

Education as a Climate Mitigation Agent: Reimagining Education Policy for Climate Resilience, Sustainable Economies, and Environmental Futures

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ABSTRACT

Climate change represents one of the defining challenges of the twenty-first century, with increasingly interconnected consequences for human wellbeing, economic security, social equity, ecosystems, and sustainable development. While education is widely recognised as essential for developing climate awareness and environmental responsibility, its potential as a strategic agent of climate mitigation, adaptation, and resilience remains insufficiently embedded within education policy and wider climate-governance frameworks. This paper argues for a fundamental repositioning of education from a predominantly knowledge-transmission function to an active component of climate action. It examines how education policy can strengthen climate literacy, influence sustainable behaviour, develop green skills, support community preparedness, promote climate justice, and enable learners to participate meaningfully in the transition towards low-carbon and climate-resilient societies. Particular attention is given to the interconnected impacts of climate change on people, economies, and the environment, and to the need for policy coherence across education, climate action, economic development, disaster-risk reduction, and environmental sustainability. The paper further argues that effective climate-responsive education requires curriculum transformation, strengthened teacher capability, interdisciplinary learning, community engagement, locally relevant knowledge, and meaningful integration of Indigenous and traditional ecological knowledge alongside scientific and technological approaches. These priorities are particularly significant for climate-vulnerable communities and Small Island Developing States, where environmental disruption, economic vulnerability, displacement risks, and inequalities can intensify the consequences of climate change. The paper proposes a policy-oriented framework that conceptualises education as a pathway connecting climate knowledge with agency, behavioural transformation, mitigation, adaptation, resilience, and sustainable development. It concludes that education should no longer be regarded merely as a sector that must adapt to climate change; rather, it should be recognised and strategically mobilised as a transformative climate-action institution capable of empowering people, strengthening economies, protecting environments, and contributing to more equitable and resilient futures.

Keywords: climate change education; education policy; climate mitigation; climate adaptation; climate resilience; climate literacy; sustainable development; green skills; climate justice; Small Island Developing States.

INTRODUCTION

Climate change has moved beyond being primarily an environmental concern to become a multidimensional development challenge affecting human security, economic stability, public health, food and water security, infrastructure, biodiversity, livelihoods, migration, cultural continuity, and the prospects for sustainable development. Its impacts are increasingly experienced through rising temperatures, sea-level rise, changing rainfall patterns, coastal erosion and inundation, ocean warming and acidification, droughts, floods, and extreme weather events.

These interconnected pressures demonstrate that responding effectively to climate change requires more than technological solutions or environmental regulation; it requires fundamental changes in knowledge, values, behaviour, skills, institutions, economic practices, and relationships between people and the natural environment. Within this broader transformation, education has a potentially decisive role. Education can develop climate literacy and scientific understanding, but more importantly, it can influence how individuals, communities, institutions, and future generations understand risk, make decisions, develop solutions, participate in climate governance, and translate

knowledge into sustained climate action (UNESCO, 2024).

The urgency of this challenge is particularly pronounced for Small Island Developing States (SIDS). Although small island states have contributed comparatively little to the historical greenhouse-gas emissions driving global warming, they are among the societies most exposed to its consequences. The Intergovernmental Panel on Climate Change (IPCC) identifies increasing temperatures, sea-level rise, tropical cyclones, storm surges, drought, changing precipitation, coral bleaching, and other climate-related pressures as significant and increasingly observable threats to small islands. These impacts extend beyond ecosystems to settlements, infrastructure, health, water and food security, livelihoods, economies, cultures, and human mobility (Mycoo et al., 2022). The concentration of populations, infrastructure, economic activities, and cultural resources in coastal areas further intensifies vulnerability. Approximately half of the Pacific population lives within 10 kilometres of the coast, while substantial infrastructure is concentrated close to coastlines (Mycoo et al., 2022). Climate change in the Pacific must therefore be understood simultaneously as an environmental, economic, social, educational, cultural, and intergenerational challenge.

For Pacific Island countries, the climate crisis is particularly consequential because environmental systems and human wellbeing are deeply interconnected. The ocean, land, reefs, forests, freshwater systems, agriculture, fisheries, and biodiversity are not peripheral to Pacific societies; they underpin livelihoods, food security, cultural identity, community relationships, traditional knowledge, economic activity, and ways of life. Climate-induced degradation of these systems consequently produces cascading effects across society. Rising seas and coastal inundation threaten settlements and infrastructure; ocean warming and acidification threaten coral reefs and fisheries; changing rainfall and saltwater intrusion place freshwater resources under pressure; and increasingly severe hazards can disrupt agriculture, tourism, transportation, health systems, schooling, and local economies. The IPCC (2022) further warns that projected climate and ocean changes will increasingly affect marine and terrestrial ecosystems and the services upon which small-island populations depend. Climate action in the Pacific must therefore address not only environmental protection but also resilience, livelihoods, social justice, cultural survival, economic sustainability, and human development.

Fiji illustrates these interconnected vulnerabilities with particular clarity. As an archipelagic Pacific Island state with substantial coastal populations, rural and maritime communities, dependence on climate-sensitive sectors, and exposure to tropical cyclones, flooding, coastal erosion, and sea-level rise, Fiji experiences climate change as a direct development challenge. Tropical Cyclone Winston in 2016

demonstrated the scale of this vulnerability, with destruction exceeding 20% of Fiji's GDP according to the IPCC assessment (Mycoo et al., 2022). More recent economic modelling reinforces the seriousness of the long-term challenge. The World Bank's *Fiji Country Climate and Development Report* estimates that, without strengthened resilience measures, climate change could reduce Fiji's GDP by approximately 3–7% by 2050, while severe compounding shocks could generate losses equivalent to 8–15% of GDP in a single year (World Bank, 2026). These projections demonstrate that climate change is not simply an environmental externality for Fiji; it represents a potentially significant constraint on national development, employment, poverty reduction, public finances, infrastructure, and future prosperity.

At the same time, the Fiji evidence demonstrates that climate vulnerability need not translate inevitably into climate-induced decline. Strategic investment in adaptation, resilience, low-carbon development, renewable energy, cleaner transport, human capability, and institutional reform can generate economic and social benefits. The World Bank (2026), for example, estimates that appropriate adaptation measures could offset substantial climate-related damage, increase GDP relative to a low-resilience pathway, and contribute to employment creation. This creates an important policy question: if climate resilience requires long-term transformation of economies, institutions, technologies, behaviours, and communities, where will the knowledge, capabilities, values, innovation, and human agency required for that transformation be developed? This paper argues that education must form a central part of the answer.

Education has traditionally been positioned within climate policy primarily as a mechanism for increasing environmental awareness and transmitting scientific knowledge about climate change. While these functions remain important, they are no longer sufficient. Climate literacy that does not translate into agency, behavioural change, institutional practice, community resilience, or sustainable economic choices has limited transformative value. Contemporary climate education must therefore move beyond teaching *about* climate change towards educating *for climate action*. This requires learners not only to understand the causes and consequences of climate change but also to acquire the knowledge, competencies, ethical orientations, problem-solving capabilities, creativity, collaborative skills, resilience, and sense of agency necessary to participate in mitigation, adaptation, environmental stewardship, disaster preparedness, sustainable livelihoods, and the transition towards greener economies.

This emerging conception is reflected internationally in

UNESCO's approach to climate change education. UNESCO (2024) conceptualises effective climate and sustainability education as holistic, scientifically grounded, action-oriented, justice-driven, and relevant across the life course. Its Greening Education Partnership adopts a whole-system approach organised around greening schools, greening learning, greening capacity and readiness, and greening communities. Similarly, the *Greening Curriculum Guidance: Teaching and Learning for Climate Action* calls for climate change and sustainability to be integrated systematically into curriculum and learning outcomes rather than treated as marginal or occasional topics (UNESCO, 2024). These developments signal an important conceptual transition: education is increasingly being recognised not merely as a sector requiring protection from climate change, but as an institutional mechanism through which societies can develop the capabilities necessary to respond to it.

This distinction is particularly important in the Pacific. Education systems across Pacific Island countries themselves face climate-related disruption through cyclones, flooding, extreme weather, damaged infrastructure, displacement, and interruptions to teaching and learning. UNICEF Pacific (2026) identifies climate-induced extreme weather and natural hazards as significant threats to children's access to safe and quality learning and notes continuing needs to strengthen climate, environmental, and ocean literacy and the resilience of schools and communities. Consequently, education occupies a dual position within the climate crisis. On the one hand, education is vulnerable to climate change and must become more resilient. On the other hand, education is a potentially powerful agent of climate response, capable of reducing vulnerability, strengthening preparedness, developing adaptive capacity, supporting mitigation, and empowering communities to shape more sustainable futures. Climate-responsive education policy must address both dimensions simultaneously.

This paper therefore advances the concept of education as a climate mitigation and resilience agent. The concept does not imply that education can substitute for decarbonisation, renewable-energy transitions, climate finance, resilient infrastructure, environmental regulation, or other direct climate interventions. Rather, it recognises that these interventions ultimately depend upon human knowledge, competencies, behaviours, political participation, institutional capacity, innovation, and collective action. Education can contribute to mitigation by shaping understanding and behaviour concerning energy use, consumption, transportation, waste, ecosystems, sustainable production, and low-carbon lifestyles. It can contribute to adaptation by developing knowledge and capabilities related to disaster preparedness, food and water security, climate-resilient livelihoods, ecosystem management, health, risk assessment, and community planning. It can strengthen resilience by

enabling individuals and communities to anticipate, absorb, respond to, recover from, and adapt to environmental and economic shocks. In this sense, education constitutes part of the human and social infrastructure required for effective climate action.

Importantly, the relationship between education and climate action should not be conceptualised solely through formal classroom instruction. A whole-of-education approach is required, encompassing curriculum, pedagogy, teacher education, school leadership, infrastructure, institutional governance, technical and vocational education and training, higher education, research, community learning, Indigenous knowledge, youth participation, and partnerships between schools, governments, civil society, communities, and economic sectors. UNESCO's Green School Quality Standard similarly identifies governance, facilities and operations, teaching and learning, and community engagement as interconnected dimensions of institutional climate action (UNESCO, 2024). This suggests that a climate-responsive school should not teach sustainability in the classroom while operating through environmentally unsustainable institutional practices. Rather, the educational institution itself should become a site where sustainability is learned, demonstrated, practised, and connected with community action.

For Fiji and the wider Pacific, such an approach must also recognise the significance of Indigenous and local knowledge. Climate education that relies exclusively on externally generated scientific or technological knowledge risks overlooking generations of place-based understanding concerning oceans, weather, agriculture, fisheries, biodiversity, resource stewardship, disaster preparedness, community relationships, and environmental change. Pacific knowledge systems are embedded within relationships among people, land, ocean, culture, ancestry, and community. These knowledge systems should not be romanticised or positioned in opposition to contemporary climate science; rather, climate-responsive education can create meaningful dialogue between scientific knowledge, Indigenous knowledge, technological innovation, and locally grounded experience. Such integration can strengthen cultural relevance, community ownership, intergenerational learning, and the practical application of climate knowledge.

The issue is also fundamentally one of climate justice. The effects of climate change are not distributed equally, either globally or within individual countries. Children, low-income households, remote communities, coastal settlements, persons with disabilities, and populations dependent upon climate-sensitive livelihoods may face disproportionately severe consequences despite having

contributed relatively little to the underlying causes of climate change. Climate-related mobility creates additional challenges for educational continuity, children's rights, community identity, and access to essential services. UNICEF and its partners emphasise that the rights and wellbeing of children affected by climate-related mobility require explicit policy protection, including continued access to education and meaningful participation in decisions affecting their futures (UNICEF et al., 2022). Education policy in climate-vulnerable Pacific contexts must therefore incorporate equity and justice alongside resilience and sustainability.

There is equally an important economic dimension. The transition towards climate-resilient and lower-carbon economies will alter the competencies required in labour markets and create demand for skills associated with renewable energy, sustainable agriculture, resilient construction, environmental management, circular economies, conservation, climate-smart technologies, sustainable tourism, disaster-risk management, and other emerging areas of green economic activity. Education and training systems consequently have a strategic role in ensuring that climate policy is connected with human-capital development and that young people are equipped not merely to survive climate disruption but to participate in shaping new economic opportunities. In Fiji, where climate resilience, employment creation, economic diversification, and sustainable development are closely connected, climate-responsive education can serve simultaneously as social policy, economic policy, environmental policy, and future-workforce policy.

However, recognising the potential of education does not automatically ensure that this potential is realised. A significant policy challenge lies in moving from broad commitments to environmental education towards coherent implementation across curricula, teacher preparation, assessment, financing, school operations, community partnerships, and national development planning. Climate change may be mentioned within curriculum or policy documents without being systematically translated into classroom practice, practical competencies, local action, or measurable learning outcomes. Teachers may support climate education but lack appropriate professional development, contextualised resources, interdisciplinary pedagogical approaches, or institutional support. Schools may teach environmental responsibility while lacking resilient infrastructure or sustainable operating practices. Furthermore, climate education can remain fragmented across subjects when the climate crisis itself cuts across science, geography, economics, health, citizenship, culture, technology, ethics, and social justice.

This reveals an important policy gap. Education policy and climate policy are too often treated as separate domains despite their deep interdependence. Climate strategies may

concentrate on emissions, infrastructure, energy, finance, agriculture, disaster management, and environmental protection, while education strategies concentrate on access, curriculum, assessment, teachers, learning outcomes, and institutional administration. Such policy compartmentalisation risks overlooking education's capacity to influence the very human behaviours, skills, values, knowledge systems, and institutional capabilities upon which successful climate action depends. For climate-vulnerable countries such as Fiji, greater policy coherence is therefore needed between education, climate action, disaster-risk reduction, environmental management, economic development, employment, social protection, and community resilience.

Against this background, this paper argues that education should be repositioned from a supporting component of climate awareness to a strategic pillar of national climate action. It proposes that education policy should deliberately connect climate literacy with human agency, behavioural transformation, mitigation, adaptation, green skills, community resilience, environmental stewardship, and sustainable economic development. The central proposition can be expressed conceptually as:

Climate-responsive education policy → Climate literacy and competencies → Human agency and behavioural transformation → Mitigation and adaptation → Community and economic resilience → Environmental sustainability → Climate-resilient futures.

This conceptualisation is particularly relevant to Fiji and the wider Pacific because it shifts the policy discussion from the question of *how education systems can survive climate change* towards the more transformative question of *how education systems can help societies confront climate change*. The distinction is fundamental. Climate-proof classrooms and continuity of learning remain essential, but resilience cannot end at the school gate. Learners should emerge from education systems equipped to make informed decisions, participate in community adaptation, protect ecosystems, develop sustainable livelihoods, contribute to green economies, engage critically with climate policy, and exercise responsible environmental citizenship.

Accordingly, this paper examines how education policy can be reimagined to position education as an active agent of climate mitigation, adaptation, resilience, and sustainable transformation, with particular attention to Fiji and Pacific Island contexts. It considers the interconnected implications of climate change for people, economies, education systems, and the environment; evaluates the transformative potential of curriculum, pedagogy, teacher capability, Indigenous and local knowledge, green skills, institutional practice, and community engagement; and identifies policy pathways

through which education can contribute more deliberately to national and regional climate responses. In doing so, the paper advances a broader proposition: education should no longer be viewed only as a sector that must become resilient to climate change; it should also be recognised as one of the institutions through which climate-resilient societies are created. For Fiji and the Pacific, where the consequences of climate change intersect directly with questions of development, equity, culture, livelihoods, identity, and intergenerational justice, repositioning education in this manner is not simply an educational reform agenda. It is an investment in the long-term resilience and sustainability of Pacific peoples, economies, environments, and futures.

LITERATURE REVIEW

Climate Change as an Educational, Developmental and Policy Challenge

Climate change is increasingly conceptualised as a multidimensional challenge extending far beyond environmental degradation. Its consequences intersect with economic development, health, food and water security, human mobility, employment, social inequality, cultural continuity, disaster risk, biodiversity, infrastructure and human wellbeing. The Intergovernmental Panel on Climate Change (IPCC, 2022) has emphasised that climate risks are interconnected and unevenly distributed, with vulnerable populations and ecosystems frequently experiencing disproportionate impacts. These interconnected consequences require climate responses that extend beyond technological interventions and environmental regulation to include the development of human knowledge, capabilities, values and collective agency.

Within this context, education occupies a potentially transformative position. Education influences how societies understand environmental change, how individuals make decisions, how communities respond to risk and how future workers acquire the capabilities required by changing economies. Climate change therefore raises two interrelated educational challenges. First, education systems themselves must become resilient to climatic disruption. Extreme weather events can damage schools, interrupt teaching and learning, displace learners and teachers, reduce attendance and place additional pressure on already constrained education budgets. Second, and more fundamentally, education systems can contribute actively to addressing the causes and consequences of climate change by developing climate literacy, adaptive capacity, environmental responsibility, green skills and civic agency.

This distinction between education that is resilient to climate change and education that creates climate resilience is central to the emerging literature. The former concentrates primarily

on protecting educational continuity, infrastructure and learners from climatic disruption, whereas the latter positions education as an enabling mechanism through which societies can mitigate emissions, adapt to environmental change and develop longer-term transformative capacity. The present paper argues that these two functions should be integrated within education policy.

