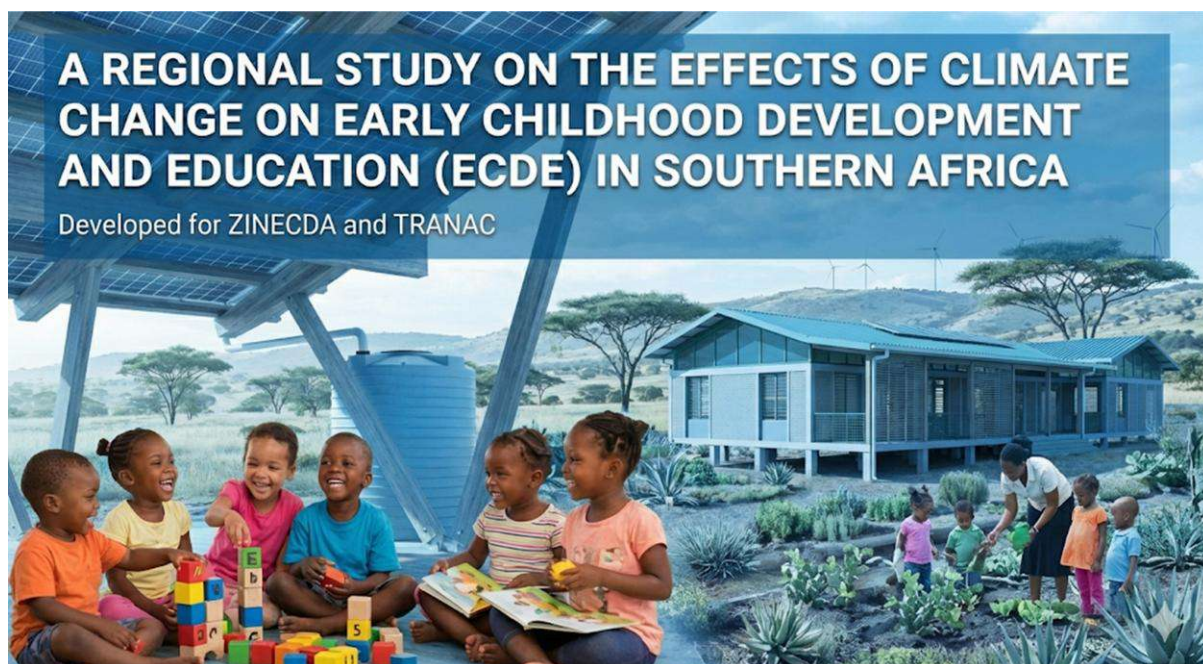
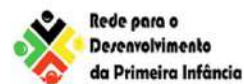




A REGIONAL STUDY ON THE EFFECTS OF CLIMATE CHANGE ON EARLY CHILDHOOD DEVELOPMENT AND EDUCATION (ECDE) IN SOUTHERN AFRICA

Developed for ZINECDA and TRANAC

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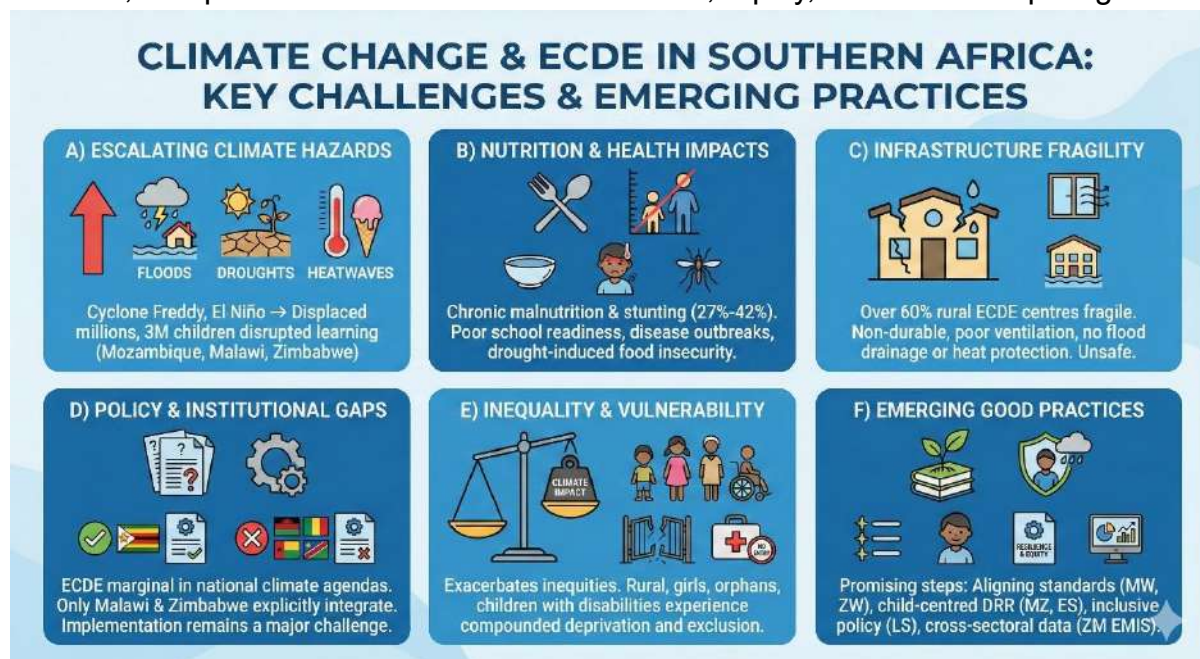
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List of Acronyms

Acronym	Definition
CCAP	Climate Change Adaptation Plan
CCBC	Community-Based Childcare Centres
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
ECD / ECDE	Early Childhood Development and Education
ECCDE	Early Childhood Care, Development, and Education
EMIS	Education Management Information System
ENAMMC	National Climate Change Adaptation and Mitigation Strategy (Mozambique)
ESSP	Education Sector Strategic Plan
GCF	Green Climate Fund
MoPSE	Ministry of Primary and Secondary Education (Zimbabwe)
MoEST	Ministry of Education, Science and Technology
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
NDP	National Development Plan
NIECDP	National Integrated Early Childhood Development Policy (Malawi)
SDG	Sustainable Development Goal
TRANAC	Transnational Advocacy Capacity Building Consultancy
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
WB	World Bank
WASH	Water, Sanitation, and Hygiene
ZINECDA	Zimbabwe Network of Early Childhood Development Actors

Executive Summary

Climate change is redefining the developmental trajectory of Southern Africa, directly threatening the cognitive, physical, and emotional foundations of its youngest citizens. For children aged 0–8 years, who represent the most formative stage of human development, every drought, flood, or cyclone disrupts not only learning but also survival, nutrition, and psychosocial well-being. The *Regional Desk Review on the Effects of Climate Change on Early Childhood Development and Education (ECDE)* presents a comparative analysis of six countries—Mozambique, Malawi, Zambia, Zimbabwe, Lesotho, and Eswatini, and offers a regional roadmap for action, grounded in policy evidence and system diagnostics. Commissioned by the Zimbabwe Network of Early Childhood Development Actors (ZINECDA), which is the lead organisation of the Transnational Advocacy Capacity Building Consultancy (TRANAC) consortium, the study synthesizes over 80 national, regional, and global sources, including climate strategies, education sector plans, and disaster risk frameworks. It situates ECDE as a *frontline sector for climate adaptation*—where the convergence of education, health, nutrition, and protection can accelerate resilience, equity, and human capital growth.



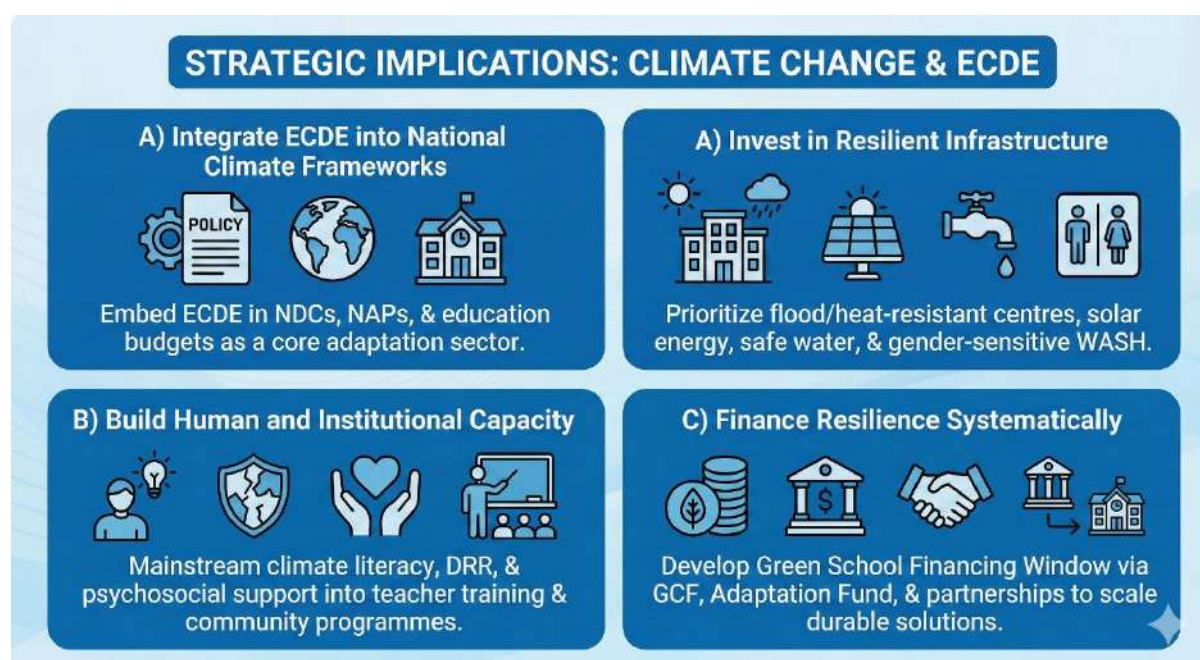
These climate shocks are not isolated—they compound existing vulnerabilities of poverty, undernutrition, gender inequality, and fragile service systems. Without urgent adaptation, the region risks losing up to two decades of progress in early learning and child well-being by 2030. The strategic implications are that this cumulative evidence underscores that climate change now constitutes a structural barrier to achieving Sustainable Development Goals (SDGs) 4.2 (Quality Early Childhood Education) and 13 (Climate Action) in Southern Africa. Without accelerated adaptation, the region risks losing up to two decades of progress in human-capital development, perpetuating intergenerational cycles of poverty, learning loss, and inequality.

