CLEAN HELPDESK
Climate, Environment and Nature

Mapping of climate finance instruments and potential for use in the education sector

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ABOUT THIS REPORT

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ABOUT CLEAN

The Climate, Environment, and Nature (CLEAN) Helpdesk is a tailored query helpdesk that offers support on climate, environment and nature mainstreaming as well as providing support on Paris Alignment and nature proofing compliance.

The CLEAN Helpdesk aims to support the United Kingdom government's delivery of meaningful contributions to build resilience to current and future climate impacts, halt and reverse global nature loss, and halve global emissions.

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Executive Summary

This paper explores various financing instruments that can channel climate and disaster risk finance into the education sector. It examines instruments such as grants, carbon credits, bonds, parametric insurance, results-based finance frameworks and debt swaps. It reviews case studies for the application of these instruments in education and finds that each of these instruments presents unique opportunities and challenges for channelling climate finance into education.

The review reveals four entry points for the application of climate finance in education:

(i) climate change mitigation, adaptation and resilience interventions targeted at the education sector;

(ii) climate change mitigation and adaptation projects not targeted at the education sector that have secondary benefits or co-benefits for education;

(iii) interventions in the education sector with climate benefits; and

(iv) education continuity during emergencies and crises.

The review also finds that the application of climate finance in education needs to consider the following aspects:

- *Clear causal links*: Establishing clear causal links between educational interventions or their outcomes and climate change mitigation, adaptation, or resilience is necessary for securing climate finance.
- *Importance of evidence*: Strong evidence linking education and climate change is essential for channelling finance into education. Currently, evidence remains weak or unproven in some cases.

- *Context and intervention*: The applicability and feasibility of financing instruments vary by context and type of intervention in the education sector.
- *Raising and deploying capital*: Some financing instruments are suitable for raising capital, while others are limited to deploying capital. Strategies for raising capital are necessary for large-scale application.
    - *Enabling environment:* Clear climate-relevant policy, regulatory frameworks, and education sector reforms will determine the opportunities for using climate finance for education in the medium to long term.
    - *Case-by-case scoping*: Instruments differ in characteristics, entry points, targeted outcomes and requirements. Scalability and replicability need case-specific consideration.

Scoping opportunities for the use of climate finance in education will also need to consider the additionality of climate finance for education interventions. In these cases, the counterfactual for climate-related benefits may be hard to prove, and climate finance is already constrained and insufficient. Other aspects to consider are the objectives, challenges, and rationale for using climate finance in the education sector. Finally, the

reasons for mobilising private sector climate finance for education-, as distinct from development finance may need further deliberation. Programme fundraisers will need to be aware of the types of intervention that make sense to the private sector.

The paper concludes by suggesting questions for future action in education, encouraging education professionals to consider:

- What challenges in the education sector can climate finance address?
- Which instruments offer potential for delivering climate finance at speed and scale for education?
    - How can the education sector scope opportunities for further application of the instruments, ensuring that the relationship between educational investment and climate benefits is clear?
    - What scale can be achieved in education for climate change mitigation and adaptation interventions that have co-benefits for education?
    - What metrics and data collection techniques are needed to evidence education co-benefits as a result of climate change mitigation and adaptation interventions?

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Acronyms

BRACE	Building the Climate Resilience of Children and Communities through the Education Sector
Cat-DDO	Catastrophe Deferred Drawdown Option
CCI	Child Cyclone Index
CREST	Climate Resilient Education Systems Trial
CTCN	Climate Technology Centre and Network
C2D	Contrat de Désendettement et Développement or Contracts for Debt Relief and Development
DFC	US Development Finance Corporation
DFCS	Debt-for-Climate Swaps
DIB	Development Impact Bond
DRF	Disaster Risk Finance
DRFI	Disaster Risk Finance Instruments
DRR	Disaster Risk Reduction
EIB	Environmental Impact Bonds
EOF	Education Outcomes Fund
FCDO	Foreign, Commonwealth and Development Office
GCF	Green Climate Fund
GEDSI	Gender Equality, Disability and Social Inclusion
GHG	Greenhouse Gas
GOP	Government of the Philippines
GPE	Global Partnership for Education
IBRD	International Bank for Reconstruction and Development
IDB	Inter-American Development Bank
INGO	International non-government organisation
IRC	International Rescue Committee
ISA	Income Share Agreement
NTU	Singapore Nanyang Technological University
NUS	National University of Singapore
QEI	Quality Education India
RBF	Results-Based Finance
RBCF	Results-Based Climate Finance
SDG	Sustainable Development Goal
SIP	Sustainable Infrastructure Program
SRP	Sovereign Risk Pools
TNC	The Nature Conservancy
TTI	UNICEF's Today & Tomorrow Initiative
UNFCCC	United Nations Framework Convention on Climate Change
VCC	Verified Carbon Credit
VCM	Voluntary Carbon Market

Foreword

Why Education and Climate Must Align

The climate crisis is already disrupting education systems around the world, with impacts being felt by millions of children. Floods, droughts, wildfires, tropical storms, and extreme heat are damaging school infrastructure and transportation, making it more difficult for children to attend school and affecting their ability to learn even when in school. In many cases, children are too hungry, thirsty, or overheated to concentrate, and teachers are similarly exposed. Climate stressors are weakening the enabling factors for children to access quality education, reducing household income, driving widespread displacement, and increasing poverty and acute malnutrition rates. Adaptations and maladaptations that negatively impact children's education and wellbeing are commonplace. Schools are regularly used as emergency shelters during crises, households are forced to migrate for better livelihood opportunities, and families sometimes resort to early marriage and child labour at the expense of education. These impacts affect vulnerable children in low- and middle-income countries most, where household resilience, adaptive capacity and fiscal and operational preparedness is weak.

With unique physiological and cognitive vulnerabilities, children are among the most vulnerable groups to the effects of climate change and environmental degradation.[1] Despite this, only 2.4% of climate finance can be classified as supporting projects incorporating child-responsive activities,[2] and an even smaller share is directed specifically to education. Private sector contributions are harder to track but are likely to be minimal; unfortunately, examples of such financing in education are few and far between. This is a missed opportunity. More attention, climate action and finance should go towards meeting the unique and cross-sectoral needs of children and young people, including and especially through education.

Education has the potential to build substantial climate resilience and equip future generations with the knowledge and skills to respond to climate challenges. Education has clear and well proven returns for individual and household income and LMIC growth, all of which are key determinants of climate resilience. More directly, there is evidence that education can improve disaster risk awareness,[3] climate awareness among individuals and their families, and climate-resilient adaptive behaviour in sectors such as agriculture.[4] This positive relationship between education and climate change is increasingly recognised internationally. However, there is not enough research, evidence, or innovation to realise the climate co-benefits from education or to maximise the eligibility of education investment for climate finance.

[1] Marin, Schwarz, and Sabarwal. 2024; Nordstrom and Cotton, 2020.
[2] UNICEF, 2023.
[3] Muttarak and Lutz. 2014.
[4] Deressa et al., 2009; Hisali et al., 2011; Khan et al, 2020.

This Education & Climate Finance collection, commissioned by FCDO from the CLEAN helpdesk, sheds light on how and where the education sector can access climate co-finance for improving the resilience and adaptation of education and delivering better climate outcomes through education. With more high-quality co-financing between the education and climate sectors, we have an opportunity to protect children's education and to contribute meaningfully to climate adaptation and mitigation.

FCDO's commitment

In our 2022 Position Paper, the Foreign, Commonwealth & Development Office (FCDO) committed to better understanding education's contributions to the climate agenda and how this could be better reflected in climate and disaster risk finance. Since then, we have worked with partners to advance this agenda:

- **BRACE**: As a board member of the Global Partnership for Education (GPE), FCDO supports the *Building the Climate Resilience of Children and Communities through the Education Sector* (BRACE) initiative. Co-financed by GPE and the Green Climate Fund (GCF), BRACE is supporting South Sudan, Cambodia, and Tonga to strengthen education system resilience including through climate finance.
- **CREST**: FCDO is funding the *Climate Resilient Education Systems Trial* (CREST) in partnership with the International Rescue Committee (IRC). This is the first pilot to use parametric insurance in education. The project explores how innovative disaster risk financing can protect learning during climate shocks.

The Challenge

Through this work with partners, we have identified two key challenges:

1. **Making the case for education**: The education sector needs stronger evidence on how and where education investment and delivery contribute to climate outcomes – resilience, adaptation, and mitigation. Without clear methodologies, data and evidence, it is difficult to meet the eligibility criteria of climate financers and to ensure that we are optimising climate outcomes through education investment.
2. **Understanding the opportunities**: There is a wide range of climate finance mechanisms – public, private, and disaster risk finance – but gaps in capability, knowledge and understanding mean that opportunities for more and better use of climate finance are often missed, particularly in sectors such as education, which have low baseline capability and knowledge of climate mechanisms.

About this collection

This mini collection of papers on the climate–education nexus includes an introduction and two think-pieces that begin to address these challenges. Aimed at anyone interested in better understanding the opportunities and risks for climate finance in the education sector, it encompasses:

- **Introduction**: This sets out key principles and information on climate and disaster risk finance relevant to the education sector, to help frame the think-pieces that follow.
- **Paper 1**: *Education pathways to climate outcomes and their potential for climate finance* by Christina Kwauk explores how education contributes to climate outcomes. It identifies four key pathways, from climate-smart school environments to foundational skills, assessing which are already eligible for climate finance and which need further evidence (including data and methodology development).
- **Paper 2**: *Mapping of climate finance instruments and potential for use in the education sector* by Manisha Gulati maps the climate finance landscape and highlights mechanisms that could be a good fit for education. It draws on case studies and expert insights to identify risks, opportunities, and next steps.

Together, these papers ask: 'How can we build better links between climate finance and education?' The answer lies in strengthening the evidence base, improving knowledge and capability, and exploring new funding models.

Looking Forward

Progress so far has been driven by collaboration. FCDO is grateful to our partners, GPE, Save the Children, IRC, UNICEF, and others, for their leadership and innovation. We hope this collection will spark new ideas, partnerships, and action.

FCDO remains committed to this agenda. We will continue to use our technical, political, and financial resources to help forge connections between the education sector and climate finance.

1. Introduction

This paper explores financing instruments that offer the potential to channel climate and disaster risk finance (DRF) into the education sector. It uses case studies to identify instruments and explores the associated challenges and opportunities to understand the potential for replication and expansion. It complements a parallel paper on pathways from education activities to climate outcomes, examining which climate finance instruments are most suitable for use in the education sector. The paper does not aim to be exhaustive on the subject or to explain the use of each instrument. The intention is to help education professionals understand the existing applicability of climate finance instruments in the education sector, to enable them to scope opportunities for further application, and to understand the wider considerations for leveraging climate finance in education.

The paper starts by detailing the methodology used. It then provides an overview of the climate finance landscape. Next, it outlines various applications of climate finance in the education sector (existing and hypothetical), discussing options for replication and scalability. Finally, it summarises the findings and suggests further avenues for exploration that might enhance opportunities to channel climate finance into education.

This paper was developed for the CLEAN Helpdesk. Based on the requirement of the CLEAN Helpdesk for all deliverables to be 'gender equality, disability and social inclusion (GEDSI)-sensitive',[5] the paper includes analysis of GEDSI aspects where possible, although this is a nascent area in which little evidence is available. As the paper is related to education, many of the findings concern finance that is already channelled towards children and youth.

[5] The CLEAN Helpdesk defines 'GEDSI-sensitive' as interventions / deliverables which include the assessment of and action to meet the practical needs and vulnerabilities of marginalised groups, using an inclusive approach to ensure everyone's voice is heard.

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2. Approach & Methodology

The study is based on desktop research and interviews with experts (see Annex 1). The approach adopted in this study is as follows:

- The first step was a review of mechanisms and instruments used to channel climate finance and DRF in response to natural disasters and climate risks. The emphasis was on instruments that enable access to resources from the private sector (financial institutions, private investors, institutional investors such as pension funds, impact investors, foundations, and philanthropists).
- The second step was to identify case studies that demonstrate the application of these instruments in education while assessing their scalability and replicability through expert interviews.
- The third step was to explore instruments with precedence for directing traditional development finance to education. The objective was to explore the potential for using these instruments to allocate climate finance to education. Again, expert interviews were used to explore the scope for scaling up or replication and key considerations for doing so.
- The fourth step was to identify other models for raising or deploying private capital for education that may have potential. The case studies were discussed and filtered for relevance with inputs from FCDO.

The paper synthesises the findings of the above and makes recommendations for education experts who are looking at entry points for accessing climate finance in the education sector.


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3. Overview of Climate and Disaster Risk Finance

3.1 Climate finance channels and instruments

There is no universal internationally agreed-upon definition of climate finance. Box 1 outlines some leading definitions. Climate finance is a multifaceted concept that is sometimes conflated with the related and overlapping concepts of green finance, sustainable finance, and low-carbon finance.[6] For the purposes of this paper, 'climate finance' refers to finance intended to reduce emissions, reduce vulnerability to negative climate change impacts, or maintain/increase resilience to negative climate change impacts.

Box 1. Definitions of climate finance

- World Bank: Climate finance is financing provided by public or private entities for activities that, in whole or in part, mitigate carbon emissions or support adaptation and resilience to climate change.[7]
- UNFCCC: Climate finance refers to local, national or transnational financing – drawn from public, private and alternative sources of financing – that seeks to support mitigation and adaptation actions that will address climate change.[8]
- UNFCCC Standing Committee on Finance: Climate finance aims at reducing emissions and enhancing sinks of greenhouse gases and aims at reducing the vulnerability of, and maintaining and increasing the resilience of, human and ecological systems to negative climate change impacts.[9]
- Climate Policy Initiative: Global primary investment by public and private actors in activities that reduce emissions and improve adaptation and resilience to climate change.[10]
- European Environment Agency: Climate finance refers to investments that support significant reductions in greenhouse gas emissions, and to financial measures that help adapt to the current and future impacts of a changing climate.[11]

[6] Grantham Research Institute of Climate Change and the Environment, 2023.
[7] World Bank Development Committee. 2022.
[8] UNCC. n.d.
[9] UNCC. n.d.
[10] Climate Policy Initiative, 2022.
[11] Sahakyan and Eisenberger, 2023.

Climate finance is delivered through a complex infrastructure, with multiple actors and funding sources (See Figure 1). It can target activities or results (See Box 2).

Public climate-related financing mechanisms involve a multitude of dedicated funding channels with differing structures of governance, modalities and objectives (see Figure 2). There are no universal criteria for accessing finance from public climate finance providers and requirements vary by provider. Public climate finance providers often have different windows under which different actors may access finance, with the access requirements of each window varying. Box 3 presents typical requirements for projects seeking public sector climate finance.

Private climate-related financing mechanisms, unlike public climate finance, operate without designated pots. The private sector typically provides climate finance in ways similar to those used for traditional activities and projects, with the climate relevance coming from the activity being financed or by the instrument used (see Figure 3).

A range of financing instruments enable access to capital from the private sector (see Figure 4).

