewed as key players in driving the shift towards a lower-carbon economy by committing more to sustainable finance. Despite this, there is a lack of literature specifically addressing climate change in the banking sector. This study aims to fill that gap by exploring climate change's impact on banks in an emerging economy – South Africa. Using thematic content analysis, the research draws on reports of six banks prepared using the Task Force on Climate-related Financial Disclosures (TCFD) framework, revealing that banks face multiple risks due to climate change and play a crucial role in promoting sustainability through financing and risk management strategies. This study contributed to the literature by highlighting the intricate relationship between climate change and the banking sector in South Africa. The study also highlights areas that banks should focus on in the future to mitigate climate-related risks.

Introduction

Over the years, climate change and its effects on various sectors have become a global concern. Stakeholders and investors are increasingly interested in how the sectors they are involved in contribute to and respond to climate change (Wade and Jennings, 2016). Numerous industries contribute to and are negatively impacted by climate change, sparking a global call to reduce carbon emissions to avoid future losses (Wade and Jennings, 2016). Climate change refers to long-term temperature shifts and typical weather patterns, often driven by industrial and human activities (Santos and Bakhshoodeh, 2021). Key sectors contributing to climate change include energy (electricity, heat, and transport), industrial processes, waste management, agriculture, forestry, and land use (Ritchie and Roser, 2020).

A study conducted between 2010 and 2022 on climate change policies highlighted that the focus remains mainly on renewable energy and the electricity sector due to their high carbon emissions and pivotal role in transitioning to a lower-carbon economy (UNCTAD, 2022). While these sectors significantly contribute to global greenhouse gas (GHG) emissions, other industries, including banking, also play a role. The banking sector, in particular, is indirectly involved in climate change through the emissions of the activities it finances (Rachmaninov *et al.*, 2021). Banks are seen as vital players in driving the shift towards a low-carbon economy by directing capital towards sustainable projects (Rachmaninov *et al.*, 2021).

A study by Caby *et al.* (2022) revealed that while banks recognise the impact of climate change on their business, many have yet to fully understand or implement adequate measures to mitigate associated risks. Historically, climate change risks have not always received the necessary attention from key

stakeholders (Georgopoulou *et al.*, 2015). However, climate change has recently been acknowledged as a significant risk to the financial system, prompting a growing need to understand its effects on the banking sector and to develop methodologies to assess these risks (Battiston *et al.*, 2021).

Watson and Sutcliffe (2021) noted that chief risk officers in banks now consider climate change a major emerging risk to their operations. The challenges banks face include conducting thorough risk assessments, the absence of industry-wide standards, and a skills shortage in the climate change field. In terms of risk assessments, banks are required to evaluate how their infrastructure, employees, customers, and suppliers are affected by climate change events, which demands a deep understanding of weather, social, and geographical factors. The lack of standardised approaches to climate risk is another challenge, as banks must navigate different methodologies before uniform standards are established. Additionally, there is a skills gap in climate science and risk management, with climate change expected to become one of the most critical risk management skills in the near future (Watson and Sutcliffe, 2021).

This research paper focuses on the impacts of climate change on the South African banking sector and the measures being taken to mitigate these risks. The study draws on data from Task Force on Climate-related Financial Disclosures (TCFD) reports produced by South African banks. It aims to assess how these institutions report their climate-related risks, their impact on climate change, and their strategies to address these challenges. While much of the existing literature focuses on central banks as regulators in climate change mitigation, this study seeks to fill a gap by exploring the specific risks banks face in an emerging economy.

Literature review

Background of climate change

Climate change refers to long-term shifts in temperature or typical weather patterns (Santos and Bakhshoodeh, 2021). It is driven by industrial activities, such as burning fossil fuels (coal, oil, and gas), and human actions, like deforestation and livestock farming, which result in rising average surface temperatures. The negative impacts of climate change include ecosystem disruption, desertification, droughts, rising sea levels, and increased flooding (Santos and Bakhshoodeh, 2021).

