Harnessing Diaspora Finance for Climate Resilience in Africa

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Abstract

As climate change accelerates, the costs of adaptation are rising sharply. This escalation comes at a time when financial inflows to developing countries – such as official development assistance and foreign direct investment – are declining. Meanwhile, the global political climate is becoming unfavourable to sustained climate financing commitments. In this context, the role of remittances in supporting climate adaptation and mitigation in developing countries has attracted growing interest. This paper broadens the lens to examine diaspora finance more holistically, encompassing not only remittances but also diaspora investments and knowledge transfer. It explores the potential of these various diaspora finance channels to contribute to climate action in sub-Saharan Africa.

Keywords

climate change, diaspora finance, adaptation, resilience, remittances, SDGs

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Cover Image

Farmers in Makueni County, Kenya, use the mound and zaï pit technique to channel water into compost, nutrient-rich pits, as a climate adaptation strategy. Photo credit: Jake Lyell/Alamy.

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Introduction

The surging financial cost of climate change adaptation is a significant policy concern globally. As climate change impacts, especially extreme weather incidents such as irregular precipitation, flooding, and droughts, increase in frequency and intensity, the adaptation costs for communities impacted by these extreme weather events continue to soar. A recent study suggested that the cost of climate change rose to USD 2.8 trillion between 2009 and 2019 (Newman & Noy, 2023). However, despite the increasing attention to climate financing, making it the dominant theme for COP 29, analysts observe that the increasing commitments are insufficient to meet the vast needs (UNEP, 2024; Valdre & Barbarà, 2024). For instance, adaptation finance recorded a marked increase from USD 22 billion to USD 28 billion from 2021 to 2022, the largest absolute and relative year-on-year increase since 2015; nonetheless, a significant adaptation financing gap remains between needs and flows (UNEP, 2024). Consequently, adaptation planning and implementation efforts continue to lag, implying that communities exposed to climate change impacts continue to be at risk.

Climate change has profound implications for other key development indicators, especially food security, health and well-being and socioeconomic disparities, including gender inequalities. As climate change-related costs continue to mount, financial resource availability for significant aspects of development are also negatively affected. The escalating cost of climate change undermines the global agenda of the Sustainable Development Goals (SDGs). This UN Agenda for 2030 outlines a comprehensive framework of 17 goals encompassing the economic, social, and environmental aspects of development. Indeed, the UN notes that the achievement of several goals and objectives of SDGs is at risk due to climate change impacts, exacerbated by escalating global conflicts and lingering economic consequences of the COVID-19 pandemic (Annan-Aggrey & Arku, 2023; United Nations, 2023). Among the urgent actions needed to sustain global development is to enhance the adaptive capacity of communities in preparedness for climate change impacts, which requires augmented climate finance (UNEP, 2024).

Equally importantly, communities most adversely affected by extreme weather events like cyclones, droughts, and floods are located in low and middle-income countries (LMICs) with limited resources to cover adaptation costs and scale up climate adaptation efforts (Belianska et al., 2022). Consequently, vulnerable communities at risk remain under-prepared and overexposed as climate change impacts escalate, particularly in sub-Saharan Africa (SSA), where the majority of livelihoods are linked to nature-dependent agriculture practices (Sinore & Wang, 2025). Thus, climate change impacts on weather, land and water resources, exacerbates food insecurity and economic challenges, increasing the precarity of already vulnerable households. In light of this mounting challenge, in 2009, developed countries pledged to raise $100 billion annually by 2020 to assist developing countries in covering the costs of adaptation and mitigation (UNFCCC, 2014). However, the actual disbursements have consistently fallen short of this target, averaging $80 billion annually. Developing countries, especially in SSA, face persistent challenges accessing funds through climate change financing mechanisms like the Green Climate Fund (GCF) due to the difficult access requirements and opaque project selection criteria (Fonta et al., 2018; Treichel et al., 2024). To illustrate, between 2016 and 2019, countries in SSA received less than USD 20 billion per year of climate funds (Belianska et al., 2022). This example confirms that climate change financing arrangements intended to provide below-market interest rates and support high-impact climate adaptation and development-oriented projects are inadequate. Meanwhile, climate finance commitments have replaced Official Development Assistance (ODA) and other development financing previously available to low-income countries (Belianska et al., 2022).

The shifting political landscape is increasingly unfavorable to climate financing, driven partly by sluggish recovery from the global economic crisis of the COVID-19 pandemic, among other factors. Climate finance was a major point of contention at the recent climate change conference, COP29, in Baku, where negotiators ultimately agreed on an annual commitment of USD 300 billion—well below the UN-estimated requirement of USD 1 trillion (Dupraz-Dobias, 2025). The Trump administration's decision to withdraw from the Paris Agreement under the UN Framework Convention on Climate Change and revoke the US International Climate Finance Plan has delivered a significant setback to global climate finance efforts (White House, 2025). This move is expected to make achieving the newly established global climate finance goal of USD 1.3 trillion by 2035 considerably more difficult (Goldberg & McGlinchey, 2025). In February 2025, the US also became the first country to cancel its outstanding commitments to the Green Climate Fund (GCF), pulling back its USD 4 billion commitment (Civillini, 2025). In March 2025, amid growing concerns about the economic impact of new tariffs imposed by the Trump administration, Canada scrapped its carbon tax -- originally designed to financially incentivize a shift toward cleaner energy sources (Hilton, 2025). As developed countries weigh climate funding against competing domestic priorities, developing countries continue to face mounting challenges in financing climate change mitigation and adaptation, even as the effects of climate change intensify, and climate-related disasters increase in frequency.