From Environmental Education to Climate Change Education

The intellectual foundations of contemporary climate change education can be traced partly to environmental education and Education for Sustainable Development (ESD). Environmental education historically sought to increase knowledge of ecological systems and encourage environmentally responsible attitudes and behaviours. ESD subsequently expanded this agenda by connecting environmental concerns with economic development, social justice and intergenerational responsibility. The Sustainable Development Goals further strengthened this relationship, particularly through SDG 4 on quality education and SDG 13 on climate action.

Climate change education represents a further evolution. It addresses the causes, consequences and possible responses to anthropogenic climate change while seeking to develop knowledge, competencies, attitudes and behaviours that support mitigation and adaptation. UNESCO increasingly conceptualises education as essential to enabling learners to acquire the knowledge, skills, values and attitudes required to respond to climate change. Recent international initiatives have consequently moved towards the concept of **greening education**, encompassing curriculum, educational institutions, teacher preparation and communities.

This evolution is significant because conventional environmental awareness does not automatically result in meaningful climate action. Knowing that climate change exists is different from understanding its structural causes, assessing competing mitigation strategies, changing behaviour, participating in collective action or influencing institutional and political decisions. Critical climate education therefore needs to develop analytical capability as well as environmental awareness.

Svarstad (2021), for example, argues for critical climate education capable of enabling learners to examine mitigation alternatives and evaluate their implications for climate justice. Such an approach moves beyond presenting climate change exclusively as a scientific problem and recognises its political, economic, ethical and distributive dimensions. Climate education consequently becomes an interdisciplinary endeavour involving science,

economics, geography, citizenship, ethics, culture, technology and social justice.

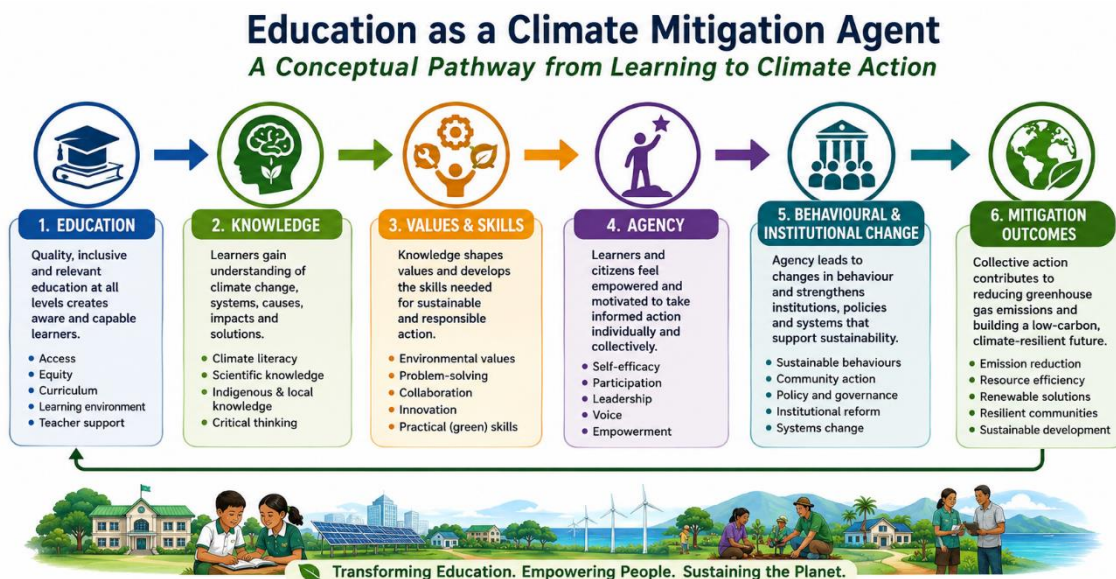
Education as a Climate Mitigation Agent

Although education is increasingly acknowledged within climate policy, the concept of education as a direct or enabling **climate mitigation agent** remains less developed than conventional climate literacy and environmental education. Mitigation refers to human interventions that reduce greenhouse-gas emissions or strengthen mechanisms that remove greenhouse gases from the atmosphere (IPCC, 2022). At first sight, education may appear to have only an indirect relationship with mitigation because schools do not themselves substitute for renewable-energy infrastructure, emissions regulation, sustainable transportation or industrial

decarbonisation. However, this interpretation underestimates the social foundations of technological and economic transition.

Climate mitigation ultimately depends upon human decisions. Energy consumption, transportation, food systems, waste generation, land management, production practices, political participation, investment decisions and consumer behaviour all involve human knowledge and agency. Education can therefore contribute to mitigation by developing understanding of carbon-intensive practices and their alternatives, encouraging sustainable lifestyles, building environmental values, strengthening green skills and preparing individuals to participate in low-carbon economies.

The relationship can be conceptualised as:



Education → Knowledge → Values and Skills → Agency → Behavioural and Institutional Change → Mitigation Outcomes.

This pathway demonstrates why climate education should not be reduced to the transmission of environmental facts. For education to function as a mitigation agent, learners must be able to translate knowledge into decisions and decisions into individual and collective action.

Education can also contribute through institutional modelling. Schools, universities and training institutions consume energy and water, generate waste, procure goods and services, manage transportation and occupy substantial physical infrastructure. Educational institutions can therefore demonstrate sustainable practice through renewable energy, energy efficiency, water conservation, sustainable food systems, recycling, biodiversity initiatives and climate-responsive infrastructure. In this way, the educational institution itself becomes a learning environment for

mitigation rather than climate responsibility existing solely within textbooks.

Climate Education, Behavioural Change and Learner Agency

A recurring issue within environmental and climate education scholarship concerns the relationship between knowledge and behaviour. Increased knowledge does not necessarily lead automatically to environmentally responsible action. Behaviour is influenced by values, cultural norms, socioeconomic circumstances, institutional opportunities, infrastructure, political systems and perceptions of personal and collective efficacy.

This has encouraged a movement away from information-

deficit models of climate education towards approaches emphasising participation, problem-solving, experiential learning and agency. Climate education is potentially more transformative when learners participate in activities that connect knowledge to practical environmental challenges. School gardens, mangrove restoration, waste reduction, energy audits, water conservation, disaster preparedness, community mapping and biodiversity monitoring can connect abstract climate concepts to everyday experience.

Learner agency is especially important. Young people should not be conceptualised simply as future adults who need climate knowledge for later life. They are present social actors capable of influencing families, communities, institutions and public debate. Climate education can enable learners to ask critical questions, analyse evidence, participate in decision-making and develop locally appropriate solutions.

However, agency should not be framed in a manner that transfers responsibility for a structurally produced global crisis onto individual children. Climate education must balance personal responsibility with understanding of governments, industries, markets, historical emissions and institutional systems. Otherwise, climate education risks becoming an individualised behavioural project rather than developing critical understanding of the systemic transformations necessary for meaningful mitigation.

Education for Climate Adaptation and Resilience

The literature on education and adaptation is particularly important for SIDS. Even under ambitious global mitigation scenarios, communities must respond to climatic changes already occurring or locked into the climate system. Adaptation involves adjustments that reduce vulnerability or enable societies and ecosystems to respond more effectively to actual or anticipated climatic conditions (IPCC, 2022).

Education can contribute to adaptation by strengthening people's understanding of climate risks and developing practical capabilities for responding to them. Relevant knowledge may include disaster preparedness, water management, climate-resilient agriculture, coastal protection, food security, ecosystem conservation, public health, emergency response and livelihood diversification.

Education can also strengthen social resilience. Communities with stronger knowledge networks, communication systems and problem-solving capacities may be better positioned to anticipate and respond to environmental disruption. Schools can serve as community knowledge centres through which climate and disaster information is communicated to households.

In Pacific communities, adaptation education has particular significance because climate impacts are frequently experienced at the intersection of environmental change and existing socioeconomic vulnerability. Adaptation cannot

therefore be separated from poverty, infrastructure, health, gender, disability, geography, livelihoods and access to public services. Climate-responsive education must recognise these differentiated vulnerabilities rather than treating communities as homogeneous.

Small Island Developing States and Climate Vulnerability

The literature consistently identifies SIDS as facing distinctive climate-related challenges. Their vulnerability is associated with small land areas, extensive coastlines, dispersed populations, dependence on climate-sensitive economic activities, limited domestic markets, infrastructure concentration, remoteness and comparatively constrained fiscal and institutional capacity. Sea-level rise, saltwater intrusion, coastal erosion, coral-reef degradation, ocean warming, tropical cyclones and freshwater insecurity create interconnected threats to sustainable development (IPCC, 2022).

For SIDS, climate change can also threaten national identity, cultural heritage and relationships with ancestral land and ocean. This differentiates the climate experience of many island societies from contexts where adaptation may be discussed primarily in terms of infrastructure or economic cost.

Education policy in SIDS therefore needs to reflect this multidimensional vulnerability. Climate education should prepare learners not only to understand global climate processes but also to interpret local manifestations of environmental change. Place-based climate education can connect global scientific knowledge with observable changes in coastlines, fisheries, rainfall, agricultural systems, biodiversity and water resources.

The literature nevertheless suggests that SIDS remain comparatively underrepresented in much mainstream climate-education research. Frameworks developed in larger industrialised countries may not adequately capture the cultural, geographical, economic and epistemological realities of island societies. This creates an important rationale for Pacific-centred climate education scholarship.

Climate Change and Education in the Pacific

Climate change has become a central development issue across Oceania. Pacific Island countries face substantial exposure despite contributing a comparatively small share of cumulative global greenhouse-gas emissions. This disparity has positioned the Pacific prominently within international debates concerning climate justice, loss and damage and global responsibility.

Pacific climate responses have increasingly highlighted

resilience, community knowledge and regional cooperation. Education is becoming part of this regional agenda. In 2026, representatives from Fiji and numerous other Pacific Island countries participated in a regional consultation on climate-smart and life-skills education organised within the Pacific Regional Education Framework. This development demonstrates growing regional recognition that climate capability needs to be embedded more systematically within education systems.

Nevertheless, climate education in the Pacific cannot simply involve inserting generic global climate content into existing curricula. Pacific societies have distinctive relationships with land, ocean, community, culture and spirituality. These relationships influence how environmental change is understood and how resilience is practised.

Climate-responsive education in the Pacific consequently requires a relational approach connecting:



People ↔ Community ↔ Culture ↔ Land ↔ Ocean ↔ Knowledge ↔ Future Generations.

Such relationality challenges educational approaches that separate human development from ecological systems. In many Pacific epistemologies, human wellbeing and environmental wellbeing are interconnected rather than competing objectives.

Indigenous and Traditional Ecological Knowledge

One of the strongest themes emerging from Pacific climate scholarship is the importance of Indigenous and traditional ecological knowledge. Pacific communities have accumulated extensive knowledge concerning weather, oceans, agriculture, fisheries, biodiversity, disaster preparedness, resource management and ecological change through generations of lived interaction with island environments.

Bryant-Tokalau (2018) demonstrates how Indigenous knowledge, customary resource management, community education and participation have contributed to adaptation

and social resilience across Pacific Island countries. Such knowledge should not be interpreted merely as historical information. It constitutes dynamic systems of observation, interpretation, values and practice that continue to inform community responses to environmental change.

Recent international scholarship similarly emphasises the need to integrate Indigenous knowledge more meaningfully within environmental and sustainability education. Systematic reviews have identified both the potential of Indigenous knowledge for ecological literacy and resilience and persistent problems involving tokenism, epistemological marginalisation and institutional barriers.

A major concern is the tendency to incorporate Indigenous knowledge into predominantly Western scientific frameworks only when it provides useful environmental

information. Such an approach risks treating Indigenous knowledge as a supplementary resource while leaving existing hierarchies of knowledge unchanged. More transformative approaches recognise Indigenous epistemologies as legitimate systems of knowing in their own right.

For climate education, this requires genuine dialogue between scientific and Indigenous knowledge rather than replacement or assimilation. Scientific climate modelling can provide important understanding of long-term atmospheric and oceanic processes, while local and Indigenous knowledge can provide detailed understanding of environmental change, ecological relationships and culturally grounded adaptation practices. The educational objective should therefore be knowledge complementarity accompanied by epistemic respect.

Indigenous Knowledge and Climate Education in Fiji

The relationship between Indigenous knowledge, climate policy and education is especially important in Fiji. Indigenous Fijian knowledge systems historically supported understandings of weather, food production, fisheries, resource use, social organisation and environmental management. Knowledge was transmitted through oral traditions, observation, participation, storytelling and intergenerational relationships.

Research examining Fiji's climate, gender and education policies has nevertheless identified significant weaknesses in the integration of Indigenous knowledge. Policy analysis by Crossley and colleagues (2023) found that connected approaches centred on Indigenous knowledges and ontologies remained insufficiently incorporated into Fijian climate and education policy. Their analysis highlights a broader challenge: Indigenous knowledge may be acknowledged rhetorically without being systematically embedded in curriculum, pedagogy or policy implementation.

This distinction between **recognition and integration** is crucial. Mentioning Indigenous knowledge within policy documents does not necessarily transform classroom practice. Meaningful integration requires curriculum guidance, culturally appropriate resources, teacher preparation, community participation and mechanisms through which knowledge holders can contribute to educational processes.

For Fiji, climate-responsive education therefore offers an opportunity to strengthen both environmental resilience and cultural continuity. Climate education can create spaces in which scientific knowledge and Indigenous environmental understanding are brought into constructive relationship. Such an approach may be particularly valuable in rural and maritime communities where learners experience environmental change directly and community knowledge

remains closely connected with land and ocean.

Climate Justice and Education

Climate change is fundamentally a justice issue because responsibility for causing the crisis and vulnerability to its consequences are distributed unequally. Countries and populations that have historically contributed least to greenhouse-gas emissions may experience some of the most serious impacts. These inequalities occur internationally and within countries.

Climate justice scholarship draws attention to distributive, procedural, recognition and intergenerational dimensions of environmental change. Distributive justice concerns who experience climate costs and benefits. Procedural justice concerns who participate in decisions. Recognition justice concerns whether different identities, cultures and knowledge systems are respected. Intergenerational justice concerns responsibilities to future generations.

Climate change education has not always adequately incorporated these dimensions. A systematic review of justice in climate change education found that justice considerations, although growing in prominence, have historically remained insufficiently integrated across climate education research and practice.

This omission is particularly problematic for Pacific learners. Climate education that explains greenhouse gases without examining global inequality provides an incomplete understanding of the crisis. Pacific students should have opportunities to examine why highly climate-vulnerable island countries face consequences generated substantially by emissions originating elsewhere, while also critically considering local responsibilities and pathways towards sustainable development.

Climate justice education should therefore develop both scientific literacy and ethical reasoning. Learners should be encouraged to examine questions of responsibility, fairness, displacement, cultural loss, climate finance, adaptation, loss and damage, and the rights of future generations.

Gender, Equity and Climate-Responsive Education

Climate vulnerability is also shaped by gender, poverty, disability, age, location and livelihood. Climate disasters can intensify existing inequalities by affecting access to resources, education, healthcare, employment and security.

Fiji-focused research examining climate justice, gender and education has shown that these dimensions are not always coherently connected within policy. Crossley et al. (2023) argue that education and gender should not be treated as simple solutions to climate change and call for

more connected policy approaches grounded in Indigenous knowledge and justice.

This has important implications for climate education. Curriculum and educational interventions should recognise differentiated experiences of climate vulnerability. Girls and women may experience climate disruption differently from boys and men, while learners in remote maritime communities may face challenges different from those in urban areas. Students with disabilities may experience additional barriers during evacuation or disruption.

A climate-responsive education system must consequently be inclusive by design rather than assuming that the same climate intervention will produce equal benefits for all learners.

