

Think Trade, Think Green

Selected Essays from the Commonwealth
Innovative Youth Competition



The Commonwealth

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Preface

The *Think Trade, Think Green: Commonwealth Innovative Youth Essay Award* was launched by the Trade Competitiveness Section and the Commonwealth Youth Programme as part of activities planned for the 2024 Commonwealth Heads of Government Meeting in Apia, Samoa. The 56 Commonwealth member countries have a combined population of 2.7 billion people, with over 60 per cent aged between 15 and 29. The role of young people as agents of positive change and creators of innovative projects in their communities and countries is increasingly recognised as they contribute to finding solutions to the myriad challenges facing our world.

Climate change is disrupting national economies and affecting the livelihoods of people, especially the most vulnerable. In dire need for action, this year's essay topic focused on how trade and trade policy can address an aspect of climate crisis in the Commonwealth.

The Competition invited young researchers and students to share their insights on trade and trade policy and amplify their voices in climate action and over 500 entries were received. This initiative aligns with the objectives of the Commonwealth Year of Youth, declared by Leaders at the Commonwealth Heads of Government Meeting 2022 to promote youth-led entrepreneurship, resilience and climate adaptation.

This publication is a recognition of the outstanding submissions of the ten selected essay writers from across the Commonwealth who have contributed their thoughts to the interlinkages between trade policy and climate action and how governments can adopt policies that foster sustainable economic growth.

Ms Kinjal Vernekar, Ms Kartikeya Garg, Mr Kyle De Klerk and Ms Anamta Afsar were outstanding in their efforts to see the competition through, review the entries and coordinate the various consultations necessary to facilitate the development of the report. The team also express our thanks to Ms Rena Gashumba for her support in designing and promoting the competition.

Ms Opeyemi Abebe
Adviser and Head
Trade Competitiveness Section

The Commonwealth Secretariat's Trade Competitiveness Section (TCS) of the Trade, Oceans and Natural Resources (TONR) Directorate provides technical assistance to member countries to improve their trade competitiveness in global markets. The TCS supports gender and youth initiatives in partnership within and outside the Secretariat, that aim to increase the participation of women and young people in global trade and promote inclusivity in the design of trade policies that reflect the ambitions of member countries to achieve the Sustainable Development Goals (SDGs) as well as the National Development Agendas of many countries.

The Commonwealth Youth Programme has supported member countries with youth development work for more than 50 years. In Commonwealth member countries, 2023/24 is the Year of Youth. Leaders at the Commonwealth Heads of Government Meeting 2022 declared 2023 as the Commonwealth Year of Youth - a year dedicated to youth-led action for sustainable and inclusive development. The extended programme aims to create more opportunities for pan-Commonwealth initiatives that address global issues affecting young people like climate change, gender equality and unemployment, whilst partnering with new organisations on projects that can be sustained beyond the Year of Youth.

A Thirst for Trade: Policy Innovations to Combat Kenya's Water Crisis

Isanda Crystal Bitutu

Introduction: a meeting of minds

Water is life, yet over 15 million Kenyans (41 per cent of the population) face water scarcity daily, particularly in arid, rural and slum regions. With only 647 m³ per capita of renewable freshwater, Kenya is classified as a water-scarce country. The impacts of climate change, rapid population growth and inadequate water management worsen this crisis, threatening food production, human health and economic development.

In the heart of this challenge, a critical dialogue unfolds: Juma, a farmer, shares the plight of his community with Amina, a trade expert, and David, a policy-maker. Together, they explore how trade and trade policies could be leveraged to address Kenya's water scarcity. By integrating these strategies and policies into existing environmental and economic plans, Kenya could gain access to essential resources and technologies, improving water access, boosting agricultural productivity and driving sustainable growth in regions stricken by water scarcity.

The price of thirst: the reality of water scarcity in Juma's community

Born and raised in the region, Juma has witnessed the devastating effects of water scarcity firsthand. He knows he needs to convey the depth of the gathered community's hardships to Amina and David.

Jambo, asanteni sana for coming to hear our story.

The rains have betrayed us year after year. The skies promise relief, yet the clouds remain empty. Our once fertile lands are cracked and thirsty, with crops withering before maturity.

Isanda Crystal Bitutu is a Kenyan digital governance advocate passionate about digital diplomacy and sustainable development for societal impact. Committed to advancing inclusive tech governance across Africa, her work bridges policy, technology, and female youth empowerment, fostering a more equitable digital landscape in Africa's evolving humanitarian, migration and tech sectors.

What was once a bountiful harvest has become a desperate struggle for survival (Lam et al., 2023).

While our community boasts 3,000 households, only 2,052 have a decent supply of water (Kabaya, 2024). This inequity poses a significant threat to the public health and well-being of the rest of us. Our livestock, our lifeline, are growing weaker. They roam for hours searching for water, often returning as shadows of their former selves. Their dwindling milk production leaves our families facing hunger and despair (Lam et al., 2023).

We've tried everything – traditional weather forecasting methods, prayers and experimental farming techniques. Yet nothing alleviates our plight. The scarce water we find is often contaminated, making our families sick.

We are trapped in a cycle of poverty, with our dreams of a better life fading with each passing drought. Our children, who should be playing and learning, are instead labouring in the fields. Without education, their opportunities are limited, prolonging the cycle of poverty (Pietrzak, 2024).

Our communities are fracturing under the strain. Conflicts over scarce water resources are rising, weakening once-strong bonds of unity. Even our traditional coping mechanisms, like sharing water from communal wells, have broken down as the crisis deepens. The once-reliable source of water is now a source of contention, pitting neighbour against neighbour (Nzioka, 2018).

The government promises help but it feels like empty words. We need more than promises; we need tangible solutions.

Amina's address: trade's role in addressing water scarcity

Amina listened to Juma with admiration and concern. Growing up in a community similar to Juma's, she understands his community's needs but wonders if her trade-focused message will resonate with those who have always struggled with drought.

Habari. We can learn a lot from Australia and South Africa. They have used trade to solve their water problems, and we can do the same here in Kenya. I'll explain how trade can turn our water challenges into new opportunities.

One smart way to deal with water shortages is to trade water virtually with other countries. Instead of using our water to grow crops like cotton or rice, which need a lot of water, we can buy them from places that have more water than us. Australia has done this successfully (Konar et al., 2013). By buying such products from other countries, we can save our water for the most important uses, reducing the pressure on our domestic water supply. Even though our trade is balanced now, things may get harder in the future as our population grows and we need more water. To keep our economy strong and make

sure everyone has enough food, we need to be careful with how we use water and change our plans (Mekonnen and Hoekstra, 2014).

Second, South Africa has done a great job using international trade to get better water-saving technologies, such as drip irrigation systems and desalination plants (Fanteso, 2020). This has helped them save 30 per cent of their water and grow more in their farms across 2 million hectares, in dry areas (Nhamo et al., 2023). We can do the same in our country reducing the water used in farming and growing more food. If we use trade deals to get new technologies, and the government supports it and works with businesses, we can use water more efficiently and grow more food, just like South Africa.

We have just talked about how well Australia is doing, but believe it or not they had a big drought years ago – the Millennium Drought – but they learned how to manage it. They bought agricultural products from other countries to stabilize prices and supplement supplies (Daly et al., 2015). They also built the Murray-Darling Basin Plan, a big water storage system that improved water storage and distribution (Department of Climate Change, Energy, the Environment and Water, nd). These initiatives have helped them ensure a reliable water supply during dry times. By making trade deals and investing in water projects, we too can handle droughts better and make sure everyone has enough food and water.

Lastly, South Africa has a system called the National Water Act of 1998, whereby people can buy and sell water rights. This helps ensure water goes where it's needed most and used most efficiently, especially during droughts. When Cape Town had a big drought from 2015 to 2017, this system helped send water to the most important places, helping them avoid a crisis (Conningarth Economists, 2004). We could do the same here in Kenya. By setting up a water market, we can ensure water is used wisely and goes to the places that need it most, maximising the efficiency of how water is used.

Let's think about what we've talked about today. We've seen how trade can help us solve our water problems, just like in Australia and South Africa. By making smart choices about what we make, buy and invest in, we can turn our challenges into opportunities for growth. We can have a sustainable future for Kenya, even with water shortages. Let's work together to make sure our communities not only survive but thrive. Asanteni!

David's address: how trade policies can help solve water scarcity

Growing up in Nairobi, David had not fully grasped rural challenges until a policy visit revealed severe water shortages, highlighting the urgent need for his work to reach those in need. Inspired by Amina's speech, he felt a strong urge to turn his trade policy ideas into action.

Good afternoon,

Water shortages cost Kenya a lot of money. They can make our economy grow slower by up to 10 per cent. In 2017, for example, a drought cost us billions of dollars. As the weather gets hotter, this problem will likely get worse.

Today, I want to talk about how we can use trade rules to solve our water problems. We need to make sure our trade plans fit with Kenya's Vision 2030 and work together with the government departments that deal with water. This will help us make real progress and achieve Amina's vision for a better future.

We can use taxes and subsidies to help with our water shortages. By making products that use a lot of water more expensive, we can encourage people to use less water. And by giving money to people who use water wisely, we can encourage them to use less water. This will help farmers and businesses use water better, which is what the Ministry of Agriculture wants (Ministry of Agriculture and Livestock Development, nd), helping save water while also growing food in a way that's good for the environment. By strategically using tariffs and subsidies, Kenya can create a more water-efficient economy.

We can also offer financial incentives to farmers who use water-saving technologies like drip irrigation and rainwater harvesting. This will make these tools cheaper and make them popular so farmers use them more, which will help save water. This fits with Kenya's National Trade Policy, which aims for sustainable growth while solving water problems (State Department for Trade, 2017). By working with local stakeholders and the Ministry of Water, Sanitation and Irrigation, we can ensure everyone benefits and uses water wisely. A strong trade plan can help us achieve these goals.

Additionally, we can set rules on how much water businesses can use. This will make them use water-saving technology and use less water for each thing they make, especially things that need a lot of water. We can include these rules in our trade plans and work with the Ministry of Investments, Trade and Industry to cut water use in farming and grow more food. This will help the economy and save water. To make sure businesses follow these rules and use less water, we will check on them from time to time and make sure they're doing what they're supposed to.

We need to change how we price water, to make people use it wisely. Charging more for using a lot of water will make households and businesses use less and save water. This can help communities like yours fix leaks and use water-saving technology. Implementing such pricing could reduce how much water we use and make us money. We should study the costs and benefits of this plan to choose the best way to save water and manage our resources. However, when we change how we price water, we need to think about people who are struggling. We can make sure that everyone can afford water and that it's fair for everyone.

Lastly, we can learn from others both locally and globally and share our ideas to manage water better and come up with new ways to save water. By working together and protecting new ideas while we're at it, we can use water more wisely, grow our economy and create new water-saving technologies. This will help us and the whole world solve water problems.

In conclusion, trade can help us solve our water problems, but we need to do it the right way. We can learn from other countries and follow good examples such as the EU's

Water Framework Directive (EU, 2014), to make smart trade deals that help us grow the economy and save water. Thank you!

Conclusion: a united front against water scarcity

As the sun set on their meeting, the three walked away with a renewed sense of purpose, ready to tackle the challenges ahead. Their united stance against water scarcity became a beacon of hope for Juma's village and many communities across Kenya.

Addressing Kenya's water scarcity through trade strategies and policies is crucial for climate resilience and sustainable development. The impacts of global warming, which intensify droughts and disrupt weather patterns, are aggravating Kenya's water crisis, affecting nearly half the population. Juma's story illustrates the need for climate-conscious policies.

By adopting solutions such as virtual water trade, investing in water-saving technologies and implementing equitable water pricing, Kenya can build resilience to these climate-induced challenges. Tackling issues like poor water management and contamination of water sources is achievable, but the unpredictability of future droughts and floods underscores the need for adaptive strategies.

To avoid problems like overreliance on other countries and environmental harm, Kenya should diversify trading partners, negotiate fair agreements and build domestic capacity. This approach will help solve water problems and show others the right way.

Kenya's trade strategies must align with global climate goals, the Sustainable Development Goals and supplementary solutions to ensure a water-secure future for all Kenyans. By embracing these solutions and taking action now, Kenya can forge a path towards a resilient and thriving nation, capable of overcoming water scarcity challenges.