A 2018 study by Fawzy *et al.* (2020) identified 315 natural disasters primarily linked to climate change, 93% of which were wildfires, droughts, storms, and floods. Greenhouse gases (GHGs), such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), are key contributors. In Asia, climate change has severely affected agriculture, threatening food security and farmers' livelihoods, decreasing crop yields and profitability, and impacting their ability to service debt (Pampana *et al.*, 2022).

The global response to climate change is embodied by initiatives like the United Nations' (UN) Conference of the Parties (COP), which has met annually since 1995 to address climate issues (Carattini and Löschel, 2021). The Intergovernmental Panel on Climate Change (IPCC) has projected global warming to reach 1.5°C by 2030–2052 unless GHG emissions are curbed (IPCC, 2018). Entities are now expected to mitigate climate impacts, report sustainability measures, and ensure responsible practices (Gulluscio *et al.*, 2020). In South Africa, climate change increasingly affects sectors like water, biodiversity, and agriculture, with regulation playing a pivotal role in promoting sustainability (van der Bank and Karsten, 2020).

Understanding the impact of climate change on banks and how banks impact and contribute to climate change

Investors and external stakeholders have increasingly shifted their focus towards entities' Environmental, Social, and Governance (ESG) performance. This change was spurred by the effects of both the COVID-19 pandemic and climate change, highlighting operational, financial, and reputational risks for business performance (Abhayawansa and Adams, 2021). Sustainability reporting has become a rapidly growing area within corporate reporting, with its importance acknowledged in developed nations and emerging economies (Darshi *et al.*, 2023). In South Africa, an emerging economy, entities face mounting pressure from stakeholders to disclose their ESG performance, even though sustainability reporting is not mandatory (Halkos and Nomikos, 2021).

In the banking sector, there is particular interest in how banks work to reduce their climate impact by transitioning to a net-zero carbon environment through their own operations and by financing sustainable projects (Rachmaninov *et al.*, 2021). Financial institutions are now urged to assess their climate-related exposures, and many banks have begun developing stress tests to understand how climate change will affect their operations (Sun *et al.*, 2022).

Banks have voluntarily started disclosing climate-related information in response to investor demands, as they are viewed as responsible corporate citizens (Caby *et al.*, 2020). Effective climate-related disclosures are crucial for fostering transparency and boosting confidence among investors and depositors. Banks are also under increasing pressure to reduce financing for high-carbon sectors, such as fossil fuel industries, in alignment with the 13th UN Sustainable Development Goal on climate action (Elliott and Löfgren, 2022).

Banks play a crucial role in combating climate change by reallocating funding towards greener industries (Reghezza *et al.*, 2022). Their success in mitigating risks and leveraging climate-related opportunities hinges on implementing sound climate policies, improving corporate governance, and fostering innovation, which will support sustainable business practices and long-term profitability (Galletta *et al.*, 2022).

Strategies to mitigate against climate change

Fawzy *et al.* (2020) identified three key strategies for mitigating climate change. The first involves employing decarbonisation technologies to reduce GHG emissions, such as transitioning to renewable energy and reducing dependence on fossil fuels. These are referred to as conventional mitigation technologies. The second strategy focuses on adopting negative emissions technologies, which remove CO₂ from the atmosphere. These include methods like soil carbon sequestration, reforestation, wetland restoration, and enhanced weathering. The third approach involves altering the earth's radiation balance through radiative forcing geoengineering techniques. These aim to stabilise or reduce global temperatures by managing solar or terrestrial radiation (Fawzy *et al.*, 2020).

Caby *et al.* (2022) found that while banks acknowledge climate change's impact on their business and have made it a strategic priority, operational implementation remains an area for concern. Key measures to mitigate against climate change include risk management, green financing, and reducing operational emissions. Improving climate change practices could strengthen banks' financial performance.

Regulatory considerations

As deposit takers and lenders, banks play a crucial role in maintaining financial stability and supporting economic operations (Berger *et al.*, 2020). Central banks, as regulators, are vital in addressing climate change by adapting their regulatory frameworks to include climate-related risks (Loewald *et al.*, 2020). These frameworks must consider shocks and other risk factors linked to climate change, enhancing prudential regulation.