Green Skills, Employment and Sustainable Economies

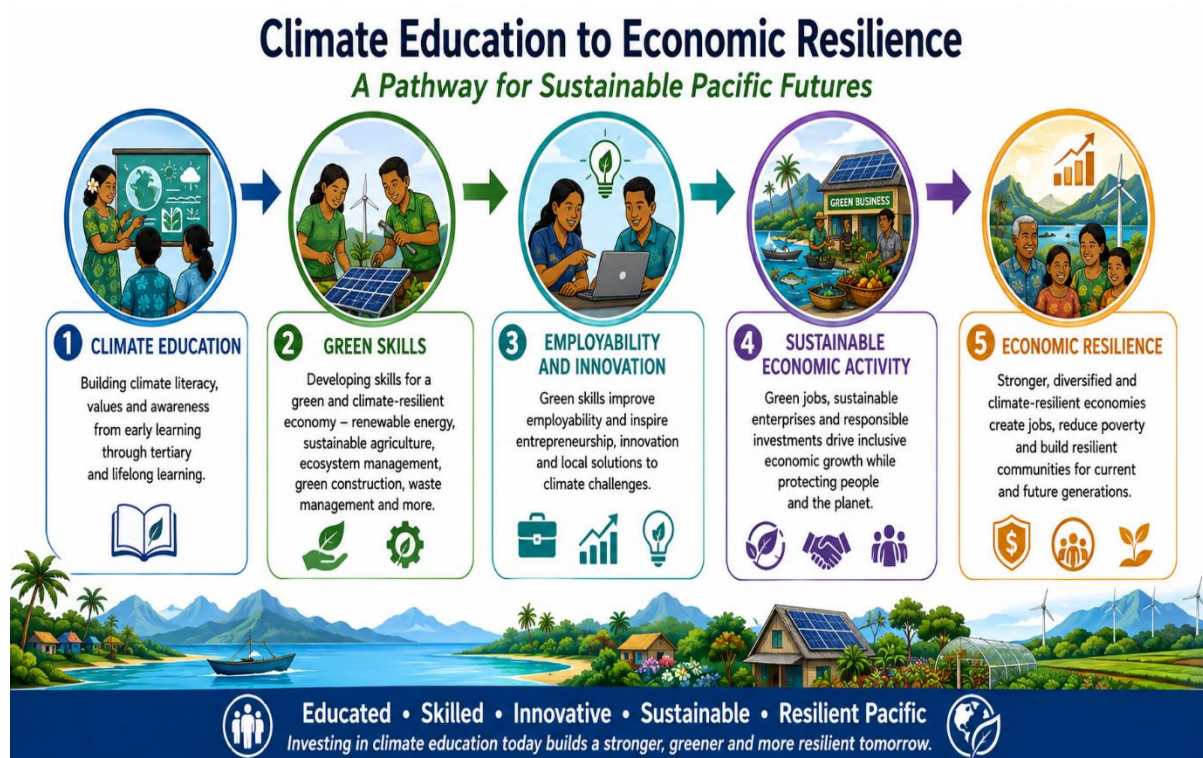
Climate change education also intersects increasingly with debates concerning employment and economic transformation. The transition towards lower-carbon and climate-resilient economies will alter the skills demanded within existing occupations while creating new forms of employment.

Green skills can include technical capabilities associated with renewable energy, sustainable agriculture, environmental management, energy-efficient construction, conservation, waste management and climate-smart technologies. However, they also include broader competencies such as systems thinking, problem-solving, collaboration, innovation, adaptability and environmental responsibility.

For Fiji and other Pacific economies, this relationship deserves greater attention. Climate vulnerability threatens important economic sectors such as tourism, agriculture, fisheries and infrastructure, while sustainable development creates opportunities in renewable energy, ecosystem restoration, climate-smart agriculture, sustainable tourism and blue and green economic activities.

Education systems therefore have an important anticipatory role. Schools, TVET providers and universities need to prepare learners for economies undergoing simultaneous digital, environmental and demographic transformation.

This creates a direct relationship between climate education and economic resilience:



Climate Education → Green Skills → Employability and Innovation → Sustainable Economic Activity → Economic Resilience.

The significance of this relationship is particularly strong for SIDS because limited economic diversification can increase vulnerability to environmental and external economic shocks.

TVET and Higher Education in Climate Transformation

Much climate education literature concentrates on

schools, yet TVET and higher education are equally important. TVET can translate climate objectives into practical occupational competencies, while universities contribute through research, professional preparation, technological innovation and policy development.

For Fiji and the Pacific, TVET could support capability development in renewable energy, resilient construction, sustainable agriculture, fisheries, water management, environmental monitoring, disaster-risk management and sustainable tourism. Universities can strengthen climate science, teacher education, engineering, economics, public policy, Indigenous studies and community-based research.

Higher education institutions can also model sustainability through their own operations. Campus energy systems, transportation, procurement, waste management and infrastructure can provide opportunities for applied learning and research.

A whole-of-education-system approach is therefore required. Climate education should not terminate when students leave school; it should form part of lifelong learning and workforce development.

Teachers and Climate-Responsive Pedagogy

Teachers occupy a central position between policy aspiration and classroom implementation. Curriculum reform alone cannot produce transformative climate education if educators lack subject knowledge, pedagogical capability, resources or confidence.

Climate change presents particular pedagogical challenges because it is scientifically complex, interdisciplinary, politically contested and emotionally significant. Teachers must be able to explain scientific processes while also facilitating discussion of ethics, justice, economics, uncertainty and possible solutions.

Effective climate pedagogy can therefore incorporate inquiry-based learning, problem-based learning, experiential learning, place-based education, interdisciplinary teaching and community projects. In Pacific settings, culturally responsive and relational pedagogies are particularly important.

Teacher professional development should consequently be regarded as climate policy infrastructure. Without capable and confident educators, ambitious curriculum frameworks may remain aspirational.

Whole-School and Whole-Institution Approaches

Recent sustainability education literature increasingly

supports whole-school approaches. These approaches recognise that climate education becomes more credible when institutional practices reinforce curriculum messages.

A climate-responsive school may integrate sustainability across governance, teaching, infrastructure, energy, water, waste, food, biodiversity, transportation, disaster preparedness and community engagement. Learners therefore encounter sustainability not simply as academic content but as an institutional practice.

The whole-school model also creates opportunities for practical learning. Students can analyse energy consumption, monitor waste, establish gardens, participate in ecosystem restoration and contribute to school climate plans.

In Fiji, schools could additionally serve as community resilience centres, particularly in areas vulnerable to cyclones, floods or other environmental hazards. This would further integrate education with community adaptation and disaster preparedness.

Policy Coherence and Whole-of-Government Climate Action

Climate-responsive education cannot be achieved through education ministries alone. Climate change intersects with environment, economy, energy, agriculture, fisheries, infrastructure, disaster management, health, employment and social protection.

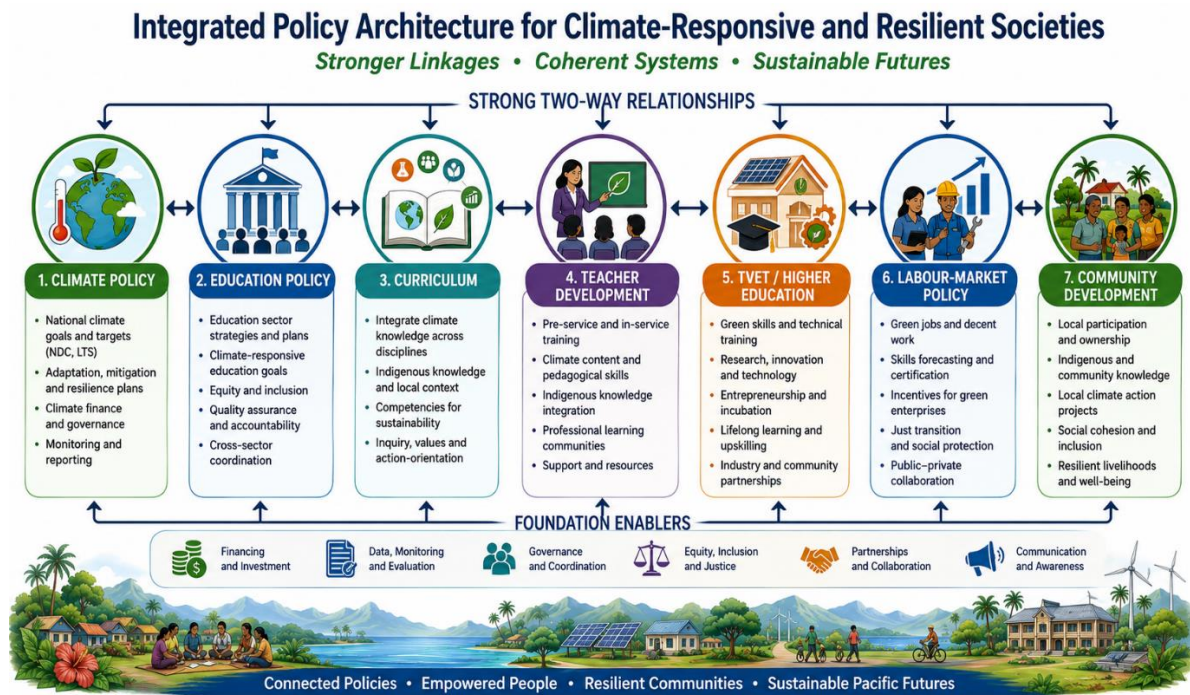
Policy coherence is therefore essential. Education policy should align with national climate commitments and development strategies, while climate policy should explicitly recognise the transformative role of education.

Fragmentation creates the risk that climate goals appear in environmental strategies but are weakly translated into curriculum, teacher preparation, assessment or educational financing. Conversely, education reforms may promote environmental awareness without connecting learning to national mitigation and adaptation priorities.

An integrated policy architecture would establish stronger relationships among:

Climate Policy ↔ Education Policy ↔ Curriculum ↔ Teacher Development ↔ TVET/Higher Education ↔ Labour-Market Policy ↔ Community Development.

Such alignment could transform education from a supporting activity into a strategic component of national climate governance.



Fiji's Climate Education Policy Context

Fiji has already established foundations for stronger integration between climate change and education. Earlier national climate policy recognised education, training and public awareness as important to climate response. Fiji's reporting to the United Nations Framework Convention on Climate Change indicates that climate-related material has been incorporated into areas of the school curriculum including science, biology, physics, geography and agricultural science, while earlier strategies sought to extend climate education across schools, tertiary education, vocational education, non-formal learning and special education. These developments are significant because they demonstrate that the concept of education contributing to mitigation and adaptation is not entirely new within Fiji's policy architecture. However, curriculum presence does not necessarily demonstrate systemic transformation. The more demanding question is whether climate principles are coherently embedded across educational policy, curriculum, pedagogy, teacher development, assessment, institutional operations, skills development and community partnerships. Fiji's contemporary climate governance context creates an opportunity to revisit this question. Rather than treating climate education primarily as environmental content distributed across selected subjects, a more ambitious approach would position education as a national mechanism for building climate capability across generations.

The Emerging Pacific Climate-Smart Education Agenda

The urgency of this agenda is reinforced by recent regional developments. In April 2026, policymakers, curriculum

specialists, teacher educators and development partners from Pacific countries met in Nadi, Fiji, for a regional consultation on climate-smart and life-skills education under the Pacific Regional Education Framework. The participation of Fiji, Kiribati, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu and other Pacific systems demonstrates that climate-responsive education is increasingly becoming a regional education-policy priority.

This development is important for two reasons. First, it confirms that climate change is moving from the periphery towards the centre of regional education planning. Second, it creates an opportunity for Pacific countries to develop approaches that emerge from their own environmental, cultural and educational realities rather than relying primarily on imported models.

The future Pacific climate education agenda should therefore combine global climate science with Pacific knowledge systems, regional cooperation, locally grounded pedagogies and national policy priorities.

Towards Education as Climate-Action Infrastructure

The literature reviewed above demonstrates that education contributes simultaneously to climate literacy, behaviour, adaptation, resilience, justice, green skills and community capability. Yet these contributions are frequently examined separately.

A more integrated conceptualisation is required.

This paper proposes that education can be understood as a form of climate-action infrastructure. Infrastructure in this context is not restricted to buildings and technologies. Education develops the human capabilities, knowledge

systems, professional skills, institutional capacities and social relationships required for climate policies to function.

The proposed relationship is:

Education Policy



Climate Literacy + Scientific Knowledge + Indigenous Knowledge



Teacher Capability + Learner Agency + Green Skills + Community Participation



Behavioural + Institutional + Economic Transformation



Climate Mitigation + Adaptation



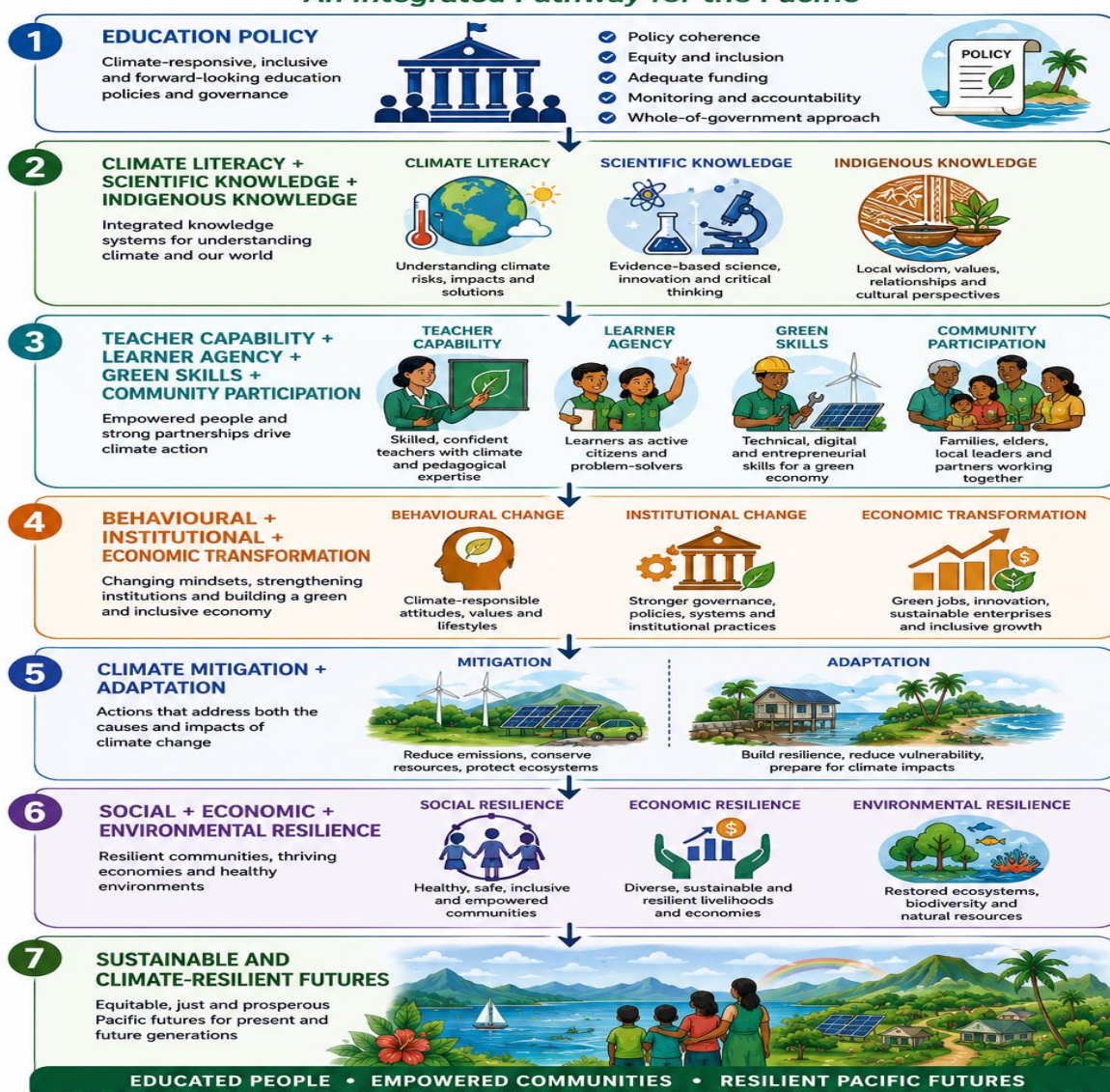
Social + Economic + Environmental Resilience



Sustainable and Climate-Resilient Futures

From Education Policy to Sustainable and Climate-Resilient Futures

An Integrated Pathway for the Pacific



This conceptualisation does not claim that education alone can resolve the climate crisis. Rather, it recognises education as an enabling and multiplier system through which technological, economic, environmental and policy interventions can become socially understood, culturally grounded and

sustainably implemented.

LITERATURE GAPS

Despite substantial growth in research concerning climate

change education, environmental education, Education for Sustainable Development and climate resilience, several important gaps remain. These gaps are particularly significant when the literature is considered from the perspective of Fiji and Pacific SIDS.

Conceptual Gap: Education Is Rarely Framed Explicitly as a Climate Mitigation Agent

A substantial proportion of existing literature conceptualises education through climate literacy, environmental awareness, sustainable development or adaptation. Comparatively less scholarship conceptualises education explicitly as a systemic **mitigation agent**.

This distinction matters. Climate awareness describes what people know, whereas mitigation concerns action that contributes to reducing the drivers of climate change. A stronger conceptual bridge is needed between educational processes and mitigation outcomes.

The literature therefore requires frameworks explaining how: **Learning → Agency → Behaviour → Institutional Change → Climate Outcomes**.

The present paper addresses this gap by conceptualising education as an enabling and multiplier mechanism for mitigation rather than simply a vehicle for environmental awareness.

Integration Gap: Mitigation, Adaptation and Resilience Are Frequently Treated Separately

Climate education research frequently concentrates on one dimension of climate response. Some scholarship focuses on mitigation and behavioural change, while other work emphasises disaster preparedness, adaptation or resilience.

In reality, these processes are interconnected, particularly in SIDS. Education policy requires an integrated model that prepares learners simultaneously to reduce future climate pressures, adapt to unavoidable impacts and strengthen community resilience.

This paper therefore integrates **mitigation + adaptation + resilience** within a common education-policy framework.

Geographic Gap: Pacific SIDS Remain Underrepresented

Much influential climate education research originates in Europe, North America and other large education systems. Although the Pacific climate literature is substantial, comparatively less research examines education policy itself as a strategic climate-action mechanism across Pacific SIDS.