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Trading for Tomorrow: Climate Solutions for Bangladesh through Trade Policy Reform

Jashim Howlader

Problem: increasing flooding and river erosion

Bangladesh is flood- and river erosion-prone. Located in a climate-vulnerable region, in a lowland area, the impacts of global warming mean the country is experiencing increasing prevalence of flooding. The effects of climate change, such as accelerated glacial melt from the Himalayas and fluctuations in rainfall, have worsened these problems (Kuhl, 2021). Bangladesh's riverbanks are eroding rapidly, social structures are shifting, arable lands are being washed away and infrastructure is heavily affected.

Trade policy to support flood-resilient development

Import tariff reductions for resilient materials: To reduce the effects of flooding and river erosion, it will be advisable to construct flood defence structures that are capable of withstanding the effects of flooding. Trade policy must be a focus here, through revising tariffs on imported products and services for use in building flood barricades, like reinforced concrete, steel and other complex engineering materials, including sophisticated gadgets to forecast flooding (Ghimire et al., 2021). A reduction of such costs will help Bangladesh build stronger and more efficient levees, embankments and flood barriers to safeguard the lives of the affected population and precious agricultural lands.

Technology transfer agreements: Bangladesh free trade agreements include clauses that address technology transfer to enhance the nation's ability to construct flood-resistant structures. One way Bangladesh can obtain comprehensive flood-fighting solutions from developed nations is through bilateral co-operation; for instance, Bangladesh can co-operation with the Netherlands, which has excellent measures to deal with floods (Ghimire et al., 2021). These agreements can also stipulate the need for training programmes for local engineers and planners, to localise the knowledge required to develop and maintain the flood defences.

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Trade for agricultural resilience

Import of flood-resilient crop varieties: Crop cultivation is heavily affected by flooding, a major natural event that hampers agricultural activities that are vital for an economy like that of Bangladesh. To this end, it is recommended that trade policies target the importation of flood-resistant crops. Some of these crops are developed to stand immersion and water-saturated conditions, hence agricultural production is possible during flooding (Khan et al., 2020). By allowing farmers to import such seeds, the problems that result from climate change could be solved, and hence food security and stable incomes for farming families can be attained.

Export incentives for resilient crops: To ensure farmers grow more flood-resistant crops, the government has a policy tool in the form of export incentives. By establishing favourable conditions for the export of these crops, this will motivate farmers financially to switch to more resistant varieties (Khan et al., 2020). In addition, it will assist in managing adaptation to climate change, as well as creating new outlets for exports of agricultural products that can enhance Bangladeshi export earnings and thus bring about diversification of the economy.

Protection of riverbanks through trade policies

Promoting erosion control technologies: Trade policies contain erosion control technologies such as geotextiles, gabion and riprap. Through tariff reductions on such materials, Bangladesh has the potential to make these technologies cheaper in the country (Baniya et al., 2021). This would help extend the application of better management practices for erosion control and prevent further damage to riverbanks, human-made structures and people's lives from the effects of erosion.

Bilateral and multilateral agreements: Special attention should be paid to trade agreements of different natures, bilateral and multilateral, related to environmental protection to increase the country's ability to address existing issues such as river erosion. Such contracts can include options for scholarships, grants and programmes for research co-operation as well as joint initiatives for the construction of riverbanks (Baniya et al., 2021). International collaboration through such treaties can help in availing the required funds and information for large-scale programmes to control erosion and therefore can minimise the impacts of river erosion significantly.

Policies to support the expansion of trade in renewable energy technologies

Reducing import duties on renewable energy technologies: Increases in greenhouse gas emissions mean it has become crucial for Bangladesh to shift towards the use of renewable energy. Elimination or reduction of import duties on solar panels, wind turbines

and other related technologies lowers their cost (Murshed et al., 2021). Government intervention to lower the cost of renewable energy will help eliminate the use of fossil fuel energy in the country and emissions of greenhouse gases.

Export incentives for renewable energy products: Exporting renewable energy products and technologies can stimulate innovative advancements in the renewable energy sector of Bangladesh (Murshed et al., 2021). Through export promotion of locally assembled solar panels and other renewable energy technology items, Bangladesh can create a market for renewable energy products. This also generates potential earnings while making a positive input into the fight against climate change across the world.

Backing climate change-resilient development in urban centres

Import policies for sustainable building materials: Developed regions, especially those in Bangladesh, are not immune to the effects of climate change, such as flooding and heat stroke. Trade policies that reduce tariffs on sustainable building materials such as green roofing systems, permeable pavements and energy-efficient construction materials can help enhance climate-resilient urban development (Chowdhury et al., 2021). Finding ways to develop these materials and make them available can increase their use in the planning of our cities to mitigate the adverse impacts of climate change.

International collaboration on urban resilience: Entering into international trade agreements that target resilience in urban areas can open Bangladesh up to adopt improved urban planning methodologies and technologies. For this reason, research projects for co-operation with other cities in countries that are familiar with the effects of climate impact can assist Bangladeshi cities in constructing infrastructure with more resilience (Chowdhury et al., 2021). They also bring forth an opportunity to exchange information on good practices and experiences in dealing with climate change, improving existing ability to cope with changes.

Organic fish farming and aquaculture or otherwise sustaining the fish industry

Trade agreements for sustainable practices: Fisheries and aquaculture in Bangladesh are vulnerable to climate change's effects on sea temperatures and other factors. Trade policies can establish rules and regulations that ensure sustainable fish farming and aquaculture on the international market (Nayna Schwerdtle et al., 2021). These agreements can, for example, help ensure trade in fishery products is conducted sustainably, thus protecting the environment in which the fish are caught and at the same time guaranteeing a long-term basis for the industry, as opposed to the current unsustainable practices often observed in fisheries.

Support to the export of sustainable fish products: Alongside this, the government should use exports as a lever to promote sustainable fishing, and therefore sustainably sourced fish products. This will not only lead to environmental conservation but also help capture a higher market share for fish products originating from Bangladesh ([Nayna Schwerdtle et al., 2021](#)). Thus, Bangladesh can ensure a proper outlet for its exports and, at the same time, maintain sustainable fishery resources.

Building climate-resilient supply chains

Facilitating trade in climate-resilient goods: Trade policies and agreements can help invigorate the supply chain through clauses that encourage the importation of goods that augment climate robustness. Such equipment can range from irrigation technologies to special seeds that enable dry land to counteract the effects of drought, as well as water-saving technologies ([Khan et al., 2020](#)). By making these products more accessible and affordable, trade policies can facilitate the development of supply systems that are more resilient to the effects of climate change.

Encouraging regional trade co-operation: Regional trade co-operation can provide effective solutions regarding the construction of climate change-resilient supply chains. It is suggested that, through regional trade, Bangladesh work hand in hand with neighbouring countries to come up with a common endowment to address the impacts of climate change ([Khan et al., 2020](#)). Such activity may involve investing in infrastructure projects in the region, joint research activities and disaster response measures that can increase the region's climate shock absorption capacity.

Improving climate finance using trade

Attracting green investments: Trade policies could encourage green investment, which is needed to fund climate change resilience. By signing relevant policies on foreign direct investment in the development of renewable energy, sustainable agriculture and other climate change-resistant sectors, Bangladesh will be able to secure the necessary financing for its adaptation and mitigation endeavours ([Baniya et al., 2021](#)). International trade treaties that contain clauses regarding green investments offer a kind of prescription for such financial flows, being long-lasting.

Leveraging international climate funds: Commitment to international trade treaties that focus on measures that can improve the climate situation can also assist Bangladesh in accessing international climate funds. Such funds, sponsored by international financial organisations and multilateral agencies, can help finance various initiatives in the sphere of climate ([Baniya et al., 2021](#)). Specific trade policies that run parallel with a global climate change financing agenda can further improve Bangladesh's chances for such funding, thus increasing the availability of climate finance to build resilience against climate change.

Conclusion

The concept of trade and trade policy can be used effectively to solve almost issues related to climate change in Bangladesh. Inasmuch as trade policies might not directly influence the natural disasters that climate change brings about, they can benefit Bangladesh's resilience to climate change through the enhancement of technology, technology transfer, agriculture, agriculture practices and renewable energy. Moreover, advancing co-operation with other countries, improving the resilience of international value chains and attracting climate financing can strengthen the nation's ability to ensure a more prosperous and resilient future. By introducing suitable trade strategies, Bangladesh can become one of the winners of climate change and its consequences.

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Leveraging Trade Policy to Address the Climate Crisis in Kenya with a focus on Sustainable Agriculture

Faith Mwendu Johnson

Introduction

Kenya is seriously threatened by the climate catastrophe, which is being reflected in the country's harsh weather patterns, protracted droughts and irregular rainfall, all of which have a severe effect on agriculture (Nyaga, 2021). Kenya's economy is heavily dependent on the sector, which employs over 40 per cent of the workforce and accounts for over 33 per cent of the country's gross domestic product (Onsomu et al., 2022). Smallholder farmers are disproportionately affected by the negative consequences of climate change, making this sector one of the most susceptible. In light of the global climate emergency, it is critical to investigate novel approaches that harmonise trade policy with ecological sustainability. To address Kenya's climate dilemma, this essay looks at how trade and trade policy might support sustainable agricultural methods and foster connections between commerce, environmental stewardship and economic growth.

Identifying the issue: The effects of climate change on Kenyan agriculture

Since most of Kenya's agriculture depends on rain, it is extremely vulnerable to changes in the weather. Millions of smallholder farmers are facing reduced crop yields, food insecurity and unstable economic conditions as a result of the growing frequency of droughts, erratic rainfall and an increase in pests and illnesses. Furthermore, the degradation of natural resources, such as through deforestation, soil erosion and water scarcity, has been made worse by climate change, posing a greater danger to the agriculture sector's sustainability and productivity (Ngcamu and Chari, 2020).

Faith Johnson is a Kenyan national and Safety, Health, Environment and Quality (SHEQ) Officer by profession. She holds a bachelor of science degree in Industrial Chemistry from the Jomo Kenyatta University of Agriculture and Technology in Kenya. She has a deep interest in nature conservation. Outside of her professional pursuits, she enjoys writing novels.

Given that rural communities depend primarily on agriculture for their livelihoods, the negative effects of climate change on the sector represent both an economic and a social concern. Communities' growing susceptibility to shocks brought on by climate change have increased poverty levels, caused migration and resulted in revenue loss. According to [Elechi et al. \(2022\)](#), tackling Kenya's climate catastrophe calls for an all-encompassing strategy that combines trade policy with sustainable farming methods to guarantee food security, to lower poverty and to increase the resilience of rural populations.

Trade and trade policy's contribution to climate crisis mitigation

Through encouraging the adoption of sustainable agriculture methods and promoting the export of environmentally friendly products, trade policy can play a critical role in mitigating the climate catastrophe ([Amelework et al., 2021](#)). There are several tactics that can be used to accomplish this:

Green trade agreements: Addressing the climate catastrophe can be greatly aided by trade agreements that place a high priority on environmental sustainability ([Ahmed et al., 2022](#)). With important trading partners, Kenya can negotiate green trade agreements with clauses addressing biodiversity preservation, carbon footprint reduction and sustainable agriculture. Incentives including favourable tariffs, access to foreign markets and technical support are some of the ways these agreements might encourage Kenyan farmers to adopt sustainable practices ([Ola and Menapace, 2020](#)). Kenya can take the lead in green trade and support international efforts to tackle climate change by co-ordinating trade policy with environmental goals.

Furthermore, by facilitating the transfer of climate-friendly technologies and practices to Kenyan farmers, green trade agreements can improve farmers' ability to adapt to climate change. For instance, Kenyan farmers can be given the resources they need to lessen their environmental impacts and increase their climate change resilience through collaborations with nations that have advanced knowledge in water management and renewable energy ([Goh and See, 2021](#)).