Regional Policy Findings and Policy Maturity Analysis

Comparative Policy and Exposure Summary					
Country	Climate Exposure Level	Policy Integration	Infrastructure Resilience	Institutional Capacity	Overall Trajectory (1–5)
Mozambique	 Very High (Cyclones, floods, cholera)	3.0	2.5	3.0	2.8 – Emerging
Malawi	 High (Floods, drought, disease)	4.0	3.5	4.5	4.0 – Advanced
Zambia	 Moderate (Drought, localized floods)	3.0	3.0	3.0	3.0 – Moderate
Zimbabwe	 High (Multi-hazard, food insecurity)	4.5	3.5	4.0	3.8 – Consolidating
Lesotho	 Moderate (Drought, frost)	3.0	2.8	3.0	2.9 – Moderate
Eswatini	 Moderate–High (Drought, flash floods)	2.5	2.0	2.5	2.3 – Nascent

Scale: 1 = Nascent, 2 = Emerging, 3 = Moderate, 4 = Advanced, 5 = Consolidating
(Sources: UNICEF 2024; World Bank 2023; AU-CIEFFA 2023; Malawi NIECDP 2025; Zimbabwe ZELP 2023; Eswatini NDC 3.0 2024)

Across all six countries, policy awareness is strong, but institutional readiness and operational resilience remain inconsistent. The Composite ECDE–Climate Resilience Maturity Score averages 3.0/5, placing the region in an *Emerging–Consolidating*



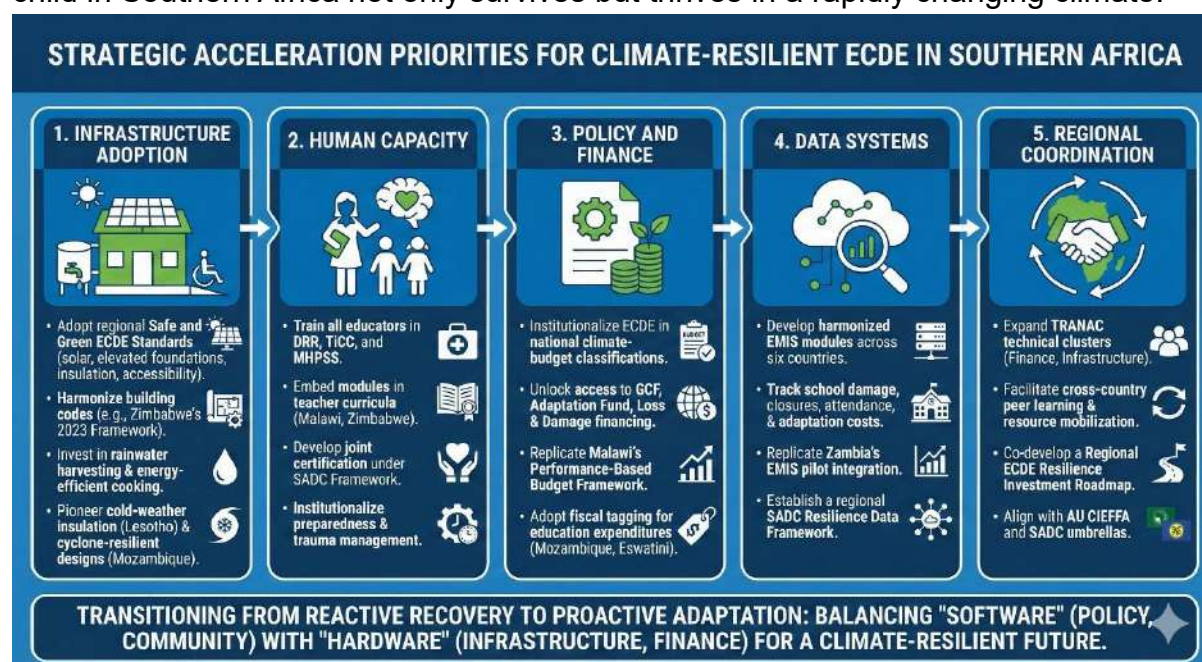
phase of development.

The Role of TRANAC in Advocacy, Policy Influence, and Coalition-Building

To strengthen TRANAC’s regional mandate and position as a policy convener, knowledge broker, and advocacy coalition catalyses the process of translating evidence into influence, the following recommendations have been proffered for TRANAC.

- Lobby SADC, AU-CIEFFA, and member states to integrate ECDE resilience in climate and education frameworks (2025–2030).
- Coordinate cross-country advocacy by engaging ministries, parliamentarians, and civil society to adopt ECDE–climate taskforces and costed action plans.
- Create a Multi-Actor Partnership (MAP) by convening a Regional ECDE Climate Action Cluster to harmonize standards, data systems, and financing mechanisms across all six countries.
- Promote South–South Learning by facilitating peer exchange among ministries, research institutions, and civil society to scale proven innovations.

Collectively, these measures represent an urgent and strategic agenda for embedding climate resilience into the foundations of early childhood systems—ensuring that every child in Southern Africa not only survives but thrives in a rapidly changing climate.



Lastly, while the report highlights the importance of inter-ministerial coordination, it is important to acknowledge the political-economy constraints that often limit such collaboration. Ministries of Education, Finance, Social Welfare and Environment frequently operate under fragmented mandates, face competition for limited resources, or experience bureaucratic inertia that slows adoption of joint climate–ECDE strategies. Strengthening coordination therefore requires not only political will, but also incentives, clear mandates, and budgeted accountability mechanisms.

1. Introduction and Background

1.1 The ECDE–Climate Nexus

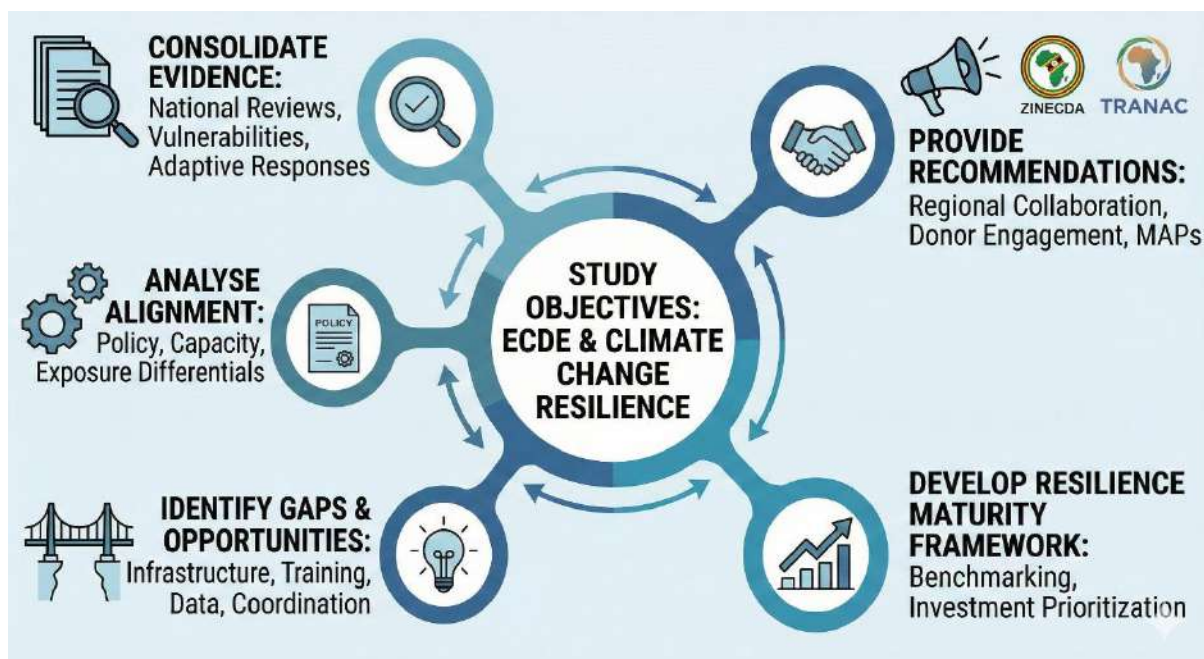
Across Southern Africa, early childhood (ages 0–8 years) represents both the most vulnerable and the most strategic window for human-capital formation. It is believed that three quarters of the information needed for the rest of one’s life is grasped from as early as in the mother’s womb, until 7 years of age. Neurodevelopmental science confirms that over 90% of brain growth occurs before age five (UNICEF 2023). Yet the region’s climatic context—marked by floods, cyclones, droughts, and increasing temperature extremes—erodes the environmental, nutritional, and emotional stability required for optimal child development.