Emerging markets, however, often lack the capacity to fully assess the impacts of climate change on financial stability and inflation. Loewald *et al.* (2020) recommend developing analytical models to bridge this gap, particularly in emerging economies that are more vulnerable than advanced markets. Central banks are urged to take the lead in creating these models.

In South Africa, the Prudential Authority of the South African Reserve Bank (SARB) regulates financial institutions to ensure financial stability. The Johannesburg Stock Exchange (JSE) also plays a key regulatory role, issuing climate change guidelines for listed entities, including banks. These regulatory initiatives encourage banks to consider climate-related risks and adopt sustainable practices to support a low-carbon economy (JSE, 2023; SARB, 2023).

Climate change reporting considerations

If ignored, climate change could significantly impact the valuation of many companies (Thistlethwaite, 2015). This highlights the need for standard setters and regulators to develop consistent

disclosures on climate risks and opportunities. Standardised guidelines would reduce inconsistency and incomparability, enabling investors to make more informed decisions (Thistlethwaite, 2015).

Given the early stage of climate change accounting, companies face uncertainty in reporting. Gulluscio et al. (2020) note that academic research on climate disclosures remains underdeveloped. The TCFD provides a widely used voluntary framework for banks, recommending disclosures on governance, strategy, risk management, and metrics (TCFD, 2017). However, since these are not mandatory, there is potential for inconsistent reporting, even within the same sector.

To address this, the IFRS Foundation consolidated the TCFD, the Climate Disclosure Standards Board (CDSB), the Sustainability Accounting Standards Board (SASB) and other bodies and launched the International Sustainability Standards Board (ISSB) to develop global sustainability standards. The ISSB's first climate-related disclosure standard, IFRS S2, was published in 2023 and focuses on climate risks and opportunities (IFRS Foundation, 2023). Though not yet mandatory in South Africa, its adoption will require legal changes, such as amendments to the Companies Act.

IFRS S2 builds on TCFD recommendations and incorporates industry-specific disclosure requirements from SASB standards. It aims to provide investors with relevant information about climate-related risks and opportunities that is useful for resource allocation decisions. The standard becomes effective from January 2024, with early adoption permitted (IFRS Foundation, 2023).

Anderson (2019) highlights the importance of disclosing climate risks in financial statements, complementing the sustainability information outside of them. The ISSB is exploring ways to improve the application of climate-related disclosures within financial reporting, including providing illustrative examples to help entities report these uncertainties effectively (IFRS Foundation, 2024). Standardised, high-quality sustainability reporting will enhance global comparability and transparency, ensuring investors can assess climate risks across sectors (Doran and Quinn, 2008).

Theoretical frameworks

Stakeholder theory suggests that an entity's behaviour, including its environmental performance, can be influenced by its stakeholders (Cadez *et al.*, 2019). Stakeholders encompass a wide range of groups, including investors, customers, employees, governments, communities, and suppliers (Freudenreich *et al.*, 2020). Freudenreich *et al.* (2020) argue that an entity can contribute to sustainable development by engaging with its societal stakeholders to improve industry standards. This theory is relevant to this study because it highlights how an entity's success depends not only on profit but also on creating value for a wide range of stakeholders. In the context of climate change and sustainability, stakeholder theory suggests that entities should prioritise ESG matters, recognising that long-term success involves addressing the concerns of multiple stakeholders, not just focusing on profit (EcoCation, 2023).

Institutional theory focuses on legitimacy, highlighting how entities gain validity by conforming to established rules, norms, and patterns (Zhao *et al.*, 2017). Some studies argue that highly structured sectors generate isomorphic pressures, which lead to entities mimicking one another. Institutions employ the institutional theory to determine how other entities conduct their operations and what norms they conform to (Zhao *et al.*, 2017). This theory is also relevant to this study and research. As entities are currently not obligated to disclose climate change but are doing so voluntarily, the institutional theory is relevant because South African banks conform to norms within their sector to enhance their legitimacy.