Promoting sustainable value chains: These chains are essential to minimising the negative effects of agriculture on the environment and maintaining the industry's long-term sustainability ([Perez et al., 2021](#)). Trade policies that encourage the export of fair-trade, low-carbon and certified organic products can encourage the development of sustainable value chains. Public-private collaborations, market access incentives and certification programmes can help achieve this ([Gameiro, 2023](#)). Kenya can improve the competitiveness of its agricultural products in global markets and mitigate climate change at the same time by promoting sustainable value chains. Furthermore, sustainable value chains can open up new business options for rural communities,

enhancing their standard of living and giving them steady incomes. For instance, encouraging organic farming and fair-trade certification for Kenyan coffee and tea can carve out a specialised market for these goods, drawing in eco-aware customers and boosting farmer earnings (Muriuki, 2023).

Encouraging climate-smart agriculture: CSA refers to a set of methods intended to boost climate change resistance, lower greenhouse gas emissions and increase agricultural productivity (Barasa et al., 2021). Kenya can encourage farmers to embrace sustainable techniques like integrated pest control, agroforestry and conservation agriculture by introducing CSA into trade policy. These methods increase the productivity of smallholder farmers while also lowering carbon emissions and improving soil and vegetation sequestration of carbon, which helps slow global warming. Trade agreements can also be used to encourage the export of climate-smart goods, which will develop a market for sustainable agriculture and motivate farmers to switch to eco-friendly methods. Globally recognised Kenyan tea and coffee, for example, can be positioned as climate-smart products and command premium pricing in foreign markets. In addition to offering farmers financial incentives to implement sustainable methods, this raises Kenyan agricultural products' competitiveness on the international market (Mulwa et al., 2021).

Building capacity and transferring knowledge: Investing in farmers' capacity-building and knowledge transfer is crucial for the successful implementation of sustainable agriculture techniques (Siebrecht, 2020). Trade policy can help establish collaborations with foreign organisations, academic institutions and businesses to give Kenyan farmers access to technological assistance and training. This can involve the adoption of agricultural types that are adaptable to climate change, methods for managing soil health and sustainable approaches to water management. Furthermore, by combining trade policy with extension and education programmes, farmers can be equipped with the skills and information they need to adapt to climate change. To improve smallholder farmers' ability to adopt sustainable practices, for example, farmer field schools and digital platforms for knowledge-sharing about climate-smart techniques can be established (Autio et al., 2021). Trade policy has the potential to strengthen the agriculture sector's resilience, guarantee food security and alleviate poverty by providing farmers with the necessary knowledge and resources to adjust to the changing climate.

Including environmental standards in trade agreements: It is crucial to include environmental standards in trade agreements to make sure trade policy handles the climate catastrophe adequately (Jinnah and Morin, 2020). Requirements for waste management, carbon emissions reduction and sustainable farming methods are a few examples of these criteria. Trade policy can level the playing field for businesses and farmers and promote the adoption of sustainable practices in agriculture by establishing clear environmental criteria (DeBoe, 2020). Furthermore, integrating environmental norms into trade policy could help advance the growth of environmentally friendly sectors, including sustainable packaging, renewable energy and eco-friendly transportation. These sectors have the potential to significantly lower the agriculture

sector's carbon footprint and increase its climate change resilience. Promoting energy-efficient processing facilities and solar-powered irrigation systems, for instance, can lessen agriculture's negative environmental effects while increasing farmer productivity and profitability (Dhonde et al., 2022).

Opportunities and challenges

Although there are many benefits to integrating trade policy with climate action, there are also issues that must be resolved. The possible clash between economic liberalisation and environmental protection is one of the main obstacles (Esty, 2023). Increased output and consumption as a result of trade liberalisation could worsen environmental degradation if they are not controlled. Designing trade policies that prioritise sustainability over short-term economic gains and that are in line with environmental goals is essential to overcoming this difficulty (Iacobuță et al., 2021).

The requirement for sufficient funding to facilitate the shift to sustainable agriculture is another difficulty. Developing sustainable value chains and putting climate-smart policies into action demands large investments in infrastructure, technology and capacity creation. Kenya could investigate cutting-edge financing options, such as climate finance, green bonds and public–private partnerships, to solve this and raise the required funds. Furthermore, international partnerships and collaboration can be extremely important in supplying the funding and technical assistance required to put sustainable trade policies into action (Van Tulder et al., 2021).

A third difficulty is striking a balance between the interests of different parties, such as government organisations, big agribusinesses, smallholder farmers and foreign trading partners. It can be challenging to bring diverse groups' priorities together in order to work towards the shared objective of sustainability. Given their lack of resources or expertise, smallholder farmers may be reluctant to adapt, and larger agribusinesses may put profit above environmental concerns. Fair distribution of trade policy advantages and commitment from all parties to sustainable practices depend on strong leadership, active stakeholder participation and inclusive policy-making (Fiandrino et al., 2022).

Despite these obstacles, Kenya has a rare chance to strengthen the climate change resilience of its agriculture sector, advance sustainable development and support international efforts to address the climate catastrophe through the integration of trade policy and climate action. Kenya can draw investments in sustainable agriculture, open up new business opportunities for rural populations and guarantee long-term food security by establishing itself as a leader in green commerce (Ahairwe and Bilal, 2022).

Conclusion

Kenya's agriculture sector faces an existential threat from the climate catastrophe but this also presents a chance to rethink trade policy in a way that balances economic

expansion with environmental sustainability. Kenya can use trade policy to address the climate crisis while guaranteeing food security, lowering poverty and boosting the resilience of rural communities. It can do this by promoting climate-smart agriculture, negotiating green trade agreements, developing capacity, encouraging sustainable value chains and incorporating environmental standards into trade policy.

It is essential that trade policy turn into a vital weapon in the fight against this global issue as the world struggles to address climate change. Kenya can secure a sustainable future for its rural communities and agriculture while also contributing to the global effort to reduce climate change by incorporating environmental objectives into trade policy. The moment to act is now, and trade policy provides Kenya with a potent tool to propel the country's agriculture sector towards greater resilience and sustainability.

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Green Trade: Revitalising Pakistan's Agriculture amid the Climate Challenge

Abdul Kabir

As the defining crisis of the century, climate change poses a significant risk to all species on the planet. Rising temperatures are fuelling environmental degradation, food and water insecurity, extreme weather events, natural disasters and economic disruption. It is obvious that business as usual can't continue, and drastic changes are urgently needed to leapfrog environmental catastrophe. The rising frequency, intensity and geographical spread of extreme and sudden natural disasters, along with the 'progressive onset' of their impacts, such as rising sea levels, tropical cyclones and flash floods, are leading to disruption across the globe. To mitigate climate crisis and prevent a meltdown in global supply chains, severe damage to transport infrastructure and restricted mobility, the green transition towards an ecologically sustainable economy is an absolute necessity.

Since the devastating floods of 2022, which displaced over 33 million people and led to damage worth more than US\$30 billion (World Bank, 2022), Pakistan has continued to confront the onslaughts of climate change, which are hampering all efforts towards a sustained recovery. Being at the epicentre of the issue, Pakistan faces numerous challenges associated with climate change, such as changing seasonal weather patterns, monsoon variability and climate-induced disasters. However, I would discuss two mutually reinforcing problems in particular – agricultural vulnerability and water and food security – and how these two can be solved in Pakistan via trade-driven carbon abatement policies and their thorough enactment.

As global temperatures rise and climate patterns become more erratic, Pakistan finds itself in a quagmire of agricultural degradation and consequent disturbed food supply chains. Pakistan is an agrarian economy: the sector remains the mainstay of the economy and accounts for 23 per cent of the country's gross domestic product. In irrigated as well as spate farming systems, temperature variations and lack of water can have negative impacts on productivity.

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As a result, agriculture becomes the most exposed and vulnerable sector to climate change.

Ranked the world's fifth most vulnerable country to climate change, Pakistan is on the brink of agricultural collapse because of projected temperature increases higher than the global average. In the wake of severe climate shocks, abrupt fluctuations in temperatures have reduced wheat and rice crop yields by 14.7 per cent and 20.5 per cent, respectively, in recent years ([Haq et al., 2021](#)), with a projected decline in overall agricultural productivity of 8–10 per cent till 2040 ([Cradock-Henry et al., 2020](#)). Additionally, crop seasons are shrinking and shifting as a result of climate change, and this could potentially terminate the viability of the production of some crops ([Syed et al., 2022](#)).

Climate-induced disasters like floods, heatwaves and droughts aren't isolated events; they induce a cascade of other problems. In the floods of 2022, 2.8 million hectares (57 per cent) of cropland was affected out of 4.8 million hectares of agricultural land in Sindh alone ([Qamer et al., 2023](#)). On the one hand, the climate crisis is wrecking livelihood opportunities for millions of people; on the other, it is also depriving many leading industries, such as textiles, leather, etc., of cheap raw materials.

On top of everything, the indirect footprint of the climate crisis on food security is not only detrimental but also irreversible. In Pakistan, 24 per cent of the population already faces high levels of acute food insecurity (IPC, 2024); in the event of a climatic catastrophe exacerbated by climate change, the entire agricultural framework is doomed to collapse, which will lead to a significant escalation in food insecurity.

In addition to this, a decrease in the water table caused by extreme temperatures has led to frequent and intensive droughts, wreaking havoc on agriculture, which depends mainly on surface and groundwater from a single source – the Indus River Basin. Ninety per cent of water used in agriculture comes from the Indus Basin irrigation system. Climate change isn't the sole contributor to the water crisis but it is exacerbating existing water scarcity by affecting the rate at which snow and glaciers melt in the Indus Basin. To mitigate this calamity, Pakistan must shift gears towards policies that safeguards its 'food basket' against climate change.

To promote sustainability and preserve agriculture, Pakistan must adapt to the impacts of climate change and mitigate its causes, and it can do so by effectively leveraging trade and trade policy. One of the important aspects of climate-smart agriculture is reducing carbon emissions from food systems including agriculture and land use, as this contributes 21–37 per cent to total greenhouse gas emissions, with supply chains accounting for 5–10 per cent of these ([Ritchie, 2021](#)). Interestingly, energy and agriculture together make up more than 85 per cent of Pakistan's emissions. This can be addressed by optimising transportation and logistics by using biofuels instead of carbon-intensive modes of transportation, reducing food waste and implementing carbon pricing mechanism.

Notably, despite being a low-carbon emission country, generating just 0.52 per cent of world's carbon dioxide emissions and yet bearing the brutal brunt of floods in 2010,

Pakistan formulated its first National Climate Change Policy (NCCP) early, in 2012, as part of a wider effort to legislate carbon reduction targets and prevent 'carbon leakage.' Updated in 2021, the NCCP emphasises diversifying agricultural products and markets to reduce dependency on climate-vulnerable crops and transitioning agriculture's energy needs to renewable sources, especially solar energy. Meanwhile, with the climate crisis making water availability unpredictable, the NCCP advocates for a virtual water trade strategy, aimed at importing water-intensive crops instead of growing them domestically.

Pakistan has been actively collaborating with various countries on disseminating green technologies and expertise and upgrading its outdated agricultural machinery. Examples of these collaborations include the United States Agency for International Development-funded Pakistan Agricultural Technology Transfer Activity 2017–2021, a partnership with the Chinese government on imports of best-quality disease-resistant and high-yield hybrid seeds of various crops like wheat and cotton (CNFA, n.d).

Right now, Pakistan is in a state of jeopardy, where the need to implement climate action cannot be overstated. Consecutive governments in Pakistan have proposed various implementation strategies but little or no actual implementation. Unfortunately, Pakistan faces many challenges in this regard, particularly because of lack of political will and policy prioritisation issues. Instability in politics and frequent changes in administration hinder efforts to formulate a sustainable and long-term policy to allocate sufficient funds and resources to climate initiatives. Political commitment to recognise climate change as a critical issue is needed to solve the problem of short-term political cycles.

Weak institutional capacity represents yet another obstacle, weakening co-ordination between multiple government bodies and private stakeholders tasked with the implementation of climate policies. Lack of institutional expertise and scrutiny mean institutions fall short of achieving their climate targets, and rampant corruption within institutions adds fuel to fire. In this regard, Pakistan must improve the capabilities of concerned institutions by providing rigorous technical training, and create effective co-ordination systems by forming inter-ministerial commissions and information-sharing platforms.

Budgetary limitations and conflicting development goals are another challenge for Pakistan – a country that annually loses US\$4 billion annually to climate change (Abbasi, 2024). A substantial climate finance gap means Pakistan lacks adequate financial resources to invest in the green transition. In order to achieve the country's ambitious goal of slashing greenhouse gas emissions by up to 50 per cent by 2050, Pakistan will need to secure huge investments from other countries. As part of global climate co-operation, meanwhile, Pakistan should receive concessional international climate finance.