Policymakers and stakeholders continue actively exploring innovative strategies and mechanisms to fund climate action and related development objectives of the SDGs and the 2030 Agenda. Migrant remittances have been recently proposed as an alternative source of climate financing. An emerging literature discusses the potential of remittances to provide significant support for developing countries dealing with climate change adaptation and mitigation costs (Maduekwe & Adesina, 2021; Musah-Surugu et al., 2017; Rustomjee, 2018; Salia & Bempong Nyantakyi, 2022). In many SSA economies, remittances constitute major financial resources received from outside the country. In 2023, this region received remittance flows of $54 billion, which were 1.5 times higher than FDI, more stable, and comparable to

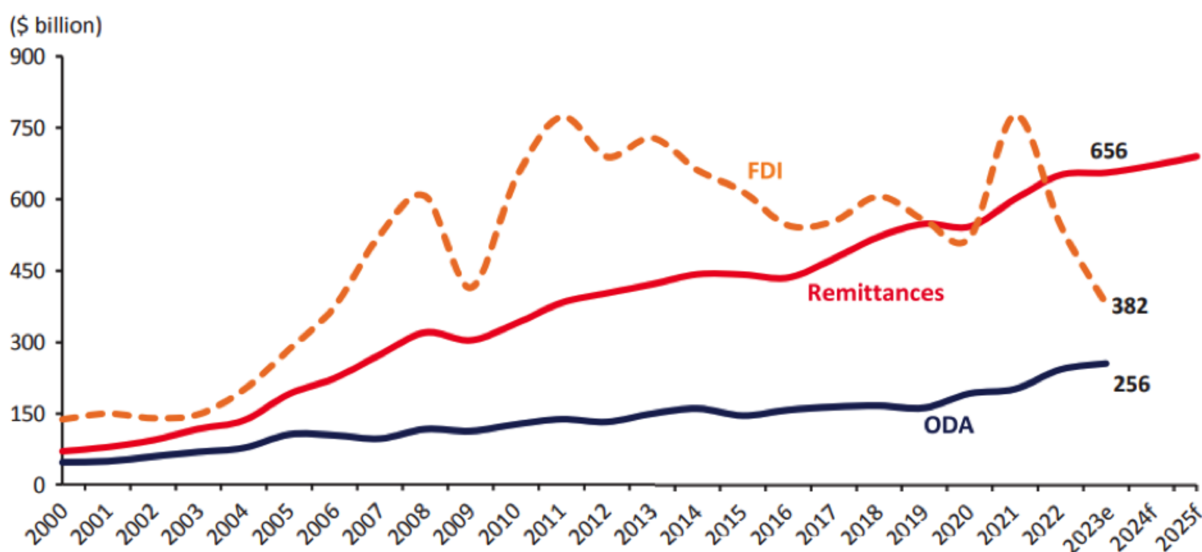
the ODA flows (which have been declining as GDP share) (Ratha et al., 2024) (Figure 1). While the extant literature has examined the potential for remittances to contribute to climate action and development, remittances constitute only a fraction of diaspora savings (Coulibaly, 2019; Gelb et al., 2021). Famoroti (2018) estimates that in Ghana, diaspora savings may form close to 85% of gross national savings. Broadening the scope of migrant-based resources to incorporate diaspora finance provides a comprehensive overview of transfers from the diaspora, including remittances, diaspora investments, and knowledge transfers (Gelb et al., 2021). Examining other diaspora finance channels, aside from remittances, can uncover new, underexplored options to mitigate climate change impacts and build up the adaptive capacity of climate-affected vulnerable populations.

Arguably, unlike remittances, knowledge of other diaspora finance channels like diaspora investment is limited because there is no systematically collected data nor standard indicators of individual mechanisms and outcomes (Gelb et al., 2021). Nonetheless, diaspora investments and knowledge transfers complement remittances. Hence, a sole focus on remittances implies an incomplete accounting of migrants' actual and/or potential contribution to development in their countries of origin. This paper examines the spectrum of diaspora finance, including individual, collective, and philanthropic remittances, as well as diaspora investment in the form of equity, loans, bonds, and knowledge transfer. The paper then discusses the potential of these diaspora finance channels to support climate change adaptation and the expansion of mitigation efforts. It further examines and analyzes the potential of diaspora finance to enhance the effectiveness of existing climate change mitigation and adaptation activities in SSA.

Unpacking Diaspora Finance – A Holistic Analysis of Diaspora Contributions to Development

The overall discussion on diaspora economic capital has mainly focused on remittances. However, other forms of diaspora capital, such as human, social, and cultural capital, are relevant in promoting development in their countries of origin (IOM, 2022). The evolving discourse on migration and development is broadening to examine other channels through which the diaspora transfer resources to promote development in their country of origin (Debass & Ardovino, 2009; Gelb et al., 2021; IOM, 2022; Rustomjee, 2018; Salia & Bempong Nyantakyi, 2022). IOM (2022) extends the definition of economic capital as an economic resource to buy and/or make products and provide services. This definition increases the scope to include the human capital contribution of the diaspora, leveraged through skills and knowledge transfer. Available evidence also shows that diaspora support for development initiatives, including business and entrepreneurship, tourism, philanthropy, environmental sustainability, and climate change resilience building, involve more than financial transfers via remittances (Gelb et al., 2021; Ketkar and Ratha, 2007). For example, through knowledge transfers, diaspora members support the development of key climate action frameworks, such as national adaptation plans and national climate change adaptation strategies in their countries of origin (Gelb et al., 2021; IOM, 2022). Therefore, a detailed assessment of diaspora transfers beyond remittances is important for a more holistic view of the diaspora's contribution to development processes and climate resilience efforts.

