Climatic Change (2026) 179:59
https://doi.org/10.1007/s10584-026-04147-y

A study of private sector engagement in climate change mitigation and adaptation activities within pacific Small Island Developing States

Corey Huber[1,2] · **Paul Dargusch**[1] · **Christopher Bartlett**[3] · **Fred Patison**[4]

Received: 6 April 2025 / Accepted: 7 January 2026

Abstract
This paper presents the results of a study into private sector engagement in climate change mitigation and adaptation action across Pacific Small Island Developing States, that was conducted as part of the work implemented by the Secretariat of the Pacific Regional Environment Program under the *Green Climate Fund Readiness project 'Supporting regional direct access entities to increase Pacific SIDS access to climate financing*. Drawing on a structured scoping evidence review and targeted stakeholder consultations, we identify key barriers and opportunities for increasing private sector involvement in climate-sensitive sectors. We critically evaluate the existing policy landscape, institutional frameworks, and financial mechanisms influencing private sector participation, with a specific focus on micro, small, and medium-sized enterprises. Barriers identified include limited access to localized climate information services (CIS), fragmented regulatory environments, and insufficient financial incentives for private investment in adaptation and mitigation initiatives. Recommendations are proposed to scale up private sector engagement, including the development, tailoring, and uptake of localised CIS, better coordinated and more inclusive institutional systems, expanded financial incentives and innovative risk mitigation tools, promotion of public-private partnerships, and streamlined policy frameworks. The strategic interventions proposed aim to overcome current barriers, mobilise private capital, and foster sustainable and inclusive economic opportunities across Pacific Small Island Developing States.

Keywords Private sector · Climate change · Pacific · Small Island Developing States

1 Introduction

There is a well-documented need to strengthen private sector engagement in climate change mitigation and adaptation initiatives across the Pacific region (Samuwai 2021; Pacific Islands Forum Secretariat 2021, 2024a, 2024c). This research was part of the work implemented by the Secretariat of the Pacific Regional Environment Program (SPREP) under the

Extended author information available on the last page of the article

Green Climate Fund (GCF) Readiness project 'Supporting regional direct access entities to increase Pacific SIDS access to climate financing. A key objective of the project was to analyse current private sector landscapes, identify barriers to and opportunities for their engagement in climate initiatives, and propose actionable strategies to mobilise greater investment and increased private sector climate leadership across Pacific island countries. The project's findings aimed to inform and guide policymakers, development partners, and private sector stakeholders to achieve the private sector-related climate goals articulated in regional and international climate finance frameworks.

This paper contributes an integrated evidence base on private sector climate action in Pacific SIDS by (i) synthesising dispersed literature through a structured evidence scoping review; (ii) analysing targeted expert consultations across eight PSIDS, and (iii) deriving a practice-oriented set of policy levers for MSME participation in mitigation and adaptation. Our analysis addresses three questions: 1) What forms of private sector engagement are documented in PSIDS across mitigation and adaptation? 2) What barriers and enablers recur across countries, sectors and firm sizes (with attention to informal enterprises and women-led firms)? 3) Which policy and financing instruments are most actionable for near-term scale-up? Given their complementary roles, we consider both domestic and foreign private sector actors, from MSMEs and local financial institutions to regional and international firms operating in PSIDS.

1.1 Context

Climate change is recognised by Pacific leaders as "the single greatest threat to the livelihoods, security and well-being of the peoples of the Pacific" (Pacific Islands Forum 2018). Pacific Small Island Developing States (PSIDS)[1] are exceptionally vulnerable to the impacts of climate change (Jain et al. 2022; Weatherill, 2022). PSIDS consistently rank amongst the most vulnerable countries to climate induced disasters (Bündnis Entwicklung Hilft/IFHV 2023; Notre Dame Global Adaptation Initiative 2024; Adil et al. 2025) with associated estimated losses due on an annualized basis far exceeding those in nearly all other regions worldwide (World Bank 2017). The climate-related vulnerability of PSIDS arises from a combination of geographical exposure and remoteness (e.g., rural coastal communities impacted by tropical cyclones), economic constraints (e.g., low GDP per capita), infrastructure and capacity limitations (e.g., under-resourced public administration), social and environmental factors (e.g., biodiversity loss), and limited access to climate finance (e.g., adaptation finance for slow and rapid-onset events) amongst other factors (Mycoo et al. 2022). Consequently, mobilising new and additional climate finance to address climate vulnerability and adaptation needs has become a crucial issue for the Pacific, drawing significant attention from PSIDS leaders and generating regional advocacy for immediate international action (Pacific Islands Forum Secretariat 2024c; Wilkinson et al. 2023).

Small Island Developing States (SIDS), including those in the Pacific region, bear minimal responsibility for the current global climate crisis (Samuwai 2021). SIDS account for just 0.5% of aggregate historic global carbon dioxide emissions (Watson et al. 2024). Due to their geographic, socioeconomic, and climate profiles, SIDS are particularly vulnerable to the extreme impacts of climate change. There are 14 SIDS in the Pacific region which

[1] Per the UN, there are 14 PSIDS – Cook Islands, FSM, Fiji, Kiribati, Nauru, Niue, Palau, PNG, Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

are considered "canaries in the coal mine of climate change" (Hanna and McIver 2017) as frontline victims to the adverse impacts of climate change. The Pacific region is particularly vulnerable to climate change, with estimated losses due to hazard-induced disasters on an annualised basis far exceeding those in almost all other regions in the world (World Bank 2017).

Mobilising resources in a vulnerable environment is a major hurdle for many PSIDS. They face high costs of capital because of their geographic isolation, small markets, and economies of scale (Samuwai and Hills 2018; Pacific Community 2019). For most PSIDS, the domestic private sector lacks substantial pools of domestic savings in the form of bank deposits, pensions funds or insurance funds, while in other cases local banks tend to accumulate their cash holdings as there are relatively few bankable investment opportunities given the risk profile of the local private sector (United Nations Economic and Social Commission for Asia and the Pacific 2021). In addition, domestic capital markets have small credit lines for PSIDS due to the small size of their economies (Sirimaneetham 2022). Compared to other developing countries, SIDS (including those in the Pacific) have lower shares of external private financing flows from international lending and foreign direct investments (FDI) (United Nations Economic and Social Commission for Asia and the Pacific 2021). Consequently, many PSIDS are heavily reliant on bilateral and multilateral official development assistance (ODA), multilateral climate funds under the Financial Mechanism of the United Nations Framework Convention on Climate Change (UNFCCC), and related multilateral climate trust funds such as the Adaptation Fund (AF), Special Climate Change Fund (SCCF), and Least Developed Countries Fund (LDCF) (United Nations Economic and Social Commission for Asia and the Pacific 2021). Furthermore, simplified and expedited access to climate finance from multiple sources is critical and urgent considering the urgent threat climate change will continue to pose to PSIDS as noted in the 2021 Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6) (Mycoo et al. 2022). Urgent, predictable, and scaled-up access to climate finance will be pivotal to PSIDS to ensure a fighting chance of survival (Intergovernmental Panel on Climate Change, Pörtner et al. 2022).

2 Methods

2.1 Literature search and selection criteria

We undertook a structured scoping evidence review of available literature published 2004–2021, including peer reviewed journal articles and grey literature such as project reports and development partner briefs. Key search terms included "climate change," "private sector," "PSIDS," "adaptation," "mitigation," "MSMEs," "public-private partnerships," and specific climate-sensitive sectors, such as fisheries, agriculture, energy, water, health, and infrastructure. Targeted stakeholder consultations that compliment the review are described in Sect. 2.2. An initial pool of approximately 200 documents was retrieved. Titles and abstracts were screened against predefined inclusion criteria: geographic focus on PSIDS, explicit reference to private sector engagement, clarity on policy implications, and emphasis on climate-sensitive sectors. Following initial screening, approximately 150 documents were subjected to full-text review, and approximately 85 documents for detailed analysis. Included sources

were assessed for forms of engagement, barriers and enablers, instruments, and reported outcomes. We did not rerun database queries, and coverage of entrepreneurship and the informal economy is addressed via existing criteria, prior grey-literature, and stakeholder consultations. Our inclusion criteria covered private sector engagement by domestic and foreign actors active in PSIDS across mitigation and adaptation.

2.2 Stakeholder consultations

We conducted key informant interviews and focus group discussions with 21 stakeholders across 8 of 14 PSIDS between November 2024 and February 2025. Participants were identified through purposive sampling (mapping of relevant institutions and networks) followed by snowball referrals. We operationalised "expert" as a professional with substantive experience in climate finance and investment, MSME/private sector support, sectoral climate policy, or disaster/climate risk management within PSIDS. Recruitment sought coverage across private sector organisations and firms (including chambers/associations), financial institutions (development and central banks), government agencies (e.g., NDMO/line ministries), and regional/international partners.

Interviews followed a semi-structured discussion guide aligned to our study aims (Appendix A) and focused on (i) barriers and enablers for private sector engagement in adaptation and mitigation; (ii) partnership opportunities (e.g., renewable energy, climate-smart agriculture, resilient/green infrastructure); and (iii) options to strengthen policy, finance, and implementation pathways. Owing to budget and time constraints, most consultations were conducted online (VoIP) and a minority occurred in person. To protect confidentiality in small-country settings, we collected non-identifying notes only and report aggregated results. Appendix B provides counts by PSID and stakeholder category. Participation was voluntary under informed consent, with the option to skip questions or withdraw at any time.

2.3 Limitations

The depth and comprehensiveness of this review were constrained by data gaps, a paucity of literature specific to micro, small, and medium-sized enterprises (MSMEs) within informal sectors and entrepreneurship in PSIDS, and a limited sample size of key informants consulted. Due to limited gender-disaggregated data in PSIDS, gender patterns are interpreted cautiously and assessed with stakeholder insights.

3 Private sector landscape in the Pacific

The private sector plays a critical role in building climate resilience for the Pacific, serving as a key driver of trade and sustainable economic development (Pacific Islands Forum Secretariat 2024a). Private sector actors in the Pacific, ranging from MSMEs to multinational corporations, hold significant potential to drive innovation, finance and implement sustainable solutions, and scale resilience initiatives. However, systemic barriers such as limited access to finance, fragmented enabling policies, weak institutional capacity, and low adaptive capacity hinder effective public private engagement on climate action.

3.1 Defining the private sector in the Pacific

The 'private sector' is broadly defined within climate literature as inclusive of actors in both the financial sector and real economy (Fayolle et al. 2019; Druce et al. 2016), "ranging from large international and domestic corporations to MSMEs and smallholder farmers" (Stoll et al. 2021). Private sector actors play a pivotal role in driving economic activity, employment, and innovation across PSIDS. However, the composition of the private sector varies significantly across the region, shaped by each PSIDS' unique geographic, economic, and cultural context.

Definitions of 'public private partnerships' (PPPs) in the Pacific also varies greatly, with some PSIDS having established formal PPP policy frameworks and related legislation and others engaging private sector actors on an ad hoc basis. Similarly, MSMEs also lack a common definition across PSIDS and reflect the same broad spectrum of formality in legal and policy specificity. PSIDS such as Fiji, Samoa, and Vanuatu have formal MSME policy frameworks, whereas most other countries in the region do not and instead rely on key sector partners (e.g., chambers of commerce, ministries of infrastructure) to navigate engagement with private sector investment on a case-by-case basis.