All these challenges can be addressed swiftly by ensuring a stable political environment, obligating every administration to adhere to the NCCP and making efforts to attract eco-friendly investments.

Pakistan can also draw from the experiences of climate frontrunners like Bangladesh, Costa Rica and Germany, among others :

For a sustainable and more robust agricultural system, Pakistan can look towards Bangladesh – a country well known for jute production. In Bangladesh, the agricultural situation is quite similar to that in Pakistan, with floods and extreme rainfall becoming the norm in both countries. However, Bangladesh has made tremendous progress in standardising climate-resilient agricultural practices and bringing about crops that can withstand extreme weather conditions (Kaushik et al, 2023).

- Costa Rica is one of the most densely forested countries in the world, and is striving to save these 'green filters' through the Payment for Environmental Services programme (UNFCCC, nd), a financial mechanism to promote the conservation of forest ecosystems and prevent land degradation.
- After the war in Ukraine broke out, Germany radically changed its energy policy so it could avoid buying Russian fossil fuels. Thanks to the feed-in tariff system, Germany's renewable energy production increased drastically, and renewable energy producers were given lucrative incentives (Maguire, 2024). By adopting a comparable incentive-based policy, Pakistan can transform its fossil fuel energy landscape into a green one.

In all these examples, political will, institutional competence, stakeholder participation, sufficient financial resources and lessons from other nations' achievements have played a role in driving success in the fight against climate change.

In a nutshell, climate-induced agricultural vulnerability and food security persist as central issues in Pakistan and need to be addressed immediately to prevent further losses. Floods and droughts in particular pose a great danger to Pakistan's economic 'backbone' and food security. Since the 1990s, Pakistan has been confronting climate-related catastrophes and it is high time the nation uses all methods, including trade, to solve the problem. It is imperative to acknowledge the role of integration of trade in climate change policy to reduce the country's carbon footprint and achieve net zero emissions. This integration will also bolster global co-operation as all countries join hands to advance the climate agenda and innovate solutions that benefit both the economy and the environment. Climate change knows no border, and its repercussions are universal. As responsible citizens of the Earth, it is our responsibility to move beyond narrow national interests and formulate policies that help in carbon sequestration. The time for action is now!

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Combating Plastic Pollution in Belize through Trade

Maria F. Mendez

Belize, a Caribbean nation, is home to the Belize Barrier Reef, a United Nations Educational, Scientific and Cultural Organization World Heritage Site and a vital part of its marine and economic ecosystem. The reef supports marine species, boosts tourism and fishing, and protects coastal areas from storm surges and erosion. The state, however, faces threats from marine pollution, particularly plastic waste. To combat this problem and help ensure growth with development in a sustainable way, the country can make use of trade policy. This essay looks into the intricacies of marine pollution and what can be done by using trade policy, and designs a comprehensive plan of action for Belize to effectively fight plastic pollution.

Plastic pollution has spread widely, with concurrent negative impacts on the environment. According to the National Geographic Society, approximately 8 million tons of plastic waste are discharged into oceans every year, contributing to the decline of the ecosystem all over the world (Parker, 2024). Plastic pollution harms all life in the sea, from the smallest plankton to the largest marine animals.

Plastic waste comes in many shapes and sizes, from microplastics to macroplastics – that is, large plastic items that can get entangled in and kill marine animals. The former are very dangerous because of their wide distribution and the difficulties involved in monitoring/removing them. Research shows that microplastics have the capacity to interfere with the ability of marine animals to reproduce and eat, thereby causing long-term negative impacts to the environment (European Commission, 2021).

Such effects of marine pollution are devastating for Belize since it is so reliant on its marine resources. This reef hosts a multitude of marine organisms, ranging from fish to invertebrates. According to the United Nations Environment Programme (UNEP, 2022), plastic waste smothers coral polyps, hindering light penetration, and adds harmful materials into the sea, which disadvantages reefs. These processes result in disruption to the whole marine ecology and bring about reef deterioration and bleaching.

One of the most pressing issues is the effects of plastic waste on sea turtles in Belize. Sea turtles are known to keep marine ecosystems in balance. They are involved in nutrient cycling, seagrass bed health and jellyfish population control. However, they

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have a tendency to mistake plastic waste for food, which may lead to ingestion, entailing internal injuries, blockages or death (FAO, 2023). The problems associated with plastic pollution are compounded by the consequential effects of the decline of sea turtles on marine ecosystems. Numbers of sea turtles are declining because of this intake of plastic waste, and this is also jeopardising the marine ecology.

Belize must use trade policy as a tool for environment conservation to effectively combat maritime pollution. One of the most effective strategies is implementation of a ban on single-use plastics, mainly straws, bags and cutlery, which act as big contaminators in the sea. A good example of how trade policy can spur environmental transformation is the European Union's ban on single-use plastics enacted in July 2021. This regulation greatly minimises plastic waste and promotes sustainable lifestyles by prohibiting some single-use plastic products and promoting the alternatives (EEA, 2024).

Belize can legislate for the gradual phasing-out of single-use plastics by setting a target for this and providing incentives for companies to switch to alternatives that are more environmentally friendly. Implementation of these regulations should be accompanied by effective enforcement mechanisms, awareness campaigns, financial incentives for developing sustainable practices and high-level publicity campaigns. Subsidies or tax breaks could be provided to enterprises that manufacture or sell sustainable alternatives to single-use plastics. Public education can promote changes in consumer behaviour and raise awareness of the negative impacts of plastic waste on the environment.

Another important way in which trade policy can help deal with marine pollution is through the promotion of sustainable packaging. Large amounts of plastic packaging end up in the water and, as such, greatly add to marine pollution. The Ellen MacArthur Foundation advocates for a shift in this regard towards biodegradable and compostable materials and showcases the potential of innovative packaging solutions for reducing plastic waste (UNWTO, 2023). Tariff-reducing trade policies on sustainable packaging material and financial incentives for companies using such substitutes can support the shift to eco-friendly packaging.

Research and development expenditures in this respect should be validated through supporting regulations that allow the creation and usage of biodegradable material. Innovation in domestic packaging technologies can provide Belize with a circular economy and less dependency on imported plastics. Such policies can motivate the use of environmentally friendly packaging materials by stimulating consumer demand and encouraging more sustainable production practices. For example, research funding for local entrepreneurs in developing biodegradable packaging alternatives would greatly spur innovations locally in this regard. At the same time, co-operation with international organisations developing environmentally friendly packaging will give Belize access to state-of-the-art technologies and best management practices.

Another critical area in which trade policy can make a significant difference when it comes to marine pollution is in the improvement of waste infrastructure. Plastic waste generated by Belize exceeds what the country's current waste management facilities can handle. In this regard, the Basel Convention Secretariat (2023) stresses the need for investment in state-of-the-art recycling technology and modern waste management systems in order to effectively manage plastic waste. Trade policies that encourage the establishment of waste-processing facilities or that ease access to recycling technology can be used to back up the building of capacity in Belize to deal with plastic waste.

Investments in waste management infrastructure can involve reduced prices for recycling equipment, modernisation funding for waste facilities and the promotion of public-private partnerships to build additional capacity in processing trash. For example, reforms to trade laws to assist Belizean towns in acquiring state-of-the-art recycling equipment could make a phenomenal difference in terms of efficiently sorting and processing garbage. Added to this, incentivising collaboration between private sector businesses and municipal governments would help achieve innovative solutions in waste management that are appropriate for the specific needs of Belize (Ocean Conservancy, 2023). In addition, critical to the proper functioning of state-of-the-art recycling technology are investments in education and training for professional waste managers. In this way, Belize will be in a better position to deal more effectively with plastic waste and mitigate the impacts of this type of pollution on the environment, through establishing an appropriate functioning waste management system.

Another major intervention in the control of climate change and marine pollution is changing to renewable energy. The International Renewable Energy Agency (IRENA, 2023) has argued that switching to renewable energy will help reduce climate change and, at the same time, offer protection to the maritime ecosystem. Reformed trade regulations that reduce barriers to renewable energy equipment importation – like wind turbines and solar panels – will get Belize closer to a low-carbon economy.

Such a breaking of dependency on fossil fuels through the promotion of renewable energies will reduce the amount of emissions responsible for an increase in global warming and in the acidity of oceans, thus saving marine habitats from undesirable effects resulting from rises in global temperatures. Apart from addressing marine pollution, shifting support towards green energy through trade policy jibes with broader environmental and economic objectives. For instance, trade policies stimulating regional renewable energy industries can simultaneously offer new opportunities for economic development and reduce the environmental impact from energy production (IRENA, 2023). Further, promoting energy efficiency with the help of trade agreements can improve the sustainability of the energy sector in Belize and reduce greenhouse gas emissions.

Critical to marine pollution control is the promotion of eco-friendly travel. Tourism dominates Belize's economy but comes at an environmental cost. Sustainable tourism practices will ensure a reduced impact of tourism on the ecosystem and also protect the

marine environment. Guidelines on sustainable tourism development are issued by the United Nations World Tourism Organization (UNWTO, 2023), which puts an emphasis on the need for environment-friendly infrastructure and responsible tourist behaviour.

This can be a reality through trade policies aimed at promoting eco-friendly infrastructure, especially adapted leisure activities and green hotels. Regulations and incentives for responsible tourism can protect Belize's natural resources and increase sustainability. Tax benefits for companies investing in eco-friendly tourism infrastructure can promote green practices. Encouraging sustainable tourism certification schemes can help companies and customers recognise and endorse eco-friendly choices.

Addressing marine pollution and climate change requires active involvement in international agreements and global efforts. By participating in international accords addressing marine pollution and hazardous waste management, Belize can bolster its environmental efforts. A framework for environmentally sound practice and hazardous waste management is provided by the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Convention Secretariat, 2023).

Belize's waste management procedures can be improved and worldwide efforts to reduce marine pollution can be supported by trade policies that are in accordance with the Basel Convention's requirements. Participation in international coalitions and the receipt of technical assistance from countries advanced in waste management practices may prove invaluable assets, and a source of knowledge for Belize. Participation in global initiatives can help Belize contribute to international efforts to address climate change and marine pollution (Ocean Conservancy, 2022).

Examination of successful case studies in other countries offers valuable ideas to help Belize design appropriate trade strategies. Two very good examples of trade policy interventions are Rwanda's 2008 introduction of a plastic bag ban and the 2017 enactment of a complete plastic bag ban in Kenya. Rwanda's ban has greatly improved the environment, and the country has become a global pioneer in the management of plastic trash. The action in Kenya has reduced plastic waste considerably and increased awareness regarding the impacts of plastic on the environment (NEMA, 2022).

Belize can design equivalent legislation and use appropriate trade policy instruments towards a reduction in plastic pollution and support for sustainable livelihoods. Anchored in past experiences of other countries, Belize can set effective policies towards environment and marine pollution goals and state-of-the-art approaches in this regard.

Belize needs to implement a ban on single-use plastics, promote sustainable packaging, improve waste management, support renewable energy, encourage sustainable tourism and participate in international agreements to combat marine pollution and climate change. This will help it sustain the economy and protect the maritime environment, including through international environmental initiatives achieved via trade policy co-ordination.

One of the dangers to the Belize Barrier Reef and the country's marine ecology is the impact of marine pollution, mainly plastics. Policies that Belize can implement include the banning of single-use plastics, encouragement of sustainable packaging, enhanced waste management, support to renewable energy, sustainable tourism and involvement in international agreements. Such measures could be exemplary to other countries in their efforts to combat climate change and marine pollution, showing that comprehensive trade policy interventions can engender propitious environmental outcomes and a sustainable future.

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Beyond the Glamour: The Role of Trade Policy in Sewing up the Problem of the Fashion Industry

Muhammad Shaheer Mirza

Introduction

Pakistan, a member of the Commonwealth, began its journey as an independent nation in 1947. From the outset, the country confronted a myriad of national crises, ranging from the ongoing battle against terrorism to the pervasive challenge of poverty to enduring political instability. These challenges have tested the nation's resilience. Despite their severity, however, the country has consistently demonstrated an ability to navigate and manage these difficulties within its available resources and capacities, reflecting a tenacity and adaptability that are worthy of recognition.