Figure 1: Remittances Investment and Official Development Assistance Flows to Low and Middle-Income Countries (excluding China), 2000-2024



Source: Ratha et al., 2024

Note: FDI: Foreign Direct Investment; ODA: Official Development Assistance; f: forecast

Diaspora finance is an umbrella term encompassing remittances, diaspora investment, and knowledge transfers from the diaspora to countries of origin (Gelb et al., 2021). Knowledge transfers are not necessarily financial resources, but diaspora contributions through the transfer of knowledge and skills complement remittances and diaspora investment, hence their inclusion in the diaspora finance classification (Figure 2).

It is helpful to distinguish diaspora investment from remittances to appreciate the broader scope of diaspora finance. Remittances are one-way transfers that cause a reduction in the sender's disposable income while increasing that of the recipient. On the other hand, diaspora investments are two-way exchanges, with the sender's savings being the source of funds (Gelb et al., 2021). In return for the funds received from the diaspora investor, the country-of-origin beneficiary offers an asset, a financial instrument, which yields a return on investment with corresponding value (Gelb et al., 2021). Thus, while remittances provide an opportunity to tap into diaspora income flow, diaspora investments offer an opportunity to tap into the accumulated wealth of diaspora members (Ketkar & Ratha, 2007). Diaspora investment, therefore, has the under-utilized potential to yield more funds to support sustainable development and climate resilience in the Global South.

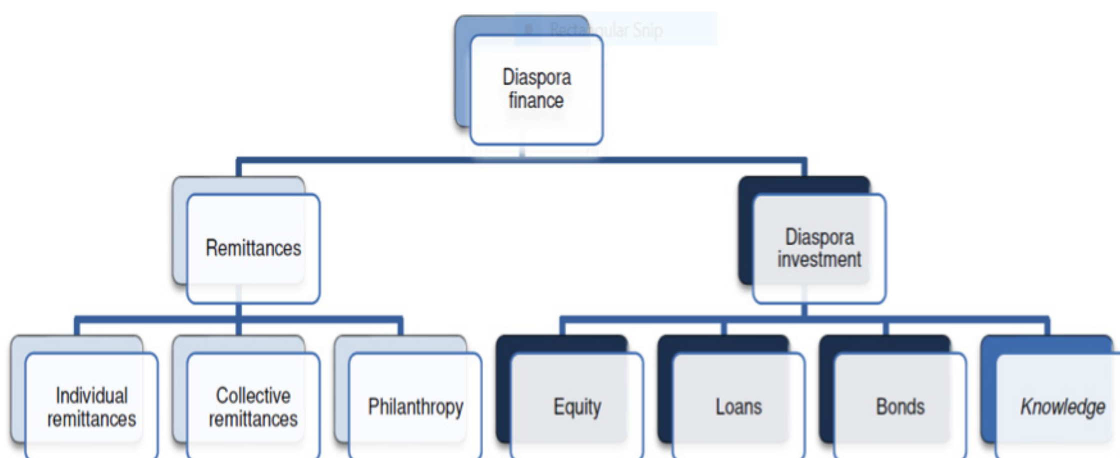
Migrant remittance transfers are typically interpersonal and based on affective ties; that is, familial or social ties link senders and receivers. Remittance transfers to households are usually meant for livelihood support, while collective remittances and transfers via CSO channels target philanthropy. Diaspora investments, however, involve economic units outside households, such as business enterprises, government organizations, or non-governmental organizations in the country of origin (Gelb et al., 2021; Ketkar & Ratha, 2007). Since interpersonal ties are not essential for diaspora investments, the diaspora community that can participate in diaspora investments is broader. For example, diaspora members who have a sense of allegiance or are sympathetic towards a country, as well as descendants of migrants who may have no remaining social ties in the country of origin, can still purchase bonds issued by the government. Thus, diaspora investments yield resources from a larger group, including second and third-generation migrants and other successive generations who can trace their ancestry to the country of origin.

A Closer Look at Diaspora Finance Channels

Remittances are typically transferred from a single migrant household in the country of residence to a single household in the country of origin. The sending and receiving households are usually connected via familial ties (Ramachandran & Crush, 2020; Vasconcelos et al., 2017). Remittances can be cash or 'in kind' transfers like food or clothing. In the event of crises, remittances are stable and tend to increase. For instance, following Hurricane Ivan in Granada, remittances increased by 15%, which was important in helping households recover from the disaster (Harvey & Savage, 2007). Similarly, Halliday (2006) observed 40-60% remittance increases in El Salvador in response to agricultural shocks such as livestock loss. Remittances also represent a sustainable source of financing/income because they remain stable for an extended period. Given the stability of remittance flows, they can support long-term goals such as income accumulation, support and enhance economically sustainable livelihoods, and increase food security (Bendandi & Pauw, 2016; Crush & Ramachandran, 2024; Owusu & Crush, 2024; Sithole et al., 2023; Thomas-Hope, 2023).