Box 2. Activity-based finance and results-based finance linked to climate action

Activity-based finance is provided before a project becomes operational. Some examples of activities in this context are:

- Improvements in business processes, supply chains and sourcing. For example, improving the efficiency of water production processes;
- The implementation of adaptation measures to protect own assets and operations. For example, improving storm and flood resistance of buildings.
- Solar, photo, voltaic or wind energy projects, the installation of electric charging infrastructure, the procurement of electric buses, and the construction of green buildings.

Results-based finance is paid when results are achieved or when intermediate milestones are reached (with monitoring and verification), based on progress in reducing emissions.

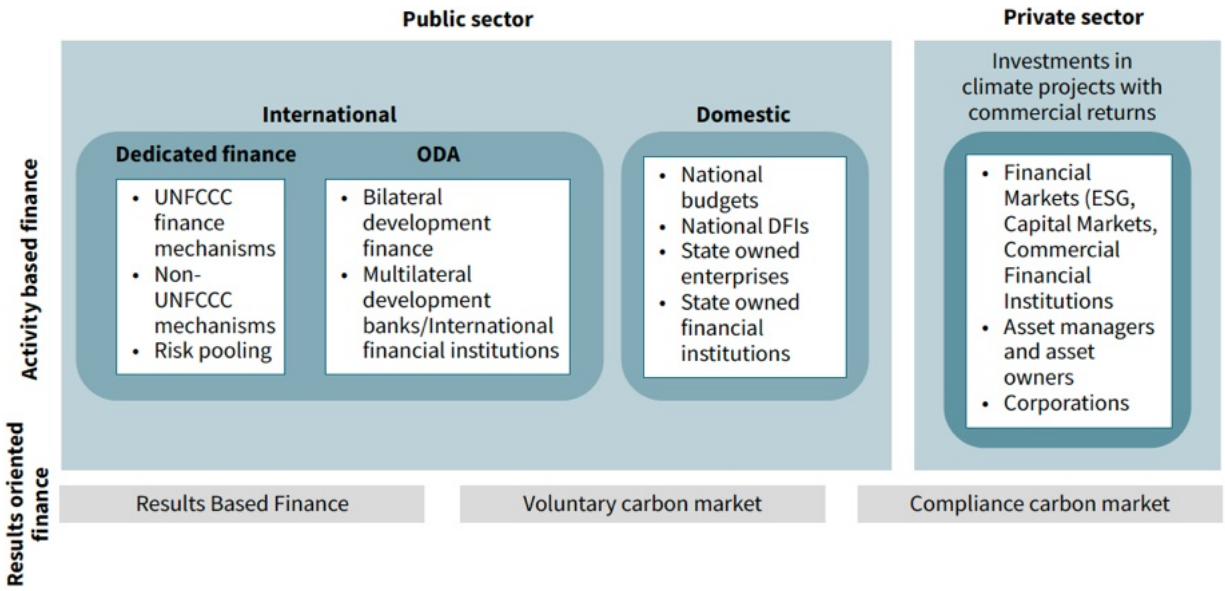
Box 3. Typical criteria for projects to be eligible for public-sector climate finance

Eligibility criteria for access to international public climate finance vary by actor and by fund. In general, projects are required to meet the following minimum eligibility criteria:

- Strong climate rationale and direct linkage based on clear scientific or policy justification, climate data and/or evidence that the funded education activity directly addresses climate risks or contributes to climate change mitigation or adaptation;
- Alignment with national climate goals and priorities, as demonstrated through national or climate-related strategies or plans;
- Projects need to articulate a vision for long-term change, showing how their activities will catalyse impact and how they may be scaled up or replicated;
- Demonstration of co-benefits such as economic or social impacts or promoting gender equality, disability, and social inclusion, with measurable indicators;
- Establish vulnerability and financing needs by demonstrating that beneficiaries are specifically vulnerable to climate impacts and that there is a lack of alternative financing sources for the intervention.

Source: Author

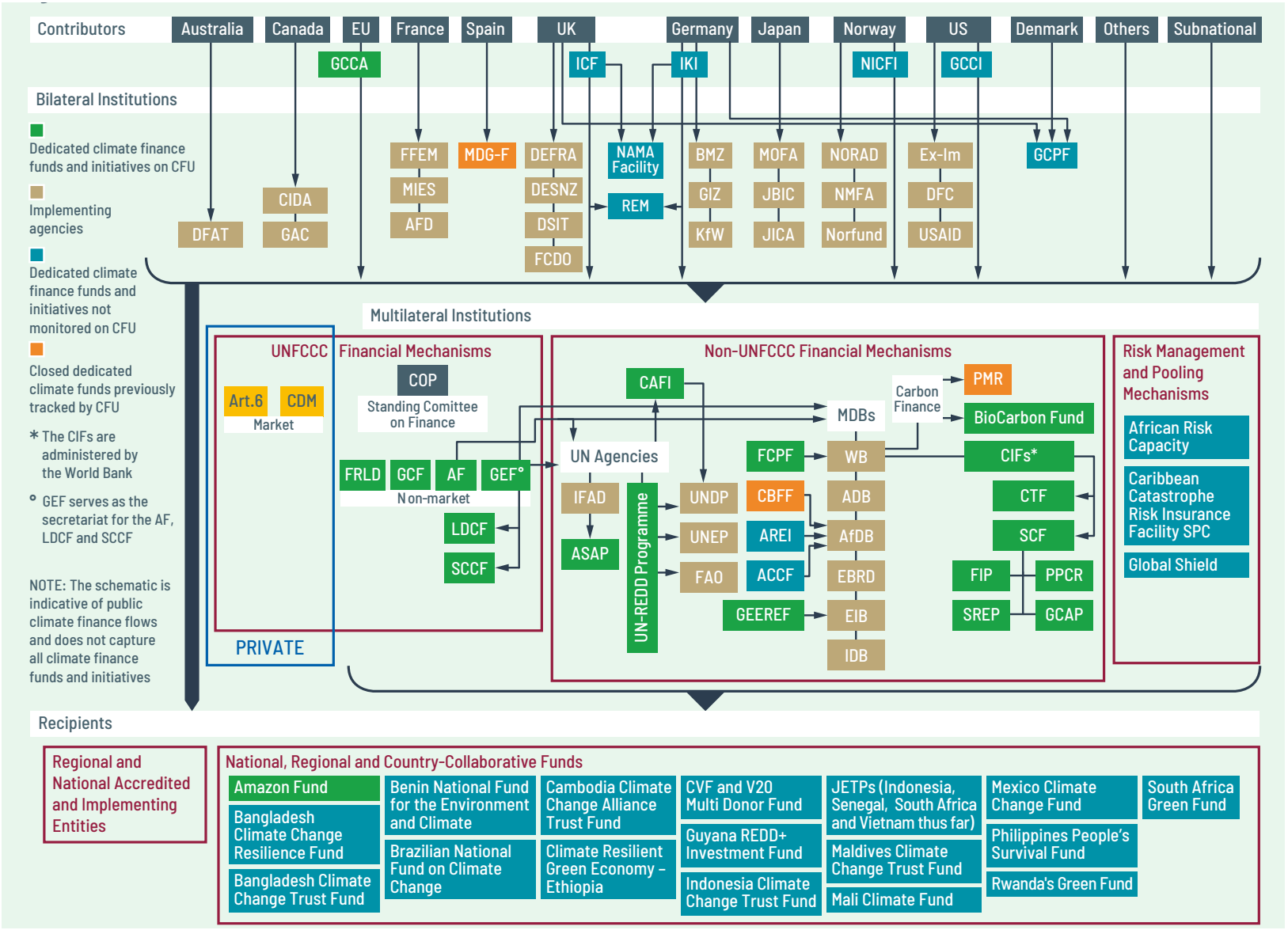
Figure 1. Overview of the climate finance framework



Source: Adapted from a presentation by the World Bank.[12]

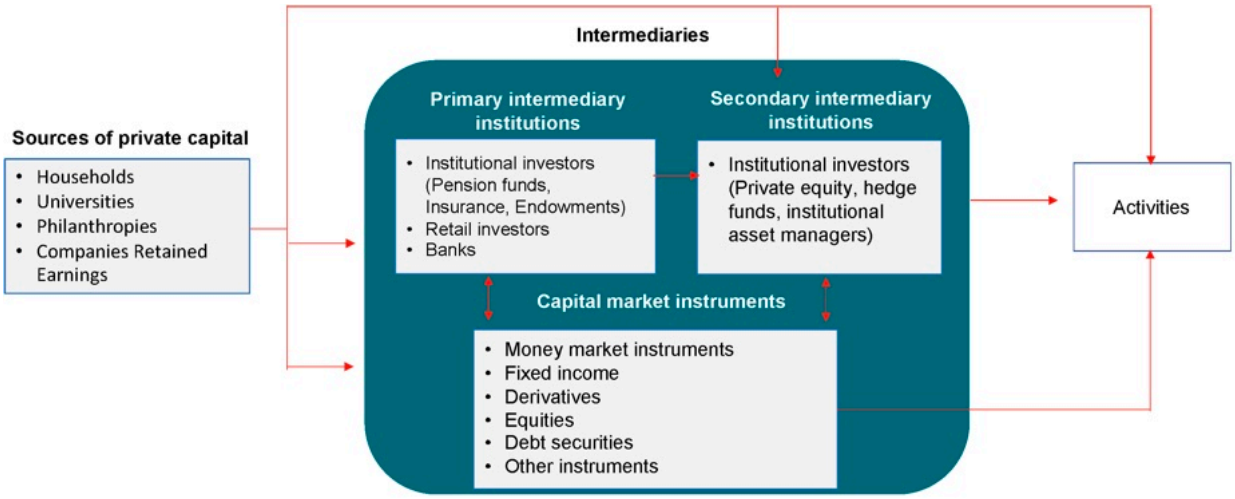
[12] Keynote presentation by Stéphane Hallegatte, Chief Climate Economist World Bank at Atelier sur le financement et l'action climatique au Niger, 16-17 Avril 2025. Organised by British Embassy Niamey, the World Bank, and Government of Niger.

Figure 2. International public climate finance architecture



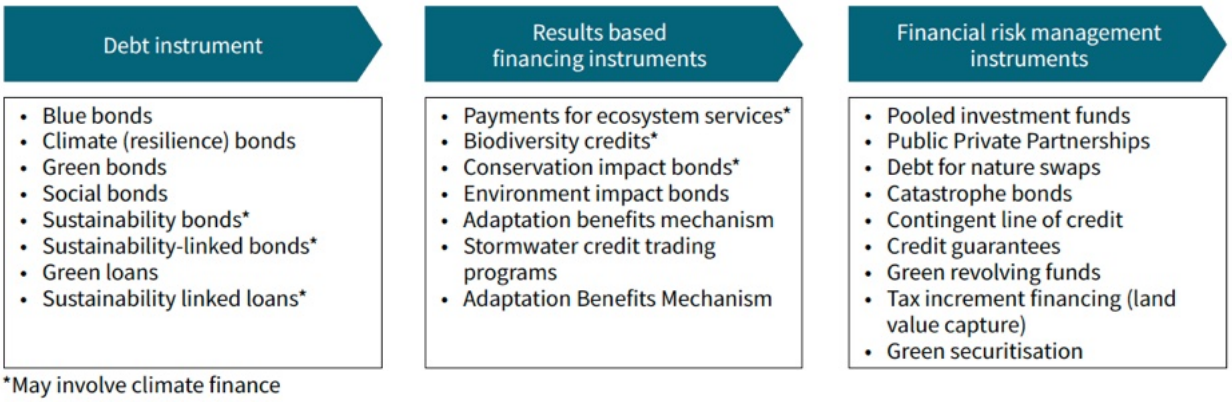
Annex 2 provides names of institutions covered in this figure. Source: Climate Funds Update, 2025.

Figure 3. Private sector finance flows from sources to investments in the context of climate finance



Source: Author

Figure 4. Illustrative list of financing instruments for climate change mitigation, adaptation and resilience



Source: NAP Global Network,[13] International Institute for Sustainable Development,[14] the World Bank,[15] and IMF[16]

3.2 Disaster risk finance instruments

DRF addresses the fiscal impacts and economic losses caused by natural hazards such as cyclones, droughts, earthquakes, and floods, and supports countries to increase their financial resilience to natural disasters. The objective of DRF is to help minimise the cost and optimise the timing of meeting post-disaster funding needs without compromising development goals, fiscal stability, or well-being.

Disaster risk finance instruments (DRFIs) may be disaggregated into (a) funding focused on protecting and managing the impacts of risk on lives and livelihoods; (b) funding aimed at minimising damage to assets and supporting the reconstruction of those assets and the services they provide post-disaster; and (c) funding intended for immediate operational and

[13] NAP Global Network. n.d.
[14] Gouett, Murphy, Parry, 2023.
[15] The World Bank Public Private Partnership Resource Centre. n.d.
[16] IMF. n.d.

humanitarian responses following a disaster.[17] (See Figure 5). Different DRFIs are used to address different types of risks (see Figure 6).

Figure 5. Common disaster risk finance instruments

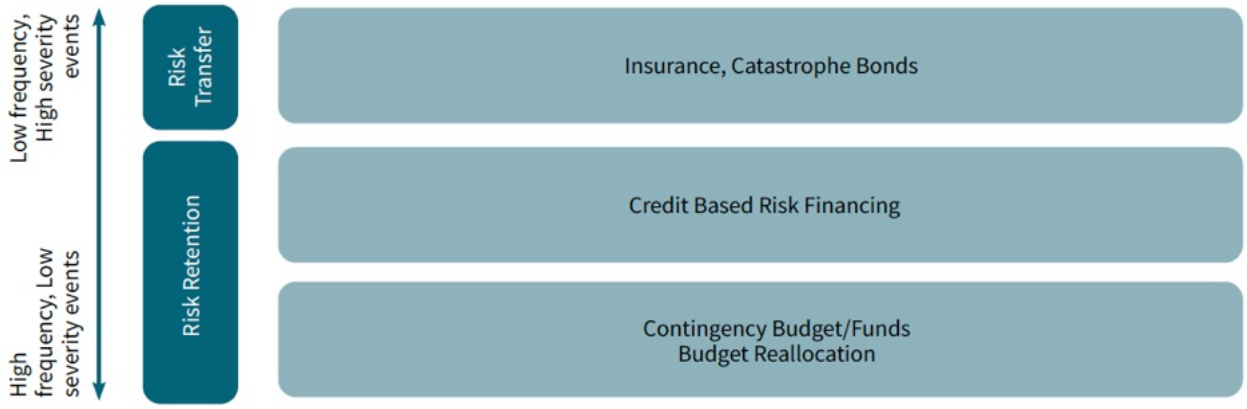
	Ex ante instrument (arranged before disaster)	Ex post instrument (arranged after disaster)
Risk retention[1]	• Contingency funds or disaster reserve funds • Line of contingent credit	• Budget reallocation • Post-disaster credit • Emergency tax allocation
Risk transfer[2]	• Insurance/reinsurance • Index insurance (parametric insurance/reinsurance)	• Humanitarian aid • Crisis response grants • Loans for development banks

[1] Risk retention refers to the responsibility for a certain level of risk or loss. It may also refer to the amount of risk that a party is willing to accept before it transfers any remaining risk.