Furthermore, MSMEs lack a common operational definition across the Pacific, including under multilateral development banks (MDBs) and major climate funds, such as the GCF. Successive reviews of the World Bank's MSME lending by the Independent Evaluation Group (IEG) have found that it is "inconsistent in defining SMEs and in applying definitions to target its support … making it more difficult to learn from experience" (IEG 2019). Although definitions can vary considerably according to widely varying national standards,[2] the best practice is to use multiple criteria – usually (1) the number of employees, (2) annual turnover or sales and (3) assets (balance sheet total). The International Financial Corporation (IFC) defines MSMEs as having to meet at least two of three criteria: fewer than 10 (micro enterprises) or up to 300 employees (medium companies), with annual sales of up to USD100,000 (micro) or up to USD 15 million (medium), and total assets of up USD 100,000 (micro) or up to USD 15 million (medium) (IEG 2019). In applying such criteria, major climate funds and MDBS should look to national definitions (or, in their absence, regional norms) so that estimates of maximum turnover and asset criteria are calibrated to the relative wealth and economic structure of host countries (IEG 2019).

3.1.1 Micro, small, and medium-sized enterprises (MSMEs)

Micro, small, and medium-sized enterprises (MSMEs) comprise more than 95% of all registered businesses globally, provide between 50 and 70% of employment, and generate over half of the gross domestic product (GDP) in numerous developing countries (Heinrich-Böll-Stiftung 2022; Montreal Group 2018; Alibhai et al. 2017). However, MSMEs often lack access to finance and, crucially, a policy framework that helps such firms to grow (IEG 2019; Supporting Entrepreneurs for Environment and Development 2020). With the right policy framework in place, MSMEs can also be "a powerful force for integrating women and youth into the economic mainstream" (Alibhai et al. 2017).

[2] A WBG survey found that national standards for defining SMEs varied considerably, with the upper limit for employment distinguishing SMEs from large enterprises ranging from a low of 19 employees to a high of 499 (IEG 2019).

MSMEs are a vital part of the business landscape in PSIDS and form the backbone of Pacific economies (Asian Development Bank 2022b). They account for a significant portion of employment and economic activity, operating in sectors that are highly vulnerable to climate risks, such as agriculture, fisheries, and tourism. Their ability to adapt to changing environmental conditions is critical for both local economies and broader climate resilience efforts. They provide essential goods and services, especially in rural and remote areas where larger enterprises are not present. These enterprises are significant job creators, particularly for women and youth, who might not have access to formal employment in larger corporations. MSMEs have the potential to drive innovation in local climate adaptation strategies. Their smaller scale often allows them to pivot more quickly than larger corporations, adopting new technologies or practices. In addition, MSMEs are frequently excluded from formal climate finance mechanisms due to their size and limited financial capacity. Addressing these barriers is essential for fostering sustainable development and ensuring that climate resilience measures reach all segments of the economy.

Many MSMEs in the Pacific operate in the informal economy, defined broadly as economic activities not fully captured by formal arrangements in law or practice (International Labour Organisation 2002, 2017). This presents additional challenges for engaging them in formal climate change policies and initiatives. Ensuring that MSMEs are included in national and regional climate change strategies is not just about inclusiveness but equally about effectiveness. MSMEs are embedded in local communities and are often more in tune with the specific environmental and social challenges facing these communities. By empowering MSMEs, governments can leverage their local knowledge and adaptability to create more sustainable and resilient economies. Furthermore, integrating MSMEs into climate strategies aligns with the United Nations' Sustainable Development Goals (SDGs) and targeted support for MSMEs would also help Pacific Island countries meet their Nationally Determined Contributions (NDCs) under the Paris Agreement, particularly in sectors like agriculture, fisheries, and tourism, where MSMEs play a dominant role (Asian Development Bank 2024b). In PSIDS, this includes many micro-entrepreneurs and home-based firms whose lack of registration, collateral, and eligibility limits access to climate relevant finance and services. To engage them at scale, programmatic routes via chambers/associations and local financial institutions are preferable to one-off projects.

Research on MSMEs has shown that the transaction costs associated with accessing international climate finance are generally prohibitive, and that the most effective solution has been to deliver finance through local private or public financial intermediaries (Dalberg 2015; Supporting Entrepreneurs for Environment and Development 2020; Green Climate Fund 2021). Additionally, large climate funds such as the GCF have offered insufficient support for local currency lending, the deployment of which in relatively small increments is a critical component of MSME support (Green Climate Fund 2021). This type of lending reduces the currency exchange risks and associated costs borne by MSMEs, making finance more accessible and affordable (Horrocks et al. 2025). Despite its importance, large climate funds such as the GCF have provided limited support for local currency lending, primarily because their financial products are typically denominated in major international currencies (e.g., USD). Local financial intermediaries tend to be best placed to deliver accessible and small-scale financial products in local currency.

3.1.2 Impact of climate change on MSMEs

Despite their diversity and heterogeneity, MSMEs remain highly susceptible to climate-related risks. In developing and emerging markets, such as in the Pacific, MSMEs often struggle to reach the minimum efficient scale needed for sustained economic viability, thereby constraining productivity gains. This shortfall in productivity undermines savings, investment rates, capital accumulation, the creation of decent employment, and overall competitiveness (Moody's 2021; International Labour Organisation 2022).

As climate change accelerates MSMEs must also adapt to an evolving natural environment while navigating the political and commercial ramifications of a global shift toward decarbonization, an undertaking that may be prohibitively expensive for many smaller enterprises. Challenges are especially pronounced in the informal sector, where businesses and workers lack the protections afforded by environmental and labour regulations, further reducing resilience to climate shocks. Additionally, companies that neglect to implement or communicate strategies addressing the social repercussions of transitioning to lower-carbon practices are likely to face growing scrutiny from investors and customers, magnifying the economic and political implications of climate change for MSMEs (Moody's 2021; International Labour Organisation 2022).

3.2 Rationale to engage the private sector

For the purposes of this paper, 'private sector engagement' will be defined as 'the ability of private for-profit enterprises to participate in the mobilisation, access, and use of climate finance.' Furthermore, the depth of potential private sector engagement is conceptualised to go beyond co-financing, with clear rationales for private sector actors in the design/planning, implementation, financing, and supporting climate finance initiatives.

The public sector alone will not be able to finance the massive costs of adapting to the adverse impacts of climate change. This is especially true for PSIDS that do not have significant public financial resources to address their climate and sustainable development needs (Pacific Islands Forum Secretariat 2024c). However, governments can provide an enabling environment for private investment in adaptation, such as providing access to relevant data and information, enforcement of fair regulations (Crick et al. 2016), and support for economic incentives (Stoll et al. 2021). Additionally, the promotion of a wider view of climate risk management in the private sector that supports new partnership models for costs sharing between government and businesses can further help incentivize private investment (Goldstein et al. 2019).

Globally, the private sector manages hundreds of trillions of USD in assets and many investors want to play a larger role in climate finance, including adaptation finance (Stoll et al. 2021). Mobilised private finance for climate investments thus far has flowed primarily towards mitigation investments with clear financial returns or verifiable emissions reductions, as opposed to adaptation of vulnerable countries (Roberts et al. 2021; Buchner et al. 2023). While the challenges in mobilising private sector involvement in climate adaptation are substantial (Pauw 2014), the overall rate of return on adaptation investments can be significant (Global Commission on Adaptation 2019). Previous studies have examined the challenges faced by developing economies in accessing and absorbing climate finance (Anantharajah and Setyowati 2022; Kalaidjian and Robinson 2022; Mungai et al. 2022).

Additional studies note it is very difficult to mobilise private capital for investments in climate projects in developing economies, even when large multilateral organisations (e.g., GCF) are involved due in part to strong transparency and reporting standards that reduces commercial confidentiality (Kalinowski 2024).

The increased engagement and mobilisation of private sector actors deserve attention as overall climate finance flows are far below what is needed to meet the target of the Paris Agreement (Kawabata 2019), noting Article 2 commits nations to scale up finance flows consistent with a pathway towards low greenhouse gas emission and climate-resilient development (United Nations Framework Convention on Climate Change 2015). Recent studies on private climate finance (Bowman 2017; Asikainen and Stadelmann 2018) posit that private climate finance could significantly contribute to bridging the current investment gap, and that a strong and supportive private financial sector is necessary for transitioning to low-emission development pathways (Sullivan 2014; Kawabata 2019). Additional studies note there is a demonstrated role for governments to work more closely with private sector stakeholders towards achieving both climate and economic development goals (Mycoo et al. 2022).

4 Private sector opportunities on climate action in the Pacific

Climate change will severely impact biodiversity and ecosystems, significantly impacting businesses and private sector investments worldwide including MSMEs (Intergovernmental Panel on Climate Change, Pörtner et al. 2022). Climate change exacerbated disasters, such as tropical cyclones, destroy critical infrastructure that is often owned by the private sector and disrupt employment and production, thus impacting the economy of which businesses are the foundation (Tierney 2007). Private sector opportunities are framed as potential avenues or enabling conditions in contrast to roles and contributions that are framed as observed or implementable actions.

4.1 Private sector opportunities in climate change mitigation

There is significant scope for the private sector to increase its investments and activities in climate change mitigation. More than USD 20t of investment opportunities exist for climate smart investments in emerging markets, inclusive of the Pacific, especially in green buildings and sustainable transport (International Finance Corporation 2016). Although renewables and energy efficiency markets have matured, significant investment potential remains in energy distribution, storage, and battery technologies. In contrast, sectors like cement, steel, aviation, manufacturing, agriculture, and land use face more complex challenges, as solutions are less well understood and require greater innovation (Bertzky et al. 2021).

Key examples of climate mitigation activities of MSMEs include reducing energy use by transitioning to energy efficient approaches (e.g., lighting, buildings, and refrigeration), reducing emissions by utilising renewable energy sources (e.g., solar PV panels), and improving water conservation through behavioural change towards reducing pollution and more efficient water use (Dalberg 2015).

4.1.1 Effectiveness and efficiency of private sector investments in climate mitigation

Evidence on the effectiveness and efficiency of climate change mitigation interventions in the private sector in developing economies, including the Pacific, is generally scarce and scattered across different sectors and interventions. Private sector activities in mitigation were found to most often operate within the framework of public sector led initiatives and projects, with public sector roles varying widely. In some sectors, the focus was on regulatory facilitation, while in others, active involvement included co-financing or providing direct incentives to private sector actors (e.g., tax relief). International donors were found to also contribute as facilitators and co-financers in select cases (Doswald et al. 2021a, 2021b).

Examples of private sector investment at the household and farm level include adopting alternative energy sources (e.g. solar PV panel, biodigesters) and implementing sustainable agricultural practices (e.g., agroforestry, innovative cropping systems). These mitigation interventions are often framed in terms of adaptation co-benefits and sustainable development. In contrast, private sector investment at the corporate level is more prevalent in the energy (e.g., wind, geothermal) and industrial sectors, often as investments within core business activities (e.g., installation of GHG treatment equipment and efficient industrial stoves in productive plants) coupled with engagement of specialist technical assistance (e.g., energy efficiency consulting services for feasibility and design considerations, development of environmental safeguards policies for power generation projects) (Ryan 2017). Additional examples include forest protection activities, both through direct involvement in park management and financial investments in ecosystem services via payment schemes (Sills et al. 2008; Blankespoor et al. 2014; Doswald et al. 2021a, 2021b).

4.2 Private sector opportunities in climate change adaptation and resilience

Private firms are recognising climate change adaptation as a key issue to address in their risk management strategies, and they are working to make their supply chains and production processes more resilient (Goldstein et al. 2019, IAIS and SIF, 2018; Mui 2019; Clapp et al. 2017; BlackRock 2021; Kweilin 2020). Additionally, many businesses experience technological, environmental, and reputation benefits from their response to climate change (Alam et al. 2022). Private firms are also financing and investing in projects that help others adapt, though far less research has been done in that field. Another growing category of private investors in climate adaptation are selling goods and services to support adaptation and resilience. Some studies have attempted to quantify private adaptation finance, while several others have outlined key barriers to private investment (Stenek et al. 2013; Climate Investment Funds 2016; Vivid Economics 2015). However, a better understanding is needed of how to unlock private capital and encourage private financing of national and local adaptation priorities (Tall et al. 2021).