Beyond family-to-family transfers, remittances can also be described as collective when diaspora communities collate their funds for specific projects like schools or healthcare centres, contributing relevant social infrastructure to their communities of origin or hometowns (Goldring, 2004). Collective remittances are raised by a group to benefit a community with which it is affiliated; consequently, the collation of contributions is usually managed by groups like hometown associations. Mazzucato & Kabki (2009) highlight examples of collective remittances by Ghanaian migrants in Amsterdam used to promote community-level development, including local health centers, classroom blocks, scholarship funds, and electrification poles in several communities in the Ashanti region of Ghana. Collective remittances have also been leveraged to constitute

Figure 2: Types of Diaspora Finance Mechanisms



Source: Gelb et al., 2021

transnational public-private partnerships (TPPs), where private remittances from the diaspora are matched with public funds from the government (Armstrong, 2017; Bada, 2016; Burgess, 2012). This arrangement enables migrant organizations, mainly hometown/community of origin associations (HTAs), to co-manage/ co-finance development projects with the state.

TPPs are facilitated through intentional engagement by state institutions with diaspora groups, which helps promote government accountability while increasing diaspora involvement in local development. These collective remittances, common in the Latin America region, prominently Mexico (Armstrong, 2017; Bada, 2016; Burgess, 2012) and other areas like Armenia (Galstyan & Ambrosini, 2023), thrive on the back of high-density migration and the formation of well-organized hometown associations in destination countries. For example, since 2002, an increasing share of Mexico's collective remittances has been channeled through the 3X1 program, which provides matching grants for community projects co-financed by US-based hometown associations. Per this arrangement, for every peso invested by an HTA in a philanthropic project, the government provided matching funds of one peso each from the federal, state, and municipal governments. With TPP arrangements, migrant groups can demand higher governance standards, at least for joint projects with the government (Burgess, 2012). The presence of decentralized state arrangements, which allow local governments more autonomy, also attracts diaspora associations to partner with local governments in countries of origin (Armstrong, 2017; Burgess, 2012). The projects funded under the TPP arrangement included public works such as street paving and drainage, potable water and electricity, and social infrastructure projects like schools, health clinics, and athletic facilities.

Additionally, diaspora members often make individual philanthropic donations targeted at specific projects or programs in their country of residence with the expectation that these will bring about some form of social good (Gelb et al., 2021). This type of engagement includes small contributions to humanitarian projects and large donations from wealthy diaspora members. IOM (2022) contends that diaspora philanthropy is often conflated with diaspora charity; however, the primary purpose of diaspora philanthropy is not to offset the ills of an issue back home but to support root cause changes related to that issue both across the diaspora and back home (p. 12). For example, the Ethiopian Diaspora Trust Fund (EDTF), a non-profit organization, is coordinating with the Ethiopian government to involve the Ethiopian diaspora in development by raising funds for vital socio-economic projects in Ethiopia (IOM, 2022). ETDF finances people-focused development projects, prioritizing initiatives focused on groups who can be agents of inclusive social and economic development, such as youth, women, smallholder farmers, small enterprises, and entrepreneurs. EDTF is an example of diaspora philanthropy, where the government actively coordinates philanthropic instruments.

The growing significance of remittances to development is reflected in the increasing volume of remittances in several contexts. For instance, in 2023, remittances received in Latin America and the Caribbean increased by 8 percent, reaching USD 155 billion (Ratha et al., 2024). Additionally, countries like Nicaragua, which recorded significant growth in remittances, 44.5 percent in 2023 (Ratha et al., 2024), underscore the importance of remittances as a significant finance option for developing countries. Nonetheless, other channels of diaspora finance, discussed below, hold similar promise for development financing.

Diaspora investments involve financial asset transactions that transfer financial resources from diasporas to private and public sector organizations and agencies (Gelb et al., 2021). Investments include equity, loans, bonds, or knowledge transfers (see Figure 2).

Equity investments are diaspora direct investment (DDI) or diaspora portfolio investment (DPI), depending on the level of control the investor has over the management of the enterprise. For DDI, the parent firm is incorporated in the destination country or another foreign country, with a branch/subsidiary established in the country of origin. In this transnational corporate investment, the diaspora investor has more than 10% of the shares in the subsidiary company, and decision-making power is exercised from the country of destination.

Another form of DDI is private equity and venture capital funds, where diaspora investors mobilize equity finance from their diaspora to invest in businesses in the country of origin. This hybrid arrangement can include non-diaspora funds and public or private sector bonds. Investors are also likely to be directly involved in managing the enterprises they fund, possibly in a mentorship role (Gelb et al. 2021). For example, through a European Union grant implemented by IFAD, FADEV, a private equity company, offered the Malian diaspora the opportunity to finance microenterprises that their relatives were managing back home. Under the same arrangement, Investisseurs et Partenaires (I&P), another private equity, supported a group of Malian diaspora investors to invest and provide technical support to high-potential SMEs in Mali. Beyond stimulating investment in the agricultural sector, these two activities are expected to generate 90 stable jobs in Mali (Coulibaly & Barca, 2022).