The ECDE–climate nexus operates mainly through three interconnected pathways.



1.2 Rationale for the Regional Study

The regional study was undertaken to generate a consolidated, evidence-based understanding of how climate change is affecting Early Childhood Development and Education (ECDE) systems across six Southern African countries—Mozambique, Malawi, Zambia, Zimbabwe, Lesotho, and Eswatini—and to inform a coordinated policy and investment response. The rationale derives from growing recognition that while ECDE is a cornerstone of human capital development, it remains one of the least integrated sectors within national climate adaptation and disaster risk management frameworks.



Overall, this study plays a dual role in situating national experiences within a regional policy ecosystem, i.e. the study aims to catalyse collective learning and promote harmonised approaches to climate-resilient ECDE. This regional lens is particularly timely given the increasing alignment of SADC education and climate frameworks with the African Union's Agenda 2063 and the Continental Education Strategy for Africa (CESA 16–25), both of which underscore the imperative of safeguarding early childhood as a foundation for sustainable, climate-smart development.

2. Methodology

2.1 Approach and Scope

This research employed a qualitative desk review combining content analysis, comparative policy mapping, and thematic synthesis. The review covered over 80 documents across the six focus countries and selected regional frameworks (SADC, AU, and UNFCCC). The analytical dimensions included the following,

1. To assess the presence of ECDE within national climate, education, or Disaster Risk Management (DRM) frameworks.
2. To determine the exposure of different countries including the level and frequency of climatic hazards affecting ECDE systems.
3. To estimate the adaptive capacity of the different countries in the areas of infrastructure, teacher preparedness, financing, and data systems.
4. To determine the level of and bottlenecks in ensuring equity and inclusion in the areas of gender, disability, and rural-urban disparities.

Each document was coded against these dimensions, using an ordinal scale (1 = nascent → 5 = advanced) to construct comparative country scores for policy maturity and resilience readiness.

2.2 Sample Document Review Matrix

As part of the regional desk review, more than 80 policy, strategic, technical, academic, and programmatic documents were examined across the six focus countries. The table below presents a sample selection of the materials reviewed

Table 1: Sample of Documents Reviewed Across the Six Countries

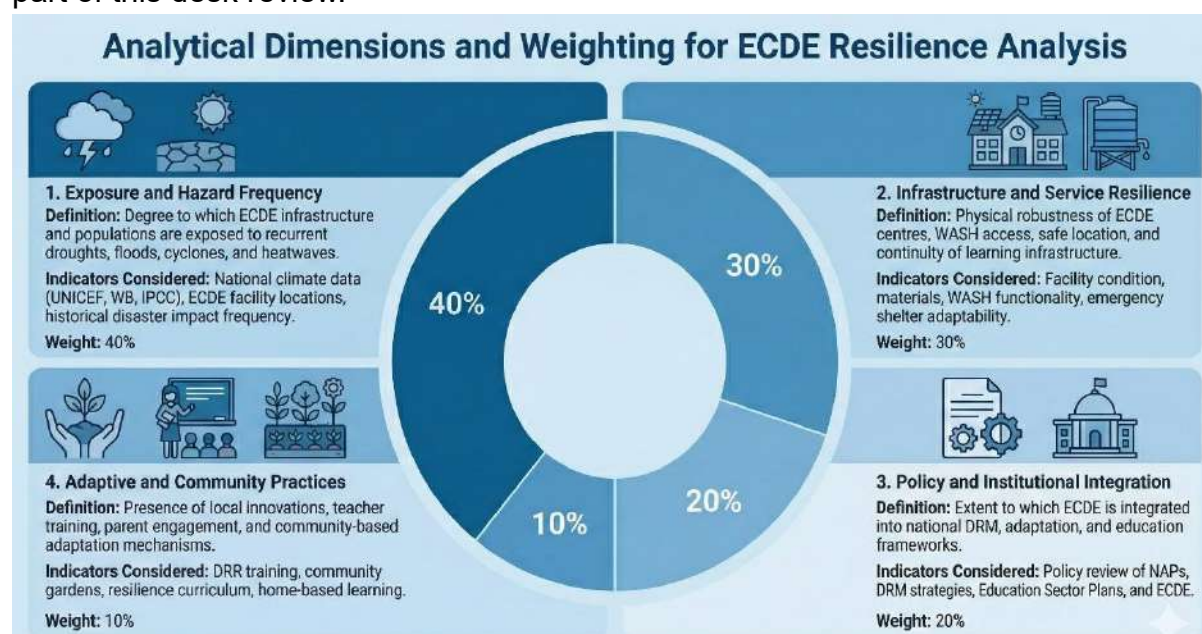
Country	Sample of Key Documents Reviewed
Mozambique	UNICEF (2024) Annual Report; National Climate Change Adaptation and Mitigation Strategy (ENAMMC) 2013–2030; Mozambique Education Sector Support Project (World Bank, 2023); UNICEF Consolidated Emergency Report (2024); Child-Centred Climate Impact and Vulnerability Assessment (2023).
Malawi	National Integrated Early Childhood Development Policy (2025); Disaster Risk Management Policy (2015); National Education Sector Investment Plan (NESIP) 2020–2030; Cyclone Freddy Rapid Assessment Reports (2023).
Zambia	Education Strategic Plan 2022–2026; Zambia Early Learning and Development Standards (ELDS, 2016); Eighth National Development Plan (2022–2026); EMIS–DRR Integration Pilot Reports (2023).
Zimbabwe	Zimbabwe Early Learning Policy (ZELP, 2023); National Climate Change Response Strategy (NCCRS, 2014); Zimbabwe National Climate Policy (2017); UNICEF Child-Centred Vulnerability Assessment (2024).
Lesotho	Inclusive Early Childhood Care and Development Policy (IECCD, 2018); Education Sector Plan (2016–2026); Revised School Feeding Policy (2023); Lesotho Vulnerability and Climate Risk Profiles (2022).
Eswatini	Nationally Determined Contribution (NDC 3.0, 2024); National Disaster Risk Management Strategy (2024–2029); Strengthening Early Childhood Development and Basic Education Systems Project (World Bank, 2023); Climate Landscape Analysis for Children (2023).

2.3. KII Sampling

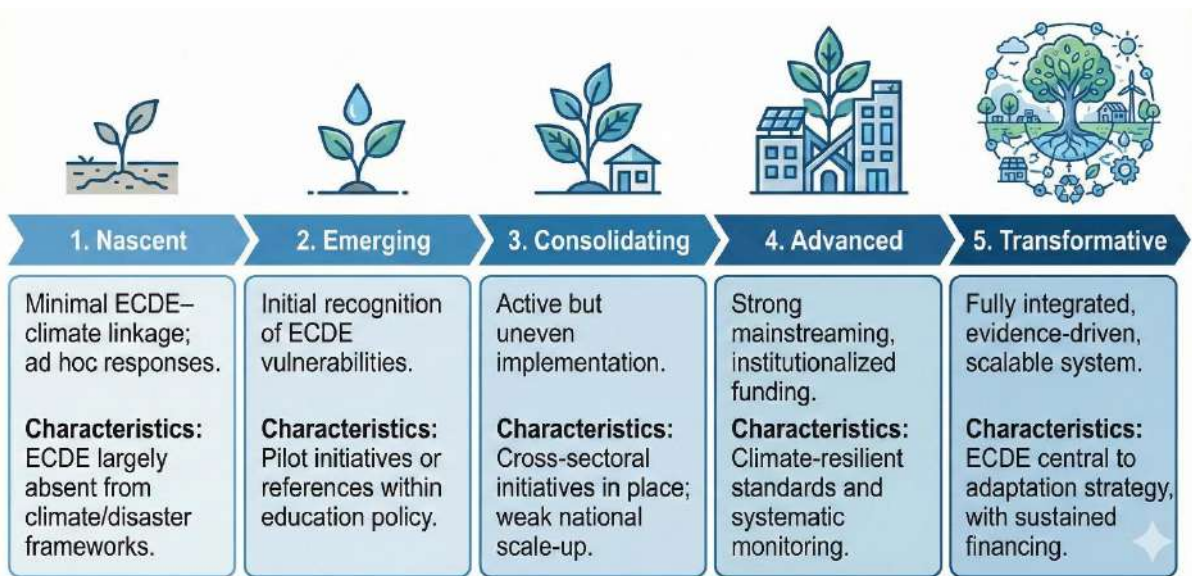
Key informants were purposively sampled based on their technical roles in ECDE, climate adaptation, disaster risk management, and social protection sectors. Respondents included ministry officials, ECDE specialists, local NGOs, UN agency staff, and community-level practitioners from Mozambique, Malawi, Zambia, Zimbabwe and Lesotho. Despite repeated attempts, no expert respondents from Eswatini were available during the data-collection window due to scheduling and institutional constraints. To mitigate this, the Eswatini analysis relies more heavily on document review, triangulation with regional datasets, and cross-country comparison.