Method

The literature review above clearly highlighted the need for further research on climate change and its relevance and impact within the banking sector. This study seeks to determine how banks impact climate change and how banks are impacted by climate change. The study and its objectives sought to contribute to the current gap in the literature, specifically within emerging economies and the African context, using South Africa as the context for the study.

A qualitative thematic analysis was chosen as the most appropriate method for this study, using inductive analysis. This approach, commonly used in qualitative research, identifies patterns and themes within data (Braun and Clarke, 2006).

The 2022 or 2023 financial periods were selected as these are the banks' most recent financial periods at the data collection time. The financial periods used were dependent on each bank's financial year-end. For those banks with climate-related disclosures, it was anticipated that they would have more robust disclosures on climate change in recent years as opposed to previous years where climate-related matters were not as topical. As the study aimed to analyse the impact of climate change and not necessarily the quality of disclosures over a period of time, only one financial year per bank, being the latest financial year, was considered.

Purposeful sampling was employed, focusing on locally controlled South African banks that are still operational. Out of the 60 total South African banks (SARB, 2023), only 14 banks were considered, with the others excluded due to being in liquidation, foreign-controlled or mutual banks. The banks in liquidation were not useful for this study as they are unlikely to be in operation within the coming years and did not produce climate-related reports. Foreign-controlled entities were not considered as these banks are influenced by foreign regulations, which is outside the scope of the South African context. Mutual banks are structured differently from commercial banks. Mutual banks are owned mutually by depositors, as opposed to having shareholders. These banks did not disclose any information relating to climate change, which would not be useful to the study. The sample was further reduced to six locally controlled banks with sufficient climate-related disclosures after examining the reports of all 14 and finding limited or no disclosure for the other eight. These six banks, representing the largest and most influential in South Africa, were chosen based on their comprehensive and consistent reporting of climate change-related issues. These banks provided detailed and standardised disclosures, allowing for meaningful comparisons and analysis.

Data collection focused on publicly available reports prepared using the TCFD framework (TCFD reports) from each selected bank. These reports were deemed the most robust and relevant sources for assessing climate change disclosures. The study and the results thereof focused on the South African operations of each bank (as some of these banks operate globally and with some having dual listings), as the study focused on the South African context. It is important to note that the focus of the study is not to determine the sufficiency or quality of the bank's disclosures relating to climate change but rather to consider what the banks have disclosed relating to the study's objectives.

The data was analysed using a thematic content analysis approach, identifying emerging themes related to climate change risks, opportunities, and mitigation strategies. A coding framework was developed to organise and analyse the data systematically, allowing for comparisons between the banks.

To ensure that the data used was accurate and reliable, the data was extracted from the official websites of each of the banks. As the data obtained from each bank was systematically analysed using NVivo software, distinct themes emerged. Once themes emerged, a coding framework was developed to identify patterns and trends related to climate change's impact on South African banks were developed. The coding framework included creating codes, identifying the themes, data segmentation, and analysing the collected data. Comparisons and contrasts were examined between the different banks to identify how they have each responded to climate change risks. Once the data had been analysed, the findings were interpreted within the context of the research objectives.

Findings and discussion

How South African banks report on how they are impacted by climate change

South African banks have begun to disclose how they are affected by climate change, emphasising both financial and non-financial risks in their reports, particularly in the context of the TCFD reports. Despite Africa's relatively low contribution to global GHG emissions (less than 4%), climate change disproportionately affects the continent. Like many African nations, South Africa faces challenges such as rising temperatures, prolonged droughts, and severe flooding, which directly impact businesses, including banks (Bedairet al., 2023).

The banks analysed have acknowledged how climate change impacts both financial and non-financial risks. Financial risks involve uncertainties that could result in monetary losses due to activities or transactions, while non-financial risks include disruptions to operations and reputational damage. The

banks have implemented methods to assess these risks, integrating them into their broader risk management frameworks.