Diaspora members who invest via DDI mechanisms have the financial incentives of a typical foreign investor and a better grasp and understanding of the local business environment (Debass & Ardovino, 2009). The diaspora also possesses an ethnic advantage: their social capital advantage in the homeland, which makes them better informed and equipped to manage uncertainties in their home country, such as political risks and economic shocks (Debass & Ardovino, 2009). Diaspora portfolio investments (DPIs) are another form of equity in which the investor holds a small proportion of the equity and does not directly influence the activities of the beneficiary enterprise. DPIs can be in the form of individual shares or diaspora mutual funds. In the case of individual shares, diaspora members purchase traded shares in individual businesses in the country of origin. By contrast, diaspora mutual funds are professionally

managed pools of funds invested in diversified portfolios of listed equities. DPIs are more common in countries with highly developed financial markets since traded shares are typically listed on stock exchanges. Also, diaspora mutual funds thrive in a broad equity market and a diaspora with a relatively high level of wealth. Thus, DPIs are less common in lower-income and lower-middle-income countries and may focus on regions rather than single countries.

Aside from equity investments, other diaspora finance channels like loans enable the diaspora to support enterprises in their country of origin without having a stake in the ownership or control of the business. **Loan** investments from the diaspora typically involve funds transferred to beneficiaries in the country of origin with the expectation of having them returned in the future (Gelb et al., 2021). Using diaspora platforms for loans, diaspora members act as retail investors to collate funds, which are then lent to social entrepreneurs and other small businesses in their countries of origin using below-market or zero-interest rates. Similarly, funds raised from the diaspora can be used to provide physical capital equipment for businesses in their country of origin (Gelb et al., 2021). For instance, Ovamba, a FinTech Innovator in Cameroon, receives machinery and equipment requests from small and medium-sized enterprises (SMEs) in Africa. Ovamba purchases the requested equipment with funds from diaspora finance marketing platforms and leases it to these SMEs. This arrangement reduces the risk for the diaspora lender and the African SME borrower by using lease payments to service the funders.

Additionally, to attract significant foreign currency inflows into the country of origin, diaspora members can be encouraged to deposit to their bank accounts through special schemes, lowering interest taxes and offering flexible options for local or foreign currency deposits. For example, Non-Resident Indians (NRIs) have been incentivized to make deposits with the State Bank of India (SBI) by providing income tax exemptions for some account types. The Indian diaspora can make transactions like remittance transfers through the SBI's 190 international offices in 35 countries (Gelb et al. 2021).

In addition to increasing foreign exchange deposits, loans can be used to encourage diaspora spending in the country of origin. Loan arrangements like remittance-linked housing loans allow migrants to borrow from their country of origin while working abroad. For example, Sociedad Hipotecaria Federal (SHF), a Mexican agency, collaborates with the Inter-American Development Bank to create a mortgage program for Mexican immigrants in the USA and Canada to invest in new or used houses in Mexico (Saenz, 2007). The program coordinates with several government and private sector agencies to facilitate legal and logistical issues such as mortgage insurance and other related services. Such housing finance schemes usually link loan repayments to remittances, allowing migrant workers to plan for their return and retirement and remittance-receiving families back home access to housing credit (Gelb et al., 2021).

Diaspora bonds are another mechanism that harnesses diaspora wealth to support development. Diaspora bonds are financial instruments that involve a country issuing foreign-currency debt aimed at its nationals living abroad. They are debt instruments issued by a country to raise finance from its diaspora (Salia & Bempong Nyantakyi, 2022). Terrazas (2010) also describes diaspora bonds as long-dated sovereign debt agreements marketed to diasporas. Typically, diaspora bonds have extended maturity periods that delay principal repayments, allowing projects to generate returns and cover capital costs over the payback period (Belianska et al., 2022).

The primary motivation for diaspora bonds is to obtain funding at lower interest rates due to the patriotic sentiment of diaspora members (Terrazas, 2010). The patriotic discount is the difference between the market interest rate for government debt and the interest rate that the diaspora will accept. For example, in the 1980s, Israel sold its bonds in the US at a fixed interest rate of 4% for a maturity period of 10 – 15 years. The US market rate for 10-year maturity yields was about 6.8% then. Thus, the lower rates accepted by the Israeli diaspora constituted their patriotic discount. While the patriotic discount can be likened to charity, Ketkar and Ratha (2007) argue that diaspora bonds are a more honorable way for governments to seek support from their diaspora members rather than simply asking for handouts. Thus, when diaspora members accept below-market interest rates, they offer governments a form of charity, which governments can leverage to generate significant resources to support development.

Diaspora bonds also present a win-win scenario for issuing governments and diaspora members because the country receives crisis-resilient foreign-currency funding, and the diaspora has an opportunity to support development in their country of origin (Famoroti, 2018). For example, in the case of India, in 1998, international sanctions were imposed on the country following its nuclear weapon testing/nuclear explosions, and this led to a downgrading of the country's debt and increased foreign exchange pressures. However, through the government's Resurgent India Bonds (RIB), USD 4.2 billion was gathered from non-resident Indians by the bond's maturity in 2003 (Gevorkyan, 2021; Ketkar & Ratha, 2007). The raised funds were used to support infrastructure development in the country, demonstrating that the patriotic sentiment of the diaspora makes them a reliable and valuable source of resources, especially during times of crisis. From the issuer's point of view, the principal motivation for diaspora bonds is a stable and cheap source of external finance, while patriotism is the primary motivation of diaspora members (Ketkar & Ratha, 2007).