2.4. Analytical Framework: Composite ECDE–Climate Resilience Maturity Score

To enable a cross-country comparison of Early Childhood Development and Education (ECDE) systems' capacity to anticipate, absorb, and adapt to climate-related risks, a Composite ECDE–Climate Resilience Maturity Score (CRM Score) was developed as part of this desk review.



Each dimension was assessed on a five-point ordinal scale, using document analysis, cross-validation with existing national datasets, and expert triangulation. The CRM Score provides a quantitative synthesis of qualitative and policy evidence, illustrating each country's current position on the ECDE–climate resilience continuum. The composite scoring framework was designed to; a) Capture both the structural (hardware) and institutional (software) dimensions of climate resilience in ECDE systems; b) Enable cross-country comparison and trend visualization; and; c) Identify scalable “quick wins” and policy priorities for regional action and investment. This index operationalizes climate resilience within the ECDE sector across four analytical dimensions, reflecting both exposure to climate hazards and the capacity of systems to respond and recover.



2.4.1. Scoring Process and Data Triangulation

- Document Review and Coding:** Each country's ECDE, education, climate, and DRM frameworks were reviewed using a structured analytical matrix. References to climate adaptation, risk management, resilience, and early childhood were coded by frequency and depth of integration.
- Quantitative Normalization:** Scores for each indicator were standardized on a 1–5 scale and weighted by the four analytical dimensions (exposure: 40%; infrastructure: 30%; policy: 20%; adaptive practices: 10%).
- Cross-Verification:** The composite country scores were validated through triangulation with global indices (ND-GAIN, INFORM Risk, UNICEF Child Climate Risk Index) and country-level data from the World Bank Climate and Development Reports (2024) and UNICEF (2023).
- Regional Averaging:** A weighted mean was calculated across all six countries, yielding a Composite ECDE–Climate Resilience Maturity Score of 2.9 / 5, which corresponds to the “Emerging–Consolidating” category.

Table 2: Regional Comparative Scores

Country	Exposure (40%)	Infrastructure (30%)	Policy Integration (20%)	Adaptive Practices (10%)	Composite CRM Score /5	Maturity Category
Mozambique	3.5	2.5	2.8	3.0	3.0	Emerging–Consolidating
Malawi	3.2	2.8	3.4	3.0	3.1	Consolidating
Zambia	2.8	2.6	2.9	2.8	2.8	Emerging
Zimbabwe	3.4	3.0	3.6	3.2	3.3	Consolidating
Lesotho	2.5	2.3	3.0	2.7	2.6	Emerging
Eswatini	2.9	2.5	3.1	3.0	2.9	Emerging–Consolidating
Regional Average	3.1	2.8	3.1	2.9	2.9 / 5	Emerging–Consolidating

2.4.2. Interpretation of the Regional Score

The regional average score of 2.9/5 indicates that Southern Africa's ECDE systems are in a transitional phase: the six countries are moving from emerging awareness toward partial institutionalization of climate resilience within ECDE. Countries have begun to recognize the intersection of climate change and early childhood, but adaptation remains policy-driven rather than systematically operationalized. Specifically,

- High policy awareness exists in Malawi and Zimbabwe, where ECDE has been explicitly integrated into national adaptation frameworks.
- Mozambique and Eswatini demonstrate strong community-based and emergency-responsive systems but lack sustained investment.
- Zambia and Lesotho are advancing through policy consolidation and donor-supported pilots, but implementation remains uneven.

Table 3: ECDE–Climate Resilience Maturity Scale

Category	Score Range	Interpretation
Nascent	1.0–1.9	Minimal readiness; ECDE excluded from climate agenda.
Emerging	2.0–2.9	Early-stage awareness; limited institutionalization.
Consolidating	3.0–3.4	Policy integration underway; weak system application.
Advanced	3.5–4.4	Institutionalized resilience and multi-sectoral capacity.
Transformative	4.5–5.0	Fully mainstreamed, nationally financed, evidence-driven system.

3.Regional Context and Country Findings

3.1 Regional Climate Profile

Southern Africa has entered a new era of climatic instability, characterized by rising temperatures, declining rainfall, and increasingly frequent extreme weather events. Over the past four decades, the region’s mean surface temperature has increased by approximately +1.5 °C—outpacing the global average of +1.1 °C (World Bank CCDR 2024). Average annual rainfall has declined by 5–15 %, particularly in southern and inland dry zones, while the frequency of severe droughts and cyclones has more than doubled since the early 2000s (SADC Climate Outlook 2024). Recently, the 2023/2024 El Nino-induced drought has led to national disaster declarations in Malawi, Zambia, Zimbabwe, and Lesotho due to severe crop failure, water shortages, and food insecurity- Mozambique was severely affected but didn’t declare a national disaster.

The table below visualizes sub-regional disparities in climate risk and ECDE resilience. Mozambique and Malawi face the highest combined hazard exposure and lowest resilience capacity, while Lesotho demonstrates relative policy maturity but persistent infrastructural fragility. These gradients guide differentiated adaptation and financing priorities across the region.

Table 4: Regional Climate Impact Gradient on ECDE Systems (2025)

Country	Dominant Climate Hazards	Exposure Level	ECDE System Resilience Capacity	Overall Climate-ECDE Risk Category	Key Hotspot Provinces / Districts
Mozambique	Cyclones, floods, storm surges, droughts	Very High	Low – fragmented preparedness, 65 % community-managed centres in non-durable structures	Extreme	Sofala (especially Buzi & Nhamatanda), Zambézia (Morrumbala & Nicoadala), Nampula (Mossuril), Inhambane (Maxixe)
Malawi	Floods, droughts, cholera outbreaks	High	Low-Moderate – Community-Based Childcare Centres (CBCCs) widespread but infrastructure fragile	Severe	Nsanje, Chikwawa, Machinga, Salima
Zambia	Droughts, heatwaves, flash floods	Moderate-High	Moderate – emerging integration of climate data in EMIS; weak sub-national implementation	High	Southern (Monze, Choma), Eastern (Chipata, Petauke), Western (Mongu)
Zimbabwe	Droughts, heatwaves, localized flooding	High	Low-Moderate – new Early Learning Policy (2023) promotes adaptation but limited financing	High	Masvingo (Chiredzi, Mwenezi), Manicaland (Chipinge, Chimanimani), Mat. South (Beitbridge)
Lesotho	Frost, droughts, erratic rainfall	Moderate	Moderate – strong inclusive education policy but weak WASH infrastructure	Medium	Mokhotlong, Thaba-Tseka, Quthing

Country	Dominant Climate Hazards	Exposure Level	ECDE System Resilience Capacity	Overall Climate-ECDE Risk Category	Key Hotspot Provinces / Districts
Eswatini	Heatwaves, droughts, strong winds	Moderate-High	Moderate – ECCDE reforms and climate mainstreaming emerging	High	Lubombo (Big Bend), Shiselweni (Nhlangano)

Scale

- **Exposure:** *Low < Moderate < High < Very High*
- **Resilience:** *Low = weak preparedness and infrastructure; Moderate = partial integration and policy alignment; High = strong climate-resilient systems*
- **Overall Risk Category:** Derived from combined exposure and resilience scores using weighted index (60 % exposure, 40 % resilience).

These changes have disproportionate effects on children under eight years of age, whose physical growth, cognitive development, and psychosocial wellbeing are directly tied to stable environmental conditions. According to the *UNICEF Climate Landscape Analysis for Children (2023)*, *an estimated 20 million young children across the six focus countries—Mozambique, Malawi, Zambia, Zimbabwe, Lesotho, and Eswatini—are exposed to at least one major climate hazard every decade.* The Kigali Declaration on Early Childhood and Climate (2023) also underscores this urgency, warning that “*every degree of warming represents a loss in developmental potential.*” Without urgent, integrated adaptation measures, the 2030 targets of SDG 4.2 (quality ECDE for all) and SDG 13 (climate action) will remain out of reach for much of the region.