However, the impacts of global crises, for example Covid-19 and climate change, have significantly influenced Pakistan's economy, creating ripple effects that are exacerbating existing challenges. These global phenomena have accentuated the country's vulnerability to external shocks, particularly in terms of environmental crises. One of the most critical impacts is the risk that the economic development gap will widen, making it even harder to achieve sustainable growth. Beyond economic implications, the climate crisis is also intensifying social challenges, including the displacement of marginalised communities, the erosion of livelihoods and a rise in health-related issues.

For instance, the severe climatic events of the past decade have had devastating consequences on our economy. The 2014 heatwave in Karachi, which claimed the lives of 2,000 people within just 5 days, highlighted the deadly potential of extreme weather events. More recently, the catastrophic floods of the summer of 2022 caused approximately US\$39 billion in damages and resulted in the internal displacement of 8.3 million people ([Adnan et al., 2024](#)). These events have sparked a curiosity in me to understand climate change and the sectors that are triggering it.

Pakistan's textile industry

Against this backdrop, the focus of this essay is on Pakistan's textile sector, which stands as the second-largest contributor to the nation's exports. Pakistan's textile

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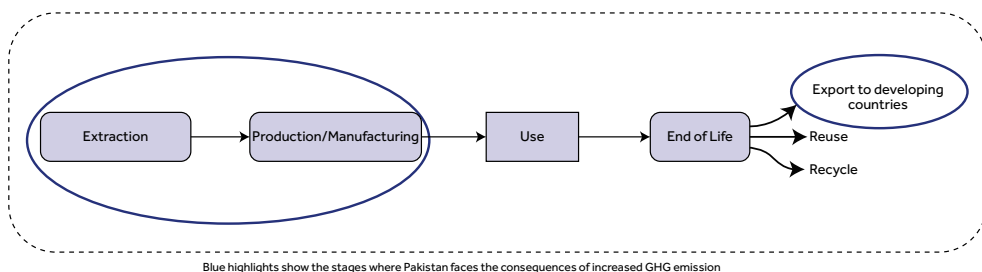
industry is internationally recognised for its production of cotton, denim, bed sheets and other textiles. The sector is not just an economic pillar but the backbone of the country's economy, significantly contributing to both gross domestic product and employment (Ali et al., 2020). The primary market lies in the Global North, which represents an ideal economic destination for Pakistan's exports. The sector also plays a crucial role in job creation within Pakistan. Garment manufacturing employs a total workforce of approximately 11.68 million. Remarkably, the textile industry alone accounts for 40 per cent of this workforce, employing around 4.672 million individuals (Ahmed, 2023).

Life cycle assessment of textile products

The rise of 'fast fashion' has seen bulk amounts of clothes being produced in countries where labour is cheap. Figure 1 presents a simplified view of the life cycle of a textile product. The process begins with the production of cotton, which is then used to produce various yarns and fabrics. Fabrics are subsequently processed in textile manufacturing plants, where they are dyed, cut and sewn into finished products such as shirts, trousers, denim pants, jackets and more.

After customers purchase and use garments, they typically reach one of three main end-of-life destinations. The *first destination* is the local second-hand clothing market, where high-quality items are selected for resale within the same country. This option, while beneficial for extending the garment's life cycle, involves significant costs associated with sorting and quality control. The *second destination* involves the recycling of certain fabrics. In this process, fibres are regenerated and repurposed for the production of new clothing items. This method, though environmentally favourable, is costly because of the advanced technology required for fibre regeneration and the labour-intensive processes involved. The *third*, and often more economical, option is the export of used clothing to developing countries. In 2022, Pakistan emerged as the world's largest importer of used clothing, with imports valued at US\$250 million. The primary sources of these imports include the US, China, the UK, Canada and South Korea (OEC, nd).

Figure 1. Life cycle of a textile product



Source: Author.

Unravelling the environmental impact of Pakistan's textile sector

The darker aspects of fashion's glamour have profound consequences for the local environment that, regrettably, are borne by the people of Pakistan and may persist if left unchecked. The purpose of outlining the logistical details of 'fast fashion' in the above section is to underscore a twofold issue that occurs at two stages marked in red circles in Figure 1.

First, on the extraction and production side, this crisis is intricately linked to the exploitation of natural resources, including land, water and air. Research indicates that the textile and clothing industries face significant sustainability challenges because of several factors: excessive consumption of land, water and energy; use of harmful chemicals; and generation of substantial amounts of liquid and gaseous waste. The production of clothes is responsible for over 20 per cent of the country's industrial water pollution, a major environmental concern given Pakistan's water scarcity issues (UNCTAD, 2023).

Facts

In fast fashion, garments are typically discarded by European consumers after being worn only seven times.

Manufacturing just one cotton t-shirt requires an estimated 2,700 litres of fresh water – equivalent to the amount one person needs for drinking in over 2.5 years

Source: European Parliament (2024).

In Pakistan, the production of one ton of finished cotton fabric requires 22,596 m³ of water (Khan and Ali, 2024). These issues collectively undermine the sustainability of the textile life cycle and contribute to the broader environmental impact of the fashion industry (Gautam et al., 2024).

Second, at the end-of-life stage, Pakistan receives a huge volume of clothing waste. This creates a burden that is exacerbated by the lack of adequate waste management infrastructure in Pakistani cities. While this influx of used garments provides economic opportunities in Pakistan – many individuals cannot afford new clothes and therefore turn to this market – it also brings significant challenges. With insufficient resources and facilities for proper waste disposal, the result is often the open disposal of garments and related items. This practice not only places a significant burden on Pakistan's already strained waste management systems but also results in environmental degradation. The accumulation of textile waste in landfills generates greenhouse gas emissions, further contributing to the global climate crisis, and also highlights the systemic inadequacies in waste management and the broader implications of global textile trade practices.

The global practice whereby wealthier nations offload their waste on less affluent countries is also termed '**waste colonialism.**' It often leads to significant environmental and social repercussions for the receiving nations. This phenomenon is particularly

evident in the textile sector, where developing countries such as Pakistan become the final destination for large quantities of discarded clothing from more affluent regions. Consequently, it breeds the ground for environmental injustice and further exacerbates the social crisis.

Leveraging trade policy for environmental solutions

To ensure harmonious coexistence between environmental preservation and economic growth in Pakistan, trade policy is pivotal. By addressing both the production and the disposal aspects of the textile sector, such policy can play a crucial role in mitigating the country's climate crisis. Here are some suggestions of where targeted trade policies can help.

Production side: enhancing transparency and compliance. One of the ways in which trade policy can address climate concerns is by aligning with international environmental policies. For example, the EU's Green Deal is not enough to combat the global crisis of climate adversity.¹ It needs to include such countries that are exploiting their natural resources to meet the demand of EU consumers. It must extend its compliance measures with such policies that would ensure full transparency in textile production processes. For example, enforcing standards that require the disclosure of environmental impacts and adherence to sustainable practices can drive improvements in production efficiency and environmental stewardship. This could lead to reduced water and energy consumption, as well as a decrease in the use of harmful chemicals. By mandating adherence to these standards, Pakistan can encourage local producers to adopt more sustainable practices, which in turn can reduce the overall environmental footprint of the textile industry.

Production side: supporting sustainable agriculture. Given that Pakistan's textile sector relies heavily on local cotton production, trade policy can also support sustainable agriculture. By promoting practices that enhance soil health and carbon sequestration, such as sustainable fertiliser management, trade policies can encourage partnerships between textile manufacturers and local farmers. Providing financial and technical support for these initiatives can improve soil quality, increase carbon sink capacity and contribute to more sustainable cotton farming practices. This, in turn, can reduce the environmental impact of cotton production and create a more sustainable supply chain for the textile industry.

Disposal side: regulating waste management. On the disposal side, trade policy can address the issue of textile waste management by implementing stricter regulations. The trade regulations listed below could discourage waste colonialism, as suggested by Sweden, France and Denmark in the Basel Convention in 2024 ([Pourmokhtari et al., 2024](#)).

¹ The EU Green Deal is a package of policy initiatives that aims to set the EU on the path to a green transition, with the ultimate goal of reaching climate neutrality by 2050.

1. **Prior informed consent:** Requiring that developed countries obtain prior informed consent before importing textile waste ensures the importing country is fully aware of and agrees to the conditions of the waste they are receiving. This would provide Pakistan with more control over the types of waste entering its borders and help prevent the importation of harmful or unmanageable waste.
2. **Banning hazardous waste exports:** Implementing a ban on the export of hazardous textile waste – such as clothes contaminated with chemicals or paint – can prevent the entry of dangerous waste that poses severe environmental and health risks. This measure would reduce the burden on Pakistan's waste management systems and mitigate the adverse effects of textile waste.

Conclusion

It is important to critically examine the limitations of initiatives like the EU's Green Deal and Circular Economy policies, which focus primarily on sustainability within the EU region while often neglecting the environmental and social impacts on countries like Pakistan that produce goods to meet European demand. While these policies are effective in reducing environmental footprints within Europe, they do not adequately address the global nature of supply chains. This oversight risks shifting the environmental burden to producing countries, where weaker environmental regulations and enforcement mechanisms prevail.

In conclusion, aligning Pakistan's trade policies with international environmental standards is crucial for addressing the country's climate crisis. Such alignment, encompassing both local and global regulations, can significantly mitigate environmental impacts, particularly within the textile sector. Achieving this requires concerted collaboration at the national level, bringing together stakeholders across the industry. Notably, the All Pakistan Textile Mills Association (APTMA) has already taken commendable steps in this direction, with the textile sector increasingly adopting global standards, including Environmental, Social, and Governance safeguards (APTMA, 2024). These initiatives have the potential to transform Pakistan's textile industry into a more sustainable and environmentally responsible entity, delivering benefits not only to the local environment but also to the global ecological landscape.

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Kenya's Path to Combating Climate Change through Trade Policies

Dorcas Mnyazi Nyaki

Climate change continues to be an area of significant focus, having caused great difficulties for developing countries like Kenya. Since the country has an agriculture-based economy, the consequences of such adversity are dire. Recently, Kenya has experienced increased droughts and floods that have had impacts on people's livelihoods and the production of food crops. Nevertheless, trade and trade policy represent an opportunity to solve these climate crisis challenges. Kenya can efficiently use trade policy to respond to the impacts of climate change by implementing policies and standards that will enhance sustainable agriculture, reduce its carbon footprint in imports and improve green technologies. This essay analyses how specific trade policies can alleviate Kenya's climatic challenges, represented in severe drought and flooding.

Background and specific problem

Kenya has a bimodal rainfall season: the long rainy season runs from March to May and the short one from October to December. These patterns are becoming more unpredictable compared with in the past, with climate change bringing about severe droughts and floods that have significant impacts on agriculture, which is the backbone of the Kenyan economy (KMD, 2020). Trade policies need to be tailored to ensure the country can address these impacts. Efforts will also involve enhancing environmental conservation to prevent further weather pattern escalations and alleviating the impacts of the current unpredictability by boosting the agriculture sector. The sector is the most significant contributor to the Kenyan economy, contributing roughly 26 per cent to the country's gross domestic product; over 70 per cent of people in rural areas are engaged in agricultural activities (MOALI, 2019).

Consequently, any interference with weather patterns affects food security and economic status.

The climate issue of droughts and floods can be attributed to deforestation. According to Global Forest Watch (nd), Kenya lost 2.23 kha of tree cover between 2001 and 2023. These

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statistics raise concerns as they indicate extensive deforestation, which contributes to climate change. When farmers cut trees to clear space for agriculture, the destruction of trees causes the concentration of carbon dioxide in the atmosphere to rise. Deforestation also causes soil erosion, which affects the production of crops on the same land, and this will contribute to food insecurity in the future (KMD, 2021). Failure to address this concern may escalate the already problematic weather situation in the country. As a result, promoting sustainable agricultural practices and incorporating them into trade policies is very important.

Trade policy solutions

The climate crisis of drought and floods in Kenya can be addressed by developing favourable trade policies that promote for green agriculture, low-carbon exports and green technologies. First, trade policies can be tailored towards promoting the use of organic products in export markets, encouraging a green farming culture among farmers. Sustainable farming practices include crop rotation, agroforestry and organic agriculture that maintains or increases on-farm biological and landscape diversity, soil health and carbon sequestration. For example, silviculture combines trees into agricultural land, which assists in storing carbon and protecting the soil from erosion. Similarly, sustainable farming can enhance yields and prevent the negative impacts of climate change (FAO, 2018).