In the Pacific, the private sector is vulnerable to all forms of hazard-induced disasters that usually cause widespread damage and losses to businesses depending on the severity of the event. Climate change is expected to exacerbate these events with increased intensities or frequencies, such as tropical cyclones, precipitation patterns, and rising ocean temperatures that have historically disrupted business development. The private sector in Pacific is, like all other segments of society in the region, is directly affected by climate impacts and are now experiencing worsening levels of loss and damage. Addressing these adverse impacts,

including action for responding to loss and damage, can take the form of private sector investment in deploying tailored early warning systems, rebuilding impacted infrastructure, and providing innovative insurance solutions. For businesses to be sustainable and successful, the adaptive capacity of the private sector to manage risks will need to be strengthened. Business models and strategies in the Pacific must be able to integrate climate change risks to build resilience and become a core part of the business operation (Pacific Islands Forum Secretariat 2024a).

While there are varying definitions of "adaptive capacity" (Siders 2019), in the context of the Pacific it can be broadly defined as the ability of a system to adjust to climate-related exposures and risks, including moderating potential damages and taking advantage of opportunities (Warrick et al. 2016; Intergovernmental Panel on Climate Change, Möller et al. 2022). At the firm level, this refers to the resources and capabilities to anticipate, absorb, and adjust to climate shocks while maintaining core functions. In practical terms this may include financial buffers, diversified inputs/markets, flexible processes, access to decision-ready climate information, and partnerships/networks that unlock resources during and after shocks (Warrick et al. 2016; Siders 2019).

4.3 Private sector roles and contributions in climate change adaptation and resilience

The contributions of private sector investment in adaptation fall into three broad categories: 1) investing in their own supply chain resilience, 2) providing climate adaptation goods and services, and 3) investing in the adaptation of others (Annica et al. 2019). Figure 1 depicts the main motivations for private sector investment in adaptation.

Climate risks increasingly threaten the continuity of economic activities, exerting disproportionately heavier burdens on low- and middle-income countries. From a private sector perspective, a growing body of evidence demonstrates that investing in climate adaptation and resilience is both essential and financially prudent (Stenek et al. 2013; Tall et al. 2021; Barrett and Chaitanya 2023; Casady et al. 2024). Early integration of resilience measures can help firms mitigate rising costs associated with climate change. Conversely, failing to incorporate adaptation and resilience considerations may lead to investment failure, prema-

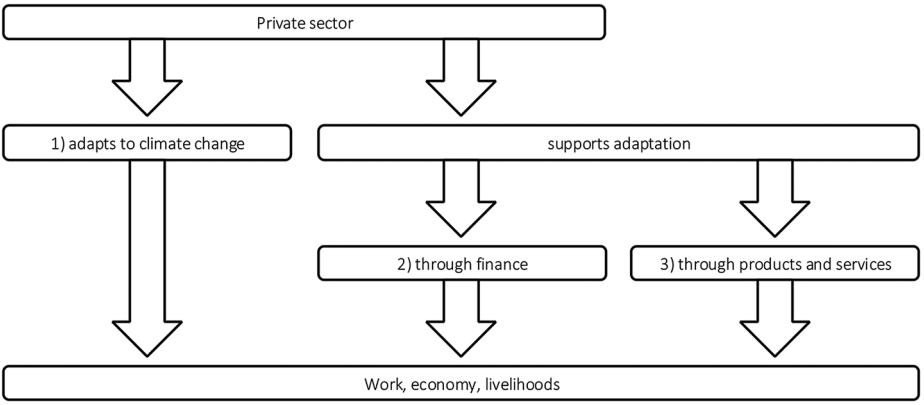

Fig. 1 Overview of three main functions of private sector in adaptation (adapted from Byiers, B., and Rosengren, A., Byiers and Rosengren 2012; Tall et al. 2021)

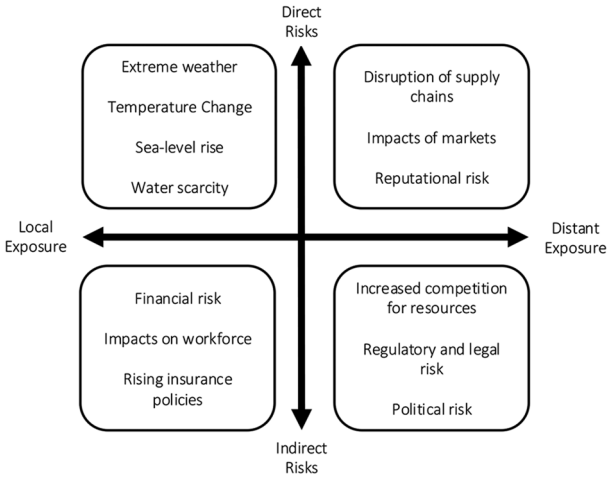

Fig. 2 Summary of direct and indirect climate risks to businesses per World Bank (adapted from Pauw 2014; Tall et al. 2021)

Table 1 Examples of private sector roles in adaptation and resilience with associated business drivers and benefits (adapted from Pauw 2014; Tall et al. 2021)

Role/Contribution	Benefits to private sector
Development and distribution of new products and services	New revenue streams; gain competitive advantage; diversity risk portfolio.
New, expanded markets for products and services	New revenue streams; increased market share; long-term viability or success of businesses.
Cost savings	Reduced raw material and operational costs; Protects profitability when margins are tight; improved insurance purchasing and lower residual losses.
Collaboration through supply chain	Competitive advantage gained through more secure and resilient supply chain; security of supply protects revenue streams.
Reputation and brand value	Market leadership; increased confidence among investors, consumers, and other stakeholders

ture asset degradation, and diminished financial returns, as well as potential loss of critical insurance coverage. Such risks are becoming increasingly apparent to investors. The United Nations Environment Programme (UNEP) has analysed the range of risks for the private sector, categorizing direct and indirect climate risks to businesses, as shown in Fig. 2 (Druce et al. 2016; Tall et al. 2021).

Beyond merely avoiding risks, adaptation also creates new investment opportunities for the private sector. Key business drivers for engaging in the climate resilience marketplace include developing new products and services that address market gaps, expanding markets for existing offerings, achieving cost savings across the entire value chain, fostering collaborations throughout supply chains, and enhancing overall reputation and brand value, as shown in Table 1.

Investment opportunities in adaptation and resilience-building activities cover multiple climate-sensitive economic sectors, inclusive of a diverse range of cost and revenue profiles that may appeal to private investors. However, initial capital requirements, potential returns, and investment time horizons can vary considerably. Private sector actors can engage in multiple stages along the value chain. Broadly, such engagement involves designing or

producing climate resilience solutions in response to market demand or regulatory directives, investing in adaptation measures when financial incentives or unacceptable risks are present, and participating in projects that both incorporate resilience features and actively enhance resilience capacity. Table 2 provides examples of adaptation investments and anticipated financial return expectations.

5 Climate finance access and the private sector in the Pacific

We reviewed the climate finance mobilised and provided internationally, and within the Pacific region. Estimates are derived from various sources, including the Organisation for Economic Cooperation and Development (OECD), International Monetary Fund (IMF), and World Bank, each utilising unique methodologies covering different time periods and based on available data.

5.1 Types of climate finance

There are various types of climate finance mechanisms and instruments relevant to PSIDS, including grants, concessional loans, guarantees, green bonds, insurance, national development banks, and national climate funds (Kalaidjian and Robinson 2022). 'Private climate finance' typically refers to capital provided by the private sector to "reduce emission, enhance greenhouse gas sinks and reduce the vulnerability of, and maintain and increase the resilience of human and ecological systems to navigate climate change impacts" (Kawabata 2019). (Table 3).

5.2 Private sector climate finance

'Private climate finance' typically refers to capital provided by the private sector to "reduce emission, enhance greenhouse gas sinks and reduce the vulnerability of, and maintain and increase the resilience of human and ecological systems to navigate climate change impacts" (Kawabata 2019). Table 4 identifies several key private sector actors relevant to the access and absorption of climate finance throughout the Pacific region. An overview of key chal-

Table 2 Key areas for private sector investors in adaptation and return expectations (adapted from Pauw 2014; Tall et al. 2021)

Private Sector Actor	Return spectrum
Real sector (corporations, private companies of all sizes)	Market-rate returns
Commercial banks	
Institutional investors	
Bilateral, multilateral, national development banks (private sector divisions)	Quasi- or blended returns
Impact investors – seeking impact + return	
Impact investors – not seeking market returns	Below market returns by design
Family offices/philanthropies/NGOs	
Bilateral, multilateral, national development banks (public sector divisions)	
Governments	

Table 3 Summary of key mechanisms and instruments relevant to access and absorption of climate finance in PSIDS (adapted from Bhandary et al. 2021; Thomas and Theokritoff 2021; Kalaidjian and Robinson 2022; Treichel et al. 2024; Owens et al. 2025)

Instrument/Mechanism	Details
Grants	Financial assistance provided without requirement of repayment to promote or directly invest in climate projects, often for adaptation in 'public goods.'
Concessional loans	Subsidized (below market rate) debt to promote or directly invest in climate projects.
Guarantees	Commitment to cover the borrower's debt obligation in the event the borrower defaults on climate projects.
Green/climate bonds	Bonds earmarked for projects with environmental and/or climate benefits
Parametric Insurance	Index-based insurance provides payouts based on a measurable condition that is related to agricultural production loss, such as drought.
National development banks	Government-backed, sponsored, or supported financial institutions that have a specific public policy mandate to promote low-carbon development in a specific country.
National climate funds	National financing vehicles designed by governments to mobilise, access, and channel climate finance investments.
Debt-for-climate swaps	Bilateral or multilateral debt being forgiven by creditors in exchange for a commitment by the debt to use outstanding debt service payments for national climate action programs.
Carbon markets	Financial mechanisms that enable the trading of carbon credits or permits, putting a price on emissions to incentivise reductions, and channel investments into low-carbon solutions.
In-Kind	Cash-equivalent contributions (e.g., goods, services), such as access to access to government land, donated equipment/assets, or volunteer human resources.

Table 4 Summary of key private sector actors relevant to access and absorption of climate finance in PSIDS (adapted from Kawabata 2019; Buchner et al. 2023; Naran et al. 2024)

Private Sector Actor	Examples in PSIDS	Roles
Industry groups	Chambers of commerce and industry	Financial assistance (various instruments) Technical assistance (including partnerships) Adaptation implementor Recipient/ beneficiary
	Local industry associations and trade groups	
Commercial financial institutions	Commercial banks, microfinance institutions	
Institutional investors	Sovereign wealth funds, insurance companies, hedge funds, pension funds	
Corporate actors	Multinational corporations (MNCs)	
Philanthropies, foundations, and non-profits	Bill and Melinda Gates Foundation, ClimateWorks Foundation	
Local service providers	Professional service firms, SMEs, technical advisors, project managers, specialists, consultants	
Community groups	Village level MSMEs, community cooperatives	
Households/individuals	Village households, community leaders	

lenges impacting private sector engagement in climate finance initiatives and projects in the Pacific region is shown in Table 5.

