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RESEARCH ARTICLE

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Green economy: Private sectors' response to climate change

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Abstract

The focus of this paper is to present a discussion of the role of the private sector in response to the need for climate change adaptations. The study, which was conducted through a literature review, investigates the concept of the green economy and climate change, as well as businesses' commitment to advance climate actions in ways that build resilience in vulnerable communities in developing countries. The paper calls on companies with national, regional, and/or global reach to adopt or develop strategies that improve resource efficiency, reduce greenhouse gas emissions, and reduce the loss of biodiversity. Businesses can accelerate this transition by aligning their investments with climate change adaptation opportunities, and thus, "green" the economy. In addition, green growth could be achieved through tactical public and private investments in mitigating climate change. The paper concludes that the private sector is a key sector in addressing the challenges of vulnerable communities, and it has much to contribute to the planning, development, and implementation of climate adaptation strategies, including sector-specific expertise, technology, efficiency, financing, and entrepreneurship. Finally, some social conditions and environmental boundaries have been highlighted in this paper to attract the attention of business leaders who are trying to build initiatives and advance climate actions that will reduce socio-community risks from climate change. Also, comprehensive initiatives and strategies have been recommended to private companies seeking to address climate vulnerabilities.

KEYWORDS

climate change, green economy, initiatives, private sector, vulnerable communities

1 | INTRODUCTION

Most developing economies face more than a few environmental risks due to the high impacts of climate change. The challenges caused by climate change that vulnerable communities face are increasingly becoming more frequent and intense as time passes. Climate change poses severe threats to communities and businesses and often results in the decline of agricultural productivity, water and food scarcity, adverse health effects, natural disasters, extreme weather events, and the like. Companies mostly depend on the infrastructure, resources, and services, including material supplies, clients, and labor, from the communities in which they operate. Any climate impact on communities, in turn, affects businesses. Therefore, it is difficult to separate community wellbeing from companies' viability, and thus, economic growth. Case in point: businesses fail in failing communities. Also, businesses that embark on climate change actions, with a focus on meeting community needs, have a competitive edge, whereas those that undermine climate initiatives and actions encounter reputational and brand risks (Barnea, Heinkel, & Kraus, 2005; Karbassi et al., 2011).

Mitigating climate change and economic damage would likely present a dilemma to policymakers. Uncertainty revolves around the benefits of policy actions; nevertheless, the cost of not taking policy actions, or actions that are strong enough, will create an enormous financial burden on the future generations. Although the costs of policy actions are more immediate and extensive, creating pushback from some parties, the costs of inaction are irreversible and possibly disastrous, and probably more devastating to developing economies than to developed economies (Tamirisa, 2008). Moreover, greenhouse gas (GHG) emissions, which have already accumulated and are warming the atmosphere, will continue to rise for decades. Therefore, policymakers increasingly recognize the need for policies, initiatives, and technologies that address global warming by moderating, and eventually, reversing the growth of emissions, and to adapt to the existing and future impacts.

This paper briefly discusses the green economy, climate change impacts on vulnerable communities, and the need for involvement by the private sector in initiatives, policies, and actions to address climate change. Although governments have control and regulatory mechanisms that they can exert on businesses, this paper underlines the

fact that climate action is not the public sector's responsibility alone, and that the private sector has much to contribute to "greening" the economy. It highlights the importance of sustainability and economic growth and places emphasis on policies and initiatives that are committed to advancing climate actions, especially in ways that build resilience in vulnerable communities in developing countries and that foster environmentally friendly economies. The paper offers support to companies with national, regional, or global reach to help them develop strategies for dealing with the immediate- to long-term consequences of climate change in developing countries where they have operations, supply chains, employees, and customers.

The key message of this paper is that community and social risks are also business risks. The paper explains that a business response to climate change is part of the evolution toward realizing a "green economy," which is described as an economy that is socially inclusive, is low carbon, and is resource efficient. In addition, green growth could be achieved through tactical public and private investments that reduce GHG emissions, improve resource efficiency, and prevent the loss of biodiversity. By aligning investments with climate change adaptation opportunities, businesses would accelerate the climate change transition, and thus "green" the economy. The paper concludes that the private sector has a key role to play in addressing the adaptation needs of vulnerable communities and has much to contribute to the planning, development, and implementation of climate adaptation strategies through sector-specific expertise, financing, technology, efficiency, and entrepreneurship. Finally, some social conditions and environmental boundaries have been highlighted to encourage business leaders who are trying to build initiatives and to advance climate actions that reduce socio-community risks of climate change challenges.