[2] Risk transfer refers to the shifting of risk from one party to another.

Source: The World Bank[18] and Global Shield against Climate Risks [19]

Figure 6. Risk layering of disaster risk finance instruments



Source: Adapted from Global Shield against Climate Risks[20] and the EU-WB/GFDRR Global Partnership on Disaster Risk Financing Analytics[21]

[17] Sirivunnabood, P. 2020.
[18] Signer, B.L. 2018.
[19] Global Shield. 2024.
[20] Global Shield. n.d.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4. Application of climate finance in education

This section presents case studies that demonstrate the use of these instruments for mobilising climate finance for the education sector, and considerations for use.

4.1 Grants

Climate finance is channelled to the education sector through grants from both the public and private sectors.[22]

4.1.1 Case studies of grants from the public sector

Many projects are funded by grants from international public climate finance actors. These projects typically target activities or investments that display clear and direct links between education and climate change. Examples are as follows:

Building the Climate Resilience of Children and Communities through the Education Sector (BRACE) initiative[23]: This is a partnership between the Green Climate Fund (GCF) and the Global Partnership for Education (GPE), which provide grant finance, and Save the Children, the executing partner. BRACE is a US$70-million investment facility announced at COP28 that aims to increase the climate resilience of the education sector through at-scale pilots of a climate-focused comprehensive school safety framework in Cambodia, South Sudan, and Tonga.[24] Specifically, it will support the retrofitting and construction of climate-resilient and green schools, embed climate change into formal and non-formal curricula, and provide early-warning systems for schools. Save the Children received support from the GCF Project Preparation Facility to develop the detailed funding

[22] Examples are given of both public and private sector grants. Examples of private sector grants were extremely limited, and only one is given. However, this does not mean there are no others. The research was limited to publicly available information provided in the English language.
[23] Green Climate Fund. 2023b.
[24] Green Climate Fund. n.d.

proposal for this initiative.[25]

Solomon Islands Knowledge-Action-Sustainability for Resilient Villages Project (SOLKAS)[26]*:* Grant finance from the GCF is supporting Save the Children to implement education-related activities under this project to strengthen the resilience of communities and rural youth on the Solomon Islands to climate change impacts and associated natural hazards. Education-related activities include support to schools to undertake local-level climate and disaster risk assessments and develop adaptation plans; climate-resilient improvements to school infrastructure such as the provision of solar PV and resilient WASH; the roll-out of a climate change curriculum and education materials; and the use of digital toolsets by schools to make climate-informed choices, such as the provision of better learning environments that ensure the safety of children.

Improving Resilience of the Education System to Climate Change Impacts in the Eastern Caribbean Region for Saint Lucia and Antigua and Barbuda[27]: This initiative was implemented through a grant to the Climate Technology Centre and Network (CTCN) to support the Government of Saint Lucia to manage the impact of climate change on the education system. The grant enabled recipients to explore ways to build resilience into the system, transition away from using schools as emergency shelters, and prepare a plan to improve technology and design options for critical shelter infrastructure. At the time of the grant, 87 of Saint Lucia's 103 public schools were designated as emergency shelters, alongside local churches and Human Resource Development Centres.[28] These shelters were deemed structurally inadequate and lacked sufficient capacity to meet the emergency demands placed on them. The CTCN grant assisted the Government of Saint Lucia to conduct climate change vulnerability assessments of school buildings in Saint Lucia and Antigua, and to develop school 'resilience improvement' packages with options for upgrading, retrofitting or replacement to increase the school buildings' resilience.

Engaging Future Leaders: Digital Education Module on Adaptation Challenges and Best Practices for Youth:[29] Grant finance from the Adaptation Fund facilitated the education of high school students in Armenia on climate adaptation through the design and introduction of digital gamified education solutions.

Other examples: Other examples of public sector grant finance are Global Partnership for Education (GPE) grants for climate-resilient education infrastructure in countries such as Cambodia and Chad. In Cambodia, grants are supporting the construction of new school facilities with climate-resilient features such as improved drainage, rainwater harvesting, and tree planting to tackle soil erosion. These grants also fund the training of educators and community leaders to enhance the climate resilience of the education system. In Chad, grants are supporting schools in the most climate-vulnerable regions, assisting them to build climate-resilient classrooms and essential WASH facilities, enabling equal and safe access to learning opportunities for students.[30]

[25] Green Climate Fund Project Preparation Facility. 2023.
[26] Green Climate Fund. 2023a.
[27] United Nations Climate Technology Centre and Network. n.d.
[28] Adaptation Fund. n.d.
[29] Adaptation Fund. n.d.
[30] Beardmore, S. 2024.

4.1.2 Case studies of grants from the private sector

Cisco Foundation's US$100 million Climate Impact and Regeneration Commitment: This grant has supported a range of climate education projects, including the Digital Opportunity Trust's Youth-Led Climate Action at Scale programme, which operates in Lebanon, Tanzania, Jordan, Ethiopia, Rwanda, Kenya, Zambia, and Malawi.[31] The project trains young people, known as 'climate champions', in climate change knowledge, participatory action research, digital skills, and other tools to develop climate initiatives and raise community awareness. These champions raise climate awareness and co-create climate solutions in climate-vulnerable areas. Examples of solutions led by these champions include mangrove forest restoration and plastic waste reduction projects. The project uses a master trainer approach with self-paced virtual learning and AI-powered mentorship to scale youth engagement and climate education.

Other grants from the Foundation have supported projects with skills-building components. For example, a grant to GRID Alternatives, a non-profit installer of clean energy technologies in the United States for low-income households and communities, has supported the training of over 33,000 individuals in solar installation through its workforce development programmes.[32]

4.1.3 Considerations for application in education

Grants have the potential to support mitigation and adaptation investments and preparedness for climate-related disasters in the education sector. Table 1 presents the main considerations for accessing grants from the public sector.

Table 1. Key considerations for accessing grants from the public sector

Factors	Description
Eligibility criteria needed	Scaling up grants from the international public sector, particularly from specialised international climate funds, requires education projects to meet specific eligibility criteria (see Box 3). Success also depends on the availability of grants.[33]
Reduction in official development assistance	There are concerns that the reduction in official development assistance from developed countries will affect the availability of grants directly and indirectly.[34]

Source: Based on interviews conducted for this study

4.2 Carbon credits

Carbon credits are a type of permit that represents one tonne of carbon dioxide (or an equivalent greenhouse gas) that has either been avoided, reduced, or removed from the atmosphere. The carbon market is a system in which carbon credits are bought, sold, and traded. It puts a price on greenhouse gas emissions so that reducing pollution has economic value.

In the carbon market, projects may generate credits for emissions reductions they achieve.

[31] Digital Opportunity Trust. n.d.
[32] De Wysocki, M. 2025.
[33] Based on interviews conducted for this study.
[34] Based on interviews conducted for this study.

The market includes compliance-based and voluntary activities that are increasingly interconnected. Compliance-based activities involve governments and private sector actors purchasing carbon credits to meet the legal obligations set by governments or international treaties. These credits are usually issued by governments, although project-based credits are also eligible in some systems. Voluntary activities involve private-sector actors committing to offset their greenhouse gas (GHG) emissions with verified carbon credits (VCCs) from the voluntary carbon market (VCM).

To produce a VCC

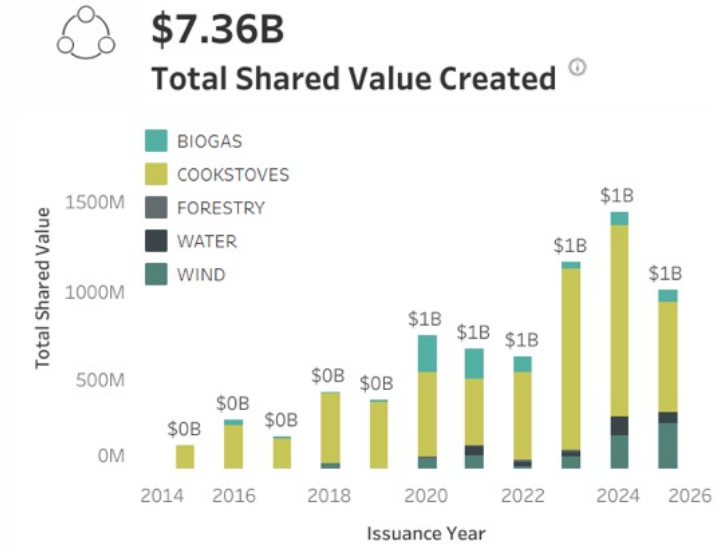
- Projects must adhere to the methodologies and practices established by carbon-crediting programmes (carbon standard setters). These entities approve projects and issue credits only when projects meet their protocols and requirements.
- A project must use a baseline counterfactual to demonstrate that the reductions or removals in emissions would not have otherwise occurred.
- The project's claims must be verified by an independent third-party validation body to confirm that the credits comply with the carbon-crediting programme's methodologies.

The primary benefit of producing VCCs is the removal or avoidance of GHG emissions. Projects producing VCCs can use the credits to fund various education initiatives and enjoy co-benefits. Co-benefits may be typically divided into four categories:

- environmental co-benefits, e.g., an improvement in air quality;
- economic co-benefits, e.g., the generation of employment opportunities in local communities;
- social co-benefits, e.g., addressing gender disparities; and
- educational co-benefits, e.g.by freeing uptime for improving learning outcomes.

As of 2024,126 projects certified under the Gold Standard had reported co-benefits under SDG 4: Quality education.[35] These projects focused on clean cookstoves, water, wind energy, biogas and forestry (see Figure 7).

Figure 7. Shared value created by Gold Standard-certified projects for SDG 4, Quality education



Source: *Gold Standard for Global Goals*

[35] See for example https://dashboard.goldstandard.org/

4.2.1 Projects generating VCCs from investing in education

A review of VCM projects found one project that is targeting the avoidance of GHG emissions through girls' education. A pilot project by SoGreen in Zambia is enabling local grassroots organisations to provide girls' education through the generation of carbon credits by quantifying the climate impact of girls' secondary education (see Box 4). SoGreen is translating the long-term climate benefits of educating girls into measurable units of emissions reductions. The emissions reductions arise from reduced rates of early marriage and early-teen pregnancies when girls remain in secondary education.

The methodology used for the SoGreen project is based in a microsimulation model that was developed over two years with the support of the Icelandic Technology Development Fund to quantify the long-term emissions impact of increasing girls' education in low-income settings. SoGreen adapted the microsimulation approach, commonly used in health and demographic modelling, to simulate the life-course trajectories of adolescent girls and project the influence of secondary education on rates of early marriage and early-teen pregnancy, and the resulting impact on greenhouse gas emissions.

The model draws on country-specific demographic and education data, paired with peer-reviewed research that links girls' education to the demographic transition and climate outcomes. It runs multiple iterations, comparing intervention and non-intervention scenarios to estimate emissions avoided over time. The validation of the methodology by an accredited verification body is expected to be completed in late 2025 with SoGreen planning continuous improvements in the methodology even after validation.

Box 4. Results from the SoGreen pilot project in Zambia

SoGreen's pilot project in Zambia is providing proof of concept for a broader approach to climate finance for girls' education in low-income countries. Specifically, the pilot is supporting the full secondary school education of 272 girls (from families that cannot afford to access education) in two cohorts across Southern and Eastern Provinces of the country in regions with the country's highest rates of child marriage. Support involves access to education, the provision of basics such as stationery and menstrual pad, and support for travel between home and school. In addition, carbon finance is supporting the training of these girls on reproductive rights, human rights, and menstruation health.

The first full project evaluation indicates that 96.7% of girls in the project's first cohort completed 9th grade and 85.6% have already transitioned into 10th grade. By contrast, only 14.9% of girls from the same background complete 9th grade nationally and just 37% of those who complete 9th grade move on to 10th grade. Based on SoGreen's methodology, this pilot is projected to avoid at least 22,000 tons of CO_2-eq emissions over a 50-year period. SoGreen has sold all credits generated from the project. The price of the credits builds a buffer against a scenario where the girls being supported drop out of education, which would result in a reduction in the number of credits obtained and therefore the revenue available to run the pilot.

4.2.2 Considerations for VCC application in education

The SoGreen project is a pilot. It remains to be seen how an accredited verification body will validate the credits through a project and methodology assessment. In addition, replication and scaling up investments in girls' education to offset carbon emissions

through projects such as SoGreen would need to take several factors into account (see Table 2). There are other challenges, too. There is conflicting evidence on the link between education levels and emissions. At the national level, more education typically correlates with higher rather than lower emissions owing to increased consumption lifestyles. At the individual level, more educated individuals may produce lower emissions.

Table 2. Key considerations for replication and scaling up of projects investing in girls' education to offset carbon

Factors	Description
Data availability	Measuring the benefits of girls' education in the form of units of emissions reductions requires demographic and health data specific to an area. These datasets are often outdated or unavailable in many developing countries, particularly low-income ones where investment in girls' education is most needed.
Funding updates of the microsimulation model	The microsimulation model would need to be updated based on contextual datasets. The model itself may need to be tailored to country context. This will require funding, which would either need to come from grants or be covered within the price of credits.
Establishing the counterfactual	Establishing the counterfactual that the reduction or removal of carbon would not have occurred without girls' education may be challenging. SoGreen took two years convincing buyers of the credits that the project actually offset carbon emissions, indicating that it could be challenging to establish the credibility of offsets generated from educating girls. However, this aspect could improve over time with more successful projects.
Additionality and permanence	This model aims to facilitate enrolment into education for underprivileged girls. In terms of emissions, the more underprivileged a person is, the fewer emissions are being produced (and therefore avoided) owing to their low consumption of energy and resources. When these projects target least developed countries, where challenges in enrolment and access to education remain significant, emissions are already very low. Therefore, the mitigation effect of girls' secondary education in these countries and the credibility of the carbon credits generated may be questioned.
Systemic challenges in the education sector	Girls' education in low-income countries, particularly in rural settings, faces systemic challenges like inadequate school buildings, a shortage of teachers (especially female teachers), and insufficient WASH facilities in schools. Where projects do not address these barriers, their impact may be limited. Scaling up may also be a challenge where these barriers persist.

Source: Based on interviews conducted for this study

4.2.3 VCC projects with education co-benefits

Examples of VCC projects that support education-related outcomes are as follows:

The Lango Safe Water Project rehabilitates boreholes to provide clean water in rural Uganda. It is reducing the need for women and girls to spend hours collecting water and

general exposure to waterborne disease and also decreasing school absenteeism among girls. Each household saves nearly four hours per week, which is often reallocated to education and income-generating activities.[36] The project is certified as 'gender responsive' by Gold Standard for its explicit contribution to gender equality, a reduction in exposure to gender-based violence in water collection, and girls' education through time savings and improved health.[37] The gender-related benefits of the project are measured through an initial gender baseline survey, annual surveys, and supplementary gender-focused local stakeholder meetings. Monitoring and reporting on benefits indicate that all women and girls using the rehabilitated boreholes spend the time saved for income-generation, social/leisure activities, and education. However, as education is not the primary intended outcome of the project, education benefits are not being measured.