Additionally, the country can develop trade policies promoting the exportation of products with accredited organic or fair-trade labels. Since these certifications are usually associated with higher market prices, they create an economic motivation that encourages farmers to use sustainable methods. According to the International Trade Centre, 'Consumers around the world are demanding products that are produced in an environmentally friendly way, hence providing an opportunity for farmers who opt for sustainable farming practices' (ITC, 2020, p. 5).

The transportation sector also remains a significant source of greenhouse gas emissions, particularly in the exportation of goods. To address this, Kenya should consider adopting green logistics technologies. This will involve switching to electric cars as a means of transport and using renewable energy sources to engage in power supply chain activities. The International Energy Agency (IEA) estimates that electric vehicles cut transportation emissions by up to half compared with conventional autos (IEA, 2019). However, this solution could be seen as unfeasible: as [Okoh and Onuoha \(2024\)](#) argue, adopting electric cars for low-carbon development encounters hurdles as a result of structural and non-structural tensions such as those relating to affordability. Hence, thorough preparation and extensive piloting should be carried out before adopting trade policies promoting the adoption of electric cars.

Another strategy that can be adopted is enacting carbon emission standards on goods exported to other countries. This would involve restricting product carbon emissions

until their disposal, thus pressuring exporters to be more environmentally friendly. Currently, the EU's Carbon Border Adjustment Mechanism is the best example of how such standards can be aligned with trade policy (European Commission, 2021).

Carbon credit schemes as a market-based trade policy can be used to address the climate crisis resulting from deforestation in Kenya. Deforestation to create land for agricultural activities and human settlement in Kenya has exacerbated the climate crisis, leading to low rainfall, loss of biodiversity and desertification. For instance, over 25 per cent of Kenya's Mau forests have been lost to encroachment, ill-planned settlements and the illegal exploitation of forest resources (Mutugi and Kiiru, 2015). Deforestation releases carbon stored in trees into the atmosphere, reducing carbon sequestration capacity and exacerbating global warming. Carbon credits as a financial incentive can help minimise the emission of greenhouse gases into the atmosphere. By integrating the carbon credit market, corporations and investors can trade carbon offsets and credits, mitigating the environmental crisis and creating new market opportunities.

The Kasigau Corridor REDD+ project in Kenya has successfully used carbon credits to fund and care for forests and wildlife and empower the community (De Leeuw et al., 2017). Overreliance on carbon credit markets without integrity and accountability for revenue obtained is a major problem linked to the political class. There can be reversal risks when forest conservation projects are not monitored and maintained adequately, undermining the credibility of carbon credits sold. There is a need for a solid governance framework and measures, community empowerment and involvement in the decision-making process. This will help Kenya protect the sustainability of its carbon credit initiatives and ensure they contribute meaningfully to both climate goals and local development.

There is also a need to promote innovation through investment in local green tech start-ups. The Kenya Climate Innovation Center (KCIC) demonstrates that investment in green initiatives provides employment and contributes to a sustainable economy (Muthanga, 2020). According to the World Bank, 'innovation and technology transfer remain central to giving developing countries a push towards a green economy' (World Bank, nd).

Case studies and examples

Various countries have linked their trade policies with climate change policies and thus can serve as a benchmark for Kenya. For example, Costa Rica has adopted several trade and environmental policies that have placed the country at the highest level of sustainable development. The primary reasons for Costa Rica's success are reforestation, agricultural practices and renewable energy. The country also has a Payment for Environmental Services (PES) initiative, whereby farmers are rewarded for practising conservation agriculture to preserve forest resources (Pagiola, 2008). This has helped recharge the water table, increase forest cover and carbon stock, and improve biodiversity.

Furthermore, Costa Rica has relied on trade agreements to export more sustainably produced goods to other countries. Organic and fair-trade products are accorded niche markets in Costa Rica, which allows the country to command premium prices for its agricultural exports. This fosters sustainable farming practices. According to [Honey \(2019\)](#), 'Costa Rica's approach of combining wildlife preservation with economic potentialities has been remarkably successful' (p. 37).

Kenya can imitate Costa Rica by implementing PES programmes that suit its environmental and economic conditions. Promoting sustainable land use practices through financial incentives is one way in which Kenya can tackle deforestation and land degradation, which are major causes of climate change in the country. Enhancement of the PES programme would further aid in carbon sequestration, water regulation and soil health, thus leading to higher agricultural yields and less vulnerability to climate change.

Furthermore, Kenya can leverage the increasing demand for sustainable goods globally by adopting organic or fair-trade labels on Kenyan agricultural produce. Setting up trade liberalisation focusing on environmentally friendly products will likely unlock more markets and increase income for farmers practising sustainable agriculture. Costa Rica's success in this regard is evidence of the feasibility of such an approach ([Honey, 2019](#)).

Another example is Norway, which focuses on the decarbonisation of its exports. The country has also implemented green shipping through electrical and hydrogen-powered vessels, significantly decreasing emissions from the maritime niche ([Mao, 2020](#)). The Green Coastal Shipping Programme of Norway is one such intervention; this envisages making the Norwegian shipping industry the most sustainable in the world by 2030 (Norwegian Ministry of Climate and Environment, 2020).

As a country with a sizeable coastline coupled with a strong dependence on seaborne trade, Kenya can apply similar measures to rein in emissions from its shipping industry. Kenya can reduce the environmental impact of its exports by implementing green shipping technologies and facilities. Relations with countries such as Norway may help foster technology-sharing and improvement of capacity in this field. The International Maritime Organization (IMO) stresses that only international co-operation can help improve the shipping industry's green technologies (IMO, 2019).

Implementation strategy

Formulating and applying trade policies in dealing with climate change issues in Kenya will require policy intervention, stakeholder participation, capacity-building and evaluation. First, the Government of Kenya needs to incorporate climate factors into its national trade policies, which should create a sound strategy for encouraging sustainable agriculture practices and eco-friendly innovations. As noted by the World Trade Organization (WTO), integrating environmental approaches into the General Agreement

on Trade in Services will enhance sustainability (WTO, 2020). According to the ITC (2020), Kenya needs to focus on exporting green goods and getting rid of taxes on green products in trade policies. Second, fiscal measures should incentivise producers and companies to become environmentally friendly. The Costa Rica example shows that PES can have tremendous environmental outcomes (Pagiola, 2008). Potential inducements include tax exemptions for renewable farming, grants and concessional interest rates for environmentally friendly crops and productions.

Building capacity at the country level and globally is crucial. Knowledge regarding organic farming and propelling green firms is essential for farmers and businesses. Capacity development contributes to the sustainability of agriculture (FAO, in 2018). Furthermore, it is noteworthy that higher expenditure on research and development can enhance green technology solutions (World Bank, nd).

Recommendations for trade policy adaptations should also include regular evaluation. The government should support monitoring and evaluation, which should provide specific indicators and goals; data sources should reveal the challenges and potential drawbacks (IIED, 2019). Integrating technology in policy-making improves data accuracy and allows for real-time policy monitoring (GEF, 2020). Organisations such as the United Nations Framework Convention on Climate Change (UNFCCC) and the World Bank can provide technical and financial support when actualising climate-friendly trade policies (UNFCCC, 2019).

Conclusion

Kenya is experiencing severe climate challenges and needs new trade policies to support sustainable, low-emission commerce and green technology. As is the case with some of the better benchmark international models, Kenyan trade should be able to support policy reforms that enhance future growth and development, which are complementary to climate change impacts. A comprehensive strategy for policy reform involves developing the proper policy structure, engaging with civil society, building capacity for all entities involved in the process and implementing mandatory monitoring procedures. By applying trade to catalyse climate change, Kenya can be assured it is on the right course to making the country more sustainable and enhancing its environment and economic status.

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Addressing Deforestation, A Major Contributor to Climate Crisis in Nigeria Through Trade and Trade Policy

Favour Fortunate Oluebube

Introduction

Deforestation, which is mostly caused by logging, fuel wood harvesting and agricultural expansion, is one of Nigeria's biggest contributors to climate change. Deforestation occurs when vegetation is removed for a variety of societal or commercial reasons without being replaced (National Geographic, nd). With 3.7 per cent of its forests lost each year, Nigeria has one of the highest rates of deforestation worldwide (FAO, 2020). Nigeria's natural forest cover in 2010 was 10.6 mega hectares, or almost 12 per cent of the country's total land area, according to Global Forest Watch (nd). Up to 81,200 hectares of natural forest were destroyed in Nigeria in 2023 (ibid.). The states of Edo, Ondo, Cross River, Taraba and Ogun were the most badly affected, according to the Nigeria Deforestation Rates & Statistics study, which spanned from 2001 to 2012 (Butler, 2014). However, according to Butler's 2014 rainforest country profile, the states most impacted were Kwara, Niger, Oyo, Ogun, Delta, Kogi, Osun, Ekitit, Bayelsa and Edo. Edo State experienced the largest loss, with a total forest loss of 268,000 hectares compared with an average of 28,200 hectares (Butler, 2014; Business Bliss Consultants FZE, 2018). Because deforestation causes higher greenhouse gas emissions, biodiversity loss and disruptions to the water cycle, it is strongly associated with the climate issue.

Link to climate crisis

Reducing the effects of climate change requires forests to be able to absorb carbon dioxide (CO₂) from the atmosphere. Because deforestation increases carbon emissions, it worsens climate change and global warming. A reduction in the quantity of carbon-absorbing trees results in more emissions that are detrimental to all living things.

including people. According to Global Forest Watch (nd), the 81,200 hectare natural resource loss in Nigeria is equal to 54.6 million tonnes of CO₂ emissions. Nigerian deforestation not only increases carbon emissions that fuel climate change but also degrades the soil, disrupts water cycles and reduces biodiversity, all of which make the problem worse. It becomes more difficult to lessen the consequences of global warming when forests are lost because natural ecosystems are less able to retain carbon. Furthermore, desertification, especially in Nigeria's northern regions caused by deforestation, can exacerbate food insecurity and community migration.

How trade and trade policy can address this issue

1. Promoting trade in renewable energy technologies

Nigeria's climate issue and deforestation are largely caused by energy usage (DCC, 2021). In order to overcome this issue, increasing the production and use of renewable energy is essential. Tariffs and other obstacles to the importation of renewable energy technologies, such as wind turbines, solar panels and energy-efficient cookstoves, can be lowered through trade policy. This is crucial when it comes to solar energy because many homes and companies may not be able to afford the cost of solar panels and batteries. The usage of diesel generators and other polluting energy sources can be reduced by accelerating the use of solar energy through advantageous trade agreements (IRENA, 2022). Additionally, trade policies that encourage exports can assist in the local manufacture of renewable energy technologies. Nigeria can meet its local energy needs and export these technologies to surrounding countries, producing cash and employment opportunities, by developing into a hub for the manufacturing of renewable energy technologies. Additionally, working with foreign partners can attract investment and technological know-how, which will promote innovation in the field of renewable energy.

Notwithstanding the many advantages of encouraging the use of renewable energy through trade, there are drawbacks as well, including high upfront capital expenditures, a lack of infrastructure and regulatory obstacles. However, these difficulties are surmountable with the correct laws and global co-operation. Nigeria, for example, stands to gain from international programmes such as the Paris Agreement, which compels nations to make investments in renewable energy as part of their climate pledges (UNEP, 2017; IRENA, 2022).

2. Incentivising sustainable agricultural practices

One effective strategy to mitigate Nigeria's climate crisis is to use trade policy to incentivise sustainable agriculture practices. Nigeria's economy is based primarily on agriculture, but unsustainable farming methods have seriously damaged the environment by causing deforestation, soil erosion and greenhouse gas emissions.

Nigeria can encourage ecologically friendly farming practices that mitigate the climate impact of agriculture while also improving food security and economic resilience by co-ordinating trade policy with sustainable agricultural aims. Slash-and-burn farming is one traditional agricultural method that contributes to deforestation, and is a major cause of climate change in Nigeria. Global warming is made worse by the destruction of trees, which increases carbon emissions and decreases carbon sequestration. Moreover, using synthetic pesticides and fertilisers increases greenhouse gas emissions, especially nitrous oxide, which has far greater potential to cause global warming than does CO₂ (FAO, 2017). Mitigating the environmental impact of these concerns can be achieved by addressing them through tailored trade policy.