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2 | CLIMATE CHANGE AND GREEN ECONOMY

"Green economy" means reducing ecological scarcities and environmental risks, and it aims for sustainable economic development without environmental degradation. It is firmly rooted in environmental accountability and related to ecological economics, but with a more political focus (Kahle & Gurel-Atay, 2014). The 2011 United Nations Environmental Programme (UNEP) green economy report contends that a green economy must be effective and fair. Fairness implies the recognition of country- and global-level equity dimensions, especially in ensuring a just transition to an economy that is resource efficient, low carbon, and socially inclusive (UNEP, 2011). Similarly, the International Chamber of Commerce (ICC) sees green economy as a collaboration of economic growth and environmental responsibility in a mutually reinforcing manner while supporting the progress on social development (ICC, 2012). Green economy encompasses six main areas (Burkart, 2009):

- Green buildings,
- Sustainable transport,
- Renewable energy,
- Land management,
- Water management, and
- Waste management.

Human activities have caused an imbalance in the natural cycles of GHG impacts and processes, with developing countries increasingly becoming sources of global emission growth because of their intensive use of natural resources to fuel economic growth. The damage could be huge when temperatures rise to a certain point, and it could cause a huge loss in gross domestic product (GDP) per capita, with relatively high GHG emissions, catastrophic risks, nonmarket, and market impacts. For example, 50% of the people in Bangladesh, 68% of the people in Madagascar, 75% of the people in Mozambique, and 38% of the people in Timor-Leste live off less than \$1.25 per day (United Nations Development Programme [UNDP], 2010). The potential effects of climate change on food production, health, water resources, and the environment are damaging, and without action, the general expenses of environmental change will be proportionate to losing no less than 5% of global GDP every year, now and forever. A wider range of impacts and risks could increase up to 20% of GDP or more. Stern suggested that 1% of global GDP per annum must be invested to prevent the worst impacts of climate change. An extensive range of uncertainty surrounds estimates of economic loss from climate change, and this makes it difficult to estimate the precise costs of climate change on economies (Dietz, Hope, Stern, & Zenghelis, 2007; Tamirisa, 2008). The reason for this is that scientific knowledge about the environmental and the physical processes fundamental to climate change is a work in progress. Even so, it is hard to estimate the extent to which individuals will have the capacity to adapt to new atmospheric conditions. Moreover, it is hard to put an existing value on the damage that would be incurred in the future (Tamirisa, 2008).

3 | IMPACT OF CLIMATE CHANGE ON BUSINESSES AND COMMUNITIES

Currently, the effects of climate change on businesses are growing. The fundamental question should be whether the existing stocks of natural resources can sustain the anticipated load on the ecosystems into the next century? Both human populations and average consumption are increasing, whereas the stocks of natural resource and the aggregate area of productive land are either in decline or fixed. The load capacity would reach critical levels as a result of population growth and increased per capita resource consumption (Kouloura, Kouloura, Panagiotakopoulos, & Safigianni, 2008). As communities move toward globalization, natural resources are extensively traded and will directly or indirectly present critical challenges to green economic growth and development. Extraction and use of resources continue apace, and the impacts are relentless. Historical data confirm these challenges, and these activities are expected to continue in the future. Certainly, the use of many types of natural capital has various environmental implications, and their impacts on communities and businesses could be devastating (Coulson-Thomas, 2016).

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The effects on businesses include the disruption of business operations, escalation of insurance prices, changes in market demands, disruptions in supply chains, and increased costs of materials, inputs, and maintenance. Although all countries would encounter climate change effects, the challenges faced by vulnerable communities in developing economies are largely catastrophic (Tamirisa, 2008). Some of the challenges that pose serious threats to the health of communities and businesses include the increased severity and frequency of extreme weather events, changing patterns of rainfall, temperature issues, decline of agricultural produce, food and water insecurity, displacement of millions of people, scarcity of resources, energy crises, indoor air pollution, and negative health effects, among others. Explicitly, the dangers faced by businesses are just as serious as those faced by the communities in which they operate. Therefore, global carbon dioxide (CO₂) emissions must be cut in half by 2050 to prevent the worst impacts (AVIVA, 2010), and this requires initiatives and/or policies that moderate the overdependence on oil, gas, and other resources, while fostering sustainable growth at the same time.