This is problematic because Pacific contexts possess distinctive characteristics: geographical dispersion, small economies, extensive ocean territories, climate-sensitive livelihoods, strong community relationships, Indigenous

epistemologies and significant exposure to climate hazards.

The paper responds by locating Fiji and the Pacific at the centre rather than the periphery of the analysis.

Fiji-Specific Policy Integration Gap

Fiji possesses climate policies, legislation, curriculum provisions and development strategies, yet the literature provides limited analysis of how these components could be systematically integrated through education policy.

Existing Fiji-focused scholarship has identified weaknesses in the connections among climate justice, education, gender and Indigenous knowledge. What remains less developed is a comprehensive policy framework explaining how the **entire education system** could contribute to national mitigation, adaptation and resilience objectives.

This paper seeks to address that gap.

Indigenous Knowledge Implementation Gap

There is growing recognition of Indigenous and traditional ecological knowledge in climate scholarship. However, recognition frequently exceeds implementation.

The literature identifies continuing risks of tokenism, epistemic marginalisation and treating Indigenous knowledge as supplementary to Western scientific knowledge rather than as a legitimate knowledge system. For Fiji, there remains a need for clearer policy mechanisms explaining how Indigenous knowledge can be integrated ethically into curriculum, teacher preparation, classroom pedagogy, community partnerships and climate decision-making.

Knowledge-to-Action Gap

A major unresolved issue concerns how climate knowledge translates into action.

Many educational initiatives measure awareness, knowledge or attitudes rather than actual behavioural, institutional or community outcomes. Consequently, evidence remains comparatively limited concerning whether climate education produces sustained changes in household behaviour, community practices, institutional decisions or mitigation outcomes.

Future research needs longitudinal and mixed-method studies tracing the pathway from learning to action.

Teacher Capability Gap

Teachers are central to climate education, yet comparatively limited Pacific-specific empirical evidence examines teachers' climate knowledge, pedagogical

confidence, professional-development needs and access to appropriate resources.

Curriculum reform without corresponding investment in teacher capability risks creating a policy–practice gap.

This represents an important area for future Fiji and Pacific research.

Green Skills and Economic Resilience Gap

Climate education and employment scholarship are increasingly connected internationally, but this relationship remains comparatively underdeveloped in Pacific education research.

More research is needed to identify the green capabilities required by Fiji's future economy and determine how schools, TVET providers and universities can develop these competencies.

The relationship among education, climate action, employment and economic resilience therefore represents a particularly important research frontier.

Whole-School Implementation Gap

Whole-school sustainability models are increasingly advocated internationally, but there is limited evidence concerning their systematic implementation across Fiji and many Pacific Island education systems.

Future research should examine school energy use, water management, waste, food systems, biodiversity, disaster preparedness, infrastructure and community engagement alongside curriculum and pedagogy.

This would shift assessment from asking whether schools *teach* sustainability towards examining whether educational institutions themselves *practise* sustainability.

Climate Justice Gap

Justice is increasingly prominent in climate scholarship but remains unevenly incorporated into climate education.

For Pacific contexts, climate education needs to engage explicitly with historical responsibility, unequal vulnerability, loss and damage, displacement, Indigenous rights, gender, disability, intergenerational equity and cultural continuity.

Climate literacy without climate justice risks providing learners with a technically accurate but socially incomplete understanding of climate change.

Youth Participation Gap

Young people are frequently described as beneficiaries of climate education rather than participants in climate governance.

More research is required into mechanisms through which Pacific learners can participate meaningfully in school

sustainability planning, community resilience projects and climate-policy dialogue.

The transition required is from:

Learning about climate change

to

Learning for climate action

and ultimately to

Participating in climate transformation.

Policy Coherence Gap

Perhaps the most significant gap is institutional fragmentation. Climate policy, education policy, economic development, TVET, disaster-risk reduction and environmental management are often administered through different institutional structures.

The literature provides insufficient attention to how these systems can be coordinated through a whole-of-government education-for-climate-action framework.

This paper therefore argues for policy coherence connecting:

Education + Climate + Economy + Environment + Community + Culture.

Methodological and Evidence Gap

Much of the climate-education literature remains conceptual, policy-oriented or based upon short-term educational interventions. There is a need for more longitudinal, comparative and mixed-method research examining whether climate-responsive education produces measurable changes over time.

Particularly valuable research in Fiji and the Pacific could investigate:

- learner climate literacy and agency;
- teacher preparedness;
- curriculum implementation;
- Indigenous knowledge integration;
- school sustainability practices;
- household and community behavioural change;
- green-skills development;
- rural, urban and maritime differences;
- gender and socioeconomic inequalities; and
- longer-term adaptation and resilience outcomes.

Such evidence would enable policy to move from normative claims about the importance of climate education towards empirically grounded understanding of what works, for whom, under what conditions and with what outcomes.

Overall Literature Gap and Contribution of the Paper

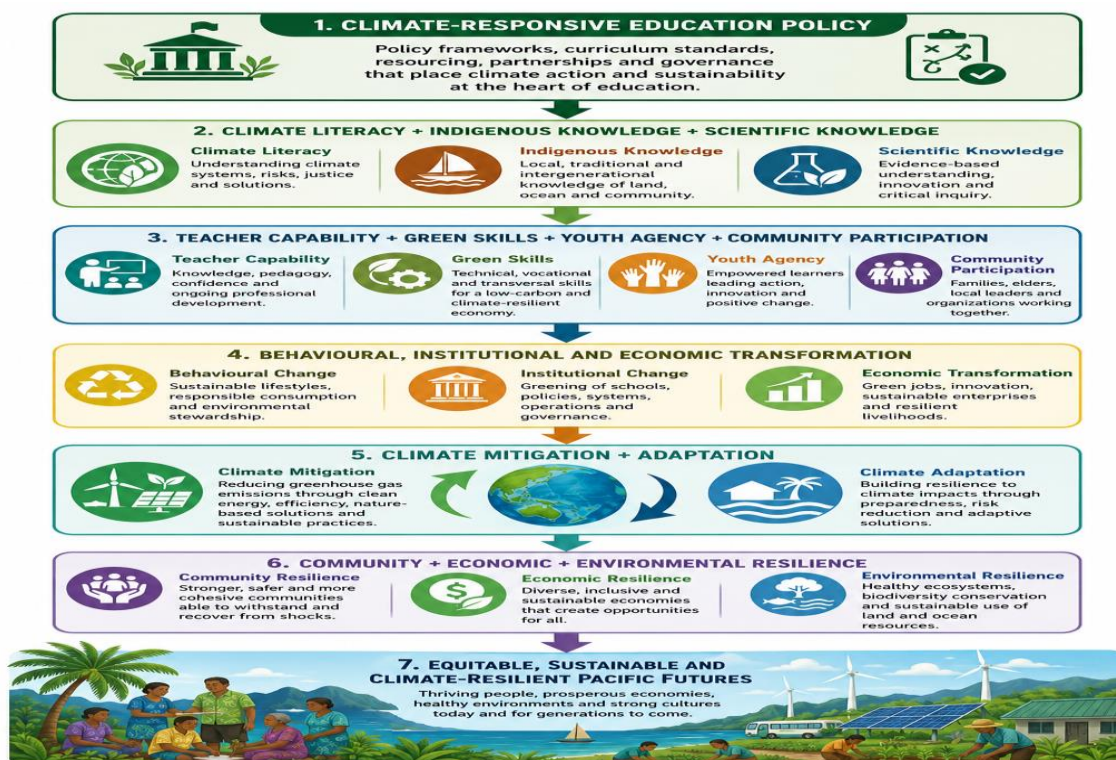
The overarching gap identified through this review is therefore not an absence of scholarship on climate change or education. Rather, it is the fragmentation of the relationship between them.

Existing scholarship has generated important knowledge about climate literacy, environmental education, sustainability, adaptation, Indigenous knowledge, climate justice, green skills and resilience. However, these areas are frequently examined as separate domains.

What remains insufficiently developed—particularly for Fiji and Pacific SIDS—is an integrated policy framework that conceptualises the education system itself as part of national and regional climate-response architecture.

The contribution of the paper therefore lies in repositioning education from a sector that is primarily expected to cope with climate change to a strategic institution capable of contributing to climate transformation. In the Fiji and Pacific context, this requires a model that is scientifically informed but culturally grounded, globally connected but locally responsive, technologically progressive but socially equitable, and oriented simultaneously towards people, economies and the environment.

This paper addresses that gap by proposing the following integrated proposition:



DISCUSSION AND ANALYSIS

Repositioning Education from Climate Awareness to Climate Action

The literature reviewed in this paper demonstrates that the relationship between education and climate change is undergoing an important conceptual transformation. Historically, education has largely been positioned as a mechanism for increasing environmental awareness, transmitting scientific knowledge and encouraging environmentally responsible behaviour. While these functions remain important, they are insufficient in the context of accelerating climate risks. Climate change now affects livelihoods, food and water security, health, infrastructure, economic productivity, biodiversity, human mobility, cultural continuity and the long-term development prospects of

nations. Consequently, education can no longer remain peripheral to climate governance. It should be repositioned as part of the institutional architecture through which societies mitigate climate change, adapt to unavoidable impacts and strengthen resilience.

This argument is particularly important for Fiji and the wider Pacific. Small Island Developing States (SIDS) face interconnected climatic risks while frequently possessing comparatively limited fiscal, institutional and technical resources with which to respond. The IPCC (2022) identifies education and awareness, human-resource capacity, improved governance, climate information, justice and equity, and the incorporation of Indigenous and local knowledge as important enablers of adaptation and resilience in small-island contexts. Education therefore operates at the intersection of several factors already recognised as essential to successful climate

responses.

The central analytical proposition of this paper is consequently that education should be understood not simply as a social sector requiring protection from climate change but as a **climate-action institution** capable of strengthening society's capacity to respond to climate change. This represents a significant conceptual distinction. A climate-resilient education system seeks to protect learners, teachers, schools and educational continuity from climate hazards. An education system for climate resilience goes further by developing the knowledge, capabilities, behaviours, values, institutions and social relationships necessary for society itself to become more resilient.

For Fiji, both functions are necessary. Schools must be able to withstand cyclones, floods, extreme heat and other disruptions, but they must also develop generations capable of reducing environmental pressures, managing climate risks and contributing to sustainable economic transformation. Education therefore needs to move from:

Education about climate change

to

Education for climate action

and ultimately towards

Education as climate action.

This progression represents the conceptual foundation of the framework proposed in this paper.

Climate-Responsive Education Policy as the Starting Point

The first component of the proposed framework is **climate-responsive education policy**. This positioning is deliberate

because sustainable transformation cannot depend exclusively on individual teachers, environmentally enthusiastic schools or isolated projects. Climate action must be institutionalised within the policy architecture of the education system.

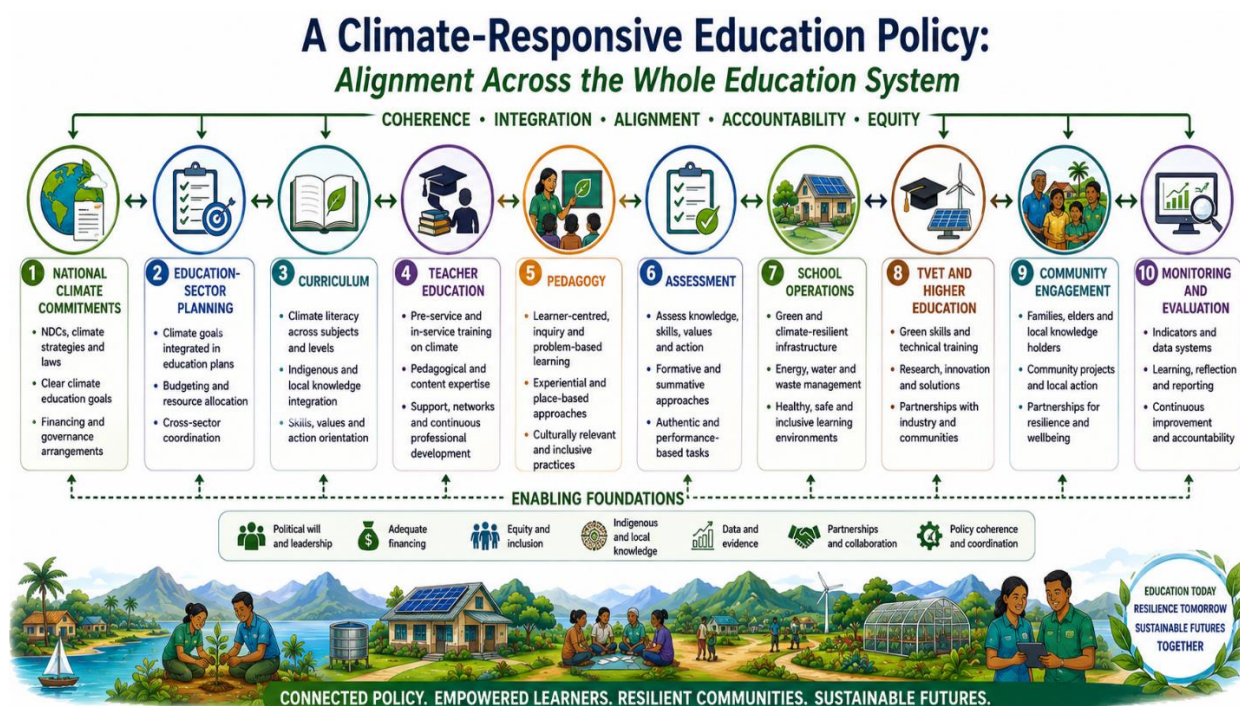
Fiji's contemporary policy environment provides a particularly significant opportunity for such institutionalisation. Fiji's Third Nationally Determined Contribution (NDC 3.0) for 2025–2035 builds upon the Climate Change Act 2021 and strengthens national commitments across mitigation, adaptation and loss and damage (Department of Climate Change, Ministry of Environment and Climate Change, Government of Fiji, 2025). Importantly for education, the NDC identifies the integration of evidence-based climate-change learning into the National Curriculum Framework as an action required to support Fiji's climate objectives.

This creates an important policy opportunity. Climate education need not be justified merely as an additional curriculum initiative. It can be understood as part of Fiji's implementation of its wider national climate commitments.

However, curriculum inclusion alone should not be regarded as sufficient. A policy can state that climate change should be taught without substantially altering what happens in classrooms, teacher preparation, assessment or institutional practice. The critical challenge is therefore implementation.

A genuinely climate-responsive education policy would require alignment across:

National climate commitments → Education-sector planning → Curriculum → Teacher education → Pedagogy → Assessment → School operations → TVET and higher education → Community engagement → Monitoring and evaluation.



The strength of such a system lies in vertical and horizontal coherence. Vertical coherence ensures that national commitments reach schools and classrooms. Horizontal coherence ensures that education policy connects with environment, energy, agriculture, fisheries, employment, disaster management, infrastructure and economic-development policy.

Without such coherence, climate education risks becoming another policy aspiration whose implementation depends on individual initiative rather than systemic support.

Education as a Mitigation Multiplier

The title of this paper deliberately conceptualises education as a **climate mitigation agent**. This proposition requires careful interpretation.

Education does not directly replace fossil-fuel infrastructure, construct renewable-energy systems or regulate industrial emissions. Its mitigation effect is primarily enabling and multiplicative. Climate mitigation ultimately depends on human decisions regarding energy, transportation, consumption, production, waste, land use, agriculture, technology and governance. Education influences the knowledge, skills, attitudes and capabilities through which these decisions are made.

The relationship may therefore be represented as:

Climate Knowledge → Understanding → Values → Capability → Agency → Behaviour → Collective Practice → Mitigation.

This is important because environmental knowledge alone does not guarantee environmental action. A learner may

understand climate change scientifically while continuing to participate in unsustainable systems because alternatives are inaccessible, expensive or institutionally unsupported. Climate education must therefore address not merely what individuals should do but also how institutions, governments, industries and communities can create enabling conditions for sustainable behaviour. This distinction prevents climate education from individualising responsibility for a systemic global problem. Learners should certainly understand their own environmental responsibilities, but they should also understand energy systems, public policy, corporate practices, infrastructure, global emissions inequalities and collective decision-making.

Education becomes a stronger mitigation agent when it develops both personal responsibility and systemic literacy.

From Climate Literacy to Climate Capability

Climate literacy is a necessary foundation of climate action, but this paper argues that literacy should ultimately develop into **climate capability**. Climate literacy concerns the ability to understand climate systems, causes, consequences, risks and possible responses. Climate capability extends further by asking whether individuals possess the practical, social and critical capacities required to act upon that understanding.

The distinction can be represented as:

Knowing → Understanding → Evaluating → Acting →

Transforming.

This movement is consistent with contemporary international approaches. UNESCO (2024) advocates climate education that is action-oriented, holistic, scientifically accurate, justice-driven and connected with lifelong learning.

For Fiji, climate capability could involve learners being able to interpret local climate risks, conserve resources, participate in disaster preparedness, understand renewable-energy options, evaluate sustainable consumption, engage in ecosystem restoration and contribute to community decision-making.