3.2. Country and Subnational Climate Risk Overview

Understanding climate risk at both national and subnational levels is crucial for contextualising the vulnerability of Early Childhood Development and Education (ECDE) systems in Southern Africa. While regional averages illustrate broad exposure, the lived reality of children and educators is profoundly local—defined by topography, livelihood systems, settlement patterns, and the adaptive capacity of district institutions. Across the six study countries—Mozambique, Malawi, Zambia, Zimbabwe, Lesotho, and Eswatini—climate variability manifests with remarkable spatial heterogeneity. Coastal provinces such as Sofala and Zambézia in Mozambique endure recurring cyclones and floods; Malawi’s southern floodplains face yearly inundation and cholera outbreaks; Zambia’s southern belt and Zimbabwe’s lowveld battle prolonged droughts and heatwaves; while Lesotho’s highlands and Eswatini’s lowveld suffer from frost, erratic rainfall, and rising heat extremes. These climatic patterns also intersect with poverty, malnutrition, and fragile infrastructure, producing multi-dimensional risks for children aged 0–8 years. Mapping this subnational exposure identifies the physical hotspots of climate impact and also informs service providers and governments where and how resilience investments should be prioritized within ECDE planning and financing systems.

The table below summarizes key climatic patterns, dominant hazards, and the subnational hotspots most affected by climate extremes across the six countries.

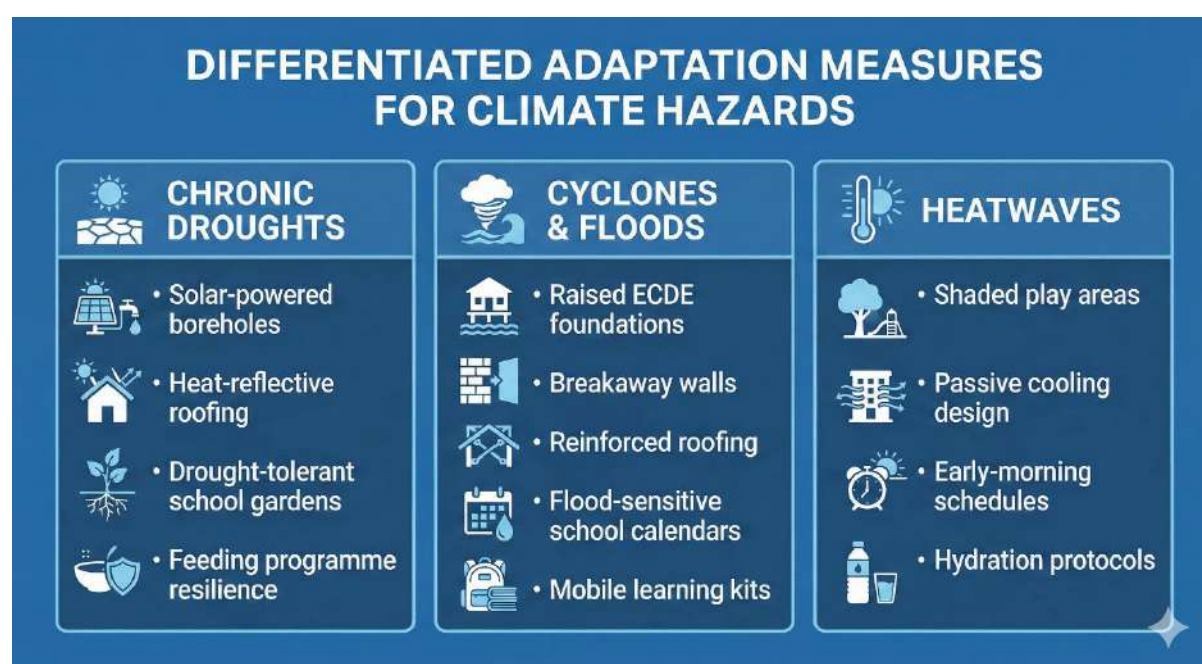
Table 5: Climatic patterns, dominant hazards, and the subnational hotspots

Country	Main Climate Hazards	Temperature & Rainfall Trends	Most Affected Provinces/Districts	Children (0–8) at Risk (Est.)	Sources
Mozambique	Cyclones, floods, coastal storms, droughts	+1.2 °C since 1980; rainfall ↓ 10 % in central corridor	Sofala (Beira, Buzi, Nhamatanda); Zambézia (Mocuba, Quelimane); Inhambane (Maxixe); Nampula (Monapo, Moma)	≈ 3.8 million	UNICEF (2024); ENAMMC (2013–2030)
Malawi	Floods, droughts, heatwaves, disease outbreaks	+1.3 °C since 1979; rainfall ↓ 8–12 % southern region	Nsanje, Chikwawa, Machinga, Balaka, Karonga	≈ 2.1 million	DoDMA (2023); NIECDP (2025)
Zambia	Droughts, flash floods, extreme heat	+1.5 °C; droughts every 2–3 years	Southern (Mazabuka, Monze), Eastern (Chipata, Katete), Western (Mongu)	≈ 2.5 million	MoE Strategic Plan (2022–2026); DMMU (2023)
Zimbabwe	Droughts, floods, heatwaves, cyclones	+0.9 °C since 1900; rainfall ↓ 5–10 %	Manicaland (Chimanimani, Chipinge); Masvingo (Chiredzi, Mwenezi); Mat South (Beitbridge)	≈ 1.9 million	UNICEF CCVRA (2024); WB CCDDR (2024)
Lesotho	Droughts, frost, flash floods	+1.4 °C since 1980; rainfall variability ↑	Mafeteng, Mophale's Hoek, Quthing (Senqu River Basin)	≈ 0.45 million	IECCD Policy (2018); Lesotho ESP (2016–2026)
Eswatini	Droughts, heatwaves, localized floods, windstorms	+1.3 °C; rainfall ↓ 10–15 % in Lubombo	Lubombo, Shiselweni, Manzini Rural	≈ 0.35 million	Climate Landscape for Children (2023); NDC 3.0 (2023)

Across the six countries, hydro-meteorological extremes have transitioned from episodic shocks to chronic systemic stressors, fundamentally reshaping the operating environment for Early Childhood Development and Education (ECDE). Mozambique now ranks among the world's most cyclone-exposed nations outside Southeast Asia—*Cyclones Idai (2019)* and *Freddy (2023)* alone destroyed thousands of ECDE and primary classrooms across Sofala, Zambézia, and Inhambane. In Malawi, annual flooding of the southern floodplains and lakeshore districts triggers cholera

outbreaks that repeatedly close Community-Based Childcare Centres (CBCCs). Zambia's southern and eastern provinces endure multi-season droughts that disrupt nutrition and school feeding programmes, while Zimbabwe's semi-arid lowveld and areas experiences compounding drought–heatwave cycles that depress enrolment and accelerate rural migration. Lesotho's highland frost cycles and erratic rainfall shorten planting seasons, exacerbating food insecurity and child malnutrition. In Eswatini's lowveld (Lubombo, Shiselweni), intensifying heatwaves—now exceeding 40 °C—limit safe outdoor learning and increase dehydration risks.

These localized crises produce a predictable chain reaction such as infrastructure failure, waterborne disease outbreaks, and teacher absenteeism evolve into secondary socio-economic shocks—malnutrition, household income loss, and displacement. Over time, these translate into tertiary effects: rising child labour, gender disparities in attendance, and declining ECDE participation. Southern Africa's ECDE systems thus operate in a high-exposure, low-resilience climate regime, where cumulative environmental and institutional fragilities converge to undermine early learning continuity and equity. Strengthening district-level adaptation mechanisms, improving climate-resilient infrastructure, and institutionalizing shock-responsive education planning are urgent priorities to safeguard developmental gains and human capital formation across the region.



3.3. Primary, Secondary, and Tertiary Impacts of Climate Change on ECDE

Climate change exerts a cascading set of impacts on Early Childhood Development and Education (ECDE) systems in Southern Africa, manifesting through direct physical damages, indirect socio-economic disruptions, and longer-term systemic and

intergenerational consequences. The magnitude and interaction of these effects differ across countries but follow a common pattern that progressively undermines children’s developmental trajectories, the resilience of families, and the institutional capacity of governments to sustain ECDE delivery.

Primary, Secondary, and Tertiary Impacts of Climate Change on ECDE			
Primary (Direct Physical Effects)			
Pathway / Mechanism  Physical destruction of ECDE facilities, injury, displacement, loss of learning materials, and unsafe environments.	Examples in the Region Cyclone Freddy (2023) destroyed over 4,000 classrooms across Mozambique and Malawi; Cyclone Idai (2019) displaced nearly 100,000 children in central Mozambique; flash floods in Eswatini (2023) and drought-driven heatwaves in Zambia caused classroom temperatures exceeding 40°C, rendering learning environments unsafe.	ECDE Implications  Immediate disruption of teaching and play-based learning; increased teacher absenteeism; exposure to trauma and fear among children; physical injury or displacement; interruption of psychosocial routines critical for early learning.	
Secondary (Socio-Economic and Nutritional Effects)			
Pathway / Mechanism  Food insecurity, livelihood loss, increased disease burden, and reduced household income.	Examples in the Region Rural households in Zimbabwe, Malawi, and Lesotho lost 40–70% of staple crops (maize, sorghum, sugar beans) during El Niño-induced droughts (ZimLAC 2024); cholera and diarrhoea outbreaks followed floods in Malawi and Mozambique; malnutrition rates above 35–40% recorded in drought-affected districts (UNICEF 2024).	ECDE Implications  Heightened stunting, anaemia, and fatigue in ECDE learners; poor concentration and attendance; withdrawal from ECDE centres as families prioritize survival; gendered caregiving burdens on girls and women.	
Tertiary (Systemic and Intergenerational Effects)			
Pathway / Mechanism  Fiscal strain, migration, population displacement, caregiver stress, and erosion of public services.	Examples in the Region Mozambique and Eswatini reported 25–30% national education budget reallocation to emergency relief post-cyclones (UNICEF 2024); Zambia and Zimbabwe face teacher migration from drought zones; Lesotho's highland communities show declining preschool participation linked to parental migration for wage labour.	ECDE Implications  Long-term decline in ECDE quality and coverage; institutional erosion of early learning services; widening inequalities between rural and urban learners; loss of generational human capital and perpetuation of the poverty–vulnerability cycle.	