Beyond their patriotic sentiments, diaspora bonds offer the advantage of allowing diaspora members to diversify their asset composition and have alternate investments outside their adopted country. Since diaspora members typically have current or contingent liabilities in their country of origin, the prospect of issuing governments paying the accrued interest and principal in the local currency is attractive despite

the risk of currency devaluation (Ketkar & Ratha, 2007). The diaspora's familial and social ties in the country of origin and familiarity with the local economic context enable them to accept risks that other investors may be unwilling to accept. For example, diaspora members may be more willing to invest in post-conflict or resource-poor countries of origin like Ethiopia when others perceive such investments as too risky (Terrazas, 2010). The patriotism and reliability of diaspora investors make diaspora bonds a viable source of funds. This aspect needs further exploration to generate much-needed resources to support development efforts, particularly climate change adaptation and mitigation.

Aside from tapping into the diaspora's financial resources, the diaspora's accumulated human capital can also be harnessed through **knowledge transfers**. Since they involve the transfer of knowledge, information, skills, and human capital, knowledge transfers are largely non-financial transactions. However, they contribute significantly to investments in countries of origin and can have even more long-term significance than the financial support provided (Gelb et al., 2021). Knowledge transfers like mentoring support and direct knowledge flow support investors in deciding where and how to invest and beneficiaries in identifying how to access and use transferred funds. For instance, the Ugandan Diaspora in Agribusiness Network (UDAN) has served as a bridge between the Ugandan diaspora and rural stakeholders in Uganda. The network enhanced the visibility of the financial and non-financial contributions of the diaspora in the agri-food sector. It enabled the diaspora to participate more meaningfully in the agricultural sector (FAO, 2022).

Similarly, the Connecting Diaspora for Development (C4D) project helped stimulate lasting connections between diaspora members in the Netherlands and institutions in their countries of origin (Kuschminder et al., 2022). Consequently, the connections facilitated ongoing interactions with far-reaching impacts beyond the knowledge transfer activities included in the programs, such as the lectures, training, and skill exchanges. For example, a diaspora member worked with staff of the human resources department of a new government ministry in Somaliland to improve their organizational structure. This knowledge exchange improved internal structures and processes, including developing a filing system and strengthening staff appraisal (Kuschminder et al., 2022). An improved human resource management system, in turn, implies a bolstered capacity to manage other economic assets transferred. Likewise, a third-generation Filipino American scientist, engineer, educator, and entrepreneur used his photovoltaic or solar cell technology expertise to conduct a feasibility study on using photovoltaic technology for rural electrification in Puerto Princesa province. He subsequently built a solar electric power plant for pumping water, lighting streets, and electrifying remote health clinics (Wescott & Brinkerhoff, 2006). Diaspora members also stand out from other professionals offering knowledge transfers because they often do not have to grapple with a language barrier, and they can more easily establish trust with institutions and individuals in the country of origin (IOM, 2023).

One critical element that sets diaspora investment apart from other types of investment is the patriotic discount diaspora members apply to their investments. The patriotic discount enables diaspora members to accept lower returns and higher risk than they would with other investments. Diaspora remitters and investors, thus, constitute a unique category of investors because they can exchange profit for the well-being and socioeconomic development of those left behind in developing countries (Bendandi & Pauw, 2016). Even in the case of non-financial knowledge transfers, the sentimental and material links the diaspora have to their country of origin serve as the primary motivation for knowledge transfers (Siar, 2014). Nonetheless, personal gain regarding status or power cannot be ruled out. Mazzucato & Kabki (2009) draw attention to micropolitics involved in collective remittances by hometown associations. Armstrong (2017) highlights the political underpinnings of Mexico's remittance matching schemes. Similarly, Siar (2014) demonstrates personal benefits as an important motivation for knowledge transfers, although altruistic motivations are the most common drivers for diaspora providing knowledge transfers. Thus, besides the primary motivation of giving back to their country of origin, the desire for more significant influence is an essential factor that inspires the diaspora to invest in their countries of origin.

Diaspora Finance and Climate Change Adaptation

Climate change increases the complexity of existing development challenges like poverty, food insecurity and inequality. Several of the contexts prone to climate change impacts are developing countries already grappling with several development challenges. Hence, climate change exacerbates these pre-existing challenges, making it imperative to enhance the adaptive capacity of vulnerable communities to efficiently manage the interaction between old pressures and new climate-induced challenges. Adaptive capacity refers to the ability of individuals and communities to anticipate, deal with, and respond to change while maintaining or improving their well-being (Levine et al., 2011). Climate finance, specifically funds targeted at vulnerability reduction activities that also maintain and increase the resilience of human and ecological systems to adverse climate change impacts, plays an important role in building adaptive capacity (UNFCCC, 2014). However, climate financing drawn from public, private, and alternative sources at the local, national, and transnational levels has historically been inadequate to meet the increasing needs of vulnerable communities. This section, therefore, discusses the potential of diaspora finance to augment climate finance arrangements and contribute to enhancing climate action.

Remittances have historically been used primarily to meet basic needs, that is, to supplement household consumption. Empirical evidence from several contexts, including Ghana (Musah-Surugu et al., 2017); Ethiopia, Bangladesh (Mohapatra et al., 2012), and Nigeria (Maduekwe & Adesina, 2021), suggests that the main focus of remittances is usually consumption, that is to meet basic needs. This consumption fo-

cus of remittances is tied to high poverty rates in developing countries where remittances are received. Thus, remittance receivers seek to meet their immediate basic needs before addressing other broader, long-term needs, like climate change-related needs. Nevertheless, recent literature highlights the role of remittances in enhancing climate resilience. Yang & Choi (2007) suggest that remittances serve as insurance for households during rainfall shocks, helping to compensate for about 65% of income loss due to rainfall shocks in the Philippines. Similarly, Mohapatra et al. (2012) observe that remittances positively impact households by preparing them against natural disasters and supporting them in coping with loss afterwards. Households receiving remittances in Ethiopia were less likely to dispose of their assets during droughts, and remittance-receiving households in Burkina Faso and Ghana were more likely to have concrete houses rather than mud houses, making them better prepared for extreme weather events like floods.