Aqua Clara Water Filters provides clean water to over 9,600 households and schools in Kenya by replacing smokey, firewood-fuelled stoves with efficient filters.[38] This reduces CO_2 emissions and frees up hours for women and children. Girls spend the time saved in school and on educational activities, directly supporting their educational attainment. As with the project above, since education is not the primary objective of the project, education outcomes are not being measured.

Nature-based Solutions for Children Hub, launched by Save the Children Global Ventures' (SCGV) is seeking to leverage the carbon credit market to fund community-based projects to benefit children while tackling climate change. Three projects are currently under development, and all are expected to have co-benefits for education. For example, projects focusing on clean cookstoves and the installation of safe drinking water technology in schools[39] will contribute to education-related goals. There is evidence that initiatives such as clean cookstoves lead to improved educational outcomes.[40]

4.2.4 Considerations of offset projects for education

Offset projects clearly offer educational co-benefits, although the co-benefits vary according to the project. Opportunities made available by offset projects for education include improved education on climate change and environmental stewardship; the rehabilitation or protection of degraded land; skills development; improved education facilities through the provision of resources for schools in the project area; increased school enrolment; and improved ability to pay school fees (when benefits from projects are channelled to communities).[41] It is possible to establish metrics for these outcomes and to measure them.[42]

There is growing demand from businesses and investors for carbon credits that also align with SDGs and deliver measurable social impacts. Buyers of credits are willing to pay a price premium where credits are associated with robust social co-benefits.[43] Therefore,

[36] Gold Standard. 2024.
[37] Gold Standard. n.d.
[38] The Girls' Day School Trust. n.d.
[39] Save the Children. 2024.
[40] Economics that Really Matters. 2024.
[41] Based on interviews conducted for this study.
[42] Based on interviews conducted for this study.
[43] Jennifer, L. 2023.

there are significant opportunities for scaling up offset projects that offer educational co-benefits. In-depth analysis will be needed to unpack the scope of offset projects, which will depend on the type of education co-benefit targeted. Table 3 presents some broad considerations for these offset projects.

Table 3. General considerations for offset projects offering educational co-benefits

Factors	Description
Verification and transparency	Since education is a co-benefit in offset projects, many projects monitoring and reporting measures do not cover education-related outcomes. For VCM projects to be a channel of climate finance for education, these measures will need to be strengthened to provide evidence of education-related benefits against pre-agreed metrics.
Types of metrics used	Projects generally use simple indicators to measure SDG impacts. This is also true of projects reporting on education impacts. A review of clean cooking projects reporting on SDG benefits indicates that the most common claim for projects reporting education co-benefit was increased training.[44] This was reported using the indicator of number of training sessions delivered as measured through surveys.[45] For offset projects to support education in a meaningful way, the metrics will need to be stronger and clearer.
Demonstrating meaningful education outcomes	Even where offset projects demonstrate clear links to education through increased enrolment, there is limited evidence suggesting that increased enrolment translates into learning outcomes in many low- and middle-income countries.[46] Offset projects will need to demonstrate meaningful educational outcomes to attract a price premium in the long term.
Project viability	The ongoing demand for transparency and reliability in carbon credits results in regular updates to certification standards' methodologies for establishing additionality, and for measurement and verification. The new methodologies are usually stringent and reduce the credits generated while increasing the costs associated with monitoring and verification. For example, credits generated by the Lango Safe Water Project halved after Gold Standard introduced a new methodology relevant to the project. The new methodology also requires meters on hand pumps and the collection of quantitative data on volume of water. This has increased the cost of monitoring and verification, adding to the project's costs.
Uncertainty over the future of VCM	Buyer confidence in the VCM has eroded following claims of fraudulent practices and questionable project integrity that emerged in 2023 and 2024. In addition, the future of the VCM is uncertain owing to the effects of Article 6 on the compliance market, which affects VCC prices. Governments are preparing for compliance markets, and there is a risk that national regulations

[44] Bakhtary, Tierney, Galt, H. and Gill-Wiehl. 2023.
[45] Ibid.
[46] Economics that Really Matters. 2024.

	will either drive out the VCM or require the VCM to transition to the compliance market. There is already evidence of governments imposing substantial fees on project developers, demanding VCCs be put in national registries, taking a share of the credit price, and controlling community benefits. These actions have made many VCM projects in general unviable, causing project closures. There may be similar risks for projects offering education-related co-benefits.
Increasing cost of VCCs for buyers	Variation in the generation of credits by projects and the risk of credits decreasing substantially when methodologies are updated means that investors are increasingly relying on insurance to cover the risk of variation. This in turn is affecting the total price of credits for buyers who are more cautious about the VCCs they purchase and how they purchase. This trend is already being observed in forestry projects.

Source: Based on interviews conducted for this study

4.2.5 Future opportunities

There may be opportunities to generate carbon credits from building and retrofitting school buildings to make them climate smart. Given the SDG 4 education benefits of such interventions, it may be possible to charge a price premium on these credits, which could go towards supporting increased school enrolment or building knowledge, skills, and agency for climate resilience and action.[47] In the UK, this concept has been applied in the form of retrofit credits generated through retrofitting of social housing to finance and accelerate the decarbonisation of social housing.[48] This initiative is unique because it not only focuses on reducing carbon emissions but also integrates social value into its framework, ensuring that the benefits of retrofitting homes extend beyond environmental impact to improve residents' lives.

4.3 Climate, green or sustainability bonds

Green bonds are a fixed-income financial instrument, where the debt proceeds raised are used to fund projects with environmental benefits. In the case of climate bonds, proceeds are used to finance mitigation- or adaptation-related projects. In the case of sustainability bonds, proceeds are used to finance projects with positive environmental and social outcomes.

4.3.1 Bond application in education

In the education sector, green bonds have been used in higher education for infrastructure development. Examples are as follows:

Higher Educational Facility Revenue Bonds (USA): In the United States, the Ohio Higher Educational Facility Commission issued Higher Educational Facility Revenue Bonds to finance the construction of student housing designed to LEED Gold standards and a

[47] See FCDO position paper on addressing the climate, environment, and biodiversity crises in and through girls' education.
[48] Drake, G. and Pellet, A. 2024.

sustainable infrastructure programme (SIP) at Oberlin College and Conservatory.[49] The SIP included improving the efficiency of buildings and energy systems across campus, integrating a geothermal energy source in energy systems on the campus, and replacing the existing steam distribution system with a hot water system.

Sustainability and Green Bonds (UK): In the UK, bonds have been issued by University College London (£300 m Sustainability Bond), King's College London (£125 m Sustainability Bond), London School of Economics (£175 m Sustainability Bond), and University of Hull (£86 m Green Bond), amongst others, to finance or refinance new or existing projects in line with their Sustainable/Green Finance Frameworks. In the case of the University of Hull, the bond was issued to support projects in line with the university's ambition of becoming a carbon neutral campus in 2027.

Other examples: Other examples of bonds in the higher education sector include a S$650 m sustainability-linked bond issued by Singapore Nanyang Technological University (NTU), a S$300m green bond issued by the National University of Singapore (NUS), AUS$250m sustainability bonds issued by Macquarie University in 2018 and 2019 each, and Stanford University's 2021 bonds with dual climate and sustainability aspects. In the case of the NTU, bond proceeds are expected to contribute towards its sustainability goals, including but not limited to achieving carbon neutrality by 2035 and reducing by 50% NTU's net energy use, water use, and waste generation by March 2026 against 2011 baseline levels. In the case of NUS, bond proceeds are intended to finance projects in the areas of green buildings, renewable energy, energy efficiency, and sustainable water and wastewater management, amongst others. Macquarie University has used proceeds from bonds to finance initiatives such as the construction of green buildings, assessed by the Green Building Council of Australia, and the restoration of natural landscapes and wetlands, thereby reducing the impact of storm flows for the university and improving flood mitigation on campus and in downstream flows.[50] Finally, Standford University intends to use proceeds for financing campus construction and renovation projects designed to have both environmental and social benefits.[51]

4.3.2 Considerations for application in education

Examples of the use of climate, green and sustainability bonds are limited to developed countries, and to the higher education sector.[52] These bonds could be replicated for other parts of the higher education sector, especially in developed countries. Their use in developing countries and in other parts of the education sector requires careful consideration. Table 4 shows key issues to consider.[53]

Table 4. Practical considerations of bonds for application in education

Factors	Description

[49] https://www.climatebonds.net/files/files/ohefc%20pre%20issue%20report.pdf
[50] Macquarie University, 2024
[51] Peacock, 2021
[52] This is not to suggest that there are no examples in developing countries or in segments of the education sector. No other examples were found as part of this research.
[53] Based on interviews conducted for this study

Bond repayment	Bonds are debt instruments and represent loans made to the issuer. Therefore, issuing institutions or actors would need to plan for repayment. This may limit the use of proceeds from bonds for education interventions in low- and middle-income countries.
Possible need for guarantees	When issued by education institutions in low- and middle-income countries, bond issuers may need to be backed by credit risk guarantees. These guarantees are likely to come from the public sector. As such, constrained public (or private sector) capital may be blocked to pay capital market actors, with no guarantee that the problem of enrolment or learning outcomes will be addressed.
Debt burden	Where the state is involved, bonds would add to the overall debt burden of these countries, some of which are already overwhelmed by debt.
Local currency markets	Bonds are not an appropriate tool in countries that have no local currency markets.
Structuring fees	The structuring of fees for bonds may make bonds in the education sector in developing countries unviable. This is because the process of designing and structuring bonds can involve extensive due diligence, managing real and perceived risks, and managing legal and credit risks, which requires significant time and investment. Bonds in these markets may also have lower secondary market liquidity, which could reduce investor appetite and raise the issuer's cost of attracting buyers at issuance, thereby contributing to higher structuring fees.

Source: Based on interviews conducted for this study

Photo by Pervez Robin on Unsplash

5. Application of DRFI in education

This section explores DRFI in education, examining the Catastrophic Deferred Drawdown Option (5.1) and parametric insurance (5.2).

5.1 Catastrophe Deferred Drawdown Option

The Development Policy Loan with a Catastrophe Deferred Drawdown Option (Cat-DDO) is a contingent credit line that provides immediate liquidity to member countries of the International Bank for Reconstruction and Development (IBRD) in the aftermath of a natural disaster.[54] It is part of a broad spectrum of risk financing instruments available from the World Bank Group to help borrowers plan efficient responses to natural disasters.[55] The Cat-DDO gives a government immediate access to funds after a natural disaster, a time when liquidity constraints are usually highest. This type of financing is typically used to finance losses caused by recurrent natural disasters. The following is an example:

World Bank's Disaster Risk Management (DRM) and Climate Development Policy Loan (DPL) to the Philippines. This loan has a Cat-DDO[56] of US$500 million, which allows the Government of the Philippines (GOP) to quickly access funds for emergency response and reconstruction when major natural disasters or health crises hit. The fund covers the restoration, rebuilding and retrofitting of schools following a disaster. Approximately 78% of public schools and 96% of students in the Philippines are exposed and vulnerable to multiple hazards. The DRM and DPL also cover human settlements and health systems besides education and have other disaster preparedness components.

Up to the full loan amount is available to the GOP for partial or full disbursement at any time within three years of loan signing. The Cat-DDO has a revolving feature, i.e., amounts repaid during the drawdown period are available for subsequent withdrawal. The three-year drawdown period may be renewed up to four times, for a total maximum period of 15 years. Funds can be disbursed when the Philippines' President declares a state of

[54] Other multilateral development banks such as the Asian Development Bank offer similar products. See for example Asian Development Bank, 2019
[55] World Bank, 2024
[56] https://projects.worldbank.org/en/projects-operations/project-detail/P180585

calamity in response to a natural disaster or public health emergency in line with the Philippine Disaster Risk Reduction and Management Act of 2010.

Box 5 indicates how others can access the World Bank's Cat-DDO.

Box 5. Access criteria for the World Bank's Cat-DDO

In order to use this contingent financing instrument, the borrower needs to have an adequate macroeconomic policy framework and a satisfactory programme in place to manage the risk of natural disasters and public health emergencies. The World Bank continuously assesses the effectiveness of the programme for managing these risks throughout the implementation phase against established results indicators and the implementation of the reform programme. Failure to implement the programme in a satisfactory way may result in the suspension of drawdowns. The DPL Cat-DDO has a pre-specified drawdown trigger linked to natural catastrophes, typically the member country's declaration of a state of emergency.

Source: The World Bank[57]

5.2 Parametric insurance

Parametric insurance disburses funds based on the occurrence of a predefined level of hazard and impact. It pays out a pre-agreed amount when a specific, pre-defined event occurs, based on the magnitude of the event rather than the actual loss incurred. The following are two examples:

UNICEF's Today & Tomorrow Initiative (TTI) is an integrated climate and disaster risk finance mechanism currently focusing on cyclone response, where pay-outs may be used to support -related activities.[58] The initiative is supported by Germany and UK through the Global Shield Financing Facility. Private investors such as Allianz support the TTI. It involves a three-year pilot from 2023 to 2025 across eight countries (Haiti, Comoros, Madagascar, Mozambique, Bangladesh, Fiji, Solomon, Vanuatu). Parametric risk transfer insurance is designed to address UNICEF's cyclone response needs for children, providing pay-outs to UNICEF countries in the event of cyclonemeasured by the specially developed Child Cyclone Index (CCI).[59] The CCI combines meteorological data on wind speeds with demographic information to assess the vulnerability of children in affected areas and is aggregated at the national level.