3.4 Gender, Disability, and Rural Equity in Climate-Resilient ECDE

Across the six countries, climate impacts disproportionately affect girls, children with disabilities, and rural children. Girls face greater caregiving burdens during droughts and floods, often withdrawing earlier from ECDE centres to support domestic work (Mozambique, Malawi, Zambia). Children with disabilities are less likely to return to learning after climate shocks due to inaccessible shelters, damaged assistive devices, and lack of specialized support services (Zimbabwe, Lesotho). Rural ECDE centres—typically constructed from non-durable materials—are the most frequently destroyed, resulting in prolonged closures and unequal recovery rates. Evidence from Malawi and Zimbabwe shows that climate events widen enrolment and attendance gaps by 12–18% between rural and urban ECDE learners. Interventions that close these gaps include: inclusive feeding programmes, accessible safe-school infrastructure, cash transfers for affected households, and disability-sensitive emergency planning. Further evidence from Malawi and Zimbabwe shows that embedding resilience modules into teacher training and aligning ECDE standards with inclusive adaptation policies can significantly improve equity outcomes.

4. Comparative Country Snapshots on Exposure, Vulnerability & Readiness

The following snapshots provide a high-level summary of each country's climate exposure, ECDE system vulnerability, and overall resilience maturity. The detailed policy and systems analysis is presented in Section 5.

4.1 Mozambique Snapshot

- Climate exposure: One of the ten most climate-exposed countries globally, facing 8–10 tropical storms and cyclones per year, with severe flooding in Sofala, Zambézia, Nampula, and Inhambane.
- ECDE system impact: Around 65% of ECDE centres are community-managed and semi-permanent, and over 780 ECDE structures were damaged by recent cyclones, disrupting early learning for more than 250,000 children under eight.
- Resilience status: National climate strategies (ENAMMC 2013–2030, Education Sector Support Project) recognize education but lack ECDE-specific targets and budgets; composite ECDE–climate resilience maturity score: 2.5/5 (“Emerging”).

4.2 Malawi Snapshot

- Climate exposure: Recurrent floods, droughts and cyclones (including Cyclone Freddy 2023), with over 90% of recorded disasters since 2000 being hydro-meteorological and affecting southern and lakeshore districts.
- ECDE system impact: More than 15,000 Community-Based Childcare Centres (CBCCs) form the backbone of ECDE, but >70% operate in non-permanent structures, and the 2023 floods disrupted services for over 400,000 ECD-aged children and damaged around 4,000 centres.
- Resilience status: The National Integrated Early Childhood Development Policy (NIECDP 2025) and DRM Policy (2015) explicitly link ECDE and climate resilience, but implementation and financing remain uneven; composite maturity score: ≈2.9–3.0/5 (“Emerging–Consolidating”).

4.3 Zambia Snapshot

- Climate exposure: Experiences compound shocks—droughts in Southern, Central and Eastern Provinces, and seasonal floods in Luapula, Western and North-Western; temperatures have risen ~1.3°C since 1980, with 15% higher rainfall variability.
- ECDE system impact: At least 70% of ECDE centres (mostly rural) are semi-permanent with weak WASH, and a child stunting rate of ≈35% reflects the combined effect of drought-driven food insecurity and disease outbreaks.
- Resilience status: Education sector plans and the National Climate Change Policy acknowledge resilience, but ECDE is not yet explicitly integrated into adaptation frameworks; composite ECDE–climate resilience maturity score: ≈2.7–3.0/5 (“Emerging/Moderate”).

4.4 Zimbabwe Snapshot

- Climate exposure: Faces recurrent droughts, floods, heatwaves and cyclones (Idai 2019, Freddy 2023), with average temperatures up $\sim 0.9^{\circ}\text{C}$ and rainfall down 5–10%, particularly affecting semi-arid southern and western districts.
- ECDE system impact: More than 60% of rural ECD centres are non-permanent, with at least 59 facilities destroyed or severely damaged in recent events; 27.4% stunting and 4.9% acute malnutrition are closely linked to repeated drought and food insecurity.
- Resilience status: Robust policy architecture – Zimbabwe Early Learning Policy (ZELP 2023), NCCRS (2014), National Climate Policy (2017) – integrates DRR and safe-school principles, but ECDE receives $<1\%$ of the education budget, and implementation is uneven; composite maturity score: $\approx 2.9\text{--}3.8/5$ (“Emerging–Consolidating/Advanced”).

4.5 Lesotho Snapshot

- Climate exposure: A high-altitude country facing recurrent droughts in lowlands and frost/cold stress in highlands, with $\sim 1.5^{\circ}\text{C}$ warming since 1960 and increasingly erratic rainfall affecting food security and access to ECDE, especially in rural mountains.
- ECDE system impact: Around 60% of ECCD centres lack proper insulation or durable materials, causing 3–6 weeks of winter or flood-related closures each year; national stunting remains high at $\approx 33\%$, linked to climate-sensitive food insecurity.
- Resilience status: The Inclusive ECCD Policy (IECCD 2018), Education Sector Plan (2016–2026), and School Feeding Policy (2023) provide strong inclusion and nutrition scaffolding but do not yet embed ECDE-specific climate strategies; composite maturity score: $\approx 2.7\text{--}2.8/5$ (“Emerging–Moderate”).

4.6 Eswatini Snapshot

- Climate exposure: Semi-arid lowlands face recurrent droughts, while central/highland areas experience storms and flash floods; mean temperatures have risen $\sim 1.6^{\circ}\text{C}$ since 1960, with multi-hazard clusters in Lubombo and Shiselweni.
- ECDE system impact: About 70% of preschools operate in informal or unsafe structures, with limited WASH and $<30\%$ rural electrification; 31% stunting and 6% wasting among under-fives reflect climate-sensitive nutrition stress.
- Resilience status: The NDC 3.0 (2024), National DRM Strategy (2024–2029) and World Bank ECCD & Basic Education Project (2023) introduce green-school and DRR concepts, but ECDE is not yet supported by a costed adaptation plan or dedicated budget; composite maturity score: $\approx 2.3\text{--}2.8/5$ (“Nascent–Emerging”).

5. Detailed Country-Level Policy and Climate Resilience Analysis

5.1. Mozambique

Mozambique's policy and institutional framework for Early Childhood Development and Education (ECDE) within a climate resilience context demonstrates a complex yet steadily strengthening architecture that combines humanitarian preparedness, system-level reform, and community-based adaptation. The education sector's resilience agenda is anchored in three core instruments: the Education in Emergencies (EiE) framework, the Plano de Emergência da Educação Básica (PEBE), and the National Climate Change Strategy (ENAMMC, 2013–2030). Together, these documents define the operational and strategic interface between the education and disaster management sectors. The *EiE framework* institutionalizes emergency preparedness across all provinces, emphasizing continuity of learning, psychosocial support, and safe school infrastructure. The *PEBE* builds on this by formalizing district-level emergency plans and school risk-mitigation measures, ensuring that basic education—and by extension ECDE—is included within localized disaster response mechanisms. Complementing this, the *ENAMMC (2013–2030)* establishes Mozambique's long-term adaptation vision, focusing on resilient infrastructure, integrated WASH systems, and cross-sectoral disaster risk management (DRM).

UNICEF's *Humanitarian Action for Children (HAC) 2025* operationalizes these strategies through targeted interventions that directly benefit early learners. The HAC plan prioritizes continuity of learning for approximately 297,000 children, including those in preschool and early grades, through the rehabilitation of damaged schools, improvement of safe WASH facilities, and expansion of climate-sensitive infrastructure in cyclone-prone provinces such as Sofala, Zambezia, and Nampula. Moreover, the plan includes training for educators and school management committees in climate adaptation and psychosocial care, building the human-resource “software” essential for resilience in the education sector.

Mozambique's climate exposure profile is the most severe in Southern Africa, characterized by high frequency and multi-hazard intensity. The country is repeatedly affected by tropical cyclones (notably Idai in 2019, Eloise in 2021, and Freddy in 2023), seasonal flooding in central and northern basins, and recurrent droughts in southern provinces linked to El Niño cycles. In 2024 alone, an estimated 625,000 people were affected and 602 schools destroyed or heavily damaged, leading to widespread learning disruptions and temporary displacement of children. These hazards also exacerbate secondary risks such as cholera outbreaks, malnutrition, and post-traumatic stress, all of which directly influence school readiness, attendance, and child well-being.