Moreover, remittances have strengthened the capacity of households dealing with climate change impacts to adapt better and be more resilient. Couharde & Generoso (2015) observe that remittance-receiving households have been able to fund long- and short-term adaptation-related investments such as purchasing irrigation equipment (short-term) and longer-term health and education goals. Further, remittances have been used to finance both incremental costs of households' infrastructure and consumption needs and additional investment needs occasioned by ongoing or expected changes in climate (Musah-Surugu et al., 2017). A study by Musah-Surugu & Anuga (2023) indicates that some activities remittance-receiving households undertook enhanced their adaptation, such as purchasing fertilizer and other farm inputs like pesticides and cultivating drought-resistant maize varieties. Moreover, the study highlights the contribution of consumption-based activities like acquiring extra food to supplement family needs to enhance adaptive capacity. This positive example signals the potential of remittances to bolster climate resilience even when spent on so-called consumption needs.

The contribution of remittances to enhancing climate change adaptation and building adaptive capacity is worth harnessing. Available records confirms that due to the limited climate financing available, more resources have been allocated towards mitigation efforts than adaptation. While the share of financing targeted at adaptation increased significantly from 17% in 2016 to 28% in 2022, mitigation finance remains more dominant, accounting for 60% of total climate financing in 2022 (OECD 2024). This situation implies that the governments of countries impacted by climate change must locate additional fiscal resources to support their citizenry in building up adaptation to climate change effects. Since most climate-vulnerable countries are also low-income countries, remittances present an opportunity to supplement adaptation costs. Particularly given that some activities that enhance adaptive capacity, like purchasing fertilizer and drought-resistant crop varieties, are closely related to consumption needs, which remittances typically support. Moreover, OECD (2024) observes that the bulk of adaptation financing is allocated to water, sanitation, agriculture, forestry, and fishing sectors (OECD, 2024). Given the relevance of these sectors to the livelihoods of migrant-sending communities, particularly in SSA, the diaspora can be encouraged to channel remittances to enhance the adaptive capacity of households back home.

Mills (2023) highlights the lack of evidence regarding remittances directed towards adaptation efforts; meanwhile, existing literature highlights several examples of initiatives channelling remittances to support mitigation efforts. For example, a diaspora initiative in collaboration with Arnergy, a utility distribution company, enabled Nigeria's diaspora to invest in renewable energy solutions on behalf of households and businesses. These arrangements allowed the diaspora members to direct their resources to procure battery-powered solar systems, a cleaner and more sustainable option than diesel-powered generators, which most households used to supplement energy (Whitlock, 2021). Similarly, in Cote d'Ivoire, through a Diaspora Energy initiative by EDF, diaspora members were able to use their remittances to purchase and install solar systems like solar home kits and solar pumps for their families, mainly in rural areas (Makanza, 2021). The empirical evidence, therefore, suggests that for remittances to contribute to sustainable development efforts like climate change adaptation, they must be deliberately directed toward such efforts (Mills, 2023). Increased awareness of remittance-sending diaspora members, as well as remittance-receiving households in countries of origin, on the impacts of climate change and adaptation mechanisms can also improve the allocation of remittances to strengthen adaptive capacity.

Remittances typically increase in times of crisis to support reactionary responses to climate stresses (Halliday, 2006; Harvey & Savage, 2007). Nonetheless, emerging literature suggests that employing remittances to build anticipatory adaptive capacity can reduce the cost and impact of climate change-related events in the long run (Nurse, 2019). Anticipatory, proactive responses like cultivating drought-resistant crop varieties enhance preparedness and bolster food security while improving the quality of building materials in anticipation of floods and strong winds to reduce the impact of climate events. Thus, pre-emptive action is far less costly financially and in terms of human suffering. Diaspora members can, therefore, be encouraged to channel remittances to support building anticipatory adaptive capacity and increasing readiness.

Beyond household-level remittances, collective remittances and diaspora philanthropy, for example, through hometown associations, can support projects that build adaptive capacity for multiple households in a community. For instance, a shared water storage system helps the local community prepare for droughts. The initial impact of drought may be reduced as the water storage facility serves as a backup. Collective remittances through hometown associations are, however, not as popular with more recent generations of migrants who are increasingly turning to individual or collective investments in private businesses (IFAD-UNCCD, 2024).

Hence, other channels of diaspora finance, such as bonds, may be more attractive to these emerging groups of migrants. Additionally, while collective remittances can benefit from diaspora attachment to specific ethnic communities and thus be a good source of financing for climate resilience, there is also the risk that diaspora support contributes to uneven development. This is because migrant-sending communities that may already have higher socioeconomic status will have more access to resources compared to poorer communities that may have few or no migrants. Thus, other diaspora finance channels like diaspora bonds, which provide resources to the central government pool to finance projects in different parts of the country, may be preferred to support a more uniform response to climate change.