5.3 Climate finance flows

Globally, the overall climate finance landscape across all sources and markets has steadily increased over the last decade, estimated to have reached USD 1.46t in 2021/2022 and USD 1.5–1.6t in 2023 (Naran et al. 2024). This increase was primarily driven by a significant acceleration in mitigation finance (reaching USD 1.3t, up by USD 439b from 2019/2020), with the largest growth in the renewable energy, transportation, and infrastructure sectors. Adaptation finance reached an all-time high of USD 76b in 2021/2022, more than doubling from 2019/2020, but far short of estimated annual needs of USD 212b by 2030 for developing countries. The largest growth areas for adaptation finance were water and wastewater, and cross-sectoral activities. Private sector finance represented 54% of mitigation flows versus only 8% of adaptation flows (Naran et al. 2024). Most climate finance (61% or USD 766b) was raised as debt, of which 53% (USD 561b) was provided at market rate. Equity investments accounted for 33% (USD 422b) and grant finance accounted for 5% (USD 69b) of total climate finance flows. Unfortunately, total climate finance flows are nowhere near the estimated needs, conservatively estimated to increase steadily from USD 8.1t to USD 9t annually (Naran et al. 2024).

5.3.1 Pacific regional flows

Between 2014 and 2019 it is estimated that USD 3.3b was committed for climate investments in the Pacific region, with USD 1.5b (44%) for adaptation, USD 1b (29%) for mitigation, and USD 0.9b (27%) for cross-cutting projects with multiple focuses jointly addressing adaptation and mitigation. During this period, both bilateral (e.g., Australia, New Zealand, Japan European Union) and multilateral sources (e.g., GCF, GEF, AF, LDCF) of climate

Table 5 Summary of key challenges impacting private sector engagement in climate finance initiatives in the Pacific (adapted from Jain et al. 2022; Pacific Islands Forum Secretariat 2024b)

Key Challenge	Details
Poor enabling environment	Lack of appropriate incentives and an enabling environment to boost private sector climate proofing investments.
Information asymmetry	Lack of information on national initiatives and interaction by government with the private sector such as country programs, pipeline projects, planning and implementation.
Low private sector understanding of potential opportunities	Limited understanding by the private sector of their role and how to maximise this role to access climate change resources.
Burdensome access requirements	Burdensome requirements and fiduciary standards applied by funding agencies regardless of size, capacity or need.
Low private sector understanding of available resources and access modalities	Limited understanding by the private sector on the available funding sources and how to access them for climate change projects.
Weak 'bankable' investment pipelines	Limited capacity and ability to prepare bankable projects that contribute to mitigating the impacts of climate change and building resilience to business operations.
High private sector climate vulnerability	Losses and damages from climate impacts presents a barrier to investment and supporting implementation of climate finance initiatives.

finance have been equally important. However, the GCF committed more climate finance for PSIDS than all other major multilateral sources combined, providing 80% of adaptation funding from all multilateral sources in the region (International Monetary Fund 2021). Furthermore, between 2016 and 2020 the OECD estimates (Organisation for Economic Cooperation and Development 2022) that only 1% (USD 0.5b) of global climate finance flows reached the Pacific region.[3]

Overall, between 2003 and 2023 it is estimated that SIDS in the Pacific received the largest amount of multilateral climate finance of all SIDS at approximately USD 1.2b (43% of USD 2.7b) across 500 projects from 12 multilateral climate funds (e.g., GCF, LDCF, GEF, Pilot Program for Climate Resilience, AF, Global Climate Change Alliance, Clean Technology Fund, Forest Carbon Partnership Facility, Scaling Up Renewable Energy Program in Low Income Countries, Special Climate Change Fund, Adaptation for Smallholder Agriculture Programme, and UN-REDD Programme). The top recipient SIDS of public multilateral climate finance include four PSIDS, namely the Solomon Islands, Vanuatu, Samoa, and PNG (Watson et al. 2024).

5.4 Constraints to PSIDS accessing and absorbing climate finance

PSIDS face myriad challenges with regards to access and absorption of climate finance, including loans significantly outnumbering grants, diminishing project sizes, poor standardisation across major climate funds, overreliance on project-based finance, slow disbursement of pledged finance, as well as relatively high transaction costs. The key challenges faced by nations in the Pacific in accessing climate finance is shown in Table 6. These findings were further informed by stakeholder consultations throughout the region.

6 Results from stakeholder consultations

Drawing on 21 key informant interviews and focus group discussions across 8 PSIDS, we identified five recurring themes that shape private sector climate action in PSIDS.

6.1 Financing constraints and de-risking

Participants consistently pointed to credit risk perceptions, collateral requirements, and short loan tenors as binding constraints for MSME climate investments. Several interviewees noted that viable proposals stall because transaction costs are high relative to deal size and banks lack pipelines of bundled projects. Suggested solutions centred on partial risk guarantees/first loss tranches, concessional credit lines targeted at MSMEs, and programmatic aggregation to reach scale. Opportunities for collaboration mentioned in the key informant interviews include green credit products linked to renewable energy and climate-smart agriculture suppliers, provided cash-flow can be demonstrated and technical assistance is available for project preparation.

[3] OCED Oceania region includes 16 PICs, including Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, and Wallis and Futuna.

Table 6 Challenges with accessing climate finance in the Pacific region (adapted from Pacific Islands Forum Secretariat 2021, 2024a)

Key Challenge	Details
Loans outnumbering grants	Loans significantly outnumber grants in funding climate initiatives, exacerbating the financial burden. Over two-thirds of official climate finance comes in the form of loans, a rate much higher than the 52% average for all development aid to developing nations.
Diminishing project sizes	The trend of diminishing climate project sizes contrasts with the growing number of financiers, complicating the financial landscape and making it difficult for vulnerable countries to secure funding at necessary scales.
Poor simplified access modalities	Despite attempts aimed at simplifying processes and standardizing procedures across major funds, the impact of these measures is yet to be determined.
Overreliance on project-based approaches	Direct government funding in climate finance remains minimal, with project-based approaches dominating, risking fragmentation and circumvention of national systems. Although direct access mechanisms offer a path to enhance local control over projects, significant potential remains to amplify their impact.
Disbursement delays	Disbursements of committed climate funds lag behind other development finance, indicating project delays or cancellations.
High transaction costs	The region faces disproportionately higher transaction costs due to logistical challenges and limited scale benefits, compounded by a scarcity of local expertise.
Absorptive capacity	Challenges in absorbing greater flows of climate finance linked to small economies of scale and lack of adequate human resources.

6.2 Information asymmetry and climate information services (CIS)

Firms and lenders reported limited access to decision ready climate information, especially sector and location-specific metrics, and cost–loss framing to inform business cases. Participants also encouraged co-design with users and incorporation of local/indigenous knowledge, with chambers/associations and extension services acting as brokers. These insights reinforce the need to link climate information services outputs to NPV/payback language understood by firms and lenders.

6.3 Policy fragmentation and PPP pathways

Stakeholders described overlapping mandates, ad hoc PPP practices, and lengthy approvals/procurement as deterrents to private sector participation. Clear PPP procedures and templates, predictable tariff/fee-setting, and defined private sector seats in climate governance were proposed as near-term fixes. Examples of collaboration opportunities raised included renewable energy Purchase Power Agreements, resilient water/transport infrastructure, and nature-based solutions, contingent on streamlined processes and transparent risk allocation.

6.4 Capacity gaps in preparation and compliance

Interviewees highlighted proposal preparation, environmental and social safeguards, and reporting as persistent bottlenecks, especially for MSMEs and smaller public agencies. Suggested remedies included project preparation facilities, training-of-trainers models delivered via chambers/industry bodies, and standard toolkits for climate finance applications. Participants also noted that online consultations broadened reach across islands but some-

times limited depth, pointing to the value of follow-up clinics that translate ideas into bankable proposals.

6.5 Partnership pathways (MSMEs, informal enterprises, women-led firms)

The consultations emphasised public–private collaboration in renewable energy, climate-smart agriculture, and green infrastructure, with chambers and local financial institutions serving as intermediaries. Several participants stressed engaging informal enterprises and women-led businesses, noting barriers in registration, eligibility, and collateral. Proposed measures included tailored micro-insurance/parametric pilots and dedicated guarantee windows. Interviewees viewed programmatic approaches as better suited than one-off projects for building pipelines and enabling equitable access.

7 Recommendations for strengthening private sector engagement

This section outlines recommendations for strengthening private sector engagement in climate mitigation and adaptation activities across PSIDS. From policy reforms and enhanced access to finance to capacity building and strategic partnerships, these measures provide a roadmap for unlocking the full potential of private sector contributions. The overall aim of these recommendations is to support a paradigm shift in PSIDS towards more inclusive and effective public-private collaboration in advancing nationally and regionally driven climate action. As PSIDS are heterogeneous and have diverse business and financing environments, application of recommendations should be context appropriate and fit-for-purpose.

7.1 Cross-cutting policy recommendations

Cross-cutting recommendations that attempt to address systemic barriers to private sector engagement in both climate change mitigation and adaptation efforts are provided in Table 7. Key examples include establishing clear legal and operational definitions for both MSMEs and PPPs, expanding targeted technical support and capacity building programs to private sector stakeholders in climate-sensitive sectors, embedding private sector representation within climate finance governance and decision-making bodies, and enhancing access to tailored financial instruments and credit facilities to MSMEs to invest in low-carbon technologies and resilient practices. Each recommendation is accompanied by relevant examples in PSIDS.

7.2 Mitigation-related policy recommendations

Private sector engagement in climate mitigation across PSIDS remains limited largely due to financial barriers, policy uncertainty, and infrastructural constraints. Targeted strategies are necessary to create an enabling environment that attracts private capital and fosters innovation. The following set of recommendations in Table 8 are designed to increase private sector engagement in climate change mitigation activities across PSIDS.

Key examples include accelerating renewable energy deployment, developing sustainable transport systems, enhancing energy efficiency in critical industries, scaling nature-

Table 7 Summary of recommendations to strengthen private sector engagement in climate change action (cross-cutting) (adapted from Csaky et al. 2017; International Finance Corporation 2017; Independent Evaluation Unit 2019; Pacific Islands Forum Secretariat 2021; Asian Development Bank 2022a, 2024a; Hassan et al. 2024; stakeholder consultations)

Recommendation	Details
C1. Greater clarity on legal and operational definitions of MSMEs and PPPs	MSMEs lack a common operational definition under major climate funds and MDBs, including the GCF and World Bank. Successive reviews of the World Bank's MSME lending by the IEG have found that it is "inconsistent in defining SMEs and in applying definitions to target its support … making it more difficult to learn from experience." Additionally, all 14 PSIDS have different legal and operational definitions of what constitutes an MSME, usually derived from an enterprise's number of employees or annual turnover, but some depend on ad hoc interpretations per sector. Additionally, capturing MSMEs within the informal sector add additional challenges.
C2. Technical support for private sector actors, including MSMEs	Developing countries frequently seek technical assistance to develop project funding proposals. In this context, national governments and development banks could strategically establish project preparation facilities, financed through annual parliamentary budget allocations and blended with additional sources such as the GCF Readiness support, to strengthen the capacity of private sector entities and other key stakeholders in advancing project preparation processes.
C3. Greater capacity building for private sector actors in climate-sensitive sectors	Building the capacity of private sector actors is critical to effectively mobilising and implementing national climate finance initiatives. Strengthening these capacities through targeted training, partnerships, bespoke funding arrangements, and strategic business planning will enhance the ability to identify and integrate climate risks into investment decisions. Yet, complex technical requirements and unfamiliarity with climate finance terminology impede many countries from accessing available funding. In this context, capacity-building interventions, including peer-to-peer learning, experiential approaches, and "training of trainers" programs conducted in collaboration with international partners, can help bridge these knowledge gaps.
C4. Greater inclusion of private sector within climate finance governance and decision-making mechanisms	Private sector actors at the national and sub-national levels play a pivotal role in effectively mobilizing climate finance and should be systematically engaged in all stages of climate project planning and implementation. Such engagement must be structured to reflect local adaptation priorities and resilience needs, thereby ensuring that interventions are both contextually relevant and socially responsive. To formalize these partnerships, clear private sector engagement procedures should be enshrined in relevant legislation, articulated within targeted policies, codified through memoranda of understanding, and/or embedded in dedicated private sector climate finance strategies. These mechanisms can be operationalized through, inter alia, working groups that bring together representatives from central agencies, private sector entities, and civil society. Concurrently, continued efforts to reinforce the political, institutional, and financial frameworks are needed to advance public–private partnerships and catalyse more robust climate finance mobilization. There also remains considerable scope for improving private sector engagement with National Designated Authorities (NDAs) and Accredited Entities (AEs) of the GCF.
C5. Increased access to finance for MSMEs	MSMEs contribute significantly to employment and household incomes in the Pacific but lack access to finance. Banks in the Pacific hold larger-than-normal levels of liquidity and prefer to invest in other liquid assets such as government securities. Without access to finance, MSMEs cannot expand their production or increase employment. The IFC estimates an SME finance gap relative to the potential demand of more than USD 1.5b across Fiji (USD 1.09b), Samoa (USD 0.03b), the Solomon Islands (USD 0.17b), Tonga (USD 0.17b), and Vanuatu (USD 0.14b). Establish or expand targeted credit guarantee schemes and blended finance instruments to de-risk lending to MSMEs and incentivise financial institutions to reallocate excess liquidity toward productive sectors.