According to the index, smaller pay-outs are triggered to UNICEF country offices when windspeeds of 39 miles per hour affect at least one child. These events provide a so-called 'minimum payment', which is fixed per country. For more intense cyclones, pay-outs are calculated based on translating the CCI value per country into country-specific dollar sums and adjusting that sum for (regional) attachment and exhaustion points. The country-specific dollar sums per CCI unit have been set for differing risk contexts and response costs.[60] The TTI is not explicitly focused on the continuity of education. Education activities may be supported if UNICEF offices use the pay-outs to provide climate-resilient schools

[57] World Bank. 2024
[58] UNICEF, n.d.
[59] UNICEF, 2024
[60] UNICEF, 2024

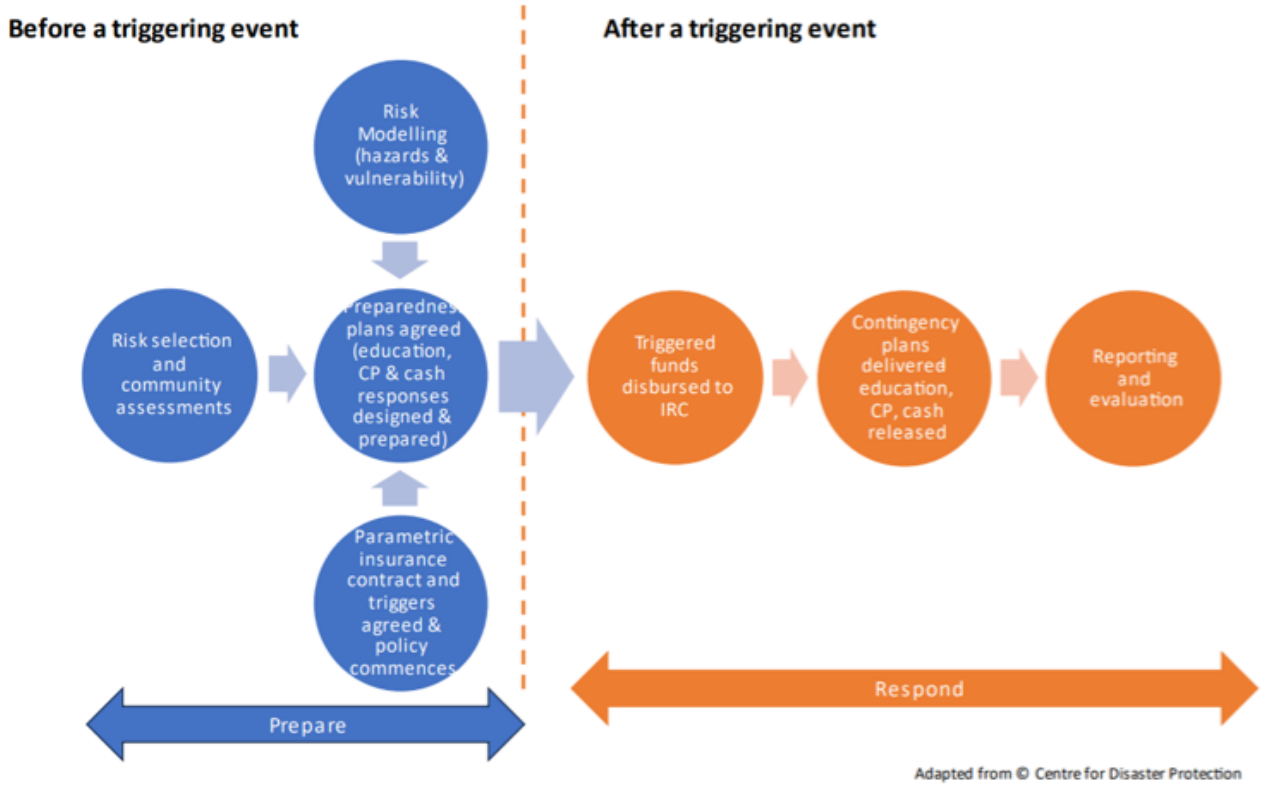
and education services. UNICEF plans for the TTI to evolve into a Global Integrated Disaster Risk Reduction (DRR) and Climate Risk Financing for Children Platform.

The Global Integrated DRR and Climate Risk Financing for Children Platform[61] will build on UNICEF's humanitarian and development mandates in the context of climate change by aligning its work on disaster risk reduction, preparedness, and anticipatory action with emergency response, recovery, and sustainable reconstruction through the 'build back better' approach. The platform will underpin implementation with integrated DRF mechanisms, DRR and climate change adaptation investments through innovative financing instruments, including parametric insurance. UNICEF is using the TTI as the first pilot product for the design and realisation of the platform.

Climate Resilient Education Systems Trial: The UK is working with the International Rescue Committee (IRC) to implement the Climate Resilient Education Systems Trial (CREST) as the first parametric insurance pilot. A £3 million, 30-month pilot is being implemented in the Garissa and Tana River counties in Kenya, selected because of the anticipated impact of El Niño. CREST will pilot an insurance-backed model with a parametric trigger to launch an integrated response to climate-related school disruption: cash to families of school children, remote education to ensure continuity of learning, and child protection support to prevent adverse coping mechanisms affecting children's development and well-being. The pay-outs are triggered by the IRC. The trial is intended to build an evidence base that may be scaled in countries that are at particular risk of climate disasters, assisting them to improve the resilience of schools and education systems and support children's education. Figure 8 shows how CREST will work.

[61] UNICEF, 2024

Figure 8. Overview of how CREST will work



Source: IRC (as part of interviews conducted for this study)

It is too early to assess the efficiency, effectiveness and impact of the CREST model.

5.2.1 Future opportunities

Initial ideas for the scaling up of CREST include the idea of sovereign governments taking out an education-specific policy or including education in a broader policy, and the use of the ARC Replica approach, which pairs government-level action with complementary efforts by the international community and civil society.[62] Under the ARC Replica approach, UN agencies and INGOs can take out 'replica' policies using donor funding, work with governments to customise the risk model, and develop harmonised preparedness plans. When pay-outs are triggered, partners receive a separate pay-out.[63] CREST could also be scaled up to address challenges to the continuity of education during hazards like extreme heat, especially in cities, where nearly 70% of the world's population is expected to live by 2050.[64]

There may be further opportunities to scale parametric insurance targeted at education at the regional level. Opportunities may exist through sovereign risk pools (SRPs) such as CCRIF SPC, which covers CARICOM and COSEFIN countries in the Caribbean and Central America for cyclone, earthquake and excess rain; the Pacific Catastrophe Risk Assessment and Financing Initiative Facility, which covers Pacific Island countries for cyclones and earthquakes; and ARC, which covers member states of the African Union.

[62] Based on interviews conducted for this study.
[63] ARC, n.d.
[64] World Bank, n.d.

Risk pooling may make parametric insurance more affordable, but detailed scoping is needed to understand the feasibility and viability of this opportunity. It will also be necessary to review the evidence with SRPs to understand if SRPs are reaching the intended beneficiaries and to determine the impact they are having on beneficiaries.[65]

Scaling up or replication would also need to consider other practicalities (see Table 5). The ability of these models to bring in private insurers needs to be explored, particularly since private insurers look for a return on their investment. Efforts to bring in the private sector could also explore how to partner with the insurance industry to use its vast modelling capacity and related products in support of parametric insurance.

Table 5. Practical considerations for parametric insurance focused exclusively on education

Factors	Description
Sustainability	The Today-Tomorrow Initiative and CREST are intended to provide proof of concept for parametric insurance that includes or is exclusively focused on education. The pilots are being supported by donor finance. The landscape of climate action and disaster risk reduction and management is saturated with several donor-supported proofs of concept in the expectation that these will be adopted and scaled up by recipient countries and other countries. However, evidence suggests otherwise. The sustainability of these innovations in the absence of donor funding will need attention.
Ability to raise capital	Parametric insurance is a risk transfer tool and a means of deploying capital. The payouts are against premiums that are paid for by the insured or someone else on behalf of the insured. It is not a means of raising capital. The premiums will need to be paid by donors, governments or those receiving payouts. Even in the case of an initiative such as UNICEF's TTI, scaling up implies that the premium will have to be paid by a donor or by UNICEF itself, meaning that there may be a trade-off between using its own funding or programming and for procuring insurance. Efficiency, effectiveness and value for money questions may need to be addressed about the use of donors' climate finance to pay premiums for parametric insurance rather than to fund climate change mitigation activities.
Accessibility	If sovereign governments in low- to middle-income countries are expected to take out education-specific policies in response to climate-relevant disasters, the ability of governments to pay premiums needs to be considered.
Moral hazard	Developing countries are questioning the need to pay for these mechanisms when they have not caused the problem of climate change. Some developing countries have begun to point out that instead of getting finance to tackle the impact of climate change as committed by developed countries, they are being asked to burden their fiscus and add to their debt burden.

[65] Based on interviews conducted for this study.

Availability of data and risk assessment	CREST is addressing the secondary impacts of disaster. Replicability and scalability would necessitate the availability of multiple types of high-quality, reliable historical data and strong analytics capability. Data would include but not be limited to climate, geospatial aspects of schools and their infrastructure, attendance, the dropout rate, learning outcomes during and after climate-related disruptions, socio-economic data and demographic data. This data is typically not available in the developing countries most vulnerable to climate change or is often of low quality. There is the possibility that improved modelling will lead to higher premiums because of better understanding of the risk.
Integration with climate action and disaster risk reduction and management policy	In the absence of concerted efforts to build climate resilience and disaster risk reduction, there is a chance that parametric insurance will not work. The basic tenet of insurance is that insurance works as long as an asset remains insurable. Where disasters are both frequent and severe, such as those with annually repeated flooding or drought, where impacts and costs keep rising, risk-reduction measures are necessary before insurance becomes an affordable solution.

Source: Based on interviews conducted for this study


Photo by Debby Hudson on Unsplash

6. Instruments directing traditional development finance to education

This section explores the instruments of results-based finance (RBF) (6.1) and debt swaps (6.2) with considerations for practical use.

6.1 Results Based Finance

Results based finance (RBF) includes a range of financing mechanisms where financing is linked and provided after the delivery of pre-agreed and verified results. An RBF arrangement involves a contract between a funder and an implementing partner. Payments are made if specified outputs or outcomes, verified by an independent third party, are achieved.

Results-based climate finance (RBCF) and environmental impact bonds (EIB) have been used as a tool to channel climate finance.[66] RBF frameworks are particularly relevant in urban development sectors, improve the environment and functioning of cities, and in transition sectors, which are high emitting sectors that will need to transition to a lower emissions pathway. [67]

6.1.1 Known applications in education

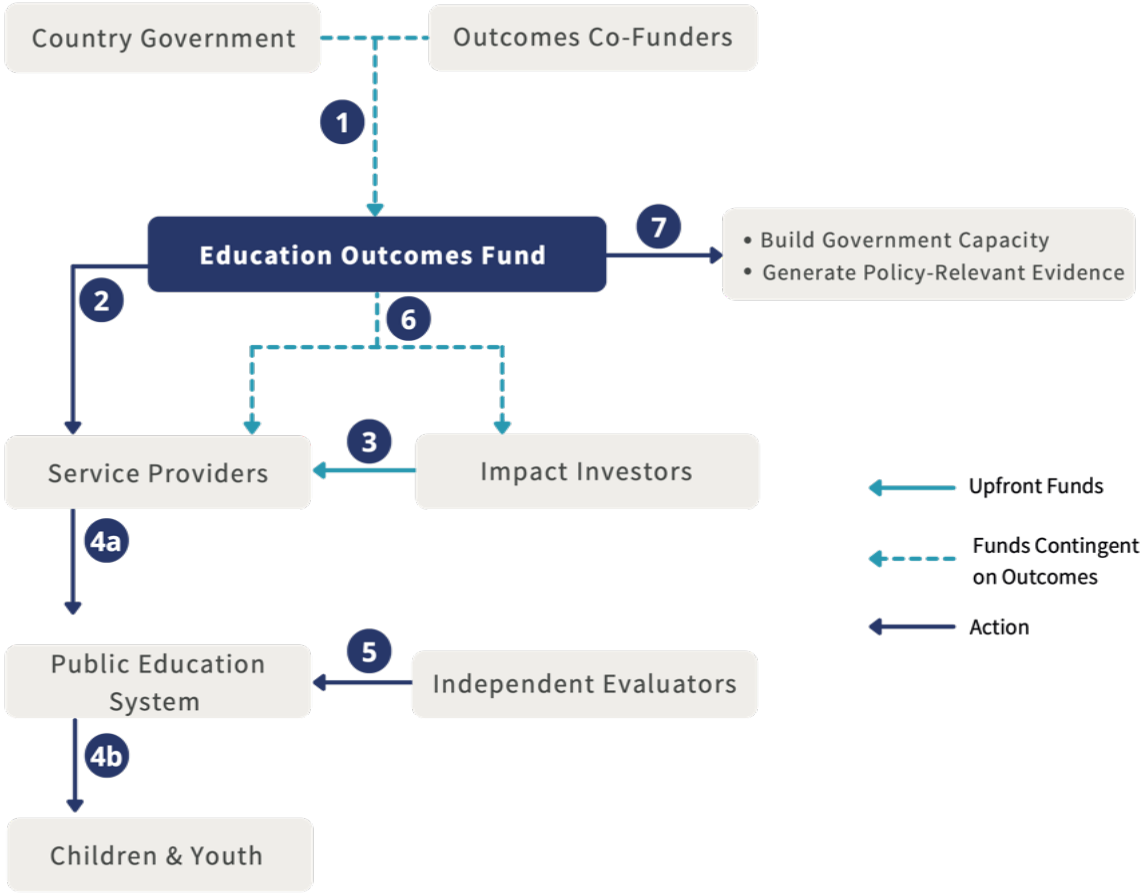
There are no examples of the use of RBF frameworks for channelling climate finance into education. Nonetheless, RBF frameworks have been used in the education sector.

Education Outcomes Fund (EOF): The EOF for Africa and the Middle East hosted by UNICEF is one example. EOF's model brings in the private sector as outcomes co-funders and impact investors (see Figure 9), with payments linked to the achievement of specified education outcomes.[68] EOF concentrates on three focus areas: early childhood care and education; basic education focused on primary schools and children out of school; and

[66] Escalanate & Orrego, 2021
[67] Escalanate & Orrego, 2021
[68] Outcomes-based contracting is a form of RBF.

skills for work. EOF contracts multiple service providers and shifts funding to the end of the results chain, intending to achieve better learning and employment outcomes for children and youth. Since 2022, EOF has been supporting the governments of Sierra Leone, Rwanda and South Africa in the development of three outcomes funds for early childhood care and education. In addition, EOF is supporting the government of Tunisia in the launch of an outcomes fund for employment skills in Tunisia.[69]

Figure 9. Operational structure of the Education Outcomes Fund



Source: Thorne, G., & Jasiqi, A.E. (2024). Education Outcomes Fund [Version 2]. Case Brief. NORRAG[70]

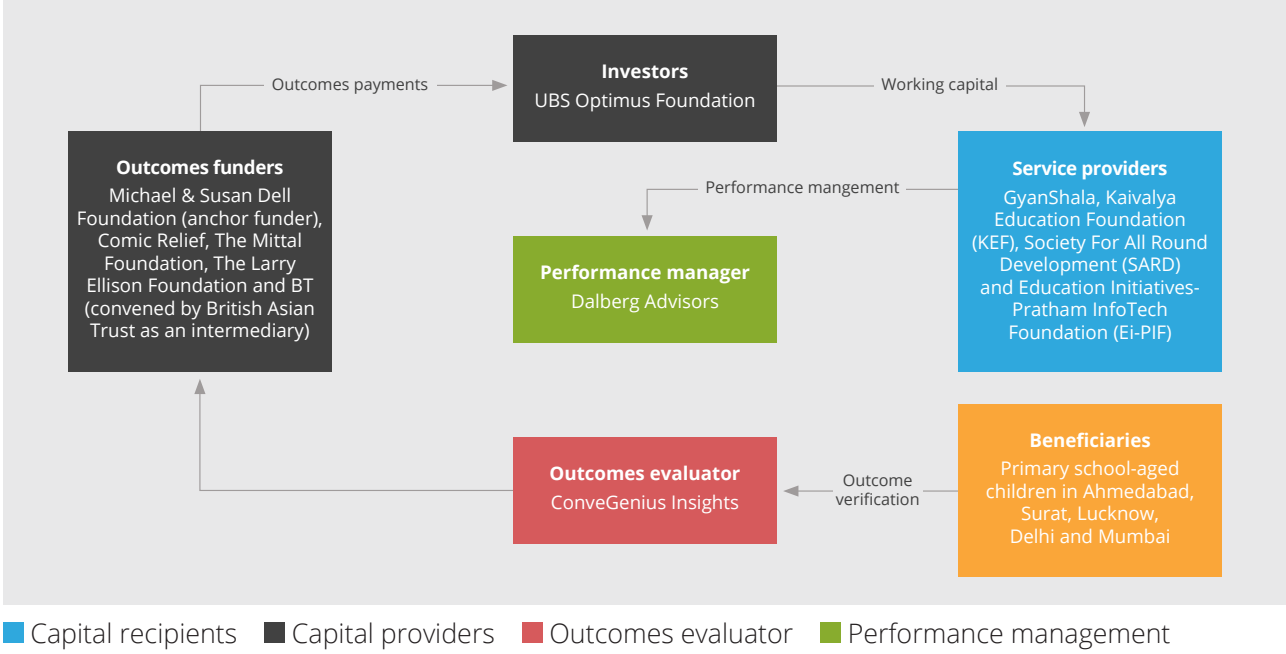
Quality Education India Development Impact Bond (DIB): Running from 2018 to 2022, the Quality Education India (QEI) DIB was an US$11.45 million initiative to improve learning outcomes for approximately 200,000 school students in Grades 1 to 8 in India, funding five high-performing service providers through a results-based finance mechanism (see Figure 9). The service providers delivered four interventions with a mix of direct and indirect education model types:

- An indirect, whole school management programme that focused on school leader training in the states of Maharashtra and Gujarat;

[69] Education Outcomes Fund, 2024a
[70] Thorne & Jasiqi, 2024.