4 | PRIVATE SECTOR ADAPTATION TO CLIMATE CHANGE

Companies' incentives for action, capacities to adapt, and their perspectives concerning the need to adapt can hinder or motivate them to embrace adaptation. Although factors such as the capacity to finance adaptation, the uncertainty of climate impacts, and previous negative experiences of managing climate sensitivities can inhibit adaptation, there are three important areas that motivate the private sector for adaptation:

- Risk awareness,
- Risk assessment, and
- Risk management (Agrawala et al., 2011).

Risk awareness is the initial motivator to engage in climate change adaptation. It communicates the magnitude of the risk to the business, and this helps in risk avoidance. A risk assessment is then performed, which forms part of a general awareness toward a specific understanding of the risks and opportunities. Based on the outcome of the risk assessment process, businesses may decide to develop and implement explicit risk management strategies. Each area builds a successive level of understanding onto the preceding area (Agrawala et al., 2011). The United Nations Global Compact of 2011 highlights the need for climate change adaptation of vulnerable communities, which is ultimately the public sector's responsibility through the provision of finance and comprehensive initiatives. Nevertheless, the role of the private sector in communities' adaptation cannot be overlooked (Karbassi et al., 2011). Now, adapting to climate change is not only a governmental issue. The globalization of supply chains and markets provide both opportunities and exposures, and it could pose a threat to governments, which now have less control over these activities. Some economic and natural resources constraints, interruptions, and crises are driving the private sector to take action voluntarily or independently of national or global commitments to climate change. However, the private sector's responsibility is not just to prepare its own operations and assets for the anticipated climate change, rather, the sector will also be required to provide solutions to the adaptation needs of the community.

The questions that business leaders should be asking are:

- How will/does global warming and climate change affect their companies and operations and affect their customers and local communities?
- What should and could a company do to assist its own people and others to adapt/adjust, address climate change challenges, and take hold of opportunities? (Coulson-Thomas, 2016).
- How should/does a company combat climate change, coping with global warming externalities, and preserving ecosystems and biodiversity? (Coulson-Thomas, 2016).

Recommendations from PwC (2010) called for better private sector representation in the governmental negotiation process and a

public-private alliance for the development of adaptation responses. It listed five key areas on which such development must focus:

- Assessment of impacts, risks, vulnerability, and knowledge sharing,
- National planning and implementation of adaptation,
- Disaster risk management and insurance,
- Technology development and transfer,
- Financing adaptation activities, including Green Funds (PwC, 2010, p. 7).

In spite of the fact that the private sector's efforts are crucial to addressing challenges posed by climate change, businesses require some level of cooperation, support, or incentives from the public sector/government. It is indicated that most adaptation measures require investment now, although the benefits may be realized later. However, short-term costs and cash flows are likely to dominate many businesses' priorities (PwC, 2010). Companies are also not experienced in quantifying how ecosystems contribute to their businesses, and they may undervalue natural resources and the ecosystem services they depend on and, as a result, underinvest in adaptive activities. Although investments in adaptation benefit both the public and the private sectors, the uncertainty of climate impacts can limit companies' incentives to invest in adaptation measures. Flexibility in production can reduce the need for preemptive measures, as companies may be able to adjust production or supply sources, while inflexibility in operations or locations increases the incentive to invest in adaptation measures. Policy and regulatory environments can stimulate private sector engagement by encouraging or requiring adaptation. Some companies' business planning horizons may be too short to consider long-term climate change impacts, which may reduce their incentives to implement adaptation measures.