Tariffs on environmentally friendly agricultural inputs, like organic fertilisers, biopesticides and conservation farming equipment, can be reduced or removed through trade policy. Farmers are more likely to implement sustainable methods that enhance soil health and lessen dependency on chemical inputs if the cost of these inputs is reduced. Reduced emissions and more robust agricultural systems may result from this change (World Bank, 2021b). Farmers may be encouraged to adopt environmentally friendly practices as a result of trade rules that offer incentives for the export of agricultural products produced sustainably. For example, the government can establish a market-driven incentive for sustainable agriculture by providing tax rebates or subsidies for the export of certified organic products. This not only lessens farming's negative environmental effects but also establishes Nigeria as a market leader in the expanding global market for organic and sustainable goods.

Furthermore, Nigeria can bargain for terms in relation to sustainable agriculture in bilateral or multilateral trade agreements. These agreements could impose obligations on member nations to follow particular environmental guidelines in agriculture, such as cutting back on deforestation or using fewer dangerous pesticides. In addition to encouraging sustainable farming methods, these agreements would guarantee Nigerian farmers' access to global markets that have stricter environmental regulations (IFAD, 2019). International collaborations aimed at sustainable agriculture research and development can also be facilitated by trade policies. Nigeria can collaborate with nations that possess cutting-edge technologies in agroforestry, sustainable irrigation and precision agriculture to gain access to innovations that maximise output while reducing environmental effect. Trade agreements could contain clauses pertaining to co-operative research projects and technology transfer, guaranteeing Nigerian farmers access to state-of-the-art sustainable farming techniques (FAO, 2017).

Trade policies have the potential to greatly advance sustainable agriculture – yet obstacles such as fluctuating markets, adherence to global norms and upfront expenses for farmers still need to be addressed. However, these issues can be resolved with the help of international co-operation, government policies that are supportive and farmer capacity-building initiatives. The funding required to expand sustainable agriculture in Nigeria can also be obtained by utilising development assistance and international climate finance (IFAD, 2019).

3. Developing carbon credit markets

Nigeria is among the continent's leading emitters of greenhouse gases, mostly as a result of deforestation, unsustainable farming practices and gas flaring in the oil and gas industry (UNEP, 2019). By placing a price on carbon and providing incentives for reductions, the emergence of carbon credit markets can be extremely important in mitigating these emissions. For example, businesses can earn carbon credits by investing in reforestation or renewable energy projects, which they can then sell other businesses that need to offset their emissions (ibid.). This market mechanism promotes the use of greener techniques in a variety of industries, lowering the nation's total carbon footprint.

Trade policies may include clauses that acknowledge and encourage the selling of carbon offsets. Nigeria could, for instance, renegotiate trade agreements to incorporate provisions recognising carbon credits produced domestically. This will make it possible for Nigerian businesses to sell carbon credits on global markets, incentivising emissions reduction initiatives financially (World Bank, 2021a). Nigeria can create bilateral or multilateral carbon trading platforms with other nations by utilising trade policy. These platforms will make it easier for carbon credits to be exchanged, giving Nigerian companies access to a larger market for their credits. In order to help Nigerian businesses deal with the challenges of carbon trading, these platforms can also offer technical support and capacity-building (UNFCCC, 2020). Trade policies could provide tariff exemptions or reductions on the importation of environmentally friendly technologies that lower emissions, like carbon capture equipment, wind turbines and solar panels, in order to assist in the establishment of carbon credit markets. The government can promote the adoption of these technologies and increase the amount of carbon credits produced by renewable energy projects by bringing down their cost (OECD, 2021a).

A national carbon credit registry that keeps track of the issuance, transfer and retirement of carbon credits inside Nigeria can be established with the help of trade policies. Nigerian credits would become more appealing to foreign buyers thanks to this registry, which would guarantee openness and legitimacy in the carbon market. Furthermore, the registry could be connected to global carbon credit systems, making cross-border credit trading simpler (UNEP, 2019). Additionally, trade policies can be created to draw international capital to Nigerian carbon offset projects such as in afforestation, reforestation and renewable energy. The government can attract foreign corporations seeking to offset their emissions by providing tax cuts, subsidies or other incentives. This will increase the domestic carbon credit market and aid in the reduction of emissions. Although carbon credit markets offer a promising way to combat climate change, there are still issues to resolve, including market volatility, the difficulty of monitoring and verifying, and ensuring benefits are distributed fairly. However, these difficulties can be lessened with the appropriate trade policy. Possibilities include using technology to monitor emissions, participating in regional carbon market projects and gaining access to international climate funds (OECD, 2021b).

4. Supporting eco-friendly products and green programmes

Trade agreements may contain clauses enforcing environmental norms, guaranteeing that imported goods fulfil specific sustainability requirements. Nigeria can stop the importation of products that harm the environment and encourage domestic manufacturing of goods that follows sustainable practices by putting such rules into place. Additionally, this gives Nigerian goods a competitive advantage in global marketplaces where sustainability is valued highly (WTO, 2019). Trade policies that encourage afforestation and green technology research and development can foster innovation in environmentally friendly businesses.

For instance, the government could provide grants or low-interest loans to businesses creating innovative environmentally friendly goods or procedures. This not only encourages innovation but also lessens the environmental effect of established businesses and helps create jobs in the green economy (World Bank, 2021c). The government can certify individuals in forest building or designate things as eco-friendly by using trade rules to support green certification schemes. To encourage businesses to pursue certification, trade rules should stipulate that preferential treatment in the form of tariffs or market access be granted to certified forest builders and certified products. These initiatives not only increase consumer confidence but also make Nigerian goods more marketable overseas (ISO, 2020).

Conclusion

In conclusion, using strategic trade policies to address Nigeria's climate challenge offers a multimodal strategy that uses financial instruments to promote environmental sustainability. Nigeria can link its economic growth with global environmental goals by fostering trade in renewable energy technology, providing incentives for sustainable farming practices, creating markets for carbon credits and endorsing eco-friendly products and initiatives. Through these measures, Nigeria not only positions itself as a pioneer in the green economy and helps alleviate the effects of climate change but also opens up new markets and prospects for sustainable development.

Additionally, including environmental standards into trade agreements and supporting green certification initiatives can boost Nigeria's competitiveness abroad by guaranteeing that its goods fulfil requirements for global sustainability. The potential benefits of decreased emissions, job creation and sustainable economic growth are substantial, even in the face of persistent constraints including high costs and competition from non-sustainable options. Nigeria can make significant strides towards a more sustainable future by approving and successfully putting these trade policies into practice. This would help the international community fight climate change while safeguarding the welfare of Nigeria's people and the preservation of its natural resources.

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Trading Our Way to a Greener Future: How Nigeria Can Turn Desertification into Opportunity in the Fight against Climate Change

Lydia Nkechi Philip

Introduction

Nigeria is at a defining stage in deciding if it will follow a path of economic growth consuming the environment or one of sustainable development. Among all the environmental issues affecting the country, one of the most pressing is desertification. This has affected significant areas of the territory and threatens food security and existence. Desertification or land degradation is one of the consequences of climate change impacts such as increased temperatures and fluctuating rain patterns, as well as unsustainable land use. It is mainly observed in the northern part of Nigeria (Yahaya et al., 2024). This essay outlines Nigeria's potential to turn the threat of desertification into a series of opportunities through trade and trade policy. The essay also underlines a progressive approach to addressing the impacts of desertification by alluding to certain agricultural products and trade policy tools, as well as the need for regional and international co-operation in Nigeria.

Nigeria's agricultural potential and trade policy instruments

The agriculture sector in Nigeria is abundant, as it has a plethora of products that can easily be exported. Edible crops such as shea butter, cocoa and cashew nuts are examples of agricultural products that stand to benefit from trade liberalisation as well as preferential market access. Such products not only are more sustainable in the harsher conditions caused by desertification but also have high value in international markets. For example, shea butter is derived from shea trees, which are adapted to

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the semi-arid climate of northern Nigeria. The nuts are processed to yield shea butter, which is globally demanded in the production of cosmetic and food products. Nigeria can improve incomes for communities that suffer from desertification by advocating for the production and exportation of shea butter (Nnodim, 2024).

Likewise, while Nigeria's cocoa is widely viewed as originating from the south, the possibilities of growing drought-resistant cocoa types in the north can be explored. This would not only expand the portfolio of Nigeria's agriculture but also reduce the effects of desertification on crops such as millet and sorghum (Amuda and Alabdulrahman, 2024). Another example of a drought-resistant crop, and one that has high export value, is cashew nuts. Currently, Nigeria is among the largest producers of cashew nuts globally; by refining its processing plants and market linkages, the country may well be able to capture more of this market while at the same time helping farmers in the cashew belt who are being threatened by desertification (Folalu, 2023).

To benefit from these agricultural opportunities, Nigeria will need to employ appropriate trade policy tools that not only facilitate market access but also promote sustainable agriculture. Lowering tariffs on such agricultural necessities as drought-tolerant seeds, fertilisers and irrigation equipment will make it easier for farmers to practice climate-smart production. Such a policy would go a long way in directly overcoming the issues caused by desertification, by providing the means for farmers to not only sustain but also enhance agricultural productivity in unfriendly conditions (Adetuyi et al., 2023).

The profitability of the agriculture sector can be boosted by offering subsidies for value-added exportable products such as processed shea butter or cashew kernels. This treats sustainable practices as being economically rewarding while at the same time driving the growth of economic endeavours that do not harm the land (Eze et al., 2023). Also, the authorised establishment of free trade zones for agricultural processing can lead to the attraction of foreign investment, development of infrastructure and employment of people in regions affected by desertification. Such zones can be established for the efficient and eco-friendly processing and exportation of horticultural crops, thereby transforming desertification into an opportunity for development (ibid.).

Challenges and barriers to effective trade policies

Despite the aforementioned benefits of using trade to address the issue of desertification, there are some issues and hurdles that need to be overcome in order to achieve this goal. One challenge is poor physical infrastructure, especially in rural areas and regions that are prone to desertification, making it difficult to implement sound trade policies. Problems include poor roads, limited electricity and lack of or inadequate storage facilities, all of which can greatly affect farmers in their production and also in working towards exportation of their produce (Lain and Engel, 2022). It is imperative to address these infrastructure challenges for the effective implementation of trade policies.

Along with infrastructure, the capacity of the producers to which the climate-resilient practices will apply is also a vital component in undertaking change. A large proportion of farmers in Nigeria do not possess the technical know-how and expertise to respond to the changing climatic conditions or to improve their marketing opportunities. Farmers require capacity-building in the form of training and extension services to enable them to adapt and achieve success under the existing climatic conditions (Adzenga and Dalap, 2023). Additionally, international trade rules such as those on subsidies and market access limit Nigeria's trade policy implementation. Dealing with such rules entails skills in diplomacy and the formation of strong partnership with other nations encountering similar difficulties (Okogwu et al., 2023).

Leveraging comparative advantage in the global agricultural market

Nigeria is endowed with a wide climatic base and a vast land mass that are suitable for agriculture practice, and this means the country has comparative advantage in this sector. For Nigeria to become more competitive in the international market and to foster sustainable farming as a technique, the country needs to strive to create specialised markets such as for organic and fair-trade products. Such products are on trend for consumers since global society is progressively becoming aware of environmental and social problems connected with overconsumption. This is an area Nigeria can tap into by encouraging production. This not only will enhance the value of Nigerian exports but also can also be linked to the strategy of counteracting desertification in the country in connection with the proper use of land resources (Olabinjo and Opatola, 2023).

The establishment of value-added processing facilities will also enhance Nigeria's advantage in the global market since most countries focus on exporting their produce without processing. Domestic processing of agricultural products in Nigeria will lead to a rise in the country's agricultural income, despite a decline in the exportation of raw commodities. This approach will not only lead to employment opportunities and economic recovery but also have positive impacts in terms of preventing desertification, in relieving the pressure on land (Chukwu and Chidubem, 2023).