Table 7 (continued)

Recommendation	Details
C6. Strengthened policy incentives and regulatory frameworks for climate finance investments	Establishing targeted policy incentives and coherent regulatory frameworks, underpinned by strong political commitment, is essential for attracting climate finance investments. Private sector actors are generally more inclined to invest in contexts characterized by macroeconomic stability, low risk exposure, and minimal transaction costs. Under these conditions, the private sector can more effectively innovate, enhance operational efficiency, and contribute to green investment portfolios through instruments such as subsidies, tax incentives, and exemptions.
C7. Recognise and engage informal enterprises and entrepreneurs	Many PSIDS enterprises operate informally, therefore engagement strategies should reduce entry barriers while enabling climate relevant investment. Priority actions should include simplified registration and compliance for programmatic climate finance, dedicated guarantee windows and credit lines for micro and women-led firms via local financial intermediaries and chambers of commerce, micro-insurance and parametric pilots, and supplier-linked schemes to aggregate small investments into bankable projects.

based solutions (NbS), expanding access to green lending products for MSMEs, supporting low-carbon practices in agriculture and fisheries, and advancing waste-to-energy (WTE) and circular economy initiatives. These interventions could support reducing GHG emissions, enhancing energy security, and promoting sustainable economic growth.

7.3 Adaptation-related policy recommendations

The following recommendations in Table 9 are designed to increase private sector engagement in climate change adaptation, loss and damage activities across PSIDS. These recommendations aim to address existing gaps, build on the region's strengths, and incentivize new opportunities for sustainable and resilient economic growth. Each recommendation is grounded in evidence and best practices, providing actionable pathways for governments, development partners, and private sector stakeholders to work collaboratively in advancing climate resilience.

Key examples include making localized climate risk and vulnerability data available, embedding climate risks in capital investment planning undertaken by governments and their development partners, setting up coordinated institutional arrangements for adaptation planning, clarifying definitions of adaptation and resilience at the national level, strengthening adaptation relevant policies and regulations, and forming clear action plans that clearly indicate the expected role of private sector actors. Further examples include identifying and strengthening financial incentives (or reducing risks and costs) for private sector participation in adaptation initiatives (such as blended finance, credit enhancement instruments, and other targeted risk reduction or revenue boosting measures) in parallel with project preparation and structuring support to further reduce costs.

8 Conclusion

We have considered role of the private sector in advancing climate change mitigation, adaptation and loss and damage action across the Pacific. We found that the region's private sector, largely made up of micro, small, and medium-sized enterprises (MSMEs), works in climate-sensitive sectors (e.g., agriculture, fisheries, tourism) and faces significant bar-

Table 8 Summary of recommendations to strengthen private sector engagement in climate change mitigation (adapted from Csaky et al. 2017; Doswald et al. 2021a, 2021b; Pacific Islands Forum Secretariat 2021; Asian Development Bank 2024a; stakeholder consultations)

Recommendation	Details
M1. Accelerate renewable energy deployment	Governments should prioritize policies that create an enabling environment for private sector investment in (e.g., micro-grids, nano-grids) renewable energy systems (e.g., solar, wind, mini-hydro, geothermal, ocean energy). This includes implementing feed-in tariffs, providing tax incentives for renewable energy projects, and simplifying permitting and licensing procedures. Mini-grids and off-grid solar solutions are especially critical for remote islands where grid extension is not economically or technically feasible. Additionally, governments can leverage PPPs and international climate finance to co-fund renewable energy projects and reduce risks for private investors. Building private sector capacity for the installation, operation, and maintenance of renewable energy systems can help ensure sustainability. Accelerating renewable energy deployment in PSIDS not only reduces GHG emissions but also enhances energy security and economic resilience by reducing reliance on imported fossil fuels.
M2. Develop low-carbon transport systems	Transport in PSIDS is heavily reliant on fossil fuels, contributing significantly to GHG emissions and economic vulnerability due to volatile fuel prices. Governments should incentivize private sector investment in electric vehicles (EVs), including hybrids, and energy-efficient maritime transport. This includes reducing import duties on EVs, providing subsidies for electric public transport fleets, and supporting the development of EV charging infrastructure. Additionally, investments in fuel-efficient and low-emission shipping technologies are critical for inter-island transport and regional trade. Partnerships with regional and international development banks can support the financing of green transport infrastructure. Encouraging private sector participation in sustainable logistics solutions and supporting local innovation in transport technologies will further contribute to decarbonizing the transport sector across the region.
M3. Promote energy efficiency in buildings and tourism infrastructure	The tourism sector is a major contributor to the economies of many PSIDS but also a significant source of GHG emissions, primarily through energy use in accommodations and transport services. Governments should implement policies and incentives that encourage private sector investment in energy-efficient buildings and resilient tourism infrastructure. This includes providing tax credits and grants for retrofitting hotels and resorts with energy-efficient appliances, solar panels, and water-saving systems. Establishing green building codes and energy performance standards can further drive sustainable construction practices. In addition, eco-certification programs can reward tourism operators that implement sustainable practices, enhancing their market appeal. Supporting energy service companies (ESCOs) to offer performance-based energy savings solutions can also help businesses adopt energy-efficient technologies while reducing upfront costs. Scaling up energy efficiency measures could reduce lifetime GHG emissions, lower operational costs for businesses, and enhance the overall environmental sustainability of tourism operators.
M4. Scale up nature-based solutions for carbon sequestration	Mangroves, seagrasses, and tropical forests all offer significant opportunities for carbon sequestration. Governments should encourage private sector investment in NbS by creating markets for blue and green carbon credits and supporting sustainable land and coastal management projects. Establishing clear legal frameworks for carbon trading and integrating carbon market mechanisms into national climate strategies will provide certainty for investors. Partnerships between private companies, local communities, and conservation organizations can drive scalable projects that restore and enhance natural ecosystems (e.g., planting mangroves, protecting coral reefs). These projects not only sequester carbon but also provide co-benefits such as coastal protection, biodiversity conservation, and sustainable livelihoods for local communities.

Table 8 (continued)

Recommendation	Details
M5. Facilitate access to green lending products for MSMEs	Access to green lending products remains a significant barrier for MSMEs to invest in climate mitigation measures. Governments and development partners could establish green financing facilities and credit guarantee schemes to support MSMEs in adopting low-carbon technologies and sustainable practices. This could involve concessional loans (below market rate), microfinance programs, and blended finance models that lower investment risks for private sector lenders. Technical assistance and capacity-building programs should be offered to help MSMEs develop 'bankable' green business models and navigate funding application processes with commercial lenders. Digital financial solutions (e.g., mobile banking, fintech platforms) can also expand financial inclusion and support small businesses in accessing green lending products.
M6. Support climate-resilient and low-carbon fisheries and agriculture	Governments should incentivize private sector investments in climate-resilient and low-carbon agricultural and fisheries practices. This could entail supporting sustainable aquaculture, organic farming, agroforestry, and climate-smart agriculture techniques that reduce GHG emissions and enhance productivity. Providing subsidies for renewable energy-powered fishing vessels and processing facilities can further help decarbonize the fisheries sector. Market-based mechanisms (e.g., certification schemes for sustainable seafood, eco-labelled agricultural products) can incentivize sustainable practices while opening new markets for local businesses. Strengthening value chains for local products could further reduce GHG emissions and improve market access.
M7. Support waste-to-energy and circular economy initiatives	Waste management presents both a significant challenge and opportunity for private sector stakeholders regarding GHG emissions reduction. Governments should encourage private sector investments in WTE projects and circular economy models. Examples include providing incentives for businesses to adopt technologies that convert organic waste into biogas or using renewable energy to reduce methane emissions from landfills. Establishing regulatory frameworks and financial incentives for recycling, composting, and plastic waste reduction could further promote private sector innovation in sustainable waste management. PPPs can facilitate the development of recycling facilities, composting plants, and WTE systems, helping to reduce the overall environmental impact of waste and support local livelihoods. Circular economy models that prioritize waste reduction, product reuse, and sustainable packaging could also help mitigate GHG emissions.

riers to effective engagement in climate action. These challenges include limited access to climate finance, policy and regulatory gaps, capacity constraints, and market fragmentation. Despite these obstacles, we found opportunities for enhanced private sector mitigation contributions through new and additional investments into renewable energy, climate-resilient agriculture, sustainable tourism, and resilient infrastructure. We also found adaptation and loss and damage opportunities for private sector actors that provide climate-relevant tools and services, engage in infrastructure rehabilitation, deliver insurance products, and implement climate responsive actions in the communities they serve. The findings further highlight the need for strategic approaches to mobilising private capital and technical expertise to strengthen climate resilience and support sustainable economic growth across the region.