- A direct classroom-based programme for children in urban slums in the state of Gujarat;
- A remedial education model in Delhi; and
- A computer-based adaptive learning platform to close learning gaps and provide actionable insights to teachers in the state of Uttar Pradesh.

Figure 10. The operational structure of the Quality Education India Development Impact Bond



Source: Ecorys and FCDO, 2022

6.1.2 Considerations for channelling climate finance to education through RBF frameworks

RBF frameworks are not necessarily more time consuming or costly to structure than traditional grant funding programmes.[71]However, their use to channel climate finance into basic education (focused on primary schools and children out of school) could face challenges depending on the outcomes being targeted in the education sector.[72] Table 6 outlines practical considerations for using RBF funding for primary education.

Table 6. Practical considerations for using RBF framework to channel climate finance for primary education

Factors	Description
Feasibility of achieving climate-related impacts	Under a model such as EOF, funds are not given to those whose actions are incentivised in favour of climate action but to service providers. Therefore, success may be limited or unsustainable for climate-related outcomes. It is also possible that RBF frameworks will not be able to pay providers of basic education in ways that lead to climate benefits.

[71] Based on interviews conducted for this study
[72] Based on interviews conducted for this study

Complexity of design	It would be complex to design a framework to pay for climate-related outcomes in education because of indirect causal chains and the data requirements needed to make these assessments. There are also measurement challenges or additional costs of verification, as explained below.
Feasibility and cost of measuring climate-related impacts	Measuring complex outcomes encompassing educational quality, learning attainment, and child development can be complicated owing to the lack of straightforward metrics or reliable proxies.[73] Verifying and attributing impact also poses significant costs and administrative burdens for funders and service providers. Tracking the same learners over time adds to the complexity and expense.[74] Consequently, there is a general trend in the sector to move to measurement approaches that do not require control groups. This could make it difficult to measure climate-related outcomes, which is essential for determining payments. Measurement and evaluation would be costly.
Balancing simplicity and robustness	As seen from the experience of QEI DIB, a number of stakeholders, including the outcomes funders, wanted a balance between an overly technical framework and focusing solely on learning outcomes. Despite attempts to keep the model simple, service providers did not have complete understanding of the outcomes-based payment framework, as the approach was very different to the standard fee-for service or grant-based contracts they were used to.
Establishing the counterfactual	In the EOF model, funders and impact investors pay a third-party service provider to deliver education-related goods and services. While it is possible to design a Theory of Change within this model to build positive climate benefits at the outcomes level, it would be difficult to prove the counterfactual. Funders will need to prove the link between goods and service provided by a third-party service provider and the climate benefits of these goods and services from the perspective of beneficiaries. This could be complex and prohibitively expensive. Moreover, the evidence base suggests that education plays a role in individuals being model citizens on climate action or that there is a carbon benefit remains weak.[75] As such, the assumptions and pathways to change would be filled with challenges.
Time and resource spent identifying a suitable comparison group	Identifying a comparison group can be both complex and resource intensive in the RBF framework. The service providers in the QEI DIB needed to engage the local government for permission to access other government schools, identify suitable schools to serve as comparison schools, involve them in the assessment conducted by the outcome evaluator, and explain the monitoring requirements of the DIB. This was a demanding task for

[73] Education Outcomes Fund. (2024b)
[74] Education Outcomes Fund. (2024b)
[75] The evidence base is weak in general and not specifically with regard to climate change issues or disaster risks.

	all service providers, in particular for one provider; their model made it difficult to get permissions from the government, given their context. The service provider therefore needed to spend additional time recruiting enough alternative schools, delaying the process of piloting and baseline data collection.
Moral hazard	Evidence of the co-benefits of climate- and education-related investments is nascent and, unless evidence-based strategies for successful co-investment are strengthened, the imposition of climate considerations alongside already challenging education objectives could present moral hazard.

Source: Based on interviews conducted for this study, and Ecorys and FCDO[76]

6.1.3 Future opportunities

RBF frameworks could be suitable for the green skills development agenda. This would mean that service providers delivering training and placement receive payments if they demonstrate results in the form of trainees learning green skills and securing 'green' jobs as a result. Job placements and job retention are commonly used metrics in the 'skills for work' segment. This could make a compelling argument for the private sector as an outcome funder, as it would involve filling the gaps for green skills in the private sector.

The private sector needs skills to support greener models of production, meet evolving consumer demands for low-carbon and environmentally sustainable goods and services, and comply with policies and regulations that are enabling the shift towards low-carbon economic pathways and lifestyles. RBF frameworks supporting the upskilling of workers for green skills or the development of green skills via the education sector could therefore be of interest to the private sector, which would be able to hire the skilled workforce being trained in this way. RBF frameworks built around green skills for work would also allow funds delivering these frameworks to tap into climate finance. However, these frameworks should consider the evidence base on the effectiveness of skills-for-work programmes, which currently suggests that these programmes offer poor return on investment.[77] The evidence base on what works also remains limited and needs to be developed. In particular, it does not cover issues to do with the sustainability of outcomes.[78]

6.2 Debt swaps

Debt swaps are agreements to redirect money from debt payments to a development objective, such as protecting forests, improving schools, or strengthening healthcare. In some swaps, the creditor agrees to swap debt payments owed to them for spending on development. In other swaps, the borrower restructures the debt, exchanging expensive debt for cheaper debt that reduces debt payments. The country then commits to use some of the savings for development goals.[79] Debt swaps can involve bilateral or multilateral debt swaps and tripartite debt.

[76] Ecorys and FCDO, 2022
[77] Based on interviews conducted for this study.
[78] Based on interviews conducted for this study.
[79] World Bank, 2024

6.2.1 Application of debt-for-education swaps

Examples of debt-for-education swaps are found in bilateral transactions enacted between El Salvador and Spain in 2005, France and Cameroon in 2006, and Germany and Indonesia in 2006.[80] More recently the World Bank supported a debt-for-development swap in Côte d'Ivoire.[81]

Spain and El Salvador agreed to convert debt owed by El Salvador to Spain into funds for education in December 2005.[82] The swap involved several education-related programmes to address the issue of regional disparities in achieving the 2000–2015 Education for All agenda. Spain contributed US$10 million over four years in the form of debt swaps for the construction of rural schools and the purchase of textbooks. Under this agreement, instead of making repayments to Spain, the Ministry of Finance of El Salvador deposited funds into a special account at the El Salvador's Central Bank. Spain then cancelled US$10 million worth of debt owed by El Salvador. The Rural School Construction programme supported by debt swaps was considered mostly positive by relevant stakeholders in Spain and El Salvador. However, the scale of the swap was too small to tackle other systemic barriers to education in the country, such as improved roads and additional school buses that are necessary for children to travel to and from school safely.

France joined other Paris Club members to cancel debt repayments through debt swaps in 2000, creating the *Contrat de Désendettement et Développement* (C2D or Contracts for Debt Relief and Development) to convert debt relief into education investments. In 2006, France diverted €1.17 billion of Cameroon's debt to education programmes. Cameroon focused on universal enrolment, gender equity, and 100% completion rates by 2015.[83] To achieve these goals, the government prioritised the recruitment of 37,200 contract teachers to the value of US$392 million over five years; however, there was a financing gap of US$103 million. C2D contributed US$55.3 million to this gap. Through frequent communications with the Cameroon government, the French government alleviated concerns about corruption and inappropriate use of budget funds. However, OECD criticised C2D for high administrative costs caused by the stringent conditions for fund use, necessary because of Cameroon's reputation for corruption.

In *Côte d'Ivoire*, the World Bank Group provided a €500 million Policy-Based Guarantee in 2024 to support the country secure a €240 million commercial loan with a lower interest rate, a 15-year maturity date, and a six-year grace period.[84] The government will use this loan to buy back €400 million of its existing high-interest commercial debt.[85] The transaction will free up €330 million in budget resources over five years, with €60 million in net present value savings. The government will invest €40 million of the savings to construct over 30 new schools that will benefit an estimated 30,000 students.[86] The rest of the savings will increase the country's fiscal reserves.

[80] Ito, Sekiguchi, & Yamawake, 2018
[81] World Bank. 2024
[82] Ito, Sekiguchi, & Yamawake, 2018
[83] Ito, Sekiguchi, & Yamawake, 2018
[84] World Bank, 2024
[85] World Bank, 2024
[86] World Bank, 2024

6.2.2 Application of debt-for-climate swaps

Debt swaps have received growing attention in recent years in the context of debt-for-climate swaps (DFCS). DFCS are an agreement between a sovereign and its creditors that reallocates a portion of ongoing debt obligations to investments in climate action.[87] In doing so, DFCS provide opportunities for countries to enhance both fiscal stability and climate resilience.[88] Examples of DFCS may be found in Seychelles in 2015, in Belize in 2021, in Barbados in 2022, and in Ecuador and Gabon in 2023 (see Table 7).[89] Some bilateral transactions were completed in Egypt, Cape Verde, Kenya and Peru in 2023.[90] Two cases of DFCS are explained below.

Ecuador[91]*:* In 2023, Ecuador converted US$1.6 billion of commercial debt into a US$656 million loan by issuing blue bonds with the help of Credit Suisse. The Inter-American Development Bank (IDB) provided a guarantee, and the US Development Finance Corporation (DFC) offered political risk insurance, enhancing the bonds' appeal to investors. This was also the first instance of combining guarantees and political-risk insurance by a multilateral institution. The deal required Ecuador to increase the protection of its marine reserves by 60,000 square kilometres and to improve sustainable fishing practices.

Belize[92]: In 2021, the Government of Belize completed a US$364 million debt-for-climate swap by repurchasing US$553 million of its public debt at a 45% discount through a Blue Loan facilitated by The Nature Conservancy (TNC) and financed by Credit Suisse. In return, Belize pledged to protect 30% of its ocean territory, including the Mesoamerican Reef, by 2026, and established a conservation fund. The transaction was managed by TNC’s subsidiary, NatureVest, and was credit-enhanced by the US DFC through political-risk insurance.

[87] GCF, 2024
[88] GCF, 2024
[89] GCF, 2024
[90] Ecdpm, 2023
[91] Sharma, 2025
[92] Sharma, 2025

Table 7. Key features of select debt-for-climate swaps

Country	Year	Instrument	Tenor (years)	Coupon	Rating	Currency	Type	Size (mm)	Debt restructured Amt. (mm)	Debt restructured Negotiation	Savings/ haircut (mm/%)	Nature conservation Amt. (mm)	Nature conservation Governance structure	Guarantee/ insurance Amt. (mm)	Guarantor/ insurer
Seychelles	2015	Blue bond (issued in 2018)	10	6.5% (effectively, 2.8% due to loan)	None	USD	Private placement	$15.0	$21.6	Bilateral	$6.6 / 31%	$15.0	Creation of a trust, SeyCCAT, to manage part of the proceeds, and the remaining by DBS	$5 + $5 loan to subsidize coupons	World Bank + GEF
Belize	2021	Blue loan/ blue bond	20	Step-up: 3.0%–6.1% (loan); 1.6%–4.5% (bond)	Aa2	USD	Syndicated to institutional investors	$364.0	$553.0	Multilateral (Buyback of 100% of one bond; 25% of total debt)	$189.0 / 34%	$180.0	Creation by TNC of conservation fund and endowment to be transferred in 2041	$364 political risk insurance + catastrophe insurance	DFC
Barbados	2022	Blue loan/ blue bond	15	3.8% (loan); 4.4% (dollar bond)	Aaa (Class A) and Aa2 (Class B)	50% USD + 50% BBD	Syndicated to institutional investors	$146.5	$150.7	Buyback of a portion of one USD (via auction) and one BBD bond (via option)	$4.2 / 3%	$40.0	Creation by TNC of environmental sustainability fund and endowment to be transferred in 2037	$150 + natural disaster and pandemic clause	IDB + TNC
Ecuador	2023	Blue bond ("Galapagos Bond")	18.5	5.6%	Aa2	USD	New debt issued in market	$656.0	$1,630.0	Buyback of a portion of several USD bonds (via market tender)	$974.0 / 60%	$323.0	Creation of Galapagos Life Fund (GLF), a nonprofit, and an endowment	$85 + $656 political risk insurance	IDB + DFC

Note: SeyCCAT = Seychelles' Conservation and Climate Adaptation Trust, DBS = Development Bank of Seychelles, GEF = Global Environment Facility, DFC = US International Development Finance Corporation, IDB = Inter-American Development Bank, TNC = The Nature Conservancy, mm = millions.