Generally, diaspora investment via bonds, loans, and equity represents an underexploited source of development finance. There is limited evidence on loans and equity used in development financing generally and climate change efforts more specifically (Asquith & Opoku-Owusu, 2020). Faal (2019) has argued that examples of such diaspora investments are limited in SSA due to the high level of informality in the region, and the operationalization of the investment mechanisms requires a regulated environment. One of the few examples of equity employed to support climate change efforts is the Boosting Green Employment and Enterprise Opportunities in Ghana (GrEEn) Project. To achieve the project aim of creating green jobs and promoting a green and circular economy, the project, funded by an EU-led consortium, used crowdlending and donation-based crowdfunding to access funds from the diaspora and other local sources to provide capital for small enterprises and to fund local climate-resilient infrastructure (Asamoah Boateng, 2023). The project registered successes in raising funds to support the creation of over 23,000 jobs. Nonetheless, being pioneering crowdfunding, a new regulatory space in Ghana, the project encountered some teething challenges, such as working with two different institutions with regulatory jurisdiction (see Asamoah-Boateng, 2023 for some critical lessons).

Overall limited information among the diaspora on green investment opportunities can, however, hinder diaspora members from taking advantage of other diaspora finance tools like bonds (IFAD-UNCCD, 2024). Additionally, the costs of diaspora bonds and the governance issues related/linked to diaspora bond issuance hinder many countries in SSA from taking advantage of or participating in diaspora bonds. For example, since 2000, only five countries in SSA have successfully issued bonds (IFAD-UNCCD 2024; Faal, 2019). Thus, Faal (2019) highlights the inconsistency between the declared enthusiasm and general rhetoric about diaspora bonds and the actual reality in the marketplace in SSA especially (p. 11).

Notwithstanding these challenges, diaspora bonds present an opportunity/ hold the promise of augmenting climate finance because diaspora bonds are debt instruments similar to green, blue, and sustainability bonds, which can help contain sovereign debt while advancing adaptation or mitigation efforts (Salia & Bempong Nyantakyi, 2022). With increasing awareness of climate change and climate actions, many people, including diaspora members, now want their countries of origin to take decisive action to mitigate and support vulnerable populations to adapt. This increasing concern for climate action makes diaspora bonds for climate action attractive as people are more likely to invest (Bendandi & Pauw, 2016). Recent examples of diaspora bonds demonstrate diaspora commitment to supporting green projects and climate action overall. For instance, Ethiopia successfully issued a diaspora bond to finance the construction of the Grand Renaissance Dam, an essential source of clean energy for the country (Salia & Bempong Nyantakyi, 2022). In 2024, Ethiopia's Ministry of Foreign Affairs recorded that since the dam's inception, the Ethiopian community association in Dubai and the Northern Emirates had purchased bonds worth USD 550,000, demonstrating strong support for the project (Ethiopian News Agency, 2023). The diaspora bonds issued by Nigeria in 2017 raised USD 300 million to fund infrastructure projects and Kenya also issued its first green bond in 2019 to fund renewable energy projects (Faal & Ababa, 2019).

While extensive climate-specific knowledge is not required to place bonds on the market, improved public finance management, procurement, and statistics to support greater transparency and accountability in debt management are essential (Belianska et al., 2022). It is also vital for governments to have a pipeline of adaptation and mitigation projects that fit into an overall national climate strategy. Including diaspora voices in decision-making related to climate change adaptation and incorporating their ideas on national adaptation plans and strategies to enhance climate change adaptation are examples of harnessing diaspora skills to support climate action. In particular, younger diaspora members' creativity and networking abilities are assets that can be harnessed to support climate action and development in general (Gagnon & Khoudour, 2023).

Diaspora knowledge transfers can contribute to enhancing adaptive capacity by supporting the development of comprehensive National Adaptation Plans (NAPs) that facilitate preparedness and response to climate change impacts. NAPs are comprehensive medium and long-term strategies that outline how a nation will adapt to the changing climate and reduce its vulnerability to climate-related risks (UNDP 2023). NAPs are also important because they provide an opportunity for countries to systematically assess their vulnerability to climate change, identify adaptation needs, and design effective strategies to build resilience (UNDP, 2023). The context-specific nature of NAPs makes diaspora knowledge transfer relevant because diaspora experts have the advantage of being familiar/knowledgeable about the local context; thus, they can provide expert advice relevant to the context. Effective NAPs include financing strategies and help countries integrate climate considerations into national policies and development plans and prioritize adaptation efforts. Diaspora support can also contribute to nationally determined contributions, including increasing awareness and promoting innovative approaches to climate change among communities in countries of origin.

Conclusion

In the face of declining fiscal resources for development-focused activities and increasing climate change costs, key national and international actors and stakeholders are seeking innovative approaches to finance climate change adaptation and mitigation activities. This paper reviewed the potential of diaspora finance channels, including remittances, diaspora investments, and knowledge transfers, to contribute to climate financing in SSA and other developing country contexts.

The paper emphasizes that examining diaspora finance enables an appreciation of a broader scope of diaspora contributions to development in their countries of origin, beyond remittances. Ultimately, the choice of a specific instrument depends upon several factors, including the country's macroeconomic situation, government policies and policy objectives, and the mix of financing options available to the government. However, other factors also impact the decision on the diaspora finance mechanism to support climate action. Further research is needed to inform decision-making and to support developing country governments in harnessing diaspora finance to support development and climate action specifically. Finally, diaspora resources should supplement government-funded social services in promoting diaspora capital. The government should continue to take the lead in providing essential services and relevant social services, and the diaspora can come alongside as financing partners.

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