To address these challenges and leverage existing opportunities, we offer targeted recommendations for governments, development partners, and private sector stakeholders, including strengthening policy frameworks to provide clear incentives for private sector climate investment, expanding access to climate finance through simplified processes and tailored instruments for MSMEs, and investing in private sector capacity building to enhance their climate change technical and institutional capabilities. Additionally, fostering PPPS and deploying innovative financial mechanism (e.g., blended finance models, insurance prod-

Table 9 Summary of recommendations to strengthen private sector engagement in climate change adaptation (adapted from Csaky et al. 2017; Ellis and Pillay 2017; Pacific Islands Forum Secretariat 2021; Tall et al. 2021; Gannon et al. 2022; United Nations Women 2023; Robertson 2024; Hassan et al. 2024; stakeholder consultations)

Recommendation	Details
A1. Develop, tailor, and enable uptake of localised CIS	Businesses, especially MSMEs, often struggle to assess how climate change may impact their operations, supply chains, and investment opportunities. To strengthen relevance and usability, CIS should be co-developed with firms, banks, and chambers and be impact-based and sector-specific, integrating local and indigenous knowledge where appropriate. CIS outputs should translate hazards into business metrics (e.g., cost–loss, avoided downtime, simple payback/NPV) to support lending and investment decisions. Uptake can be accelerated by working through intermediaries (e.g., chambers, MFIs, extension/industry bodies), bundling CIS participation with finance or procurement eligibility, and providing decision dashboards. Investments should also strengthen national meteorological capacity, data sharing agreements, and quality assurance standards so products remain trusted and maintainable.
A2. Establish coordinated institutional frameworks	A fragmented policy and institutional landscape can hinder private sector participation in climate adaptation. Many PSIDS lack clear, coordinated frameworks that define how adaptation objectives will be achieved and what role private sector actors should explicitly play. Overlapping mandates, inconsistent policies, and unclear roles among government agencies may create further confusion and discourage private engagement. Establishing well-defined and coordinated institutional frameworks, that explicitly include the private sector, is essential for fostering a supportive environment for private sector engagement. Moreover, creating dedicated public-private coordination bodies (e.g., boards, working groups, committees) can encourage constructive dialogue and collaboration.
A3. Expand financial incentives and risk mitigation tools	Financial barriers remain a significant constraint on private sector engagement in climate adaptation. High upfront costs, uncertain returns, and perceived risks deter businesses from pursuing and implementing adaptation projects. Blended finance mechanisms, which combine public and private funding, are particularly effective in de-risking private investments. Public finance could be used to absorb potential initial losses (e.g., first-loss facility), while private capital could finance scalable projects. Credit enhancement instruments (e.g., guarantees, insurance products) can protect investors from climate-related risks. Offering tax incentives, concessional loans (below market rate), and grants for adaptation projects implemented by the private sector will further encourage their participation. Governments can also facilitate access to international climate finance by supporting businesses in navigating complex funding mechanisms (e.g., GCF, GEF, AF).
A4. Leverage public-private partnerships (PPPs)	Governments can utilise PPPs to strategically scale up adaptation investment by leveraging private sector resources and expertise through co-development and implementation of adaptation projects. This collaboration could allow for shared responsibilities and risk sharing while ensuring that projects align with national adaptation goals. To maximize the potential of PPPs, governments should create enabling legal and regulatory frameworks that facilitate meaningful private sector participation. This includes offering co-investment opportunities, streamlined procurement processes, and attractive risk sharing arrangements. PPP models can be particularly effective in sectors such as resilient infrastructure, renewable energy, water resource management, and disaster risk reduction.

Table 9 (continued)

Recommendation	Details
A5. Integrate gender-inclusive strategies	Women-owned MSMEs in PSIDS often face collateral constraints, network gaps, and care/time burdens that limit access to climate finance and project opportunities. Climate shocks can magnify these constraints, a dynamic sometimes described as a "triple vulnerability" across economic, social/care, and climate exposure dimensions. Governments and development partners should prioritize gender-inclusive strategies that support targeted financial products (e.g., micro-loans, grants) specifically designed for women-led enterprises, including MSMEs. Capacity building programs should focus on enhancing women's technical and leadership skills in climate-sensitive industries, enabling greater participation in adaptation initiatives. Policies that promote gender-responsive procurement, equal participation in decision-making processes, and access to markets are essential for creating a supportive environment. Inclusive strategies not only foster social equity but also increase the potential of private sector actors to contribute to climate resilience.
A6. Streamline regulatory and policy frameworks	Governments should conduct comprehensive policy reviews to identify and eliminate regulatory bottlenecks. Simplified permitting processes, transparent tax regimes, and harmonized standards for adaptation project review and approval can significantly increase the ease of doing business. Clear and consistent policy signals, including incentives for green investments and/or lending, will provide private sector actors with greater certainty to invest in long-term adaptation initiatives. Additionally, integrating climate adaptation considerations into national development policies and regulatory frameworks ensures that private sector investment aligns with broader resilience objectives.
A7. Promote programmatic financing over project-based approaches	Private sector engagement should transition from ad hoc and project-based funding to comprehensive programmatic financing. This approach streamlines fund delivery, reduces transaction costs, and aligns investments with national adaptation priorities (e.g., NAPs, NDCs). Pooling adaptation funds under nationally managed platforms enables the integration of private investments into larger scale and more sustainable programs. Programmatic financing also provides a more predictable funding flow, encouraging long-term private sector involvement by aligning business strategies (e.g., longer loan tenors) with national resilience goals (e.g., ten-year timeframes of NDCs).
A8. Establish national private sector adaptation investment facilities	Creating national level private sector investment facilities dedicated to adaptation and resilience projects could significantly enhance private sector participation. These facilities could pool funds from various sources, reducing individual investor risk and encouraging larger scale private investments in adaptation. By providing blended finance options and credit guarantees, these platforms can de-risk investments and improve the financial viability of adaptation projects. They could also offer technical assistance (e.g., project preparation facility) enabling private sector stakeholders to develop 'bankable' adaptation proposals.
A9. Simplify and harmonize application and reporting procedures	Donors often require complex application and reporting processes that deter private sector stakeholders (especially MSMEs) from engaging in climate adaptation projects (e.g., GCF, GEF, AF). Streamlining and harmonizing these procedures across funding mechanisms will make it easier for businesses to access and manage climate finance. Simplified application processes reduce administrative burdens, expedite fund disbursement, and allow businesses to focus on implementation rather than compliance. Additionally, harmonized reporting frameworks ensure accountability while minimizing duplication of effort, fostering greater trust and collaboration between private sector actors and funding providers.

Table 9 (continued)

Recommendation	Details
A10. Facilitate access to subnational and community-level adaptation finance	Many adaptation projects require solutions tailored to local contexts, yet private sector engagement outside the national level often has low visibility and awareness. Developing mechanisms that improve access to finance for sub-national and local actors (e.g., rural MSMEs and community-based enterprises) could strengthen grassroots adaptation efforts. Tailored financing models (e.g., microfinance for small-scale adaptation initiatives, community-based climate bonds) could incentivise and enable local MSMEs to invest in resilience measures. Involving sub-national actors ensures that adaptation projects are more context specific, socially inclusive, and environmentally sustainable. This focus could further strengthen the private sector's role in supporting bottom-up resilience building.
A11. Develop new and innovative financial instruments for adaptation	Governments and financial institutions should introduce new and innovative fit-for-purpose financial instruments tailored to the diverse needs of businesses and private sector actors. This includes climate resilience bonds, debt-for-climate swaps, specialized microfinance products, and taxes/levies to disincentivise climate-poor activities. Climate resilience bonds could be issued by governments or corporations to raise dedicated funds for adaptation projects, such as resilient infrastructure, disaster risk reduction, and sustainable agriculture. These bonds link investor returns to measurable climate adaptation outcomes, attracting socially responsible investors and impact funds focused on sustainable development. Debt-for-climate swaps could offer debt-burdened PSIDS an opportunity to redirect debt repayments toward climate adaptation initiatives. In this model, creditors forgive a portion of external debt in exchange for government commitments to invest in resilience building projects. This approach frees up fiscal space for governments to engage the private sector in co-financing large-scale adaptation solutions. Microfinance products (e.g., flexible micro-loans, concessional credit for adaptation technologies) tailored to MSMEs could incentivise community level adaptation investments in key climate-sensitive sectors and industries (e.g., climate-smart agriculture, water resource management, renewable energy systems).
A12. Enable climate risk transfer for firms and MSMEs	Effective risk transfer requires high quality hazard/exposure data and careful management of basis risk to address the potential mismatch between index triggers and actual losses. Options include piloting parametric micro-insurance for MSMEs (linked to CIS) and participation in sovereign/regional risk pools and catastrophe bonds for critical infrastructure. Early focus should be on small pilots via domestic insurers and programmatic aggregation to reach scale, with consumer protection and disclosure standards in place.

ucts, risk-sharing tools) are key for reducing investment risks and encouraging broader private sector participation. We find untapped opportunities for governments and donors to better acknowledge the private sector in the Pacific as both a source of, and important beneficiary of, climate finance as they continue to provide a range of resources, goods and services that are reducing greenhouse gas emissions, building resilience and addressing the impacts of climate change within and beyond the communities in which they operate. By implementing our strategic recommendations, the private sector has the potential to become a key driver of climate leadership and sustainable development across Pacific Small Island Developing State.

We found limited existing research on firm-level returns to adaptation (e.g., payback/NPV for MSME investments), the effectiveness of credit de-risking instruments at MSME scale, CIS uptake and cost–loss calibration in PSIDS, gender-disaggregated impacts (including care burdens and agency constraints), informal enterprise data and engagement pathways, and basis-risk measurement for parametric products and risk pools. We suggest future research should focus on co-producing metrics with domestic financial institutions

and chambers of commerce, implementing small piloting and evaluation windows, and developing shared data protocols with national meteorological services and regulators.

Supplementary information The online version contains supplementary material available at https://doi.org/10.1007/s10584-026-04147-y.

Author contributions CH conceptualized the study, conducted data collection and analysis, and wrote the original draft. PD supervised the research, contributed to methodology development, and reviewed the manuscript. CB provided regional expertise and technical review. FP contributed supported data validation and regional contextualisation. All authors reviewed and approved the final manuscript.

Funding Open Access funding enabled and organized by CAUL and its Member Institutions. This manuscript is based substantially upon findings from a research study commissioned by SPREP, which was supported by the Green Climate Fund Readiness Programme. No additional funding was received specifically for the preparation or submission of this manuscript.

Data availability The manuscript primarily references publicly available literature, with some exceptions where unpublished sources were used. Stakeholder interview notes are confidential and not publicly available, though insights drawn from these are reflected in aggregated form within the manuscript. Further information may be provided by the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate Not applicable.

Consent for publication Consent for publication was granted by the Secretariat of the Pacific Regional Environment Programme (SPREP).

Competing interests The authors declare no competing interests.

References

Adil L, Eckstein D, Kunzel V, Schafer L (2025) Climate risk index, 2025: who suffers the most from extreme weather events? Germanwatch e.V. https://www.germanwatch.org/sites/default/files/2025-02/Climate%20Risk%20Index%202025.pdf

Alam A, Du A, Rahman M, Yazdifar H, Abbasi K (2022) SME respond to climate change: evidence from developing countries. Technol Forecast Soc 185:122087. https://www.sciencedirect.com/science/article/pii/S0040162522006084?via%3Dihub

Alibhai S, Bell S, Conner G (2017) What's happening in the missing middle? Lessons from financing SMEs. World Bank. Washington, DC. https://openknowledge.worldbank.org/server/api/core/bitstreams/92e686b9-92e9-57b5-9cd2-daccf7fa8583/content

Anantharajah K, Setyowati A (2022) Beyond promises: realities of climate finance justice and energy transitions in Asia and the Pacific. Energy Res Soc Sci 89:102550. https://www.sciencedirect.com/science/article/pii/S2214629622000561

Annica C, Hausotter T, Hanzler M (2019) The roles of the private sector in climate change adaptation - an Introduction. Adelphi. https://adelphi.de/en/system/files/mediathek/bilder/EXPLAINER%20The%20roles%20of%20the%20private%20sector%20in%20climate%20change%20adaptation%20-%20adelphi.pdf

Asian Development Bank (2022a) Expanding development Bank financing of micro, small, and medium-sized enterprises in the Pacific. https://www.adb.org/sites/default/files/project-documents/51142/51142-001-tar-en.pdf

Asian Development Bank (2022b) The case for using development banks to finance micro, small, and medium-sized Enterprise finance in the Pacific. https://www.adb.org/sites/default/files/linked-documents/51142-001-ld-

Asian Development Bank (2024a) Asia-pacific climate report 2024. https://www.adb.org/sites/default/files/publication/1008086/asia-pacific-climate-report-2024.pdf

Asian Development Bank (2024b) Asia small and medium-sized enterprise monitor, 2024: designing an MSME ecosystem for resilient growth in asia and the Pacific. https://www.adb.org/sites/default/files/publication/1011576/asia-sme-monitor-2024.pdf