Source: Center on Global Energy Policy[93]

6.2.3 Considerations for channelling climate finance to education through debt swaps

The appeal of debt swaps is that they simultaneously tackle the challenges of high indebtedness and the need for investments in climate action and other development activities. However, past swaps have involved several risks and challenges that are difficult to overcome.[94]

Table 8. Practical considerations for channelling climate finance into education through debt swaps

Factors	Description
Low contribution to managing the debt crisis	Debt swaps are unlikely to cancel enough debt to meaningfully contribute to the debt crisis.[95] For example, when Seychelles agreed to a debt-for-nature swap with TNC, TNC and other private investors bought 5% of the country's debt (worth US$21 million) from European governments. The debt was then transferred to a trust that offered lower interest rates on repayments, enabling the Seychelles to save US$8 million, which was then spent on projects to protect marine life. This agreement did nothing to alleviate the country's debt burden as all the liberated funds were allocated to nature projects. Furthermore, the US$8 million that was saved equated to less than 2% of the country's total debt.[96]
Inadequate urgent response	Debt swaps are extremely complex and lengthy to negotiate, with agreements sometimes taking several years to be reached. Because of this, debt swaps are unlikely to present an adequate urgent response to either the debt, the climate crises or development objectives.

[93] Jain, Palacios and Verhoeven, 2023
[94] World Bank & IMF, 2024
[95] https://d3n8a8pro7vhmx.cloudfront.net/eurodad/pages/1945/attachments/original/1610462143/debt-andclimate-briefing-final.pdf?1610462143
[96] Climate Action Network, 2023

Affordability for recipient countries	Debt swaps typically involve hiring professionals with specific skills to assist with negotiating an agreement. This can be expensive for the borrowing government (alongside other costs) and can far outweigh the amounts of money allocated to climate or development goals.
Existing debt management	Countries need to have strong debt management capacity to record and report on the swap and grasp the transaction's financial, fiscal, spending management, legal, and operational implications.
Future planning	Swaps need to be integrated into a wider governance reform of national debt management and the international financial system. Otherwise, indebtedness is likely to increase again in the long run, after an initial improvement. As a result, climate change mitigation and adaptation will remain structurally underfunded.
No additional climate finance	Critics of debt swaps also argue that they do not provide additional or new climate finance to developing countries as required by the Paris Agreement for developed countries to provide financial assistance to developing countries. Instead, they argue, debt swaps free up developing countries' existing (but already constrained) resources to reallocate to development objectives.
Power dynamics	Unequal power relations between debtor and creditor often mean that freed-up resources must be reused according to the conditions set by the creditor.

As Table 8 shows, debt swaps are intrinsically complex and involve several challenges. This means that both DFCS and debt-for-education swaps would need to overcome several challenges to improve and upscale in order to deliver climate and development finance quickly and effectively. Moreover, linking climate and education together in one swap may take away the autonomy of recipient countries to decide priorities for climate action. Given these challenges, linking climate and education together in one swap may not be ideal and are unlikely to be a useful instrument to consider at this stage.

6.3 Income Share Agreement model

In the context of education, an Income Share Agreement (ISA) model is a financing approach according to which a student receives upfront funding to cover tuition or training costs in exchange for agreeing to pay a fixed percentage of their future income over a specified period once they have completed their education or training. Chancen International's Future of Work Fund[97] used an ISA model to finance 10,000 excluded youth in Rwanda, South Africa and Kenya by 2025 for their tuition fees. Under the agreement, education costs were covered at one of Chancen International's partner education institutions, with Chancen International providing guarantees to the partner education institution that they would cover the tuition fees of students who were unable to fulfil their educational debt obligations. The fund thus allowed underserved and marginalised students to access job-market-relevant post-secondary education without upfront costs. It employed a blended finance structure to integrate grant funding from the

[97] Convergence, n.d.

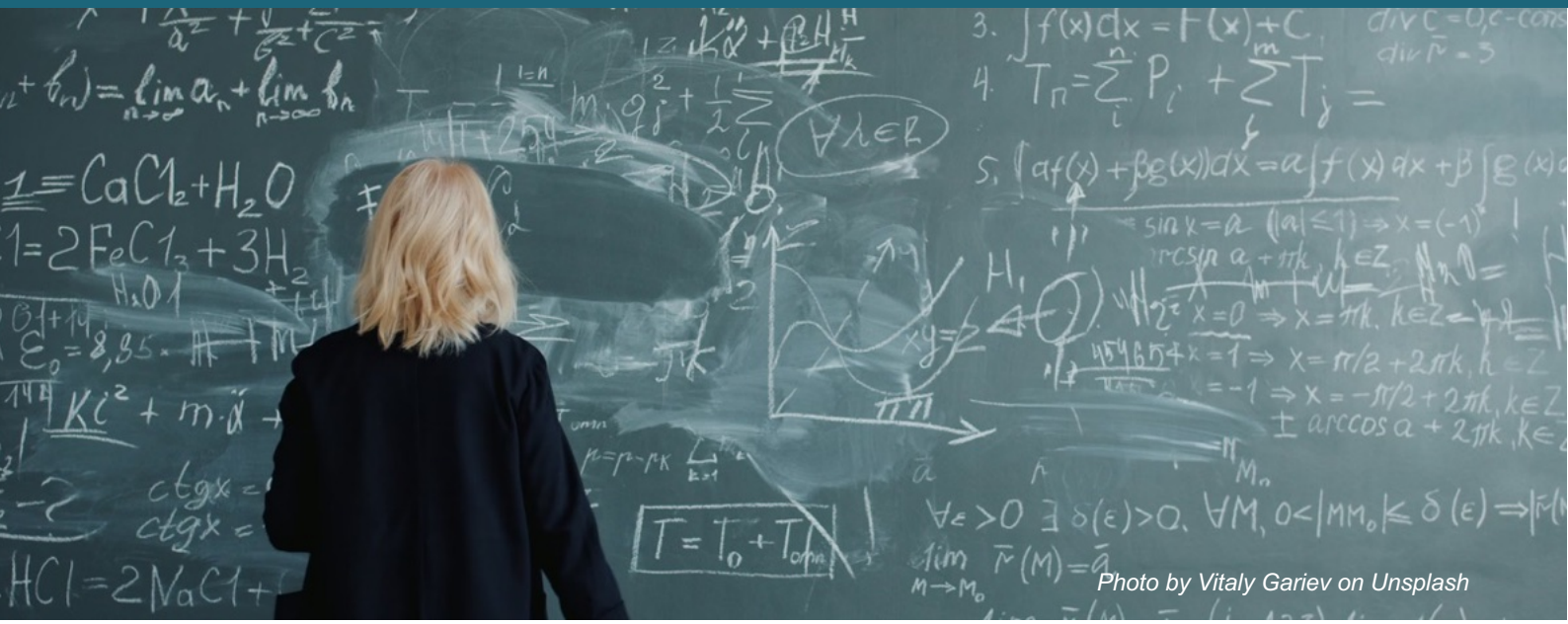
SDG Impact Initiative with patient capital[98] from impact investors to mitigate risks and offer access to high-quality skills development for low-income individuals.

The students signed contracts agreeing to repay a percentage of their income after graduation, with repayment rates evaluated by Chancen International to ensure that repayment was aligned with their future financial success. The amount was capped at a specified threshold assessed by Chancen International to ensure it did not deplete the students' income.[99] Selection for participation in the programme was based on a list of criteria, including financial, socio-demographic, geographic/household, and basic education. The ISA model removes financial barriers by eliminating the need for collateral and aligns incentives between funders, education providers, and students, making education financing more accessible.

6.3.1 Future opportunities

The ISA model could be suitable for the green skills development agenda. Scoping this opportunity will necessitate better understanding of the effectiveness of the ISA model. The model may be of interest to employers who provide climate-related goods and services. To that extent, scoping the feasibility of the ISA model would reveal whether these employers could provide grants or patient capital.

[98] Patient capital is a term used to describe long-term investment, in the form of debt or equity, where sustainable growth is prioritised alongside financial returns.
[99] Convergence, n.d.



7. Insights on the use of climate finance in education

This review of financial instruments used to channel climate finance to education reveals seven main insights:

1. *Entry points:* As Table 9 shows, there are four entry points for accessing climate finance and DRF instruments in the education sector:
   - Direct climate change mitigation and adaptation interventions;
   - Climate change mitigation and adaptation interventions not targeting education that have educational co-benefits;
   - Interventions in the education sector with direct climate benefits;
   - Maintaining continuity of education in emergencies and crisis.
2. *Clear causal links:* For education interventions to be eligible for climate finance, they have to establish clear causal links between the intervention's outcomes and climate change mitigation, adaptation or resilience.
3. *Importance of evidence:* Evidence of climate benefits from education interventions or education benefits from climate projects is essential for channelling finance into education. As seen in the case studies and pointed out by interviewees, evidence of climate benefits is weak in some cases, such as projects investing in girls' education to offset carbon. In some cases, the claims have not been proven, as in offset projects offering education-related co-benefits.
4. *Potential and feasibility vary by context and type of intervention:* The applicability of instruments may be limited by context, as in the case of climate, green or sustainability bonds, or by type of intervention, as in the case of RBF frameworks. This suggests that the feasibility, potential, strengths and weakness of each financing instrument will vary on a case-by-case basis.
5. *The importance of distinguishing between raising and deploying capital:* Some financing instruments, such as bonds, are suitable for raising capital; others, such as

parametric insurance, are limited to deploying capital. For these instruments, consideration will need to be given to raising capital to enable applicability at scale.

6. *Potential and feasibility depend on an enabling environment:* Clarity and certainty about climate policy frameworks, and education sector reforms will determine the opportunities and success of climate finance applications for education in the medium to long term. For example, clarity and certainty are needed about both national carbon markets and education sector reforms that address systemic barriers to quality education.
7. *The need for case-by-case scoping of opportunities:* Instruments channelling climate finance into education vary in their characteristics, data requirements, structuring requirements, entry points, outcomes being targeted, and monitoring and reporting requirements for outcomes. In light of the above insights, the potential for scalability and replicability will require case-specific consideration.

Table 9 summarises the various climate finance instruments that may be used in the education sector, with an indicative list of relevant interventions.

Table 9. Climate finance instruments that may be used in the education sector

Category	Instrument	Types of interventions	Replicability and Scalability potential	Potential actors in this space
Climate action projects that yield education co-benefits				
Climate change mitigation, adaptation and resilience interventions in the education sector	Grants	▪ Climate-smart education infrastructure ▪ Safer learning facilities ▪ Embedding climate change and DRR knowledge and skills into education management and curricula ▪ Integrating disaster risk preparedness and management in the education sector ▪ Early warning systems ▪ Teacher training	▪ High	Governments, public climate finance providers, UN agencies, philanthropic bodies, (I)NGOs, education sector actors
	Bonds	▪ Climate-smart infrastructure	▪ Low[a] to Medium	Governments, private sector, education sector actors
Climate change mitigation and adaptation projects not in the education sector that have educational co-benefits	Carbon offsets	▪ Climate-smart infrastructure ▪ Increasing school enrolment ▪ Building knowledge, skills, and agency for climate resilience and action ▪ Skills development	▪ Low to Medium	Governments, project developers, (I)NGOs, private sector
Education investments that generate climate outcomes				
Interventions in the education sector with climate benefits	Grants	▪ Creating an enabling environment[b]	▪ High	Governments, public climate finance providers
	Carbon offsets	▪ Increasing school enrolment	▪ Needs further investigation and evidence	governments, private sector, project developers, philanthropic bodies,

				NGOs, education sector actors
	Results based financing (RBF) frameworks, ISA model	▪ Green skills development	▪ Low	governments, public climate finance providers, philanthropic bodies, impact investors, private sector
Maintaining continuity of education in emergencies and crisis				
Education continuity	Grants Parametric insurance	▪ Inclusive provision of quality education during emergencies and crisis ▪ Inclusive provision of quality emergency education outside of formal national systems to plug gaps, accessible to all girls and boys that need it ▪ Social protection, school feeding, mental health support, violence prevention, and psychosocial support.	▪ High for grants ▪ Low to medium for parametric insurance	Governments, public climate finance providers, philanthropic bodies, UN agencies, (I)NGOs, humanitarian sector actors, private sector
	Contingent credit lines	▪ Restoration, rebuilding and retrofitting of education infrastructure	▪ Low[c] to medium	Governments, multilateral development banks

[a] Necessitates repayment by education institutions and applicability likely to be low in low-income countries and in many middle- income countries.
[b] The FCDO position paper on addressing the climate, environment, and biodiversity crises in and through girls' education notes that the enabling environment refers to four components: gender equality and inclusion; strengthening the systems that govern both education and environmental policy, including coordination and financing; teacher supply and support; and community engagement and empowerment to tackle climate and environmental change and identify leaders who can support this work.
[c] This will depend on the debt burden that countries are willing to accept.
Source: Author

7.1.1 Broad considerations for climate finance in education

As noted in the discussion under case studies and highlighted by interviewees, the scoping of climate finance for education needs careful consideration of a range of aspects. Some of these are shown in Table 10 below. It is important to integrate GEDSI considerations into climate finance and DRFI in education. These considerations are shown in Boxes 6 and 7).

Table 10. General considerations for accessing climate finance for education

Factors	Description
Additionality of climate finance	Climate finance is already constrained and insufficient. Climate finance providers prioritise interventions where the climate benefits are clear. Education providers that are unable to prove the counterfactual and thus prove additionality may struggle to convince finance providers.
Objective of using climate finance for education	Greater deliberation is needed on the types of interventions that should be targeted for climate finance; in particular, those targeting enrolment and learning-related outcomes. The magnitude of challenges in the education sector and the weak evidence base on the effectiveness of education interventions in improving learning outcomes raises questions about the use of climate finance to improve outcomes. The use of climate finance for these outcomes might divert finance from other mitigation and adaptation measures that are able to deliver climate action at scale.
Rationale for use of climate finance	The mitigation-relevance of some activities in the education sector may be low or hard to prove; for example, programmes targeting increased school enrolment. Where they can prove mitigation benefits, these may low be compared to other mitigation efforts (such as the energy transition) that are urgently needed to reduce emissions. Therefore, it is important to consider whether education might be better supported through development finance, leaving climate finance to target areas that are likely to deliver greater mitigation benefits. Increased school enrolment could continue to be supported by development finance. At the same time, the case for adaptation and climate resilience benefits from adaptation needs to be developed further, emphasising measurable outcomes that may be leveraged to promote the use of climate finance in education.
Objective of tapping into private sector for climate finance for education	The objective of targeting the private sector rather than development finance and the types of interventions that should solicit private sector finance will need further deliberation. The private sector typically responds to four motivations: a) commercial incentives, b) returns on investment or profit, 3) enhanced legitimacy and reputation, and d) future access to new markets. As seen in some case studies, some private sector investors are also motivated by their need to offset carbon emissions.
Implications of private sector climate finance:	In some cases, the public sector may need to give guarantees for private sector climate finance channelled into education. It such cases, it would be necessary to consider whether scarce public sector climate finance is being blocked for lower-priority climate outcomes.

Source: Based on interviews conducted for this study

Box 6. Integrating a GEDSI lens into climate finance in education

Climate finance grants from the public sector are likely to have a focus on GEDSI, aligning with the existing priorities of funders such as GCF, which has a strong GEDSI mandate.