5 | PRIVATE SECTOR INITIATIVES, POLICIES, AND ACTIONS

Although the pace is slow, the private sector is recognizing the need to tackle climate change, both in strategic and operational terms. Although most businesses recognize the current and future impacts that climate change could pose to their operations, very few engage in climate change actions and even supplementary activities that increase awareness among communities and the general public (UNEP, 2011). Some companies use various platforms, such as websites and social media, to show climate change awareness and engage in exercises highlighting their initiatives, and in some circumstances, publicizing the results. For example, initiatives to raise awareness of climate change impacts among children, such as Australia's Commonwealth Scientific and Industrial Research Organization's CarbonKids and UNEP's International Children's Painting Competition on the Environment (UNEP, 2011). Climate change presents effects of great breadth, magnitude, and complexity, but it could also be a catalyst for economic transformation. It provides a warning that the prevailing economic models are unsustainable, and thus, it heralds the need for a radical

restructuring of a balanced "Green Economy Model" for growth, resource equity, and resource use. Businesses sometimes see climate change as a new business opportunity, with co-benefits for sustainable or green growth (Karbassi et al., 2011). Even so, some communities adapt and build resilience to climate effects, often in ways such as water and energy conservation, planting of drought-resistant vegetation, use of innovative financial tools, and the like. Green growth involves both sustainable development and economic policies. It addresses two central objectives:

- The continuous comprehensive economic growth to mitigate poverty and enhance well-being and
- An improved environment management for addressing climate change and resource scarcity (OECD, 2012).

Most often the commitment of the private sector is subjective to the increasing market demand for environmentally responsive products and governmental efforts to regulate ecological externalities. Hence, businesses that strive to maintain their operations and increase their competitiveness increasingly prepare for the effects of climate change. Although understanding the significance of the current and potential adaptation role of the private sector is important, it is crucial to identify the tools and policies that encourage their engagement with the community. The key is to align business incentives closely with communities' adaptation needs. Some initiatives, including Forum for the Future, AVIVA, an insurance company, which has an initiative called ClimateWise, the Organization for Economic Cooperation and Development (OECD), among others (AVIVA, 2010; Gazibara & Chapple, 2011; Kouloura et al., 2008; OECD, 2012; Tamirisa, 2008; UNEP, 2011) would be significant to business leaders. Other partnerships include the United States Environmental Protection Agency's (EPA) Smart Sectors Program, Green-e, Ceres's Clean Trillion, RE₁₀₀ by The Climate Group, the Carbon Disclosure Project and Responsible Care, to name a few (Cefic, 2018; EPA, 2017). Also, the programs that have been put forth include the carbon tax and a hybrid with a safety valve, Cap-and-trade policies, Payment for Ecosystem Services, the Green Innovation Grant Program, Environmental Fiscal Reform, and the like (Environmental Facilities Corporation, 2018; OECD, 2012; Tamirisa, 2008).

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Generally, any initiative or policy should be purposefully designed toward eliminating or minimizing adverse effects and/or improving the conditions of environmental and social boundaries (Gazibara &

Chapple, 2011). Similarly, interventions are simultaneously required on both the technological and behavioral fronts.

Environmental boundaries include:

- GHGs: Reducing GHG emissions to support the average global temperature rise of not more than 2°C.
- Natural habitats: Reducing the loss of natural habitats. All endangered species are safeguarded. Areas such as aquaculture, agriculture, and forestry are managed sustainably to ensure conservation and biodiversity.
- Waste: Eliminating waste streams through closed-loop processes, recycling, and reuse.
- Water: Sustainably managing local watershed and global consumption of blue water sources to the minimum cubic threshold per year.
- Ocean acidity: Reducing and maintaining the concentrations of acid compounds in oceans to preindustrial levels.
- Nonrenewable resources: Recycling of nonrenewable natural resources that do not generate any environmental risk (hydrocarbons and iron ore).
- Renewable resources: Sustainably managing the stocks of renewable resources, such as forests and marine fisheries, to meet human and broader ecosystem needs.
- Soil productivity: Improving and protecting soil productivity, including sustainable land use and crop-growing on ice-free lands.
- Chemicals: Reducing and controlling toxic chemical releases to avoid damage to natural systems.
- Atmospheric aerosols: Limiting the atmospheric aerosols loading.
- Ozone: Maintaining the stratospheric ozone levels (above 276 Dobson units).
- Nitrogen and phosphorus: Controlling the amount of nitrogen removed from the atmosphere (e.g., not exceed 35 million tons per year). Maintaining the amount of phosphorus that flows into the ocean (e.g., not exceed 11 million tons per year).