Asikainen A, Stadelmann M (2018) Mobilizing private finance for climate action in the global South: Nordic experiences and the way forward. Nord Work Papers 915:15. https://norden.diva-portal.org/smash/record.jsf?pid=diva2%3A1266240%26dswid=-8751

Barrett S, Chaitanya R (2023) Getting private investment in adaptation to work: effective adaptation, value, and cash flows. Global Environ Change 83:102761. https://doi.org/10.1016/j.gloenvcha.2023.102761

Bertzky M, De Roy E, Doswald N, Perez J, Prowse M, Puri J, Puche I, Torrente L, Velasco G (2021) Climate change mitigation interventions in the private sector in developing countries. An approach paper for an evidence gap map. Green climate Fund, Independent Evaluation Unit. https://ieu.greenclimate.fund/document/priv-approach-paper

Bhandary R, Gallager K, Zhang F (2021) Climate finance policy in practice: a review of the evidence. Clim Pol 21:529–545. https://doi.org/10.1080/14693062.2020.1871313

Blackrock (2021 January 26) Net zero: a fiduciary approach. Letter to Client from CEO Larry Fink, https://www.blackrock.com/corporate/investor-relations/2021-blackrock-client-letter

Blankespoor B, Dasgupta S, Wheeler D (2014) Protected areas and deforestation: new results from high resolution Panel data. Policy research working paper, No. 7091, World Bank, Washington, DC. https://documents1.worldbank.org/curated/en/330281468220167045/pdf/WPS7091.pdf

Bowman M (2017) Capitalising on the juncker Fund: mobilising private climate finance for sustainability. King's college London Dickson poon School of law legal studies research paper series 39. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3027529

Buchner B, Naran B, Padmanabhi R, Stout S, Strinati C, Wignarajah D, Miao G, Connolly J, Marini N (2023). Global Landscape of Climate Finance 2023. Climate Policy Initiative. https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2023/

Bündnis Entwicklung Hilft/IFHV (2023) WeltRisikoBericht 2023. Berlin: Bündnis Entwicklung Hilft. https://weltrisikobericht.de/wp-content/uploads/2024/01/WorldRiskReport_2023_english_online.pdf

Byiers B, Rosengren A (2012) Common or conflicting interests? Reflections on private sector (for) development agenda. Discussion paper No. 131. https://ecdpm.org/application/files/9416/5547/2321/DP-131-Conflicting-Interests-Private-Sector-Development-Agenda-2012.pdf

Casady C, Cepparulo A, Giuriato L (2024) Public-private partnerships for low-carbon, climate-resilient infrastructure: insights from the literature. J Cleaner Prod 470:143338. https://doi.org/10.1016/j.jclepro.2024.143338

Clapp C, Lund H, Aamaas B, Lannoo E (2017) Shades of climate risk: categorizing climate risk for investors. CICERO Center for International Climate Research. Oslo. https://agris.fao.org/search/en/providers/125321/records/6748e15e7625988a37215e3f

Climate Investment Funds (2016) Private sector investment in climate adaptation in developing countries: landscape, lessons learned and future opportunities. https://www.cif.org/sites/cif_enc/files/knowledge-documents/7544-wb_cif_ppcr_report-v5.pdf

Crick F, Diop M, Sow M, Diouf B, Diouf B, Muhwanga J, Dajani M (2016) Enabling private sector adaptation in developing countries and their semi-arid regions - case studies of Senegal and Kenya. Grantham research institute on climate change and the environment working paper No. 258. https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2016/12/Working-Paper-258-Crick-et-al.pdf

Csaky E, Frei-Oldenburg A, Hess U, Kuhn S, Miller C, Varangis P, Perry D (2017) Climate smart financing for rural MSMEs: enabling policy frameworks. https://documents1.worldbank.org/curated/en/609414 98850160436/pdf/P162945-06-30-2017-1498850158845.pdf

Dalberg (2015) Increasing MSME access to climate finance. https://cdkn.org/sites/default/files/files/CDKN-Dalberg-Access-to-Finance-for-MSMEs_-final-1.pdf

Doswald N, Marin I, Perez J, Prowse M, De Roy E, Torrente L, De Velasco G (2021a) Effectiveness of climate change mitigation interventions in the private sector in developing countries - a synthetic review. Green Climate Fund, Independent Evaluation Unit. https://ieu.greenclimate.fund/document/psim-synthetic-review

Doswald N, Marin I, Perez J, Prowse M, De Roy E, Torrente L, De Velasco G (2021b) Evidence gap map and intervention heat map of climate change mitigation interventions in the private sector in developing countries. Green Climate Fund, Independent Evaluation Unit. https://ieu.greenclimate.fund/document/psim-egm

Druce L, Moslener U, Gruening C, Pauw P, Connel R (2016) Demystifying adaptation finance for the private sector. United Nations Environment Programme. https://www.unepfi.org/wordpress/wp-content/uploads/2016/11/DEMYSITIFYING-ADAPTATION-FINANCE-FOR-THE-PRIVATE-SECTOR-AW-FULL-REPORT.pdf

Ellis C, Pillay K (2017) Understanding 'bankability' and unlocking climate finance for climate compatible development. CDKN working paper. https://cdkn.org/sites/default/files/files/CDKN_unlocking-climate-finance.pdf

Fayolle V, Fouvet C, Soundarajan V, Nath V, Acharya S, Gupta N, Petrarulo L (2019) Engaging the private sector in financing adaptation to climate change: learning from practice. Action on climate today, learning paper, February. https://weadapt.org/wp-content/uploads/2023/05/act-private-sector-paper_final_web-res.pdf

Gannon K, Castellano E, Eskander S, Agol D, Diop M, Conway D, Sprout E (2022) The triple differential vulnerability of female entrepreneurs to climate risk in sub-saharan Africa: gendered barriers and enablers to private sector adaptation. WIREs Clim Change 13(5):e793. https://doi.org/10.1002/wcc.793

Global Commission on Adaptation (2019) Adapt now: a global call for leadership on climate resilience. https://gca.org/reports/adapt-now-a-global-call-for-leadership-on-climate-resilience/

Goldstein A, Turner WR, Gladstone J, Hole DG (2019) The private sector's climate change risk and adaptation blind spots. Nat Clim Change 9:18–25. https://doi.org/10.1038/s41558-018-0340-5

Green Climate Fund. (2021) Independent evaluation of the green climate fund's approach to the private sector. https://ieu.greenclimate.fund/sites/default/files/document/230330-priv-final-report-vol-i-top-web-isbn.pdf

Hanna E, McIver L (2017) Small Island States - canaries in the coal Mine of climate change and Health. In: Climate change and global health. CABI, UK, pp 181–191. https://www.researchgate.net/publication/276848876_Small_Island_States_-Canaries_in_the_Coalmine_of_Climate_Change_and_Health

Hassan A, Regmi B, Steinbach D, Acuda A, Holland E, Johnstone K, Gul M, Patel S (2024) Good practices in accessing and delivering adaptation finance to support small Island developing States (SIDS) and Least developed countries (LDCs). Evidence report. https://www.iied.org/sites/default/files/pdfs/2024-10/22561g.pdf

Heinrich-Böll-Stiftung. (2022) Green Climate Fund: Private Sector Finance In Focus. Briefing, 2: Micro-, Small-, And Medium-Sized Enterprises (*MSMEs*). https://us.boell.org/sites/default/files/2022-03/hbs%20Washington_GCF-PrivateSector2_MSME%20briefing_final.pdf

Horrocks P, Marshall C, Thomas C, Venon D, Portmann D, Okuwobi W (2025) Unlocking local currency financing in emerging markets and developing economies: what role can donors, development finance institutions and multilateral development banks play? OECD development Co-operation working papers, No. 117, OECD Publishing, Paris. https://doi.org/10.1787/bc84fde7-en

Independent Evaluation Group (2019) World Bank group support for Small and medium enterprises: a synthesis of evaluative findings. https://ieg.worldbankgroup.org/sites/default/files/Data/Evaluation/files/SME_Synthesis.pdf

International Finance Corporation (2016) Climate investment opportunities in emerging markets, an IFC analysis. https://documents1.worldbank.org/curated/en/602971510740408248/pdf/121277-WP-IFC-Climate-Investment-Opportunity-Report-Dec-PUBLIC.pdf. Washington, DC

International Finance Corporation (2017) MSME finance gap: assessment of the shortfalls and opportunities in financing micro, small and medium enterprises in emerging markets. https://documents.worldbank.org/pt/publication/documents-reports/documentdetail/653831510568517947/msme-finance-gap-assessment-of-the-shortfalls-and-opportunities-in-financing-micro-small-and-medium-enterprises-in-emerging-markets

International Labour Organisation (2002) Decent work and the informal economy - report. Presented Gener Discussion Int Labour Conf VI. https://webapps.ilo.org/public/english/standards/relm/ilc/ilc90/pdf/rep-vi.pdf

International Labour Organisation (2017) A study on the future of work in the Pacific. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@asia/@ro-bangkok/@ilo-suva/documents/publication/wcms_553880.pdf

International Labour Organisation (2022) How MSMEs Can contribute to and benefit from a just transition. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/%40ed_emp/%40emp_ent/documents/publication/wcms_858855.pdf

International Monetary Fund (2021) Unlocking access to climate finance for Pacific Island countries. https://www.elibrary.imf.org/view/journals/087/2021/020/article-A001-en.xml

Jain D, Chda A, Pathak R, Jha R, Russell S (2022) Climate risk insurance in Pacific small Island developing States: possibilities, challenges, and vulnerabilities-a comprehensive review. Mitig Adapt Strateg Glob Change 27:26. https://doi.org/10.1007/s11027-022-10002-z

Kalaidjian E, Robinson S (2022) Reviewing the nature and pitfalls of multilateral adaptation finance for small island developing states. Clim Risk Manag 36:100432. https://doi.org/10.1016/j.crm.2022.100432

Kalinowski T (2024) The green climate Fund and private sector climate finance in the Global South. Clim Pol 24(3):281–296. https://doi.org/10.1080/14693062.2023.2276857

Kawabata T (2019) What are the determinants for financial institutions to mobilise climate finance? J Educ Chang Sustain Finance Invest 9(4):263–281. https://doi.org/10.1080/20430795.2019.1611148

Kweilin E (2020) Climate risks: what businesses should do about it. Forbes. https://www.forbes.com/sites/kweilinellingrud/2020/02/25/climate-risk-what-businesses-should-do-about-it/

Intergovernmental Panel on Climate Change [Möller V, van Diemen R, Matthews JBR, Méndez C, Semenov S, Fuglestvedt AJS, Reisinger (eds.)]. In: Pörtner H-O, Roberts DC, Tignor M, Poloczanska ES, Mintenbeck K, Alegría A, Craig M, Langsdorf S, Löschke S, Möller V, Okem B. A (2022).: Annex II: Glossary [Climate Change: Impacts, adaptation and Vulnerability. Contribution of working group II to the sixth assessment report of the intergovernmental panel on climate change. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp 2897–2930. Rama (eds.). https://doi.org/10.1017/9781009325844.029

Intergovernmental Panel on Climate Change [Pörtner H-O, Roberts DC, Tignor M, Poloczanska ES, Mintenbeck K, Alegría A, Craig M, Langsdorf S, Löschke S, Möller A. Okem V, and B. Rama (eds.) (2022) Climate change, 2022: impacts, adaptation, and Vulnerability. Contribution of Working group II to the Sixth Assessment report of the Intergovernmental Panel on climate change. Cambridge University Press. Cambridge University Press, Cambridge, UK and New York, NY, USA. https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_FullReport.pdf