For example, the Solomon Islands SOLKAS project with grant finance from GCF includes the aim of increasing gender equality and social inclusion across all areas of community life, with a specific focus on ensuring that women's voices and the voices of traditionally underrepresented groups (e.g. youth, people with a disability) are heard in climate-related decision-making forums. Addressing the gendered nature of climate change impacts is a key component of all SOLKAS climate and development planning at community and provincial levels. The project includes the development of gender and disability-sensitive climate change materials, and giving gender and disability inclusion training to Disaster Risk Committees and government ministries.**Error! Bookmark not defined.**

Similarly, grants from the public sector for education may also have a focus on GEDSI, depending on the priorities of the funder. For example, the Cisco Foundation has funded Kara Solar, which trains Indigenous communities to access, implement, and manage solar transportation and energy systems in their own territories, on their own terms; it also funds Solar Sister, a women-led renewable energy distribution model with strong adult learning principles.**Error! Bookmark not defined.**

For carbon credits, there is a growing demand for high-integrity carbon credits that promote gender equality.[100] As demonstrated by the case studies above, a focus on gender equality as a co-benefit offers an important entry point for financing inclusive education initiatives through carbon credits.

There is little evidence available on how bonds may be used to finance education in a GEDSI-sensitive way. However, the number of gender bonds globally is on the rise,[101] and gender can be integrated into sustainable bonds.[102]

When considering the use of traditional development finance instruments to channel climate finance, it is useful to note that RBF approaches for gender outcomes have been evolving over the past decade, with over 160 gender-focused RBF initiatives taking place. In education, RBF projects use incentives to boost girls' enrolment and grade progression.[103] Similarly, debt swaps that integrate a gender perspective have been used in the education sector. For example, a debt swap partnership between Egypt and Italy has incentivised families to keep girls in school and has supported women's entrepreneurship through micro-loans and skills development, with a strong gender equality and social inclusion focus.[104]

Source: Prepared by CLEAN HELPDESK GEDSI experts

[100] Social Development Direct, 2024
[101] Parallelle Finance, 2024
[102] 2X Global, 2022
[103] World Bank & GPRBA, 2024
[104] Schools Meals Coalition, 2025

Box 7. Integrating a GEDSI lens for DRFI in education

Integrating gender into DRFI can protect and enhance women's economic participation in the face of disasters and also enhance the effectiveness and sustainability of DRFI initiatives.[105] However, there is little evidence available on how to integrate gender, disability or wider social inclusion into DRFI within the education sector specifically.

The scope of this research precluded a deep dive into these issues. It may be useful to draw upon the learnings of a gender perspective being integrated into Cat-DDOs (for example to integrate climate change considerations and promote sectoral resilience in health, transportation, and tourism in Colombia, while encouraging community participation and a gender perspective in risk management).[106] Similarly, lessons could be drawn from a variety of initiatives on how to make parametric insurance gender- and disability-inclusive in order to address differential climate vulnerabilities and target specific groups for insurance pay-outs.

Source: Prepared by CLEAN HELPDESK GEDSI experts

[105] World Bank & Global Shield Financing Facility, 2025
[106] Relief Web, 2025

8. Directions for further action

This review has identified financing instruments that are currently being used to channel climate and disaster risk finance into education. Each of these instruments presents unique opportunities and challenges. Exploring the further possibilities of these instruments will require a thorough understanding of the education sector and expertise on the instrument.

The review has identified a range of important issues for the use of climate finance in education. Building on these findings, key questions for the education sector to address are as follows:

a. What challenges in the education sector can climate finance address?
b. What is the additionality of climate finance over traditional development finance?
c. How can the education sector strengthen evidence on how and where education interventions offer climate benefits?
d. Which instruments offer potential for delivering climate finance of an appropriate kind, speed and scale for education?
e. How can the education sector scope opportunities for further application of the instruments where the rationale for education investment and addressing climate risks/benefits for mitigation, adaptation or resilience is clear?
f. How can climate change mitigation and adaptation interventions with educational co-benefits increase in scale?
g. What metrics and data collection techniques are needed to prove educational co-benefits from climate change mitigation and adaptation interventions that are not targeted towards the education sector?
h. What is the case for the private sector climate finance for education?
i. What is needed to ensure that climate finance for education reaches the most marginalised and vulnerable children?

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Annexures

Annex 1: List of interviews conducted for this study

Organisation	Representatives
Unbounded Associates	Christina Kwauk
CO2Balance	Issie Hatfield
Centre for Disaster Protection	Chris Kiggell
Climate Bonds Initiative	Rachel Hemingway
Education Outcomes Fund	Paul Wafer
IRC	Emma Gremley
Save The Children	Kayne Harwood
SoGreen	Gudny Nielsen

Annex 2: Global Climate Finance Architecture

Implementing Agencies and Institutions	
AfDB	African Development Bank
AFD	Agence Française de Développement (French development agency)
ADB	Asian Development Bank
BMZ	Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung (federal ministry of economic cooperation and development, Germany)
CIDA	Canadian International Development Agency
DESNZ	Department for Energy Security and Net Zero (UK)
DEFRA	Department for Environment, Food and Rural Affairs (UK)
DFAT	Department of Foreign Affairs and Trade (Australia)
DFC	United States International Development Finance Corporation
DSIT	Department for Science, Innovation and Technology (UK)
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
Ex-Im	Export-Import Bank of the United States
FAO	Food and Agriculture Organization of the United Nations
FCDO	Foreign, Commonwealth and Development Office (UK)
FFEM	Fonds Français pour l'Environnement Mondial (French global environment facility)
GAC	Global Affairs Canada
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (German technical cooperation)
IDB	Inter-American Development Bank
IFAD	International Fund for Agricultural Development
JBIC	Japan Bank of International Cooperation
JICA	Japan International Cooperation Agency
KfW	Kreditanstalt für Wiederaufbau (German development bank)
MIES	Mission Interministérielle de l'Effet de Serre (inter-ministerial taskforce on climate change, France)
MOFA	Ministry of Foreign Affairs (Japan)
NMFA	Norwegian Ministry of Foreign Affairs
Norfund	Norwegian Investment Fund for developing countries
NORAD	Norwegian Agency for Development Cooperation
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
WB	World Bank

Multilateral Funds and Initiatives	
AAAF	Africa Adaptation Acceleration Program
ACT	Accelerating Coal Transition program (implemented through WB, ADB, AfDB, EBRD and IDB)
AF	Adaptation Fund (GEF acts as secretariat and WB as trustee)
ACCF	Africa Climate Change Fund
AREI	African Renewable Energy Initiative
Art.6	Article 6 market and non-market approaches (implemented under the Paris Agreement)
ASAP	Adaptation for Smallholder Agriculture Programme
CAFI	Central African Forest Initiative
CBFF	Congo Basin Forest Fund (hosted by AfDB)
CDM	Clean Development Mechanism (implemented under the Kyoto Protocol)
CIF	Climate Investment Funds (implemented through WB, ADB, AfDB, EBRD and IDB)
CTF	Clean Technology Fund (implemented through WB, ADB, AfDB, EBRD and IDB)
FCPF	Forest Carbon Partnership Facility
FIP	Forest Investment Program (implemented through WB, ADB, AfDB, EBRD and IDB)
FRLD	Fund for responding to Loss and Damage
GCAP	Global Climate Action Programs (implemented through WB, ADB, AfDB, EBRD and IDB)
GCCA	Global Climate Change Alliance
GCF	Green Climate Fund
GEF	Global Environment Facility
GEEREF	Global Energy Efficiency and Renewable Energy Fund (hosted by EIB)
LDCF	Least Developed Countries Fund (hosted by the GEF)
PMR	Partnership for Market Readiness
PPCR	Pilot Program for Climate Resilience (implemented through WB, ADB, AfDB, EBRD and IDB)
SCCF	Special Climate Change Fund (hosted by the GEF)
SCF	Strategic Climate Fund (implemented through WB, ADB, AfDB, EBRD and IDB)
SREP	Scaling Up Renewable Energy Program in Low Income Countries (implemented through WB, ADB, AfDB, EBRD and IDB)
UN-REDD Programme	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation

Bilateral Funds and Initiatives	
GCCI	Global Climate Change Initiative (US)
GCPF	Global Climate Partnership Fund (Germany, UK and Denmark)
ICF	International Climate Finance (UK)
IKI	Internationale Klimaschutzinitiative (international climate initiative, Germany)
MDG-F	MDG Achievement Fund (implemented by UNDP)
NAMA Facility	Nationally Appropriate Mitigation Action Facility (UK, Germany, Denmark and the EC)
NICFI	Norway's International Climate Forest Initiative
REM	REDD+ Early Movers (Germany and UK)

Annex 3: Glossary of terms used in this paper

Additionality	Additionality is the extent to which the benefits of a particular intervention would not have happened without that intervention.
Blue bonds	A type of green bond that focuses on marine and ocean-based projects with positive environmental outcomes.
Biodiversity credits	An economic instrument that finances actions that result in positive, measurable biodiversity-related outcomes.
Capital markets	Capital markets are markets in which long-term financial assets are traded. These assets have a maturity period of more than one year and are used to raise long-term funds for the borrowers and provide long-term investment opportunities for the lenders.
Catastrophe bonds	This is a high-yield debt instrument that was initially designed for insurance/reinsurance companies but is increasingly being used by government bodies and businesses to protect themselves against catastrophe-linked losses. A CAT bond mitigates the impacts of large pay-outs in the event of a natural disaster by allowing the issuer (such as an insurance company) to receive funding from the bond only if a specific predefined catastrophic event occurs.
Climate resilience bonds	These are green bonds where the issuer commits to dedicating a portion (or all) of the proceeds raised by the bond issuance to investments that support climate change adaptation and resilience-related assets, projects, and activities.
Compliance markets	The compliance market establishes a carbon price by laws or regulations that control the supply of allowances that are then distributed by national, regional, and global regimes. Compliance markets are created in response to legally binding emissions reduction targets set by regional, national and international agreements, such as the 1997 Kyoto Protocol and the 2015 Paris Agreement.
Conservation impact bonds	Pay-for-success, outcome-based financial structures that strengthen conservation efforts and address biodiversity loss and support actions to enhance the ability of natural systems to adapt to climate change.
Counterfactual	A counterfactual represents a hypothetical scenario depicting what would have occurred in the absence of a specific intervention, project, or policy. The counterfactual baseline serves as a crucial reference point against which the actual impacts of the intervention may be assessed.
Debt for nature swaps	A country that has received development finance can cancel its debt if it agrees to use the funds it would have paid to service its debt to financing programmes that protect biodiversity and nature.
Disaster risk financing	Risk financing refers to the pre-planned flow of funds to address the impacts of unexpected shocks; risk financing tools include insurance, contingency funds / budgets, contingent credit lines, etc.
Green loans	These are loans used to finance or refinance green projects. They differ from bonds in terms of size and the way in which the funding is raised. Funds for bonds come from the investor market, while funds for green

	loans come from a bank or private operation; the amounts tend to be smaller than for a bond.
Green revolving funds	An internal capital pool that is dedicated to funding sustainability projects that generate cost savings. A portion of these savings is used to replenish the fund, allowing for reinvestment in future projects of similar value
Green securitisation	Securitisation involves the pooling of financial assets into one group to form a new, sellable financial product. The instrument is defined as 'green' when the underlying cash flows are derived from financial assets (i.e., loans) to fund low-carbon assets, or when proceeds from the deal are earmarked to invest in low-carbon assets.
Money market instruments	Money market instruments are the instruments that represent the short-term debt of a borrower. They have a maturity period of less than one year and are used to meet borrowers' and lenders' short-term liquidity needs.
Parametric insurance	Insurance that pays out benefits based on a pre-determined index for the loss of assets and investments as a result of weather or other catastrophic events.
Payment for ecosystem services	PES arrangements are transfers of cash or other resources from ecosystem service beneficiaries (such as downstream water consumers, city dwellers, and hydropower owners) to providers (such as farmers, land trusts, and protected areas).
Private placement	The sale of bonds to pre-selected investors and institutions rather than public sale on the open market.
Pooled investment funds	These are financial vehicles that combine capital from different entities and deploy this capital to projects/initiatives. These entities may be public, private, and/or not-for-profit.
Social bonds	Similar to green bonds but they raise funds exclusively to support new and existing projects with clear social outcomes.
Social finance	This supports actions mitigating or addressing a specific social issue or achieving positive social outcomes. Project categories can include: providing affordable basic infrastructure, access to essential services (like healthcare), affordable housing, employment generation, food security, and socioeconomic advancement and empowerment
Sustainability bonds	A type of green bond where the proceeds from the issuance are used to finance or refinance projects with positive environmental and social outcomes.
Sustainable finance	Incorporates climate, green and social finance.
Sustainability-linked bonds	Bonds that are linked to the issuer's achievement of climate or broader sustainability goals, such as through a covenant linked to the bond coupon. These bonds do not have use-of-proceeds criteria, such as the requirement to finance particular projects. They involve predefined key performance indicators (KPIs) that are linked to a certain trigger event

	that has the potential to modify the pricing structure of the bond if the KPI is not achieved by a predetermined date.
Sustainability-linked loans	Any debt or loan facility that incentivise the borrower's progress towards environmental and social development objectives. The borrower's performance is measured against sustainability performance targets over the life of the facility, leading to changes in debt pricing.
Tax increment financing	A form of land value capture financing based on the expected appreciation of land value. It assumes that once redevelopment projects are completed, land values will increase and, as a result, the taxation authority will receive higher tax revenue.
Trigger/drawdown trigger	A trigger is a pre-defined, measurable event or parameter that, when met or exceeded, automatically initiates a pay-out.
Verified carbon credit	A verified carbon credit is a certification stating that the holder has reduced or removed from the atmosphere one metric ton of carbon dioxide equivalent, either directly or indirectly, in line with applicable rules and requirements, as verified by an independent third party.
Voluntary carbon market	Voluntary carbon markets exist alongside compliance markets. They enable companies, non-profit organisations and individuals to purchase carbon credits on a voluntary basis with no intended use for compliance purposes. Buying credits on a VCM does not directly help a country meet its obligations under the Paris Agreement, but it helps companies to offset their individual carbon footprint and thus overall net emissions. Voluntary markets function outside of compliance markets; therefore they do not currently involve any direct government or regulatory oversight.

Source: NAP Global Network,[107] International Institute for Sustainable Development,[108] the World Bank,[109] IMF,[110] UNIDROIT,[111] and EON[112]

[107] https://napglobalnetwork.org/innovative-financing/?category=debt-instruments#categories
[108] https://www.iisd.org/publications/report/financial-instruments-climate-change-adaptation
[109] https://ppp.worldbank.org/public-private-partnership/financing-instruments-climate-finance-asset-recycling
[110] https://climatedata.imf.org/pages/glossary
[111] https://www.unidroit.org/work-in-progress/verified-carbon-credits/#:~:text=Verified%20carbon%20credits%20(%E2%80%9CVCCs%E2%80%9D,by%20an%20independent%20third%20party.
[112] https://www.eon.com/en/innovation/future-of-energy/energy-and-beyond/compliance-vs-voluntary-carbon-markets-explained.html