Climate education should therefore not be evaluated only by asking:

“What do students know about climate change?”

A more meaningful evaluation would also ask:

“What are students able and willing to do with what they know?”

This shift has major implications for curriculum and assessment.

Transforming Curriculum: Climate Change as an Interdisciplinary Reality

Climate change cannot be adequately understood within a single school subject. Its causes and consequences extend across scientific, economic, social, ethical, political, technological and cultural domains.

A climate-responsive curriculum should therefore be interdisciplinary.

Science can develop understanding of atmospheric processes, ecosystems and emissions.

Geography can examine spatial vulnerability, hazards, migration and human-environment relationships.

Economics can investigate externalities, climate finance, sustainable development and green transitions.

Agriculture can explore climate-smart farming and food security.

Technology can examine renewable energy and innovation.

Social sciences can investigate inequality, governance, migration and climate justice.

Languages and the arts can enable communication, cultural interpretation and environmental storytelling.

Civics can develop understanding of environmental rights, responsibilities and democratic participation.

Climate change should consequently operate as a **cross-curricular organising issue**, not merely an environmental topic within science or geography.

UNESCO's Greening Curriculum Guidance (2024) supports precisely this type of holistic approach, including age-appropriate learning outcomes and action-oriented climate education across formal and non-formal education.

For Fiji, curriculum transformation should additionally

connect global scientific concepts to local realities. Learners should be able to relate climate science to cyclones, flooding, coastal change, coral reefs, fisheries, agriculture, water security, heat, biodiversity and community livelihoods.

The objective is to make climate education scientifically credible while also experientially meaningful.

Indigenous Knowledge Is Not an Optional Addition

The second stage of the proposed framework combines **climate literacy, Indigenous knowledge and scientific knowledge**. The placement of these knowledge systems alongside one another is theoretically significant.

Pacific climate education should not be based on the assumption that scientifically produced knowledge represents the complete body of legitimate climate knowledge while Indigenous knowledge functions merely as supplementary cultural material. Pacific peoples have developed extensive knowledge of land, ocean, weather, ecosystems, food production, resource stewardship and environmental change through generations of observation and lived experience.

The IPCC (2022) itself recognises embedding Indigenous and local knowledge and cultural resources in decision-making as an important enabler of adaptation in small islands.

For Fiji, Indigenous knowledge can contribute to understanding seasonal patterns, traditional food systems, marine resource management, disaster preparedness, biodiversity, land stewardship and community resilience. Such knowledge also contains ethical dimensions concerning relationships among people, land, ocean, community, ancestors and future generations.

This relational worldview is highly relevant to climate education because the climate crisis is partly a consequence of development models that have frequently separated economic progress from ecological wellbeing.

A Pacific approach can challenge that separation by teaching that:

Human wellbeing cannot be sustained independently of environmental wellbeing.

Importantly, integration should not romanticise Indigenous knowledge or position it in opposition to science. Both knowledge systems have strengths and limitations. The objective should be epistemological dialogue and complementarity.

The most powerful Pacific climate education may therefore emerge from the intersection of:

Scientific evidence + Indigenous ecological knowledge + lived community experience.

Pacific Relationality as a Climate-Education Strength

A distinctive contribution of Pacific contexts is the emphasis placed on relationality.

Climate change is frequently represented through statistics: atmospheric concentrations, temperature increases, sea-level projections, emissions trajectories and economic losses. These measures are essential, but they do not fully capture what environmental change means to communities whose identities are closely connected to land, ocean, kinship, culture and ancestry.

Pacific relationality provides a different starting point. Environmental wellbeing is understood through relationships rather than isolated variables.

The climate question therefore becomes not simply:

“How can we protect resources?”

but:

“How can we sustain the relationships among people, land, ocean, culture and future generations?”

This perspective can enrich international climate-education scholarship because it moves sustainability beyond technical management towards ethical responsibility.

Recent Pacific education initiatives provide evidence that this approach is increasingly being recognised. In 2026, UNESCO-supported work on climate-smart education in the Pacific explicitly highlighted cultural practices and community values as foundations upon which education systems can build climate resilience.

This is an important conceptual shift: Pacific knowledge should not merely be inserted into global climate-education frameworks. Pacific perspectives can themselves contribute to reshaping those frameworks.

Teachers as Climate-Policy Implementers

No climate-responsive curriculum can succeed without teachers.

Teachers occupy the critical space between policy intention and learner experience. If climate education policy is ambitious but teachers lack knowledge, confidence, resources or pedagogical preparation, a substantial policy–practice gap will emerge.

Teacher capability should therefore be regarded as part of **climate-policy infrastructure**.

Teachers require at least four interrelated capabilities:

Climate content knowledge + pedagogical capability + contextual knowledge + action-oriented teaching competence.

Climate content knowledge enables teachers to explain climate processes accurately.

Pedagogical capability enables them to translate complex

concepts into meaningful learning.

Contextual knowledge enables them to connect climate issues to local environments and communities.

Action-oriented competence enables them to move beyond information transmission towards inquiry, participation, problem-solving and community engagement.

Teacher education institutions therefore have an important responsibility. Climate education should be integrated into initial teacher preparation as well as continuing professional development.

For Fiji and Pacific countries where education systems may already face resource constraints, teacher development must be practical, sustained and contextually appropriate rather than dependent on isolated workshops.

Green Skills: Connecting Climate Policy with Economic Futures

One of the most important arguments of this paper is that climate-responsive education should be connected to economic transformation.

Climate policy is sometimes perceived as involving a trade-off between environmental protection and economic development. Education can help challenge this binary by preparing citizens and workers for emerging low-carbon and climate-resilient economies.

Fiji's NDC 3.0 establishes substantial ambitions for energy transformation, including significant reductions in energy-sector emissions and a transition towards renewable electricity (Department of Climate Change, Ministry of Environment and Climate Change, Government of Fiji, 2025). Such transitions require human capability.

Renewable-energy systems require technicians.

Climate-smart agriculture requires skilled farmers and agricultural specialists.

Sustainable tourism requires environmentally informed managers and workers.

Resilient infrastructure requires engineers, architects and tradespeople.

Marine conservation requires scientific and community expertise.

Waste reduction and circular economies require entrepreneurs and technical capability.

Education therefore becomes a bridge between climate ambition and economic implementation.

The relationship can be expressed as:

Climate Policy → Education and Training → Green Skills → Green Employment → Sustainable Enterprise → Economic Resilience.

This is particularly important for Pacific SIDS because economic diversification and resilience are essential in economies exposed to environmental and external shocks. TVET institutions should therefore occupy a central rather than peripheral position in national climate strategies.

Youth Agency: From Recipients to Climate Actors

Climate education often conceptualises young people as recipients of knowledge. This paper argues that they should instead be recognised as climate actors.

Young people possess a unique stake in climate policy because they will live longest with the consequences of decisions being made today. Yet educational systems often give them comparatively limited opportunities to participate in environmental decision-making.

Youth agency should therefore become an explicit outcome of climate-responsive education.

Learners can participate in:

- school climate committees;
- community adaptation projects;
- mangrove and ecosystem restoration;
- waste-reduction programmes;
- energy and water audits;
- school gardens;
- climate communication;
- citizen science;
- disaster preparedness; and
- local environmental planning.

Such experiences transform climate education from abstract learning into participatory citizenship.

The objective is not to transfer responsibility for solving climate change onto young people. Rather, it is to recognise their right and capacity to participate meaningfully in decisions concerning their futures.

Schools as Living Laboratories for Climate Action

If schools teach sustainability while operating unsustainably, learners encounter a contradiction between curriculum and institutional practice.

Whole-school approaches address this problem by transforming the educational institution itself into a site of climate action.

UNESCO's Green School Quality Standard (2024) identifies four interconnected areas: school governance, facilities and operations, teaching and learning, and community engagement.

For Fiji, these principles could translate into school-level practices involving rainwater harvesting, renewable energy, energy conservation, waste separation, composting, school gardens, sustainable food practices, mangrove planting, biodiversity conservation, climate-resilient infrastructure and

disaster preparedness.

These initiatives have educational as well as environmental value.

A solar-energy system can become a science and technology learning resource.

A rainwater system can support learning about water security.

A school garden can connect agriculture, nutrition, biodiversity and climate adaptation.

An energy audit can connect mathematics with sustainability.

Mangrove restoration can integrate biology, geography, Indigenous knowledge and community participation.

The entire school can therefore become a curriculum.

Community Participation and the Expansion of Climate Learning

Climate education should not end at the school boundary.

In Pacific societies, community relationships, intergenerational knowledge and collective practices are particularly important. Schools can learn from communities while communities can also benefit from knowledge developed through schools.

The framework therefore positions **community participation** alongside teacher capability, green skills and youth agency.

Community elders and knowledge holders can contribute environmental histories and Indigenous ecological knowledge.

Government agencies can provide scientific and technical expertise.

Civil-society organisations can support environmental projects.

Universities can provide research partnerships.

Businesses can support green-skills development and sustainable enterprise.

Traditional and faith leaders can strengthen community mobilisation.

Climate education can consequently operate as an intergenerational knowledge network rather than a one-directional transfer of information from teacher to learner. This is particularly valuable in rural and maritime Pacific communities where lived environmental experience may provide highly contextual knowledge of ecological change.

Behavioural Transformation Is Necessary but Insufficient

The fourth stage of the proposed model involves **behavioural, institutional and economic transformation**.

Behavioural change matters. Sustainable consumption,

waste reduction, energy conservation, responsible transportation and environmental stewardship can collectively contribute to climate objectives.

However, an excessive focus on individual behaviour can obscure structural responsibility.

A learner cannot choose public transportation if adequate public transportation does not exist.

A household cannot transition to renewable energy if technology is unaffordable.

A community cannot protect ecosystems if economic survival depends on unsustainable resource extraction.

Climate education must therefore develop critical understanding of both **individual agency and structural conditions**.

This is why behavioural transformation in the model is accompanied by institutional and economic transformation.

Climate-responsive education should prepare learners not simply to adapt themselves to existing systems but also to participate in improving those systems.

Institutional Transformation and Policy Coherence

Educational institutions themselves must change if education is to become a credible climate-action mechanism.

Institutional transformation includes governance, financing, procurement, infrastructure, assessment, professional development and partnerships.

At the national level, policy coherence becomes particularly important.

Climate policy cannot remain the responsibility of an environment ministry alone. Education, finance, agriculture, fisheries, energy, employment, infrastructure, health and disaster-management agencies all influence climate outcomes.

Fiji's NDC 3.0 provides a useful foundation because it explicitly calls for climate objectives to be integrated into decision-making and for climate implications to be reflected across governmental processes.

Education should therefore be positioned within a **whole-of-government climate governance model**.

The education ministry should know what capabilities national climate policy requires.

TVET institutions should know what green occupations are emerging.

Universities should know what research and professional capabilities are required.

Schools should know what climate competencies learners should develop.

Communities should have meaningful mechanisms for contributing local and Indigenous knowledge.

Policy coherence converts these separate activities into a system.

Climate Justice Must Remain Central

Climate education in Fiji and the Pacific cannot be separated from climate justice.

Pacific Island countries have contributed comparatively little to historical global emissions while experiencing substantial climate risks. Fiji's NDC 3.0 itself notes the country's very small contribution to global emissions while emphasising its considerable vulnerability.

Climate education should therefore enable learners to understand not only climate science but also questions of responsibility, fairness and power.

Who caused the problem?

Who experiences the greatest consequences?

Who has the resources to adapt?

Who participates in climate decisions?

Who pays for loss and damage?

Whose knowledge is recognised?

What responsibilities does the present generation have towards future generations?

These are educational questions as much as political questions.

A climate curriculum that teaches atmospheric science while ignoring inequality provides learners with only a partial understanding of climate change.

Climate justice should consequently be treated as a cross-cutting principle rather than a specialist topic.

Equity Within Fiji Must Also Be Addressed

Global climate inequality should not obscure inequalities within Fiji itself.

Climate vulnerability is shaped by geography, income, gender, disability, age, livelihood and access to infrastructure. Rural, maritime and coastal communities may experience environmental risks differently from urban communities.

Similarly, schools do not possess equal resources.

A climate-responsive education policy must therefore avoid creating a new form of educational inequality in which well-resourced schools become green, digitally enabled and climate-ready while disadvantaged schools struggle to implement even basic climate programmes.

Equity should consequently shape:

resource allocation;

teacher development;

climate-resilient infrastructure;

access to technology;

curriculum resources;

community support; and

climate financing.

Climate-responsive education should reduce inequality rather than reproduce it.

Mitigation and Adaptation Must Be Integrated

A major contribution of the proposed framework is its integration of mitigation and adaptation.

These concepts are often discussed separately, but for Pacific SIDS they are deeply interconnected.

Mitigation addresses the causes of climate change.

Adaptation addresses its consequences.

Resilience concerns the capacity to anticipate, absorb, recover from and transform in response to disruption.

Education can contribute to all three.

For example, teaching renewable-energy literacy contributes to mitigation.

Teaching climate-resilient agriculture contributes to adaptation.

Developing community disaster preparedness strengthens resilience.

Teaching ecosystem restoration may contribute simultaneously to mitigation, adaptation and biodiversity conservation.

A Pacific education framework should therefore resist artificial separation and instead develop integrated climate capability.

Community Resilience as an Educational Outcome

The proposed model deliberately moves beyond individual learning outcomes towards **community resilience**.

Education's value should not be assessed only through examination results or qualifications. In climate-vulnerable societies, education can also be evaluated through its contribution to community capability.

Do learners transfer climate knowledge into households?

Do schools participate in disaster preparedness?

Do community projects emerge from school learning?

Are Indigenous environmental practices being sustained?

Are young people participating in environmental decision-making?

Such questions broaden the meaning of educational effectiveness.

Education becomes successful not simply when learners know more but when communities become better able to anticipate, respond to and recover from climate-related challenges.

Economic Resilience as an Educational Outcome

The second resilience dimension is economic.

Climate change can disrupt agriculture, fisheries, tourism, infrastructure, employment and household livelihoods.

Education can reduce vulnerability by supporting livelihood diversification, innovation, entrepreneurship and green skills.

This does not mean that education alone can insulate an economy from climate shocks. Rather, education expands the

range of capabilities available to individuals and societies when economic conditions change.

Climate-responsive education should therefore prepare learners not merely for existing jobs but for changing economic systems.

This requires stronger relationships among schools, TVET institutions, universities, employers and national economic planners.

For Fiji, climate education should be considered part of human-capital development for a climate-resilient economy.

Environmental Resilience as an Educational Outcome

The third dimension is environmental resilience.

Healthy ecosystems themselves provide climate protection. Mangroves, forests, coral reefs, wetlands and healthy soils contribute to carbon storage, coastal protection, biodiversity, food systems and livelihoods.

Education can strengthen environmental resilience by developing ecological literacy and stewardship.

However, stewardship should not be conceptualised simply as conservation undertaken on behalf of nature. Pacific relational perspectives suggest a deeper interpretation in which environmental wellbeing and human wellbeing are mutually dependent.

Protecting mangroves, for example, may simultaneously support biodiversity, fisheries, coastal protection, carbon storage, cultural practices and livelihoods.

Climate education should therefore encourage systems thinking: the ability to recognise that environmental, social and economic systems are interconnected.

Education as Climate-Action Infrastructure

The analysis presented throughout this paper leads to a broader theoretical proposition: education should be conceptualised as **climate-action infrastructure**.

Infrastructure is normally understood in physical terms—roads, energy systems, seawalls, water networks and buildings. Yet none of these systems can be designed, implemented, maintained or governed effectively without human capability.

Education creates that capability.

It produces teachers, engineers, technicians, policymakers, farmers, scientists, entrepreneurs, community leaders and informed citizens.

It develops the knowledge through which climate risks are interpreted.

It develops the skills through which solutions are implemented.

It develops the values through which priorities are determined.

It creates the social capability through which collective action becomes possible.

Education is therefore not merely supporting climate infrastructure.

Education is part of climate infrastructure.

This represents one of the principal conceptual contributions of the paper.

The Pacific as a Contributor to Global Climate-Education Thinking

Pacific Island countries are frequently represented internationally primarily through vulnerability narratives.

Such narratives are understandable given the seriousness of climate threats, but they can unintentionally position Pacific peoples as passive victims.

The analysis in this paper suggests an alternative framing.

Pacific societies possess knowledge, relational philosophies, community structures, adaptive practices and experiences that can contribute meaningfully to international climate-education scholarship.

The Pacific should therefore be viewed not simply as a region requiring climate-education solutions but as a region capable of **generating climate-education knowledge**.

The concept of relationality, the integration of Indigenous ecological knowledge, community-based adaptation and strong relationships between identity and environment can enrich global approaches that remain overly technical or individualistic.

This represents a shift from:

Pacific as climate victim

towards

Pacific as climate knowledge contributor and climate-action leader.

A Timely Policy Window for Fiji and the Pacific

The timing of this discussion is particularly significant.

Fiji's NDC 3.0 covers 2025–2035 and explicitly identifies curriculum integration among its climate-related reforms (Department of Climate Change, Ministry of Environment and Climate Change, Government of Fiji, 2025).