InternationalAssociation of Insurance Supervisors and Sustainable Insurance Forum (2018) Issue Paper on Climate Change Risks to the Insurance Sector. https://content.naic.org/sites/default/files/inline-files/cmte_c_climate_related_iais_sif_issues_ppr.pdf

Montreal Group (2018) SME-Focused development banks: 5 key missions in a Time of change. https://themontrealgroup.org/wp-content/uploads/2023/07/7_envsme-focused-development-banks-5-key-missions-in-a-time-of-change-2.pdf

Moody's.(2021) Rising focus on just transition will raise risks for most exposed companies. https://assets.website-files.com/5df9172583d7eec04960799a/61b1ecee7929380a0fdba25b_BX10329_MCO-ESG%20Solutions_Just%20Transition-DEC2021.pdf

Mui C (2019) PG & amp;E is just the first of many climate change bankruptcies. Forbes. https://www.forbes.com/sites/chunkamui/2019/01/24/pge-is-just-the-first-of-many-climate-change-bankruptcies/#3aec8c9b7e5f

Mungai E, Ndiritu S, Da Silva I (2022) Unlocking climate finance potential and policy barriers - a case study of renewable energy and energy efficiency in Sub-Saharan Africa. Resour Environ Sustain 7. https://doi.org/10.1016/j.resenv.2021.100043

Mycoo M, Wairiu M, Campbell D, Duvat V, Golbuu Y, Maharaj S, Nalau J, Nunn P, Pinnegar J, Warrick O (2022) Small Islands. In: Climate change: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp 2043–2121. https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter15.pdf

Naran B, Buchner B, Price M, Stout S, Taylor M, Zabeida D (2024) Global landscape of climate finance, 2024: insights for COP29. Climate Policy Institute. https://www.climatepolicyinitiative.org/wp-content/uploads/2024/10/Global-Landscape-of-Climate-Finance-2024.pdf

Notre Dame Global Adaptation Initiative (2024) Country index rankings. https://gain.nd.edu/our-work/country-index/rankings/

Organisation for Economic Cooperation and Development (2022) Aggregate trends of climate finance provided and mobilised by developed countries in 2013-2020. https://www.oecd.org/finance/aggregate-trends-of-climate-finance-provided-and-mobilised-by-developed-countries-in-2013-2020-d28f963c-en.htm

Owens K, Carter G, Park S, Viney G (2025) Bridging the adaptation-finance gap: pathways for the green climate fund in the Pacific. Earth Syst Gov 24:100247. https://doi.org/10.1016/j.esg.2025.100247

Pacific Community (2019) Regional synthesis report of the pacific climate change and disaster risk finance assessments. https://climatefinance.gem.spc.int/sites/default/files/inline-files/PCCFAF%20Synthesis%20Report_2019_Web.pdf

Pacific Islands Forum Secretariat (2021) Policy Brief: opportunities for private sector engagement in climate change action in the Pacific. https://library.sprep.org/sites/default/files/2023-06/2021-Policy-Brief.pdf

Pacific Islands Forum Secretariat (2024a) Forum economic ministers meeting, information paper, 4: Private sector development, Annex, 1: pacific regional private sector Strategy (2024-2028) Concept note. https://forumsec.org/sites/default/files/2024-09/Regional%20Private%20Sector%20Development%20Strategy.pdf

Pacific Islands Forum Secretariat (2024b) Review of national climate change policies in the Pacific for consideration to include the private sector - final report. Unpublished. https://docs.google.com/document/d/1doKjpPDlJPdEU-9rYyIcCNugWSZ_L3R1/edit?usp=sharing%26ouid=112877396532281604778%26rtpof=true%26sd=true

Pacific Islands Forum Secretariat (2024c) Technical assessment of climate finance in Pacific Island Countries, annex to the Pacific climate finance mobilisation and access strategy 2024–2030 - draft V.0. https://docs.google.com/document/d/1mbX10HS6So8igxefOyv13fe0VwLgLugN/edit?usp=sharing%26ouid=112877396532281604778rtpof=truesd=true

Pacific Islands Forum (2018) Boe declaration on regional security. https://www.forumsec.org/2018/09/05/boe-declaration-on-regional-security/

Pauw WP (2014) Not a panacea: private-sector engagement in adaptation and adaptation finance in developing countries. Clim Pol 15(5):583–603. https://doi.org/10.1080/14693062.2014.953906

Roberts J, Weikmans R, Robinson S, Ciplet D (2021) Rebooting a failed promise of climate finance. Nat Clim Change 11:180–182. https://doi.org/10.1038/s41558-021-00990-2

Robertson M (2024) The New collective quantified goal on climate finance and its access features: operationalising 'enhanced access' to climate finance. ODI working paper, ODI, London. https://media.odi.org/documents/The_New_Collective_Quantified_Goal_and_its_access_features.pdf

Ryan N (2017) Is there an energy-efficiency gap? Experimental evidence from Indian manufacturing plants. PEDL Research papers. Private Enterprise development in low-Income countries (PEDL). https://assets.publishing.service.gov.uk/media/5a0425eae5274a0ee5a1f15f/Ryan_Is_There_an_Energy-Efficiency_Gap.pdf

Samuwai J (2021) Understanding the climate finance landscape and how to scale it up in pacific small island developing states. https://repository.unescap.org/bitstream/handle/20.500.12870/4045/ESCAP-2021-WP-Undersanding-the-climate-finance.pdf?sequence=1%26isAllowed=y

Samuwai J, Hills J (2018) Assessing climate finance Readiness in the Asia-Pacific region. Sustainability 10(4):1192. https://www.mdpi.com/2071-1050/10/4/1192

Siders AR (2019) Adaptive capacity to climate change: a synthesis of concepts, methods, and findings in a fragmented field. WIREs Clim Change 10(3):e573. https://doi.org/10.1002/wcc.573

Sills E, Arriagada R, Ferraro P, Pattanayak S, Carrasco L, Ortiz E, Cordero S, Caldwell K, Andam K (2008) Impact of Costa Rica's program of payments for environmental services on land use. Payments for environmental services (PES) learning paper, World Bank, Washington, DC. https://documents1.worldbank.org/curated/en/600221468032653414/pdf/862790NWP0PESL00Box385172B00PUBLIC0.pdf

Sirimaneetham V (2022) Ensuring public debt sustainability in the Pacific small Island developing States. MPFD Policy Brief, No. 125. UNESCAP, Bangkok. https://repository.unescap.org/handle/20.500.12870/5216

Stenek V, Amado J, Greenall D (2013) Enabling Environment for private sector adaptation, an index assessment framework. World Bank Group, Washington, DC. https://www.ifc.org/content/dam/ifc/doc/mgrt/Enabling-Environment-for-Private-Sector-Adaptation-Stenek-Amado-Greenall.pdf

Stoll PP, Pauw WP, Tohme F, Gruning C (2021) Mobilizing private adaptation finance: lessons learned from the green climate Fund. Climatic Change 167:45. https://link.springer.com/article/10.1007/s10584-021-03190-1

Sullivan R (2014) Climate change: implications for investors and financial institutions. University of Cambridge, Cambridge, UK. https://www.cisl.cam.ac.uk/business-action/low-carbon-transformation/ipcc-climate-science-business-briefings/finance-and-investment

Supporting Entrepreneurs for Environment and Development (2020) Translating climate finance into climate action on the ground level: leveraging the potential of small- and medium-sized enterprises (SMEs). https://seed.uno/system/files/2024-05/seedclimatefinanceforsmesreport.pdf

Tall A, Lynagh S, Vecchi C, Bardouille P, Pino F, Shabahat E, Stenek V, Stewart F, Power S, Paladines C, Neves P, Kerr L (2021) Enabling private investment in climate adaptation and resilience: current status, barriers to investment and blueprint for action. https://documents1.worldbank.org/curated/en/566041614722486484/pdf/Enabling-Private-Investment-in-Climate-Adaptation-and-Resilience-Current-Status-Barriers-to-Investment-and-Blueprint-for-Action.pdf

Thomas A, Theokritoff E (2021) Debt-for-climate swaps for small islands. Nat Clim Change 11:889–893. https://www.nature.com/articles/s41558-021-01194-4

Tierney K (2007) Businesses and disasters: vulnerability, impacts, and recovery. Handbook of disaster Research. Handbooks of sociology and social research, 275–296. Springer, New York, NY. https://www.semanticscholar.org/paper/Businesses-and-Disasters%3A-Vulnerability%2C-Impacts%2C-Tierney/6fb079bf1e495cb62609b3dc23d99fb082225b8b

Treichel P, Robertson M, Wilkinson E, Corbett J (2024) Scale and access to the green climate fund: big challenges for small island developing states. Global Environ Change 89:102943. https://doi.org/10.1016/j.gloenvcha.2024.102943

United Nations Economic and Social Commission for Asia and the Pacific (2021) Workshop on innovative climate financing instruments: supporting post covid-19 pandemic recovery in Asia Pacific Small Island Developing States. http://www.unescap.org/events/2021/workshop-innovative-climate-financing-instruments-supporting-post-covid-19-pandemic

United Nations Framework Convention on Climate Change (2015) Paris agreement. https://unfccc.int/sites/default/files/english_paris_agreement.pdf

United Nations Women (2023) Working paper - the climate-care nexus: addressing the linkages between climate change and women's and girls' unpaid care, domestic and communal work. https://www.unwomen.org/sites/default/files/2023-11/working-paper-the-climate-care-nexus-en.pdf

Vivid Economics (2015) Building an evidence base on private sector engagement in financing climate change adaptation - final report. European Bank for Reconstruction and Development. http://www.ebrd.com/documents/climate-finance/get-mdb.pdf

Warrick O, Aalbersberg W, Dumaru P, McNaught R, Teperman K (2016) The 'Pacific adaptive capacity analysis Framework': guiding the assessment of adaptative capacity in Pacific Island communities. Reg Environ Change 17(4):1039–1051. https://doi.org/10.1007/s10113-016-1036-x

Watson C, Schalatek L, Evequoz A (2024) Climate funds update. Climate finance regional briefing: small island developing states. https://climatefundsupdate.org/wp-content/uploads/2024/04/CFF12-2024-ENG-SIDS-DIGITAL.pdf

Weatherill CK (2022) Sinking paradise? Climate change vulnerability and Pacific Island extinction narratives. Geoforum 145:103566. https://doi.org/10.1016/j.geoforum.2022.04.011

Wilkinson E, Panwar V, Pettinotti L, Cao Y, Corbett J, Bouhia R (2023) A fair share of resilience finance for small Island developing States: closing the gap between vulnerability and allocation. Overseas Development Institute

World Bank (2017) Pacific possible, long-term economic opportunities and challenges for pacific Island countries. https://openknowledge.worldbank.org/server/api/core/bitstreams/c6f92324-744b-5ee2-b09c-190d9828cc52/content

Authors and Affiliations

Corey Huber[1,2] · Paul Dargusch[1] · Christopher Bartlett[3] · Fred Patison[4]

✉ Corey Huber
corey.huber@monash.edu

Paul Dargusch
paul.dargusch@monash.edu

Christopher Bartlett
VanuatuClimateChange@gmail.com

Fred Patison
fredp@sprep.org

[1] Pacific Action for Climate Transitions (PACT) Centre, Monash University, Melbourne, Australia

[2] Pacific Consulting Limited, Port Vila, Vanuatu

[3] Ministry of Climate Change, Government of Vanuatu, Port Vila, Vanuatu

[4] Secretariat of the Pacific Regional Environment Programme (SPREP), Apia, Samoa