Quantifying the impact and learning from case studies

In arguing that trade is an effective method of tackling the issues causing desertification, it is possible only to estimate the impacts and use case examples. The negative impacts of desertification have already been manifested, in the loss of billions of dollars in agricultural production in Nigeria. Use of the trade policy instruments described above could help Nigeria raise agricultural export revenue by 20–30 per cent in the next decade. This would amount to billions of dollars that can be channelled back to improve infrastructure, create employment and enhance the environment (ITA, 2023).

For instance, several countries have been able to use trade as a tool in tackling similar environmental issues. In Morocco, trade policies are employed in the promotion of sustainable agriculture as well as combating desertification, especially in the arid regions of the country. Policies have included changing tariffs on inputs used in agriculture, export incentives for processed agricultural produce and the setting-up of special economic zones for processed agricultural goods. Analysis of the Moroccan experience suggests that trade can indeed be a powerful tool to fight desertification ([Abdelmajid et al., 2021](#)).

Policy recommendations for Nigeria

The following policies can be recommended using the above analysis, to help the Nigerian government harness trade to fight desertification. First, a sustained increase in government expenditure on agricultural research and development is important, to identify better drought-resistant crops, improve farming techniques and enhance the competitiveness of Nigeria's agricultural produce in the global market ([Udoh and Adelaja, 2021](#)). Capacity to take part in trade negotiations must also be strengthened, so Nigeria can enhance its sustainable agricultural development. This involves training trade negotiators and establishing relationships with other countries with similar environmental challenges ([Nwokolo et al., 2023](#)).

Furthermore, it will be useful to rely on partnerships in sustainable agriculture between the private and the public sectors, as a way of proactively encouraging sustainability in agriculture and underlining the need to improve the design of value-added processing services. Together, the government and the private sector can contribute to putting in place the necessary conditions for the development of agriculture in areas that are prone to desertification ([Akinrinde et al., 2024](#)).

Conclusion

Among all the problems that exist in Nigeria today, desertification presents one of the biggest issues, with significant effects on agriculture, food security and livelihoods. Nevertheless, using trade and trade policy, Nigeria can transform this environmental calamity into a development advantage. By encouraging the production and exportation of certain crops, applying a range of trade policy measures, and solving problems and obstacles to the effective functioning of trade policies, Nigeria can provide more resistant agriculture and join global efforts to fight climate change.

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Addressing Kenya's Climate Crisis with Trade and Trade Policies

Kennedy Manyasi Washika

For the past few years, Kenya has been experiencing the effects of climate change one after the other, which has had negative economic impacts and slowed development. The situation has been worsened by the country's overreliance on climate-sensitive natural resources. One of the key areas of concern in Kenya is that climate change is placing at risk the biodiversity and the various ecosystems that are significant for economic diversification in the country. Long dry seasons, increasing temperatures, adverse weather conditions and fluctuating rainfall are affecting the economy and environment in various ways. Among the primary environmental problems in Kenya is deforestation. Deforestation and forest degradation have not only altered biodiversity composition but also affected the emission of greenhouse gases, contributing to the climate crisis. A large number of forests have been converted for settlement, logging and expansion of agriculture in the past few decades. This has led to desertification, loss of soil, erratic rainfall patterns, floods and soil erosion, which affect the natural environment and climate change cycles, and thus have adverse social and economic impacts on Kenya's ecological structure.

From an ecological perspective, forests are important for absorbing carbon dioxide (CO₂), maintaining the climate and protecting biological diversity. They play the role of natural shields to extremes of climate and watersheds, and also arrest soil erosion. In terms of the economy, forests and healthy land are vital to the people of Kenya since they support millions of people who rely solely on agriculture, forestry and tourism. Trade and trade policy are, therefore, a feasible option to counteract deforestation and land degradation in Kenya. Kenya can, therefore, use trade policies to fight climate effects by implementing measures such as protecting forests, sustainable agricultural practices, curbing carbon emissions and using technology for green energy. This essay explores how carbon credit markets and piezoelectric energy can be utilised as a strategic trade policy to tackle deforestation and the climate crisis in Kenya.

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Specific problem and connection to climate change

Kenya's vegetation is estimated to represent 8.8 per cent of the country's total land, which is 10 per cent less than the global target recommended for maintaining an ecological balance. According to estimates, there are 5,000 hectares of forest degradation in the water towers, translating to a 50,000 hectare annual depletion rate (Ngila et al., 2024, p. 201). This corresponds to a 62 million m³ annual decrease in the amount of water available, which costs the economy US\$19 million. Over 3.18 mega hectares of natural forest covered more than 5.7 per cent of Kenya's total area in 2010. The country had lost 10.1 kilo hectares of natural forest in 2023, the same as 6.35 Mt of CO₂ emissions, according to Global Forest Watch (2024).

The need for biofuel and other direct drivers have led to growing numbers of wild animals that graze on plants, logging of forests, timber extraction, human-made fires, overgrazing and economic developments such as industrialisation, infrastructure and urbanisation (Berenguer et al., 2021). Once forests are chopped down, the carbon that was sequestered in the trees re-enters the atmosphere, hence increasing the emission of greenhouse gases (Nunes et al., 2020). This accelerates the process of climate change and increases the effects of global warming. Moreover, the water-holding capacity of such areas that have been deforested or degraded is lesser and, thus, more extreme instances of drought and floods are experienced (Mwangi et al., 2020). International trade policy frameworks are thus needed to help address the deforestation challenge in Kenya.

Trade and trade policy solutions

Kenya's deforestation has created a climate catastrophe that can be addressed by using carbon credit systems as a market-based trade policy. Unlawful forest resource exploitation, ill-planned settlements and encroachment have resulted in the loss of approximately 25 per cent of Kenya's Mau woodlands (Mutugi and Kiiru, 2015). Deforestation decreases the ability of the atmosphere to sequester carbon and intensifies global warming by releasing carbon that has been stored in trees back into the atmosphere. The financial incentive of carbon credits can reduce the amount of greenhouse gases released into the environment. Organisations and investors may engage in carbon offsets and credit transactions to both address the environmental problem and develop new opportunities by incorporating the carbon credit market. Accountability measures need to be upheld, the community has to be empowered and involved in the processes, and political will must be in place so Kenya can sustain the viability of the carbon credit programmes and ensure they deliver on both the domestic development and the climate change objectives.

Kenya can curb the climate change crisis by adopting renewable and efficient energy. This can be achieved by increasing the import of renewable energy solutions such as piezoelectric energy as a trade policy. Piezoelectric energy involves the generation of electricity from mechanical stress applied to certain materials, known as piezoelectric

materials. These materials produce electrical charges when subjected to pressure or vibrations, converting kinetic energy into electrical power (Walubita et al., 2018). Currently, in Kenya, infrastructure development, as well as urbanisation, is on the rise. In this, piezoelectric energy can be a sustainable solution to climate change challenges. If piezoelectric materials are installed in areas like roads, bridges and pedestrian walkways, which are areas of high traffic activity, Kenya can benefit from the energy resulting from movement and vibration. The uses of this renewable energy source will assist in minimising the use of forest and fossil fuel energies, reducing greenhouse gas emissions and adapting necessary power to distant areas, hence enhancing energy security in the event of climate change (ibid.).

A trade policy to enhance the transfer of technology and investment for the development of piezoelectric energy could be formulated. An effective technique would be to sign a bilateral treaty with a developed country that has superior skills in piezoelectric activity. Under such a policy, Kenya could offer to export surplus agricultural produce, say sugarcane, to the partner country in exchange for funds and technological support to develop piezoelectric energy. Also, Kenya could swap the carbon credits it has earned for piezoelectric energy technology and structures. The policy could contain details on how to import the piezoelectric materials and technology and ways to train local personnel to improve their abilities. Furthermore, the policy could encourage the consolidation of local Kenyan firms with global technology suppliers for innovation and capacity purposes.

Piezoelectric energy can assist in combating climate change in Kenya in different ways. For example, in densely populated urban areas like Nairobi, roads and highways experience high levels of traffic. If piezoelectric sensors are integrated into a busy highway, the vibrations and pressure from thousands of vehicles can be converted into electrical energy (Walubita et al., 2018). This harvested energy can be used to power streetlights and traffic signals; the energy can be used for cooking purposes, reducing the reliance on forests and fossil fuels and decreasing greenhouse gas emissions. On the other hand, the installation of piezoelectric energy in communities would reduce overreliance on wood fuel and the need for kerosene and diesel generators. Kenya can thus lower local air pollution and greenhouse gas emissions while simultaneously improving energy access and quality of life in underserved regions. Piezoelectric energy as a sustainable alternative can minimise the pressure on forests, thereby reducing deforestation rates.

Case studies and examples

A good example of a carbon trading project is the Jari/Amapá REDD+ Project in Brazil. This project is based in the Jari Valley in the states of Pará and Amapá. It concentrates primarily on the implementation of measures to prevent emissions from deforestation and forest degradation. It currently has preserved more than 65,980 hectares in Amazon rainforest regions and earns carbon credits through avoiding the deforestation caused by logging and agricultural conversions (Sustainable Travel International, nd). By model of

regional development, which values the 'standing forest,' the Jari Amapá Project focuses on forest preservation and minimising greenhouse gas emissions through a mosaic of activities involving protection, monitoring and research, involving local communities in the actions. This project has preserved biodiversity and alternative livelihoods for local communities, reducing the pressure on forest resources.

Tel Aviv, Israel, is one place where piezoelectric energy is used. A pilot project has installed piezoelectric sensors beneath roads within the municipality of Tel Aviv ([Walubita et al., 2018](#)). The project also works to decrease the city's dependency on conventional power sources, decrease the emission of gases and prove that piezoelectric energy is a feasible form of clean energy ([West et al., 2020](#)). Since piezoelectric energy offers a renewable solution to fuel wood, its harnessing will lead to less pressure on forest resources and subsequently cut down on deforestation. Projects can earn extra carbon credits where the objectives support forest conservation, to create dual incentives.

Challenges

Implementation of carbon credit markets and piezoelectric energy may encounter several challenges. First, Kenya does not have the advanced technological infrastructure required for the integration and adoption of piezoelectric energy. Therefore, it should establish partnerships and collaboration with international organisations that can provide technology, financial support and capacity-building. Kenya has many carbon credits that can be sold in the market in exchange for piezoelectric technology transfer.

Second, Kenya's weak regulatory frameworks and corruption hinder the implementation and appropriate use of carbon credits. The country needs to strengthen institutional frameworks by establishing independent regulatory bodies to monitor carbon credit systems. Moreover, engaging local communities and civic society in decision-making can reinforce transparency and accountability.

Implementation strategy and recommendations

Formulating and applying trade policies to deal with climate change in Kenya will require policy intervention, capacity-building, stakeholder engagement and evaluation. Kenya needs to develop a transparent and accountable system for registering carbon credits. This registry would capture the generation, trade and use of credits so that they not only spur local development but also meet climate needs. Second, there is a need to support the engagement of government, private entities and international bodies in funding carbon offset initiatives, including afforestation, agroforestry and practising efficient and renewable energy. Kenya can also sign deals with countries that have enhanced technologies in renewable energy, for instance piezoelectric systems.

Recommendations for changes to trade policy have to involve ongoing assessment. The government must support monitoring and evaluation; it should set clear objectives and

indicators, while data sources should highlight any difficulties or potential negative effects (IIED, 2019; GEF, 2020). While implementing climate-friendly trade policies, institutions like the World Bank and the United Nations Framework Convention on Climate Change (UNFCCC) can provide both technical and financial assistance (UNFCCC, 2019).

Conclusion

This rise in climate change in Kenya, especially through deforestation, calls for urgent and creative measures. Kenya can meet and address these challenges while at the same time promoting economic growth and sustainable development through trade and trade policies. Regarding climate change effects, policy reforms could include carbon credit systems and other technologies that are appropriate for future development in Kenya, such as piezoelectric energy. These policies can be put into practice through processes such as the enhancement of local capacity, strengthening governance structures and collaboration at the international level. The success of these interventions will inform not only the international community but also other nations within the developing world that are experiencing similar problems. Thus, commitment to sustainable development can play a big role in eradicating deforestation and enhancing the climate change response. This is vital if Kenya is to transform to offer a better and sustainable future for its population.

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