Despite these vulnerabilities, Mozambique's ECDE system has shown progressive institutional strengthening over the past five years. The Ministry of Education and

Human Development (MINEDH), in coordination with the National Institute for Disaster Management (INGD), has developed contingency protocols, decentralized response structures, and introduced climate-resilient school standards. However, ECDE remains indirectly covered within these instruments, with most adaptation resources concentrated at the primary education level. As a result, community-managed preschools—which represent nearly 65% of all ECDE centres—remain disproportionately exposed to climate shocks due to fragile construction, limited WASH access, and inadequate learning continuity mechanisms.

5.1.1. Systemic Strengths and Gaps

Table 6: Mozambique Systemic Strengths and Gaps

Dimension	Strengths	Gaps	Opportunities
Policy Integration	The EiE and PEBE frameworks are operational in 11 provinces and have institutionalized DRR across education planning processes, linking with district and provincial DRM committees.	ECDE is not explicitly defined or costed within adaptation budgets or sectoral DRR strategies, creating a gap in resource allocation and accountability.	Incorporate ECDE indicators, cost lines, and child-protection components within national DRR and education-sector strategies.
Infrastructure	Resilient WASH and classroom designs have been piloted in Sofala and Nampula under UNICEF's "Safe Schools" initiative and the World Bank's education infrastructure program.	More than 80% of rural ECDE centres are community-constructed, non-permanent, and vulnerable to wind, flood, and heat damage.	Scale up cyclone- and flood-proof ECDE prototypes through climate finance mechanisms such as the Green Climate Fund (GCF) and the World Bank's resilient infrastructure window.
Human Capacity	Over 3,400 teachers and education officers have received training in DRR, <i>Teachers in Crisis Contexts (TiCC)</i> , and Mental Health and Psychosocial Support (MHPSS), strengthening the system's emergency response capability.	There is no ECDE-specific resilience or environmental curriculum, and preschool educators rarely receive DRR or psychosocial support training.	Extend EiE, TiCC, and MHPSS training to ECDE educators and caregivers; incorporate climate adaptation modules into teacher training colleges and in-service programs.

Mozambique's current trajectory can be classified as *Emerging to Moderate* (2.8/5 on the ECDE–Climate Resilience Maturity Scale). While exposure remains extremely high, institutional readiness is growing, driven by robust multi-sector coordination, increased investment in emergency preparedness, and international support. The main challenge lies in scaling from pilot-level initiatives toward nationwide, systematized resilience frameworks that explicitly include ECDE. Targeted policy reforms—such as creating a costed ECDE climate adaptation plan, strengthening inter-ministerial coordination through the PEBE mechanism, and embedding resilience

indicators in the Education Management Information System (EMIS)—could elevate Mozambique from reactive recovery to proactive resilience by 2030.

In summary, Mozambique exemplifies a country in transition: its policy frameworks are well-articulated and grounded in multisectoral collaboration, yet implementation remains uneven, particularly for community-based ECDE centres. Its combination of severe climatic exposure, adaptive experimentation, and strong donor engagement provides both a warning and a model for other Southern African states striving to safeguard early childhood development amidst an escalating climate crisis.

5.2 Malawi

Malawi presents one of the most comprehensive and community-rooted frameworks for integrating Early Childhood Development and Education (ECDE) within a climate resilience agenda in Southern Africa. The country's ECDE system is underpinned by a robust network of Community-Based Childcare Centres (CBCCs) that function not only as early learning spaces but also as nodes for child nutrition, protection, and community mobilization. These centres have become instrumental in the country's adaptive response to recurrent climate shocks, serving as entry points for both humanitarian relief and long-term resilience building.

The policy framework is anchored in two complementary national strategies: the National Integrated Early Childhood Development Policy (NIECDP, 2025) and the Disaster Risk Management (DRM) Policy (2021). The NIECDP articulates a holistic approach to child development—integrating education, health, nutrition, water, sanitation, and protection—and explicitly recognizes the need to build resilience in early learning environments. It outlines clear cross-sectoral coordination mechanisms led by the Ministry of Gender, Community Development and Social Welfare, in collaboration with the Ministries of Education, Health, and Agriculture. The DRM Policy (2021) reinforces this integration by assigning child development institutions, particularly CBCCs, a role in local disaster preparedness and response planning. This two-tier policy structure ensures that climate adaptation is not treated as an isolated intervention but as an integral part of community systems that sustain children's learning and well-being.

From a climate exposure standpoint, Malawi is one of the most climate-vulnerable countries in the world, facing recurrent droughts, floods, and storms that heavily disrupt early learning continuity. The devastating Cyclone Freddy (2023) exemplified the cumulative nature of these shocks—destroying hundreds of CBCCs, displacing families, and triggering widespread cholera outbreaks due to water contamination and sanitation breakdowns. In flood-prone districts such as Nsanje, Chikwawa, and Phalombe, attendance in ECDE centres fell by up to 30% during the 2023–2024 school year. The dual impact of destroyed infrastructure and disrupted nutrition programs has had cascading effects on cognitive and physical development outcomes, particularly among children aged 0–5.

Despite these challenges, Malawi stands out regionally for its systemic resilience and community-centered implementation of ECDE services. The CBCC model—operating across all districts and supported by an extensive volunteer network—has demonstrated the capacity to absorb shocks and facilitate rapid recovery following climatic events. For instance, following Cyclone Freddy, community caregivers and local development committees reactivated 68% of affected CBCCs within eight weeks through community-driven repairs and the use of locally available materials. Such grassroots adaptability underscores the strength of Malawi’s “social infrastructure,” which complements formal education policies and extends the reach of the state into remote rural areas.

5.2.1. Systemic Strengths and Gaps

Table 7: Malawi Systemic Strengths and Gaps

Dimension	Strengths	Gaps	Opportunities
Policy Integration	The NIECDP (2025) mainstreams climate resilience by linking ECDE with nutrition, health, and WASH, ensuring multi-sectoral alignment across ministries.	There is no standalone budget for ECDE climate adaptation or school safety within national education financing frameworks.	Integrate ECDE climate priorities and costed actions into the upcoming Nationally Determined Contributions (NDC) and National Adaptation Plan (NAP) revisions.
Infrastructure	CBCCs function as multi-purpose community hubs for education, health, and nutrition services, strengthening resilience to localized shocks.	Most CBCCs are built from mud, thatch, and reeds, offering little resistance to floods or high winds.	Develop and pilot low-cost, solar-ventilated CBCC prototypes with locally sourced, climate-resilient materials adaptable to district contexts.
Human Capacity	A strong base of trained caregivers, volunteers, and local committees supports ECDE delivery and post-disaster recovery.	Disaster Risk Reduction (DRR) and psychosocial support training are not yet institutionalized in teacher training colleges or caregiver certification pathways.	Embed climate literacy, DRR, and psychosocial care modules into national ECDE teacher training curricula and ongoing in-service programs.

Malawi’s ECDE–climate trajectory can be classified as Advanced Integration (4.0/5) on the regional maturity scale. The country has successfully institutionalized resilience concepts at both policy and operational levels, combining state frameworks with strong community mechanisms. However, the persistent infrastructure gap—where over 70% of CBCCs remain structurally vulnerable—continues to undermine these gains.

To consolidate progress, Malawi should prioritize three key actions over the medium term:

1. Scale-up resilient infrastructure investment through partnerships with the Green Climate Fund (GCF), World Bank, and UNICEF, focusing on eco-friendly and low-cost construction models for CBCCs.
2. Institutionalize resilience competencies within teacher training colleges and district education offices to sustain adaptive practices beyond emergency response cycles.
3. Integrate ECDE into climate finance and planning instruments, ensuring that early learning receives dedicated funding under national adaptation and mitigation frameworks.

In summary, Malawi demonstrates a model of community-driven resilience where policy coherence, local ownership, and social capital mitigate the effects of recurrent climatic stressors on early learning systems. Its experience underscores how empowering local ECDE actors—caregivers, parents, and district committees—can serve as a frontline adaptation mechanism in the face of escalating climate threats. By scaling resilient CBCC infrastructure and integrating climate financing mechanisms, Malawi could advance from “advanced integration” to a fully consolidating, climate-resilient ECDE system by 2030.

5.3 Zambia

Zambia’s approach to Early Childhood Development and Education (ECDE) within the broader climate adaptation and resilience agenda reflects a system in transition—moving from awareness and policy intent toward operational integration. The country’s policy architecture embeds climate and environmental considerations within national education and development planning, but ECDE remains underrepresented in costed programs and institutional practice.

The policy framework guiding this interface is primarily shaped by the Education Sector Plan (ESP, 2022–2026) and the National Policy on Climate Change (2016). The ESP explicitly identifies environmental sustainability and climate change as cross-cutting issues within education quality, access, and equity. It commits to promoting “safe, green, and inclusive learning environments,” and outlines sectoral coordination with the Ministry of Green Economy and Environment (MoGEE) to mainstream climate considerations into education planning. However, while the ESP acknowledges early learning as foundational to lifelong education, it does not yet define ECDE as a distinct adaptation sub-sector, nor does it include costed interventions for ECDE-specific infrastructure, teacher training, or learning continuity during climate shocks.