At the regional level, policymakers, curriculum specialists, teacher educators and development partners from Pacific Island countries met in Nadi in April 2026 to advance climate-smart and life-skills education under the Pacific Regional Education Framework.

At the global level, UNESCO's Greening Education Partnership seeks to accelerate climate integration across curriculum, schools, teacher development and communities.

These developments create a rare convergence:

Global momentum + Pacific regional cooperation + Fiji

national climate commitments + Education-system reform opportunity.

The challenge is to convert this convergence into sustained implementation.

Fiji therefore has an opportunity not merely to insert additional climate content into its curriculum but to develop a coherent **Climate-Responsive Education Policy Framework** capable of connecting national climate ambitions with education-system transformation.

From Policy Aspiration to Measurable Outcomes

One danger within climate and education policy is rhetorical ambition without measurable implementation.

A credible climate-responsive education strategy therefore requires indicators.

Possible indicators could include:

- percentage of curriculum areas containing age-appropriate climate competencies;
- percentage of teachers completing climate-education professional development;
- learner climate-literacy and climate-agency outcomes;
- proportion of schools implementing whole-school sustainability plans;
- renewable-energy and water-conservation adoption in schools;
- Indigenous and local knowledge integration;
- student participation in climate-action projects;
- climate-resilient infrastructure coverage;
- green-skills programmes within TVET;
- partnerships between schools and communities;
- inclusion of climate justice within curriculum;
- rural, urban and maritime implementation equity; and
- evidence of behavioural and community-level outcomes.

Monitoring should therefore ask not merely whether climate policy exists but whether it is changing educational practice and contributing to social outcomes.

Towards a Fiji and Pacific Climate-Responsive Education Model

The analysis suggests that Fiji and the Pacific require a model that is simultaneously global and local.

It must be **scientifically grounded** because climate policy requires credible evidence.

It must be **Indigenous and culturally grounded** because Pacific environmental relationships cannot be understood independently of culture, place and community.

It must be **action-oriented** because knowledge without agency is insufficient.

It must be **economically connected** because climate transition requires new capabilities and livelihoods.

It must be **justice-oriented** because climate impacts and responsibilities are unequal.

It must be **inclusive** because vulnerability differs across communities and learners.

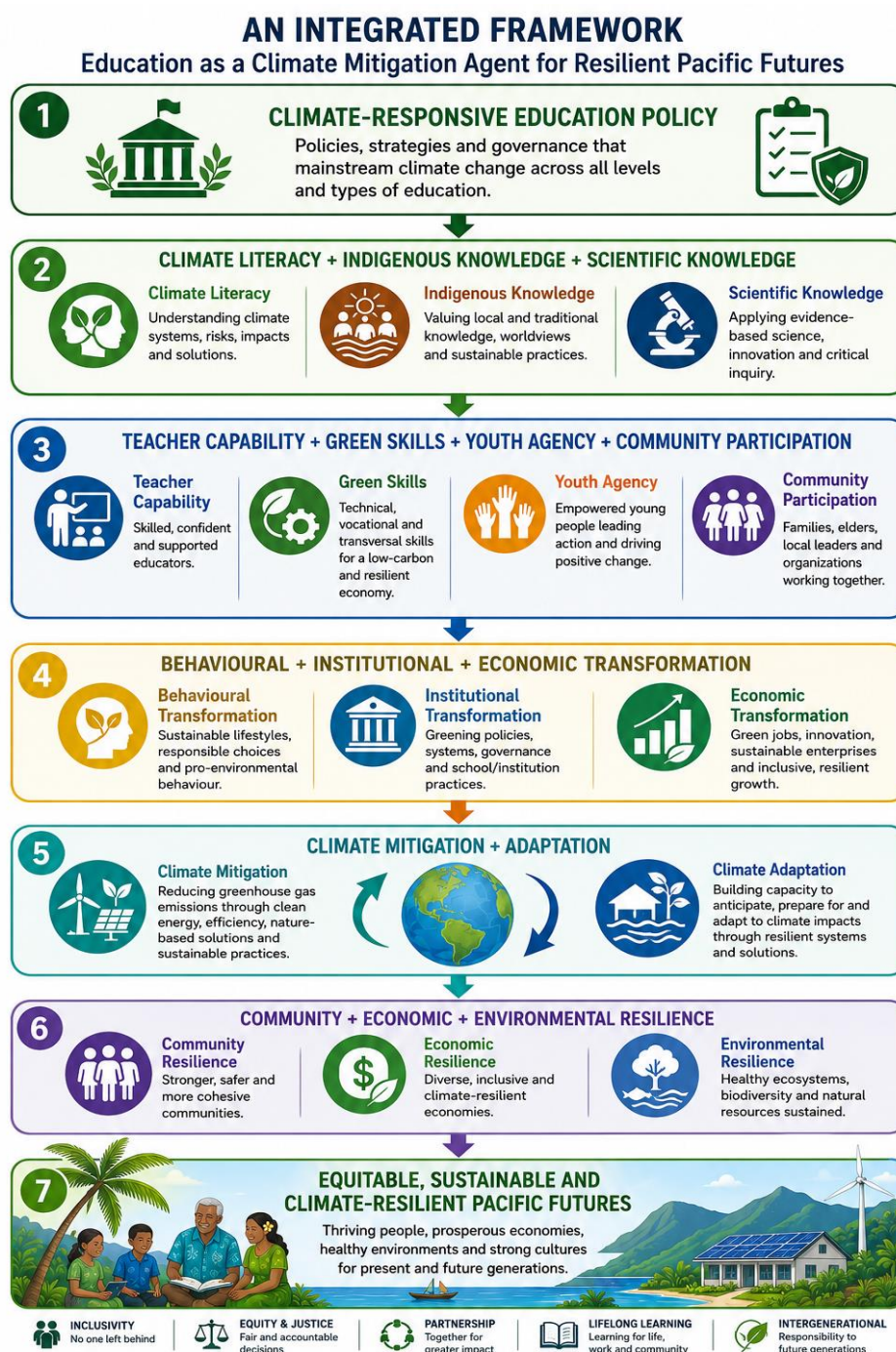
It must be **intergenerational** because climate change extends beyond current political and educational cycles.

It must be **systemic** because curriculum reform alone cannot transform society.

The significance of the model lies in the relationships among

its components. Climate literacy alone is insufficient without capability. Capability is insufficient without agency and opportunity. Agency is insufficient without supportive institutions. Institutional change is insufficient if economic systems remain unsustainable. Mitigation is insufficient without adaptation in already vulnerable communities. Adaptation is insufficient if it reproduces inequality. Resilience is therefore produced through the interaction of knowledge, capability, institutions, justice, culture and sustainable economic transformation.

The integrated framework proposed in this paper therefore represents the following pathway:



Overall Analytical Synthesis

The discussion demonstrates that the role of education in climate change needs to be reconsidered fundamentally.

The conventional question has often been:

How should education respond to climate change?

This paper proposes a more ambitious question:

How can education help society respond to climate change?

The difference is substantial.

The first treats education primarily as a sector requiring adaptation.

The second treats education as a source of transformative capacity.

For Fiji and the wider Pacific, this transformation is particularly important because climate change threatens not only infrastructure and economic activity but also communities, ecosystems, livelihoods, cultural relationships and intergenerational futures.

Education cannot prevent climate change independently. Nor can curriculum reform substitute for emissions reduction, climate finance, renewable-energy investment, resilient infrastructure or international climate responsibility. However, none of these interventions can be sustained without knowledgeable citizens, capable professionals, informed communities, skilled workers, effective institutions and social commitment.

Education provides the human foundation upon which climate transformation depends.

The central argument of this paper can therefore be summarised in a single proposition:

Education should no longer be viewed merely as a sector that must become resilient to climate change; it should be deliberately designed, funded and governed as an agent through which climate resilience is created.

For Fiji, this means aligning education policy with the Climate Change Act 2021, NDC 3.0, national development priorities and regional Pacific education frameworks. For the wider Pacific, it means developing climate education that combines scientific knowledge with Indigenous epistemologies, community relationships, green skills, justice and learner agency. Internationally, it means recognising education as an essential component of climate-action infrastructure.

Ultimately, climate change is not only a technological or environmental problem. It is also a problem of knowledge, behaviour, values, capability, institutions, economics, justice and collective choice. These are precisely the domains in which education operates.

Repositioning education as a climate mitigation and resilience agent therefore offers a powerful policy proposition for the Pacific: educating for climate action is simultaneously an investment in people, an investment in sustainable economies and an investment in the environmental systems upon which present and future generations depend.

CONCLUSION

Climate change is no longer an environmental challenge that can be addressed independently of education, economic development, social equity, cultural continuity and human capability. Its consequences increasingly extend across communities, livelihoods, infrastructure, ecosystems, public health, food and water security, employment and national development. For Small Island Developing States (SIDS), and particularly Fiji and the wider Pacific, these interconnected pressures are especially significant because geographical exposure, economic vulnerability, dispersed populations, dependence on climate-sensitive resources and limited adaptive capacities can magnify the effects of climate-related disruption (Intergovernmental Panel on Climate Change [IPCC], 2022). Responding effectively to this challenge therefore requires more than technological solutions, climate finance and environmental regulation. It also requires societies capable of understanding climate risks, evaluating alternatives, adapting practices, developing sustainable technologies and livelihoods, participating in collective decision-making and translating climate commitments into sustained action.

This paper has argued that education should occupy a substantially more strategic position within that response. The conventional framing of education as a sector that must become resilient to climate change remains necessary but is incomplete. Schools, teachers, learners and educational infrastructure unquestionably require protection from cyclones, flooding, sea-level rise, extreme heat and other climate-related disruptions. However, education also possesses the capacity to influence the knowledge, values, competencies, behaviours, professions, institutions and social relationships through which climate action occurs. Education should therefore be understood simultaneously as a sector requiring climate resilience and as an institution capable of producing climate resilience.

This distinction represents the central conceptual contribution of the paper. Climate-responsive education should progress beyond the transmission of information towards the development of climate capability. Climate literacy remains foundational because learners require scientifically credible knowledge concerning the causes, consequences and possible responses to climate change. Yet knowledge alone does not guarantee action. Effective climate education must enable learners to interpret evidence, understand local risks, evaluate alternative responses, develop practical and green skills, participate in decision-making and translate learning into individual and collective agency. Contemporary international guidance similarly emphasises action-oriented, justice-

informed and holistic approaches to climate education rather than limiting climate learning to environmental awareness (UNESCO, 2024a, 2024b).

The argument developed in this paper can consequently be summarised as a progression from knowing about climate change to developing the capability to act upon climate knowledge. This transition has important implications for curriculum, pedagogy, assessment, teacher preparation and education policy. Climate change cannot be adequately addressed as a discrete topic confined to science or geography. It intersects with economics, agriculture, technology, health, ethics, citizenship, culture, employment, disaster preparedness, social justice and sustainable development. A climate-responsive curriculum should therefore be interdisciplinary, contextualised and action-oriented, enabling learners to understand the systemic relationships among environmental, social and economic change.

For Fiji and other Pacific Island countries, this transformation must also be culturally and epistemologically grounded. Climate education that simply transfers international models into Pacific classrooms risks overlooking the knowledge systems, histories, values and lived experiences of Pacific communities. Indigenous and traditional ecological knowledge provides important understandings of land, ocean, weather, biodiversity, food systems, resource stewardship and community resilience. The IPCC (2022) recognises Indigenous and local knowledge as an important contributor to adaptation and resilience in small-island contexts. Climate-responsive education in Fiji and the Pacific should therefore create meaningful relationships among scientific knowledge, Indigenous knowledge and lived community knowledge, rather than treating these as competing or hierarchically ordered forms of understanding.

This integration also has deeper significance for the way climate change itself is conceptualised. Pacific relational perspectives challenge approaches that separate people from the natural environment and economic development from ecological wellbeing. Land, ocean, culture, community, identity and intergenerational responsibility are interconnected. Climate education grounded in these relationships can therefore contribute more than local relevance; it can offer a distinctive Pacific contribution to global climate-education thinking. The Pacific should not be positioned solely as a region vulnerable to climate change. It should also be recognised as a source of knowledge, relational philosophies, community practices and climate leadership capable of informing wider debates concerning sustainable futures.

Teachers are indispensable to this transformation. Climate-responsive policies and curricula will have limited effect if teachers lack the scientific understanding, pedagogical capability, culturally responsive resources and professional confidence required to implement them. Teacher preparation

and continuing professional development should therefore be recognised as components of climate-action infrastructure. Teachers need opportunities to develop interdisciplinary, inquiry-based, place-based and action-oriented pedagogies that connect climate knowledge to learners' communities and environments. Investment in teacher capability is consequently not supplementary to climate-responsive curriculum reform; it is one of the conditions upon which successful reform depends (UNESCO, 2024a).

The paper has further argued that climate-responsive education must connect environmental sustainability with economic transformation. Climate change threatens climate-sensitive sectors that are particularly important to Pacific economies, including agriculture, fisheries, tourism, infrastructure and coastal resources. At the same time, transitions towards renewable energy, climate-smart agriculture, sustainable tourism, ecosystem restoration, resilient construction, circular economies and other green activities create new demands for knowledge and skills. Schools, technical and vocational education and training institutions, universities and lifelong-learning systems therefore have an important role in preparing citizens for changing labour markets and sustainable economic activity. Climate education should accordingly be understood not only as environmental education but also as an investment in human capability and long-term economic resilience.

This relationship is particularly important for Fiji as it seeks to translate its national climate ambitions into implementation. Fiji's Climate Change Act 2021 establishes an important legislative basis for climate governance, while the country's Third Nationally Determined Contribution for 2025–2035 strengthens the connection among mitigation, adaptation, resilience and national development. Significantly for the argument advanced in this paper, Fiji's NDC 3.0 identifies the integration of evidence-based climate learning into the National Curriculum Framework as part of the country's climate-response agenda (Department of Climate Change, Ministry of Environment and Climate Change, Government of Fiji, 2025). This provides an important contemporary policy opportunity to reposition education from a supporting activity to a more deliberate component of national climate implementation.

However, curriculum inclusion by itself will not be sufficient. The effectiveness of climate-responsive education will depend on whether policy commitments are translated into teacher preparation, learning resources, assessment practices, school operations, financing, educational leadership, TVET, higher education, community engagement and measurable outcomes. The policy challenge is therefore one of systemic coherence.

Education policy needs to communicate with climate policy, while both need to connect with economic development, energy, agriculture, fisheries, employment, infrastructure, disaster-risk reduction and community development. Climate change crosses institutional boundaries; education for climate action must do the same.

Schools and other educational institutions can play an important practical role in this process by becoming living laboratories for sustainability. Whole-institution approaches can integrate climate responsibility into governance, curriculum, energy and water use, waste management, food systems, biodiversity, infrastructure, disaster preparedness and community partnerships. UNESCO's Green School Quality Standard reinforces the importance of connecting institutional governance, facilities and operations, teaching and learning, and community engagement (UNESCO, 2024b). For Fiji and Pacific communities, such an approach could enable educational institutions to function not only as places where climate change is taught but also as visible demonstrations of sustainable and resilient practice.

Equally important is the participation of learners and communities. Young people should not be positioned simply as future beneficiaries of climate action. They have legitimate interests in decisions that will shape the environmental conditions under which they will live and should therefore be provided with meaningful opportunities to participate in climate initiatives. Similarly, communities should not be treated merely as recipients of climate information generated by formal institutions. Pacific communities possess knowledge, experience and adaptive practices that can enrich educational processes. Climate-responsive education should consequently be relational and intergenerational, connecting learners, teachers, families, elders, traditional knowledge holders, policymakers, civil-society organisations, universities and other community actors.

Climate justice must remain central to this transformation. Fiji and other Pacific Island countries face significant climate risks despite contributing only a small proportion of global greenhouse-gas emissions. Climate education should therefore enable learners to understand questions of historical responsibility, unequal vulnerability, loss and damage, adaptation finance, displacement, cultural continuity and intergenerational equity alongside the physical science of climate change. However, climate justice must also be considered within countries. Rural and maritime communities, low-income households, persons with disabilities and groups dependent upon climate-sensitive livelihoods may experience climate impacts and educational opportunities differently. A climate-responsive education system must therefore ensure that climate transformation does not become another source of educational inequality.

The paper has also emphasised the importance of conceptual precision. Education should not be presented as a substitute

for direct emissions reduction, renewable-energy transition, sustainable transport, ecosystem protection, resilient infrastructure, climate finance or international cooperation. Such a claim would overstate what education can accomplish. Rather, education should be understood as an enabling and multiplier mechanism. Technologies require skilled people to develop, operate and maintain them. Climate policies require informed institutions and citizens to implement and support them. Adaptation strategies require communities capable of interpreting risks and applying appropriate responses. Sustainable economies require workers with relevant competencies. Climate justice requires citizens capable of understanding inequality and participating in public decision-making. Education contributes to the human and social capabilities upon which these wider interventions depend.