Social conditions include:

- Hunger and poverty: Eliminating persistent and systematic levels of malnutrition and hunger from vulnerable communities. Eradication of extreme poverty.
- Health: Providing universal access to restorative, preventive, and reproductive healthcare. The spread of climate change impacts-related illnesses needs to be halted.
- Rights: Encouraging and improving reproductive and other human rights and freedoms (a must-do action).
- Water and sanitation: Enhancing universal access to proper sanitation and safe drinking water.
- Education: Enhancing universal access to primary and secondary education.
- Shelter: Providing adequate shelter.
- Information: Ensuring universal access to information.

- Energy: Sustainably using and ensuring universal access to efficient energy systems.
- Trust: Building trust at all levels in society, for people and institutions.
- Civil society: Providing broad access to participatory, transparent, and accountable civil societies. Promotion of active and strong civil society.
- Science: Promoting science as the foundation for groundbreaking solutions for societal problems and sound policymaking.
- Sustainable values: Promoting and improving values that are consistent with sustainability through societal norms and education.

These conditions and boundaries (Gazibara & Chapple, 2011) indicate clearly what is expected in an initiative, a policy, or an intervention for a green economy: "A resilient sustainable economy that maximizes the quality of life, for people to develop their full potential and lead creative, productive lives within environmental limits" (i.e., necessary social conditions and environmental boundaries; Gazibara & Chapple, 2011, p. 4). In order to achieve the aforementioned boundaries and conditions, more research is vital (Scott, 2005). Investments in socio-environmental research and development would help unearth new sustainable processes, products, approaches, models, and interventions. Some specific innovative solutions and an overview of a green economy have been presented by Fulai et al. (2015). They indicate a range of innovation and enterprise that can be triggered through the application of the principles of a circular economy, a regenerative and designed ab initio economy to eradicate waste and replenish nutrients and water to ecosystems (Fulai et al., 2015). These authors also explain decoupling as an innovative solution for controlling the use of resources and their subsequent impacts. Resource decoupling is the efficient use of water, energy, land, and other materials to maintain economic growth, while impact decoupling involves using resources judiciously to control environmental impacts. Fulai et al. (2015) show a circular green economy that radically deviates from the dominant take, make, waste linear model of production and consumption. It is rooted in system thinking and stimulated by the living natural world where waste from one species is food for another and continues in a cyclical system of self-sufficiency. Also, it is inspired by the pursuit of higher employment and with the underlying idea that businesses should be trading utilization rather than trading goods, hence facilitating closer monitoring and control over the end-of-life disposal as opposed to the redeployment of abiotic and biotic materials (Fulai et al., 2015).

6 | CONCLUSIONS

With such a wide scope, this paper sought to call on "green" initiatives, policies, programs, and interventions that build resilience in vulnerable communities, especially those in developing economies. A resilient sustainable community is one that maximizes quality of life and allows for people to develop their full potentials and lead creative, productive lives within environmental limits. Similarly, a truly green economy

is socially inclusive, is low carbon, is resource efficient, and provides the best possible quality of life for all. Through a literature review, an overview of climate change impacts on communities and businesses was presented to highlight the need for the private sectors' involvement to advance climate actions. Some key characteristics of the green economy, the social conditions, and environmental boundaries were identified as a guide to business leaders who are trying to build initiatives and advance climate action in ways that will reduce socio-community risks of climate change challenges. The review indicated that green economy is possible; however, we have already overstepped key environmental boundaries and are moving toward uncharted and dangerous territories. Innovative models and solutions are needed. Some of these models and solutions will require radical and firm public policy interventions; however, the private sector and investors need to engage voluntarily and actively in investments and policies aligned with a sustainable future and cooperate with the public sector interventions. The role of the private sector should include addressing the adaptation needs of vulnerable communities and contributing to the planning, development, and implementation of climate adaptation strategies, through sector-specific expertise, financing, technology, efficiency, and entrepreneurship. Explicitly, a business response to climate change is critical to the transition to a green economy. Finally, few strategic initiatives and solutions have been recommended; nonetheless, any initiative, policy, or action need not hobble the community.

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