Key financial risks identified include credit, operational, and liquidity risks. Credit risk arises when clients in high-emission sectors, such as oil, gas, and coal, experience difficulties transitioning to a low-carbon economy, potentially leading to higher transition costs and lower credit quality. Operational risks include supply chain disruptions and potential increases in operating costs as banks transition to greener operations. Liquidity risk could emerge if climate events hinder banks' ability to meet their funding needs. For example, one bank highlighted that climate-related physical damage could disrupt business operations, while another used scenario analysis to understand these risks' long-term impact better.

The banks also report on physical risks, both acute and chronic. Acute risks refer to event-driven scenarios such as floods, heat waves, and other extreme weather events. South Africa has seen recent devastating floods that have affected bank operations, increased credit risks due to clients defaulting on loans, and caused significant damage to physical assets. These events also create additional costs for insurance businesses, which are often part of banking groups. Chronic risks, on the other hand, involve long-term shifts in climate patterns, such as rising sea levels and increased temperatures. These trends have significantly impacted sectors like agriculture, as seen with droughts in the Northern Cape province. The inability of farmers to produce sufficient crops due to extreme weather can result in financial strain and defaults on loans, which in turn affects the profitability of banks.

Transition risks are those related to the shift towards a low-carbon economy. This includes regulatory changes, technological advancements, and evolving market demands. Banks, through their investment portfolios, may indirectly contribute to GHG emissions by financing high-emitting sectors. The shift towards green finance could lead to reduced revenue from traditional industries but also presents new opportunities in sustainable finance, such as issuing green bonds. Legal and reputational risks are also significant, as banks may face litigation related to environmental damage or adverse public opinion for supporting high-emission industries.

In conclusion, South African banks are increasingly aware of climate change's profound impact on their operations, directly through physical risks and indirectly through the businesses they finance. By incorporating climate-related risks into their strategies and disclosing their vulnerabilities, these banks aim to manage the uncertainties posed by climate change while transitioning towards a more sustainable future.

How the South African banking sector impacts climate change

This section addresses the themes identified in relation to the second objective, which seeks to evaluate the disclosures made by South African banks on how they affect and contribute to climate change. The following themes, derived from the banks' respective TCFD reports, provide insight into their impact on climate change.

The SARB has revealed that the country's ongoing energy crisis costs the economy an estimated R125 million per day (Loewald, 2023). Marope and Phiri (2023) report that South Africa had experienced load shedding since 2009, when the energy crisis was formally declared. Power outages have escalated significantly since 2018, with around 4,000 hours of load shedding recorded between 2019 and 2022. This highlights the severity of the crisis and underscores the urgent need for government and private sector intervention. The energy crisis directly impacts climate change in South Africa. Load shedding has led to increased reliance on air pollution-heavy diesel generators. Power shortages also affect banks, requiring backup power for their facilities, including branches. South Africa's energy sector is a major contributor to GHG emissions, and banks indirectly contribute to this through the funding they provide to the sector. Additionally, banks' electricity use in their operations exacerbates their carbon footprint. One bank reported increased emissions due to the greater use of diesel generators during load shedding. In contrast, other banks reported reductions in electricity consumption through energy efficiency strategies and the adoption of renewable energy initiatives. Some banks are also moving towards "green" operations, such as solar-powered buildings with minimal GHG emissions, as part of their commitment to reducing their

environmental impact. Banks offer solar-energy financing to encourage individuals and businesses to transition to more sustainable energy sources.

Sustainable finance involves extending financing to organisations that prioritise environmental sustainability. The six banks studied have actively issued green bonds to help clients transition towards net-zero emissions. These include issuing sustainability bonds, financing renewable energy infrastructure, and ceasing to fund high-emitting sectors like coal and oil. By financing renewable energy and sustainable projects, these banks are helping to reduce financed emissions, supporting the transition to a low-carbon economy, and indicating the banks' long-term commitment to sustainable financing.

The banks are also working towards reducing their GHG emissions by transitioning to digital operations and reducing paper consumption. One bank, for instance, operates primarily as a digital bank, which significantly lowers its environmental footprint. All six banks have reported reduced paper use over the past two financial years, adopting self-service digital solutions and minimising emissions through reduced paper consumption.