This leads to the broader proposition developed in this paper: education should be recognised as climate-action infrastructure. Conventional climate infrastructure is commonly understood in physical terms, including renewable-energy systems, resilient buildings, transportation networks, water systems and coastal protection. Yet effective climate transformation also depends upon human infrastructure: knowledge, skills, values, institutions, leadership, innovation, community relationships and collective capacity. Education is one of the principal social institutions through which this human infrastructure is developed and sustained.

Conclusion

Climate change is no longer an environmental challenge that can be addressed independently of education, economic development, social equity, cultural continuity and human capability. Its consequences increasingly extend across communities, livelihoods, infrastructure, ecosystems, public health, food and water security, employment and national development. For Small Island Developing States (SIDS), and particularly Fiji and the wider Pacific, these interconnected pressures are especially significant because geographical exposure, economic vulnerability, dispersed populations, dependence on climate-sensitive resources and limited adaptive capacities can magnify the effects of climate-related disruption (Intergovernmental Panel on Climate Change [IPCC], 2022). Responding effectively to this challenge therefore requires more than technological solutions, climate finance and environmental regulation. It also requires societies capable of understanding climate risks, evaluating alternatives, adapting practices, developing sustainable technologies and livelihoods, participating in collective decision-making and translating climate commitments into sustained action.

This paper has argued that education should occupy a substantially more strategic position within that response. The conventional framing of education as a sector that must become resilient to climate change remains necessary but is incomplete. Schools, teachers, learners and educational infrastructure unquestionably require protection from cyclones, flooding, sea-level rise, extreme heat and other climate-related disruptions. However, education also possesses the capacity to influence the knowledge, values, competencies, behaviours, professions, institutions and social relationships through which climate action occurs. Education should therefore be understood simultaneously as a sector requiring climate resilience and as an institution capable of **producing climate resilience**.

This distinction represents the central conceptual contribution of the paper. Climate-responsive education should progress beyond the transmission of information towards the development of **climate capability**. Climate literacy remains foundational because learners require scientifically credible knowledge concerning the causes, consequences and possible responses to climate change. Yet knowledge alone does not guarantee action. Effective climate education must enable learners to interpret evidence, understand local risks, evaluate alternative responses, develop practical and green skills, participate in decision-making and translate learning into individual and collective agency. Contemporary international guidance similarly emphasises action-oriented, justice-informed and holistic approaches to climate education rather than limiting climate learning to environmental awareness (UNESCO, 2024a, 2024b).

The argument developed in this paper can consequently be summarised as a progression from **knowing about climate change to developing the capability to act upon climate knowledge**. This transition has important implications for curriculum, pedagogy, assessment, teacher preparation and education policy. Climate change cannot be adequately addressed as a discrete topic confined to science or geography. It intersects with economics, agriculture, technology, health, ethics, citizenship, culture, employment, disaster preparedness, social justice and sustainable development. A climate-responsive curriculum should therefore be interdisciplinary, contextualised and action-oriented, enabling learners to understand the systemic relationships among environmental, social and economic change.

For Fiji and other Pacific Island countries, this transformation must also be culturally and epistemologically grounded. Climate education that simply transfers international models into Pacific classrooms risks overlooking the knowledge systems, histories, values and lived experiences of Pacific communities. Indigenous and traditional ecological knowledge provides important understandings of land, ocean, weather, biodiversity, food systems, resource stewardship

and community resilience. The IPCC (2022) recognises Indigenous and local knowledge as an important contributor to adaptation and resilience in small-island contexts. Climate-responsive education in Fiji and the Pacific should therefore create meaningful relationships among **scientific knowledge, Indigenous knowledge and lived community knowledge**, rather than treating these as competing or hierarchically ordered forms of understanding.

This integration also has deeper significance for the way climate change itself is conceptualised. Pacific relational perspectives challenge approaches that separate people from the natural environment and economic development from ecological wellbeing. Land, ocean, culture, community, identity and intergenerational responsibility are interconnected. Climate education grounded in these relationships can therefore contribute more than local relevance; it can offer a distinctive Pacific contribution to global climate-education thinking. The Pacific should not be positioned solely as a region vulnerable to climate change. It should also be recognised as a source of knowledge, relational philosophies, community practices and climate leadership capable of informing wider debates concerning sustainable futures.

Teachers are indispensable to this transformation. Climate-responsive policies and curricula will have limited effect if teachers lack the scientific understanding, pedagogical capability, culturally responsive resources and professional confidence required to implement them. Teacher preparation and continuing professional development should therefore be recognised as components of climate-action infrastructure. Teachers need opportunities to develop interdisciplinary, inquiry-based, place-based and action-oriented pedagogies that connect climate knowledge to learners' communities and environments. Investment in teacher capability is consequently not supplementary to climate-responsive curriculum reform; it is one of the conditions upon which successful reform depends (UNESCO, 2024a).

The paper has further argued that climate-responsive education must connect environmental sustainability with economic transformation. Climate change threatens climate-sensitive sectors that are particularly important to Pacific economies, including agriculture, fisheries, tourism, infrastructure and coastal resources. At the same time, transitions towards renewable energy, climate-smart agriculture, sustainable tourism, ecosystem restoration, resilient construction, circular economies and other green activities create new demands for knowledge and skills. Schools, technical and vocational education and training institutions, universities and lifelong-learning systems therefore have an important role in preparing citizens for changing labour markets and sustainable

economic activity. Climate education should accordingly be understood not only as environmental education but also as an investment in human capability and long-term economic resilience.

This relationship is particularly important for Fiji as it seeks to translate its national climate ambitions into implementation. Fiji's Climate Change Act 2021 establishes an important legislative basis for climate governance, while the country's Third Nationally Determined Contribution for 2025–2035 strengthens the connection among mitigation, adaptation, resilience and national development. Significantly for the argument advanced in this paper, Fiji's NDC 3.0 identifies the integration of evidence-based climate learning into the National Curriculum Framework as part of the country's climate-response agenda (Department of Climate Change, Ministry of Environment and Climate Change, Government of Fiji, 2025). This provides an important contemporary policy opportunity to reposition education from a supporting activity to a more deliberate component of national climate implementation.

However, curriculum inclusion by itself will not be sufficient. The effectiveness of climate-responsive education will depend on whether policy commitments are translated into teacher preparation, learning resources, assessment practices, school operations, financing, educational leadership, TVET, higher education, community engagement and measurable outcomes. The policy challenge is therefore one of **systemic coherence**. Education policy needs to communicate with climate policy, while both need to connect with economic development, energy, agriculture, fisheries, employment, infrastructure, disaster-risk reduction and community development. Climate change crosses institutional boundaries; education for climate action must do the same.

Schools and other educational institutions can play an important practical role in this process by becoming living laboratories for sustainability. Whole-institution approaches can integrate climate responsibility into governance, curriculum, energy and water use, waste management, food systems, biodiversity, infrastructure, disaster preparedness and community partnerships. UNESCO's Green School Quality Standard reinforces the importance of connecting institutional governance, facilities and operations, teaching and learning, and community engagement (UNESCO, 2024b). For Fiji and Pacific communities, such an approach could enable educational institutions to function not only as places where climate change is taught but also as visible demonstrations of sustainable and resilient practice.

Equally important is the participation of learners and communities. Young people should not be positioned simply as future beneficiaries of climate action. They have legitimate interests in decisions that will shape the environmental conditions under which they will live and should therefore be provided with meaningful opportunities to participate in

climate initiatives. Similarly, communities should not be treated merely as recipients of climate information generated by formal institutions. Pacific communities possess knowledge, experience and adaptive practices that can enrich educational processes. Climate-responsive education should consequently be relational and intergenerational, connecting learners, teachers, families, elders, traditional knowledge holders, policymakers, civil-society organisations, universities and other community actors.

Climate justice must remain central to this transformation. Fiji and other Pacific Island countries face significant climate risks despite contributing only a small proportion of global greenhouse-gas emissions. Climate education should therefore enable learners to understand questions of historical responsibility, unequal vulnerability, loss and damage, adaptation finance, displacement, cultural continuity and intergenerational equity alongside the physical science of climate change. However, climate justice must also be considered within countries. Rural and maritime communities, low-income households, persons with disabilities and groups dependent upon climate-sensitive livelihoods may experience climate impacts and educational opportunities differently. A climate-responsive education system must therefore ensure that climate transformation does not become another source of educational inequality.

The paper has also emphasised the importance of conceptual precision. Education should not be presented as a substitute for direct emissions reduction, renewable-energy transition, sustainable transport, ecosystem protection, resilient infrastructure, climate finance or international cooperation. Such a claim would overstate what education can accomplish. Rather, education should be understood as an **enabling and multiplier mechanism**. Technologies require skilled people to develop, operate and maintain them. Climate policies require informed institutions and citizens to implement and support them. Adaptation strategies require communities capable of interpreting risks and applying appropriate responses. Sustainable economies require workers with relevant competencies. Climate justice requires citizens capable of understanding inequality and participating in public decision-making. Education contributes to the human and social capabilities upon which these wider interventions depend.

This leads to the broader proposition developed in this paper: **education should be recognised as climate-action infrastructure**. Conventional climate infrastructure is commonly understood in physical terms, including renewable-energy systems, resilient buildings, transportation networks, water systems and coastal protection. Yet effective climate transformation also

depends upon human infrastructure: knowledge, skills, values, institutions, leadership, innovation, community relationships and collective capacity. Education is one of the principal social institutions through which this human infrastructure is developed and sustained.

The integrated framework advanced in this paper captures this relationship:

The importance of this framework lies not simply in its individual components but in their interdependence. Climate knowledge without agency may produce awareness without action. Agency without supportive institutions may generate

frustration rather than transformation. Climate policy without skilled people may remain aspirational. Economic transformation without equity may reproduce existing inequalities. Adaptation without cultural and community knowledge may lack legitimacy and contextual relevance. Mitigation without adaptation cannot adequately address the climatic changes already affecting vulnerable communities. Sustainable climate transformation therefore requires the integration of knowledge, capability, culture, institutions, economics, justice and participation.



The timing for such integration is particularly significant. Fiji's current national climate commitments, the broader Pacific Regional Education Framework and emerging regional initiatives concerning climate-smart education create an important policy window. These developments provide an opportunity for Fiji and neighbouring Pacific countries to move beyond fragmented climate activities towards education systems in which climate capability becomes an explicit and measurable educational outcome. Such transformation should be accompanied by research and evaluation capable of determining what approaches work, for whom, in which contexts and with what long-term consequences.

Future research should therefore examine the implementation and outcomes of climate-responsive education across Fiji and other Pacific SIDS. Empirical studies are particularly needed on teacher preparedness, learner climate literacy and agency, Indigenous knowledge integration, whole-school sustainability, community participation, green-skills development and the relationship between education and behavioural change. Comparative studies across rural, urban and maritime contexts would help identify geographical and socioeconomic inequalities, while longitudinal research could examine whether climate education produces sustained changes in behaviour, institutional practice, employment pathways and community resilience. Such evidence would strengthen the transition from persuasive policy aspiration towards empirically informed climate-education systems.

Ultimately, the central question is no longer simply whether education should address climate change. The urgency and scale of the climate crisis make that question increasingly settled. The more important question is how education systems can be deliberately designed to contribute to the social transformation required by climate change.

For Fiji and the wider Pacific, the answer cannot lie solely in adding more climate information to existing curricula. It requires a broader repositioning of education policy, curriculum, teacher capability, Indigenous and scientific knowledge, youth participation, green skills, institutional practices and community relationships around the shared objective of building resilient societies.

The central conclusion of this paper is therefore clear: education should no longer be regarded merely as a sector that must survive the climate crisis; it should be recognised as one of the institutions through which societies develop the capability to confront it.

Reimagined in this way, education becomes a bridge between climate knowledge and climate action, between Indigenous wisdom and contemporary science, between environmental protection and sustainable economic development, and between the decisions of the present generation and the wellbeing of generations yet to come. For Fiji and the Pacific, investing in climate-responsive education is therefore more

than an educational policy choice. It is an investment in resilient people, sustainable economies, healthy environments, cultural continuity and the capacity of Pacific communities to shape their own futures in a rapidly changing climate.

The future of climate policy will depend partly on technologies, finance and international agreements. But it will also depend upon what people understand, what they value, what they are capable of doing and how effectively they can act together. These are fundamentally educational concerns. Repositioning education as a climate mitigation, adaptation and resilience agent is therefore not peripheral to the climate agenda. It is an essential component of building equitable, sustainable and climate-resilient Pacific futures.

WAY FORWARD

The way forward for Fiji and the wider Pacific requires a fundamental shift from fragmented climate-education initiatives towards a coherent, whole-of-system approach in which education is deliberately positioned as part of national and regional climate-action architecture. Climate change is now sufficiently embedded within the social, economic and environmental realities of Pacific Island countries that climate-responsive education can no longer remain dependent upon isolated projects, individual teachers or occasional curriculum activities. It should instead become a sustained policy commitment linking education, climate governance, economic development, community resilience and environmental stewardship.

The starting point should be the development of a Climate-Responsive Education Policy Framework for Fiji, aligned explicitly with the Climate Change Act 2021, Fiji's Third Nationally Determined Contribution for 2025–2035, the National Curriculum Framework and relevant Pacific regional education priorities. This is especially timely because Fiji's NDC 3.0 explicitly commits the country to integrating evidence-based learning about climate change into the National Curriculum Framework (Department of Climate Change, Ministry of Environment and Climate Change, Government of Fiji, 2025). Such a commitment creates an opportunity to move beyond treating climate change as an isolated curriculum topic and instead embed climate capability systematically across the education system.

The next stage should be to transform climate education from knowledge acquisition towards climate capability and action. Learners certainly require accurate scientific understanding of climate change, but education should also enable them to interpret local climate risks, evaluate possible responses, develop green competencies, participate in community action and make informed

social, economic and environmental decisions. UNESCO's Greening Curriculum Guidance similarly advocates an action-oriented, holistic, scientifically accurate, justice-driven and lifelong-learning approach rather than a narrow information-based model of climate education (UNESCO, 2024a).

Curriculum transformation should consequently occur across disciplines rather than being confined to science, geography or environmental studies. Climate change intersects with economics, agriculture, tourism, technology, health, citizenship, ethics, culture, social justice and employment. A cross-curricular model would enable learners to understand climate change as a systemic issue and examine the relationships among environmental sustainability, livelihoods, economic development and human wellbeing. Age-appropriate climate learning outcomes should be progressively developed from early childhood through primary, secondary, TVET, higher education and lifelong learning, consistent with UNESCO's recommendation for climate-ready learning across age groups and educational settings (UNESCO, 2024a).

A Pacific climate-responsive education model should also place **Indigenous knowledge and Pacific relationality** at its centre. Scientific climate knowledge is indispensable, but it should be taught in constructive relationship with Indigenous and local knowledge concerning land, ocean, weather, ecosystems, resource stewardship, food systems, community relationships and intergenerational responsibility. Such integration would enhance cultural relevance while recognising Pacific communities as producers of climate knowledge rather than merely recipients of externally generated expertise. The objective should be complementarity between scientific evidence, Indigenous epistemologies and lived community knowledge.

Teacher preparation should constitute another central pillar of the way forward. Teachers cannot effectively facilitate climate-responsive learning unless they possess adequate knowledge, resources, pedagogical confidence and contextual understanding. Climate education should therefore be incorporated into initial teacher education and continuing professional development. Training should address climate science, Indigenous and local knowledge, interdisciplinary pedagogy, climate justice, inquiry-based teaching, project learning, community engagement and learner agency. Teacher capability should be regarded as a long-term investment in national climate capacity rather than an optional addition to curriculum reform.

The transformation should extend beyond curriculum into the operation of educational institutions themselves. Schools, colleges and universities should increasingly become **living laboratories for sustainability**. UNESCO's Green School Quality Standard identifies school governance, facilities and operations, teaching and learning, and community engagement as four interconnected dimensions of whole-

institution greening (UNESCO, 2024b). Fiji could progressively adapt such principles to local conditions through renewable-energy use, water conservation, climate-resilient infrastructure, sustainable food systems, waste reduction, biodiversity protection, disaster preparedness and community partnerships.

This institutional transformation should be implemented equitably. Rural, maritime and economically disadvantaged schools should not be expected to undertake climate transformation without appropriate resources. Climate-responsive education policy should therefore incorporate differentiated financing, infrastructure support and teacher development so that climate innovation does not become concentrated only in well-resourced urban schools. Equity must remain central to the implementation process.

TVET and higher education should also occupy a substantially stronger position within climate policy. Climate commitments increasingly require specialised competencies in renewable energy, sustainable construction, agriculture, fisheries, environmental management, resilient infrastructure, tourism and other green and blue economic sectors. Fiji and neighbouring Pacific Island countries should therefore conduct systematic assessments of emerging green-skills requirements and align education and training programmes accordingly. This would connect climate action directly with employment creation, innovation, entrepreneurship and economic resilience.

Youth participation should be institutionalised rather than treated as symbolic. Learners can contribute meaningfully to school sustainability programmes, citizen science, conservation, disaster preparedness, climate communication and community resilience projects. Schools and universities should create formal structures through which students can participate in climate planning and sustainability governance. This approach recognises young people as active contributors to climate transformation rather than simply beneficiaries of future policy.