The banks have also expressed support for the recycling sector, funding businesses that handle paper, plastic, glass, and other non-biodegradable materials. This initiative reduces GHG emissions and contributes to job creation, addressing South Africa's high unemployment rate. Furthermore, banks have implemented waste management and recycling practices within their operations, further demonstrating their commitment to environmental responsibility.

South African banks have identified various ways in which they impact climate change. Their initiatives include adopting renewable energy, reducing financed emissions, promoting digital operations, and supporting the recycling sector. These actions align with the principles of institutional theory, which suggests that institutions adopt practices that align with societal norms to maintain legitimacy (Zhao *et al.*, 2017). In this case, the banks act as responsible corporate citizens, positively contributing to environmental sustainability.

The measures South African banks are taking to tackle and respond to climate change

Banks are often perceived as responsible corporate citizens. Banks invest in corporate social responsibility initiatives primarily to give back to society rather than for profit-making motives (Eyasu and Arefayne, 2020). Given this, banks must communicate their strategies for addressing climate change to stakeholders, including investors. Voluntarily disclosing climate-related information, as it is not yet mandatory in South Africa, aligns with institutional theory, where organisations disclose such information to gain legitimacy (Zhao *et al.*, 2017). This objective is closely related to how banks contribute to mitigating climate change through their operations.

As discussed in the previous section, South African banks have recognised the importance of addressing the country's energy crisis. A key aspect of their strategy involves commitments to reduce or cease financing thermal coal mines, as detailed in their TCFD reports. This includes restricting loans to coal-mining companies and lowering their exposure to high-emission sectors, such as oil. Banks acknowledge the need to balance reducing carbon emissions with supporting the country's social and economic development. In response to climate change, banks are also shifting towards financing green and sustainability-linked investments. Several banks have already issued and listed bonds related to renewable energy to encourage investors to transition to a low-carbon economy. They aim to continue issuing green bonds and expanding their balance sheets with sustainability-linked assets.

All six banks have set long-term goals of reaching net zero for their scope 1, 2, and 3 emissions. These targets are aligned with the Low Emission Development Strategy approved by the South African government, which aims to achieve net zero by 2050. This is also consistent with South Africa's commitments under the Paris Agreement and the United Nations Framework Convention on Climate Change (Department of Forestry Fisheries and the Environment, 2020). Banks have made specific commitments to monitor and refine their transition plans towards net zero, embedding climate-related strategies into their risk management frameworks.

Accurate data is critical for effective climate change disclosures. Banks have acknowledged the challenges of relying on estimates and assumptions due to data unavailability. They are working to enhance their data collection systems to provide reliable information, particularly for scope 1, 2, and 3 emissions. This improvement will support better reporting and help mitigate risks. One bank focuses on improving data quality and methodologies, while another has established a data and systems working group dedicated to this task.

As part of their environmental initiatives, banks are committed to recycling waste and electronic equipment and moving towards a paperless environment. These measures aim to reduce GHG and increase operational efficiency.

Banks are continually improving their governance structures to manage climate-related risks. Their boards of directors bear ultimate responsibility for sustainability matters, supported by various committees that oversee progress. In addition to strengthening governance, banks are investing in training for board members and staff to ensure they are equipped to handle climate-related challenges.

Based on their TCFD reports, it is evident that South African banks are taking substantial steps to address climate change. Initiatives such as reducing exposure to high-emission sectors, increasing green investments, setting net zero targets, improving data accuracy, and enhancing governance structures all demonstrate a commitment to environmental sustainability. Banks align with institutional and stakeholder theory through these efforts and contribute to a broader societal goal of transitioning to a low-carbon economy.

Conclusion and recommendations

Understanding the impact of climate change on the banking sector in South Africa is vital for a range of stakeholders (Wade and Jennings, 2016). As stakeholders increasingly focus on how entities address sustainability issues, banks and other institutions have begun to prioritise reporting on ESG matters, including climate change. This study aimed to explore the effects of climate change on South African banks, evaluate the impact these banks have on the environment, and assess how they plan to tackle climate change.

Climate change has become a significant concern for investors and other stakeholders, increasing the focus on ESG performance (Abhayawansa and Adams, 2021). Investors are particularly interested in how climate change affects organisations. Climate change refers to shifts in average temperature or weather patterns over time (Santos and Bakhshodeh, 2021). Both human and industrial activities contribute to this phenomenon. Human activities include deforestation and livestock farming, while industrial activities mainly involve burning fossil fuels like oil, gas, and coal (Santos and Bakhshodeh, 2021).

This study employed a thematic content analysis, a method appropriate for interpreting contextual data such as written reports (Azungah, 2018). The analysis focused on recent TCFD reports from six major South African banks. The study was designed to address three key objectives without assessing the quality of the disclosures. These objectives were to determine from climate-related disclosures how South African banks report on the impact of climate change, assess how these banks affect climate change, and evaluate the measures they are taking to address climate change.

It was found that climate change affects banks and, in turn, that banks have a noteworthy impact on the environment. The first objective examined how climate change impacts banks, revealing that physical and transition risks are the primary concerns. This finding is consistent with research by Grippa and Mann (2020), who found that financial systems are exposed to both physical and transition risks related to climate change. Other risks for banks include financial and non-financial threats, such as South Africa's ongoing energy crisis, which affects both business operations and the banks' clients.

The second objective focused on how banks contribute to climate change, with one key theme being the impact banks have through the entities they finance. Reghezza et al. (2022a) found that banks play a crucial role in reallocating funding from high-emission sectors. Additionally, South African banks are adopting practices like moving towards paperless operations and supporting recycling efforts. The banks' impact on climate change has both positive and negative aspects, with some institutions reducing their carbon footprints by moving away from financing high-emission activities.

The final objective investigated how banks are addressing climate change. Themes included the goal of achieving net-zero emissions by 2050 and improving data collection on both their operations and clients. The study also highlighted improvements in climate governance structures, the provision of climate change training, increased budgets for climate-related initiatives, and updated remuneration policies that include sustainability targets. These strategies align with research by Fawzy et al. (2020) on effective climate change mitigation measures.

Theoretical frameworks relevant to this study include institutional and stakeholder theories. Institutional theory suggests that entities voluntarily disclose information to gain legitimacy by following industry norms (Zhao et al., 2017). This theory applies to South African banks, as their climate-related disclosures, though not legally required, help them maintain legitimacy within the financial sector. Stakeholder theory, meanwhile, emphasises that businesses should consider a broad range of stakeholders in their operations (Cadez et al., 2019). By addressing climate change, banks demonstrate that they value stakeholders' interests beyond just shareholders and profit-driven investors.

The study concluded that climate change has a clear and significant impact on banks in South Africa, an emerging economy and that these institutions are actively working to mitigate their environmental impact. Banks should continue prioritising achieving net-zero emissions, improving data accuracy, and aligning with emerging regulatory frameworks. Strengthening climate governance and training programmes will also be essential for fostering a sustainable, low-carbon economy.

This study contributed to the literature by highlighting the intricate relationship between climate change and the banking sector in South Africa, highlighting both the impact climate change has on the banks and the banks' contribution to climate change. The implications of these findings are significant for stakeholders, as they emphasise the necessity for banks to enhance their climate-related disclosures and integrate climate risk management into their strategies. Moving forward, South African banks should continue prioritising achieving net-zero emissions by 2025, improving data accuracy for disclosure purposes, and aligning existing and emerging regulatory frameworks into their disclosures. In addition, banks should strengthen climate governance structures and provide comprehensive climate change training across all levels of their organisations. These proposed steps will not only mitigate against risks but additionally position banks as leaders in the transition to a sustainable, low-carbon economy.

Limitations of this study include its narrow sample, which may not fully represent the banking sector, and the potential for researcher bias. Future research could explore whether South African banks engage in "greenwashing" or assess their readiness to adopt the new IFRS S2 climate-related disclosure standard. These avenues of inquiry would help evaluate the adequacy and accuracy of climate-related disclosures in the South African banking sector.

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