Community partnerships will also be essential. Climate-responsive education should strengthen relationships among educational institutions, families, traditional leaders, Indigenous knowledge holders, civil-society organisations, government departments, private-sector actors and local communities. Such partnerships can support intergenerational knowledge exchange and connect classroom learning with real environmental challenges. The April 2026 Pacific consultation on climate-smart and life-skills education in Nadi is particularly significant because it demonstrated growing regional commitment to integrating climate capability within education systems and brought together policymakers,

curriculum specialists and teacher educators from numerous Pacific countries (UNESCO, 2026).

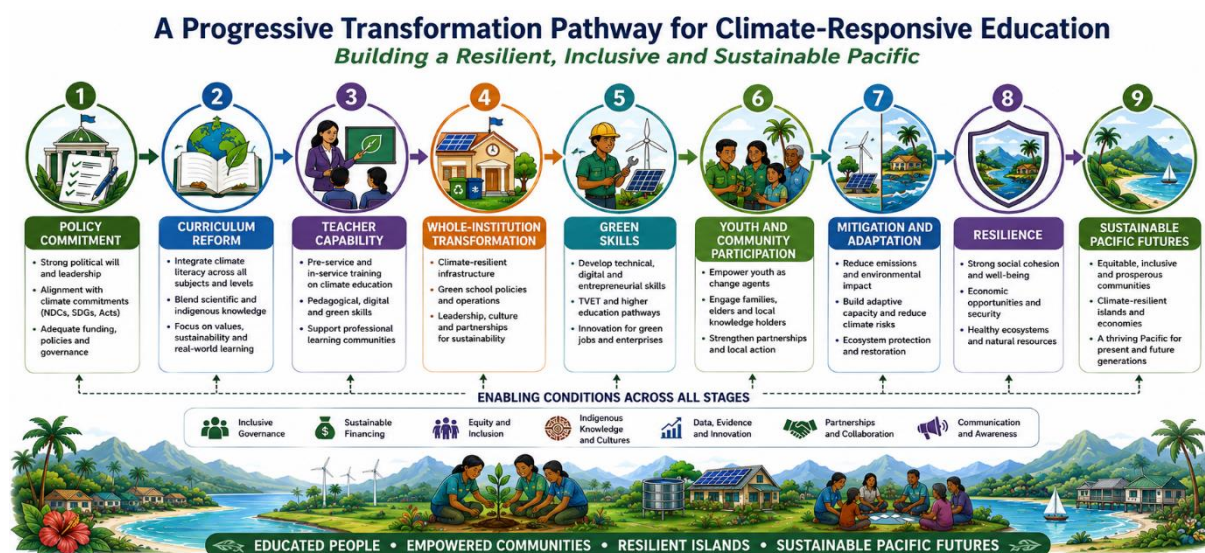
A stronger regional dimension should therefore accompany national reform. Pacific Island countries face many shared challenges and could benefit from common climate-education resources, teacher-development programmes, curriculum exemplars, Indigenous knowledge exchanges, research networks and monitoring frameworks. Regional cooperation under structures such as the Pacific Regional Education Framework could reduce duplication and enable small education systems to pool expertise and resources.

Monitoring and evaluation must also become central to the future agenda. Climate education should not be assessed merely by whether it appears in policy documents or curricula. Indicators should examine whether teachers are prepared, learners possess climate knowledge and agency,

schools adopt sustainable practices, communities participate, Indigenous knowledge is meaningfully integrated and education contributes to behavioural and institutional change. Where possible, longitudinal research should investigate whether these educational interventions contribute to community, economic and environmental resilience over time.

The overall way forward can therefore be conceptualised as a progressive transformation:

Policy Commitment → Curriculum Reform → Teacher Capability → Whole-Institution Transformation → Green Skills → Youth and Community Participation → Mitigation and Adaptation → Resilience → Sustainable Pacific Futures.



This pathway requires sustained political commitment, financing, capacity building, institutional coordination and evidence-based evaluation. The objective should not be to create another temporary climate-education project but to establish climate responsiveness as a permanent characteristic of education systems in Fiji and the Pacific.

Ultimately, the way forward requires a change in policy mindset. The question should no longer be whether education has a role in climate action. Current national, regional and international developments demonstrate that it does. The more important task is to determine how that role can be systematically designed, funded, implemented and evaluated. Fiji's NDC 3.0, UNESCO's Greening Education agenda and the emerging Pacific climate-smart education movement create a timely policy window for such transformation (Department of Climate Change, Ministry of Environment and Climate Change, Government of Fiji, 2025; UNESCO, 2024a, 2024b, 2026).

If this opportunity is used effectively, Fiji could move beyond incorporating climate change within selected areas of

education and towards establishing an education system that actively contributes to national mitigation, adaptation, resilience and sustainable-development goals. Such a model could also offer lessons for other climate-vulnerable Pacific Island states.

RECOMMENDATIONS

Based on the literature review, identified research gaps, conceptual framework and discussion developed in this paper, the following recommendations are proposed for Fiji and the wider Pacific.

Develop a National Climate-Responsive Education Policy Framework

The Government of Fiji should develop a comprehensive Climate-Responsive Education Policy Framework jointly involving the education ministry, climate-change

authorities and other relevant government agencies.

The framework should explicitly connect education-sector objectives with Fiji's Climate Change Act 2021 and NDC 3.0. In particular, Fiji should operationalise the NDC 3.0 commitment to integrate evidence-based climate-change learning into the National Curriculum Framework (Department of Climate Change, Ministry of Environment and Climate Change, Government of Fiji, 2025).

The framework should establish national expectations for curriculum, teacher preparation, school operations, TVET, higher education, community participation, Indigenous knowledge, monitoring and financing.

Integrate Climate Education Across the Entire Curriculum

Climate change should not be confined to science or geography.

The National Curriculum Framework should identify climate competencies across relevant curriculum areas, including science, social science, economics, agriculture, technology, health, citizenship, languages and the arts.

Learning should progress from basic environmental awareness in early childhood towards more complex understanding of mitigation, adaptation, climate justice, economics, technology and civic responsibility at secondary and tertiary levels.

This approach aligns with UNESCO's recommendation that climate learning be holistic, age-appropriate, interdisciplinary and action-oriented (UNESCO, 2024a).

Establish Climate Capability as a Graduate Outcome

Fiji should consider identifying **climate capability** as an expected outcome of education.

Graduates should leave school not only knowing what climate change is but also possessing the skills to analyse climate information, identify risks, evaluate solutions and participate constructively in environmental action.

A climate-capable learner should demonstrate:

knowledge + critical thinking + values + practical skills + agency + responsible action.

Assessment frameworks should progressively measure these competencies.

Integrate Indigenous and Pacific Knowledge Meaningfully

Climate-responsive education should incorporate Indigenous and traditional ecological knowledge across curriculum and pedagogy.

This should involve consultation with Indigenous knowledge holders, communities and cultural specialists rather than relying solely on textbook interpretations.

Relevant areas could include traditional resource

management, weather interpretation, agriculture, fisheries, biodiversity, disaster preparedness and relationships among people, land and ocean.

The objective should be genuine knowledge integration rather than tokenistic cultural inclusion.

Strengthen Teacher Education and Continuous Professional Development

Climate education should be embedded within pre-service teacher education and continuing professional development.

Teacher programmes should develop competencies in climate science, sustainability, Indigenous knowledge, climate justice, interdisciplinary learning and action-oriented pedagogy.

Teachers should also be provided with Fiji- and Pacific-specific teaching resources.

Professional development should be sustained rather than delivered primarily through one-off workshops.

Establish a Fiji Green and Climate-Ready Schools Programme

Fiji should consider establishing a national **Green and Climate-Ready Schools Programme** adapted from whole-institution approaches such as UNESCO's Green School Quality Standard.

Schools could progressively be assessed across:

- governance and climate planning;
- climate-responsive curriculum and teaching;
- energy and water management;
- waste reduction;
- biodiversity and school environments;
- resilient infrastructure;
- disaster preparedness; and
- community engagement.

UNESCO's model explicitly identifies governance, facilities and operations, teaching and learning, and community engagement as the four pillars of green-school transformation (UNESCO, 2024b).

Prioritise Rural, Maritime and Vulnerable Schools

Equity should be a central implementation principle.

Climate financing for education should prioritise schools facing high climate risk, inadequate infrastructure or geographical isolation.

Rural and maritime schools may require additional assistance for renewable energy, water systems, climate-resilient buildings, internet connectivity, teaching

resources and teacher professional development. Climate-responsive education should narrow rather than widen existing educational inequalities.

Expand Green Skills Through TVET

Fiji should undertake a national green-skills needs assessment.

TVET programmes should subsequently be aligned with emerging employment and resilience needs in areas such as:

- renewable energy;
- sustainable construction;
- climate-smart agriculture;
- fisheries;
- ecosystem restoration;
- water management;
- waste and recycling;
- sustainable tourism; and
- disaster-risk management.

This would strengthen the connection among education, climate policy and economic resilience.

Strengthen the Climate Role of Universities

Universities in Fiji and the wider Pacific should play a stronger role in climate-responsive education through research, teacher education, professional training, technological innovation and community partnerships.

Universities should also examine their own carbon footprints and sustainability practices.

Campus operations can function as applied learning sites for renewable energy, water management, conservation, transport and waste reduction.

Institutionalise Youth Participation

Schools, universities and education authorities should create formal mechanisms for youth participation in climate action.

These could include student climate councils, school sustainability committees, environmental monitoring and community projects.

Youth participation should extend beyond ceremonial consultation and provide genuine opportunities for decision-making and leadership.

Strengthen School–Community Climate Partnerships

Schools should develop structured partnerships with communities.

Community elders and Indigenous knowledge holders can contribute local ecological knowledge, while schools can share scientific and climate information.

Such partnerships can support locally grounded projects including mangrove restoration, food gardens, coastal

monitoring, waste reduction and disaster preparedness.

Incorporate Climate Justice Explicitly

Climate justice should become an explicit curriculum dimension.

Learners should explore:

- historical emissions responsibility;
- unequal vulnerability;
- loss and damage;
- climate finance;
- displacement;
- gender and social inequality;
- Indigenous rights;
- cultural continuity; and
- intergenerational responsibility.

This would ensure that climate education addresses both scientific and ethical dimensions.

Link Climate Education with Disaster-Risk Reduction

Climate education and disaster-risk education should be integrated.

Schools should incorporate practical preparedness for cyclones, flooding, extreme heat and other climate hazards.

Students should understand not only emergency procedures but also the wider relationship among disaster risk, climate change, vulnerability and resilience.

Establish Dedicated Climate-Education Financing

Education-sector climate transformation requires financing.

The Government of Fiji and development partners should consider dedicated funding streams for:

- teacher training;
- curriculum resources;
- resilient school infrastructure;
- renewable energy;
- water security;
- whole-school sustainability projects;
- climate research; and
- community partnerships.

Funding should be distributed according to vulnerability and need.

Strengthen Whole-of-Government Coordination

Climate-responsive education should involve collaboration among ministries responsible for:

- education;
- climate change;
- environment;

economy and finance;
 agriculture;
 fisheries;
 energy;
 infrastructure;
 health;
 employment; and
 disaster management.

A formal inter-ministerial mechanism could ensure that education reforms remain aligned with national climate and sustainable-development priorities.

Develop Pacific Regional Climate-Education Cooperation

Pacific governments should continue strengthening regional cooperation through PacREF and related mechanisms.

The April 2026 regional consultation in Fiji demonstrates that climate-smart education is already becoming a shared Pacific priority (UNESCO, 2026).

Regional collaboration could include:

shared curriculum resources;
 teacher-training modules;
 regional research;
 Pacific Indigenous knowledge repositories;
 climate-literacy benchmarks; and
 comparative monitoring.

Small education systems could benefit substantially from pooling expertise and resources.

Develop Measurable Climate-Education Indicators

Implementation should be monitored through measurable indicators.

Possible indicators include:

percentage of curriculum areas containing climate competencies;
 teacher professional-development participation;
 student climate literacy and agency;
 number of green or climate-ready schools;
 renewable-energy use in education institutions;
 Indigenous knowledge integration;
 student participation in climate projects;
 TVET green-skills enrolments; and
 school-community climate partnerships.

This would allow governments to evaluate implementation rather than relying primarily upon policy statements.

Establish a National Climate-Education Research Agenda

Fiji should encourage systematic research into climate education.

Priority areas should include:

teacher climate capability;

student knowledge and agency;
 Indigenous knowledge integration;
 climate justice;
 school sustainability;
 community participation;
 green skills;
 rural and maritime inequities;
 gender and disability;
 behavioural change; and
 long-term resilience outcomes.

Universities and government agencies should collaborate in producing evidence that can continuously refine policy.

Use Longitudinal and Mixed-Methods Evaluation

Future research should examine whether climate education produces sustained changes over time.

Longitudinal studies could investigate the pathway:

Education → Knowledge → Agency → Behaviour → Community Practice → Resilience.

Mixed-method research would be particularly appropriate because climate education outcomes involve both measurable changes and complex cultural and behavioural processes.

Position Fiji as a Pacific Climate-Education Knowledge Hub

Fiji has the opportunity to become a regional leader in climate-responsive education.

Its international climate advocacy, current national climate commitments and strategic regional location provide a strong foundation.

Fiji could support regional curriculum development, teacher training, research conferences, policy dialogue and climate-education innovation.

Rather than importing climate-education models unchanged, Fiji could contribute a distinctive Pacific model based on:

science + Indigenous knowledge + relationality + justice + community + resilience.

Adopt a “People, Economy and Environment” Policy Test

Every major climate-responsive education reform should be evaluated according to three interconnected questions:

How does this policy strengthen people and communities?

How does it contribute to sustainable and resilient economic development?

How does it protect or restore environmental systems?

This three-dimensional test would reinforce the central

argument of the paper that climate action cannot be understood solely through emissions or environmental indicators.

Treat Education as Climate-Action Infrastructure

The final and overarching recommendation is that Fiji and Pacific governments formally recognise education as part of climate-action infrastructure.

Climate infrastructure should not be understood solely as seawalls, resilient buildings, renewable-energy plants and water systems.

Human capability is equally fundamental.

Education produces the teachers, technicians, scientists, policymakers, entrepreneurs, farmers, engineers, community leaders and citizens who design, implement, maintain and govern climate solutions.

Accordingly:

Investment in climate-responsive education should be recognised as investment in climate resilience itself.

This recommendation captures the central proposition of the paper. Education cannot replace emissions reduction, climate finance, renewable energy, resilient infrastructure or international cooperation. However, these interventions ultimately depend upon knowledgeable people, skilled professionals, capable institutions and informed communities. Education creates that human capacity.

For Fiji and the Pacific, repositioning education as a climate mitigation, adaptation and resilience agent therefore provides an opportunity to connect educational transformation with climate action, economic development, social justice, Indigenous knowledge and environmental sustainability.

The desired outcome is not simply a generation that understands climate change.

It is a generation capable of responding to it, adapting to it, mitigating it and helping shape a more equitable and sustainable Pacific future.

REFERENCES

1. Bryant-Tokalau, J. (2018). *Indigenous Pacific approaches to climate change: Pacific Island countries*. Palgrave Macmillan. <https://doi.org/10.1007/978-3-319-78399-4>
2. Department of Climate Change, Ministry of Environment and Climate Change, Government of Fiji. (2025). *Fiji's third nationally determined contribution (NDC 3.0), 2025–2035*. Government of Fiji.
3. Fiji Ministry of Economy, Climate Change and International Cooperation Division. (2020). *Republic of Fiji third national communication: Report to the United Nations Framework Convention on Climate Change*. Ministry of Economy.
4. Government of Fiji. (2021). *Climate Change Act 2021*. Government of Fiji.
5. Government of Fiji, & World Bank. (2017). *Climate vulnerability assessment: Making Fiji climate resilient*. World Bank.
6. Intergovernmental Panel on Climate Change. (2022). *Climate change 2022: Impacts, adaptation and vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, & B. Rama, Eds.). Cambridge University Press. <https://doi.org/10.1017/9781009325844>
7. Lagi, R., Waqailiti, L., Raisele, K., Sanchez Tyson, L., & Nussey, C. (2023). 'Curui': Weaving climate justice and gender equality into Fijian educational policies and practices. *Comparative Education*, 59(2), 305–324. <https://doi.org/10.1080/03050068.2023.2188370>
8. Pacific Islands Forum Secretariat. (2018). *Pacific Regional Education Framework (PacREF) 2018–2030: Moving towards Education 2030*. Pacific Islands Forum Secretariat.
9. Svarstad, H. (2021). Critical climate education: Studying climate justice in time and space. *International Studies in Sociology of Education*, 30(1–2), 214–232. <https://doi.org/10.1080/09620214.2020.1855463>
10. UNESCO. (2024a). *Green school quality standard: Greening every learning environment*. UNESCO.
11. UNESCO. (2024b). *Greening curriculum guidance: Teaching and learning for climate action*. UNESCO. <https://doi.org/10.54675/A00Z1758>
12. UNESCO. (2026). *Building resilient futures: Pacific countries advance climate-smart and life skills education*. UNESCO Regional Office for the Pacific States.