Similarly, the National Policy on Climate Change (2016) provides a framework for integrating adaptation measures into all sectors, including education, yet operational focus remains limited to school-level initiatives in primary and secondary education. The absence of targeted ECDE investment leaves a structural gap in the early stages of human capital development—precisely where vulnerability to climatic stressors is greatest.

Zambia's climate exposure varies spatially across the country but has direct implications for early learning. Southern and Western provinces experience recurrent droughts and heat stress that undermine agricultural livelihoods, contributing to food insecurity and increased absenteeism among young children reliant on school feeding programs. In contrast, Northern and Luapula provinces face seasonal flooding that damages community-based ECDE centres, restricts access, and leads to displacement. According to the Ministry of Education's 2023 situation analysis, learning disruptions due to floods and droughts now occur in nearly one-third of all rural schools annually. The cascading impacts—malnutrition, unsafe water, and reduced attendance—are compounded by limited infrastructure resilience and weak localized disaster management systems.

Nevertheless, Zambia has made meaningful progress in developing institutional infrastructure and data systems that can be leveraged to support ECDE resilience. The Ministry of Education, with World Bank and UNICEF support, has piloted Education Management Information System (EMIS) modules that integrate disaster-risk reduction (DRR) and school safety indicators. These pilots—initially focused on primary education—represent a critical step toward systematizing data on climate impacts, recovery times, and learning continuity. Expanding these data systems to include ECDE facilities would allow policymakers to quantify climate risk and target investments more effectively.

At the same time, the Ministry of Infrastructure, Housing, and Urban Development (MIHUD) has established climate-sensitive design guidelines for education infrastructure through the Green School Initiative, which promotes low-cost, energy-efficient classrooms and rainwater harvesting. Although the initiative is currently concentrated in primary schools, it provides a scalable model for ECDE centres, particularly in rural and peri-urban areas.

5.3.1. Systemic Strengths and Gaps

Table 8: Zambia Systemic Strengths and Gaps

Dimension	Strengths	Gaps	Opportunities
Policy Integration	Climate awareness and sustainability principles are explicitly embedded in the Education Sector Plan (ESP 2022–2026), with inter-ministerial collaboration under the National Policy on Climate Change (2016).	ECDE remains absent from costed action plans and sector budget frameworks; no dedicated adaptation lines exist for early learning.	Incorporate ECDE-specific objectives and financing within the next ESP review cycle and the National Adaptation Plan (NAP) process.
Data Systems	EMIS pilots in select provinces track DRR and climate indicators for primary schools, establishing a foundation for resilience monitoring.	Early learning data—such as centre vulnerability, closures, and attendance under climate stress—are missing from the system.	Expand EMIS to capture 0–8 age group data, integrating ECDE indicators with environmental and disaster-risk metrics.
Financing	The Ministry of Education has DRR budget lines for infrastructure rehabilitation and safe-school programs.	No allocation currently targets ECDE-specific resilience measures.	Pool donor and government resources under a “Green School Fund” for ECDE infrastructure retrofitting and innovation.

Zambia’s ECDE–climate resilience trajectory is assessed as Moderate (3.0/5). The country demonstrates strong institutional potential and a clear policy orientation toward climate-conscious education but lacks the granular focus and financing mechanisms necessary to translate this into measurable ECDE outcomes. The integration of DRR indicators into EMIS and the adoption of sustainable infrastructure prototypes represent tangible progress, yet they remain confined to upper education levels. To accelerate progress toward a resilient ECDE system, Zambia should pursue three interlinked priorities:

1. Policy and Budget Integration: Explicitly cost ECDE adaptation interventions within the ESP’s midterm review, including infrastructure retrofitting, WASH upgrades, and teacher training.
2. Data-Driven Adaptation Planning: Institutionalize climate and ECDE indicators within EMIS and leverage geospatial mapping to identify high-risk centres for targeted support.
3. Infrastructure and Financing Innovation: Scale the Green School Initiative to ECDE, embedding energy efficiency, ventilation, and water conservation features, financed through climate adaptation funds and corporate social responsibility partnerships.

Overall, Zambia represents a middle-path performer in the regional ECDE–climate resilience landscape: it combines growing institutional sophistication and political commitment with persistent execution gaps at the pre-primary level. With stronger

cross-sector coordination, targeted ECDE financing, and enhanced subnational accountability, Zambia could advance from “moderate” to “advanced integration” status by 2030—becoming a regional model for data-informed, climate-smart early childhood systems.

5.4 Zimbabwe

Zimbabwe represents one of the most policy-advanced yet operationally constrained ECDE–climate resilience systems in the Southern Africa region. The country has established a comprehensive policy and institutional framework that explicitly connects early learning with climate adaptation, disaster risk reduction (DRR), and environmental education. However, persistent fiscal constraints, weak subnational implementation, and recurrent climatic shocks continue to undermine the translation of policy intent into systemic resilience at the school and community levels.

The policy framework is anchored in three major instruments that collectively articulate Zimbabwe’s climate–education nexus:

1. The Zimbabwe Early Learning Policy (ZELP, 2023), which integrates environmental education, DRR, and climate literacy into the national Early Learning Development Standards (ELDS). The ZELP explicitly identifies resilience and sustainability as key quality dimensions of ECDE and commits to creating “safe, green, and inclusive learning environments” for children aged 3–8 years.
2. The National Climate Change Response Strategy (NCCRS, 2014), which positions education as a strategic pillar for building adaptive capacity, focusing on knowledge dissemination, institutional preparedness, and awareness creation from the early grades.
3. The National Climate Policy (2017), which formalizes the governance framework for multi-sector climate action and highlights the role of education in fostering behavioural and community-based adaptation.

Together, these policies establish a strong vertical alignment from national to local levels—linking climate adaptation priorities with education-sector objectives. Zimbabwe’s Education Sector Strategic Plan (2021–2025) further reinforces this integration by embedding sustainability in school infrastructure design, curriculum delivery, and teacher training frameworks.

In terms of climate exposure, Zimbabwe experiences one of the most complex risk profiles in the region, with recurring droughts, floods, and cyclones interacting to create multi-dimensional vulnerabilities. The southern and western provinces (Matabeleland South, Masvingo, and Midlands) are recurrently affected by droughts that drive food insecurity, malnutrition, and reduced school attendance, while eastern parts of Zimbabwe (Manicaland province- Chimanimani and Chipinge, and Mashonaland East province) face annual flooding and tropical storms. The devastating impacts of Cyclone Idai (2019) and Cyclone Freddy (2023) exemplify this duality—destroying

dozens of ECDE and primary school facilities, displacing thousands of learners, and triggering long-term psychosocial and infrastructural crises. Matabeleland North and Souths, Bulawayo, and Midlands provinces are most susceptible to droughts and dry spells. Nationwide, an estimated 27% of children under five are stunted, reflecting both chronic drought impacts and the intergenerational effects of food insecurity (ZimLAC, 2024).

Despite this high exposure, Zimbabwe’s institutional architecture provides a strong foundation for climate-responsive ECDE governance. The Ministry of Primary and Secondary Education (MoPSE) oversees a dedicated ECDE sub-vote within the national education budget—a rare development in the region—which enables the tracking of financial flows specific to early learning. Furthermore, UNICEF, ZINECDA, and other partners have supported pilot programs integrating DRR, psychosocial support (PSS), and climate education in ECDE settings across Manicaland and Masvingo. These initiatives have tested community-level resilience models, including child-safe evacuation drills, eco-classroom construction, and the use of local materials such as stabilized soil blocks for flood-resistant classroom walls.

5.4.1. Systemic Strengths and Gaps

Table 9: Zimbabwe Systemic Strengths and Gaps

Dimension	Strengths	Gaps	Opportunities
Policy Integration	Comprehensive alignment between ECDE, DRR, and climate policies (ZELP 2023; NCCRS 2014; Climate Policy 2017) with clear standards for environmental education and child safety.	Weak translation at subnational levels—limited technical capacity and coordination among district education offices.	Embed ECDE-specific climate resilience indicators into Education Management Information System (EMIS) and district supervision tools to monitor implementation.
Financing	A dedicated ECDE sub-vote exists under the MoPSE budget (2023), allowing for targeted tracking of expenditures and donor contributions.	Allocation remains below 1% of total education spending, insufficient for infrastructure rehabilitation or large-scale teacher training.	Introduce a Climate-Resilient ECDE Financing Window linked to the National Climate Fund and donor co-financing mechanisms.
Human Capacity	Strong technical partnerships with UNICEF, ZINECDA, and Save the Children supporting DRR, MHPSS, and inclusive ECDE initiatives.	Uneven coverage of training—most ECDE teachers and district officers lack climate education or psychosocial preparedness.	Institutionalize DRR, climate literacy, and trauma-sensitive teaching within teacher training colleges and certification frameworks.

However, while Zimbabwe's policy intent is comprehensive and well-articulated, implementation remains uneven across districts, largely due to financial and institutional bottlenecks. Only 0.8% of the national education budget is allocated to ECDE, and less than half of district education officers have received formal training in climate mainstreaming. Similarly, while DRR and PSS modules have been piloted in teacher colleges, national rollout remains incomplete. These constraints hinder scaling up promising innovations and institutionalizing resilience within the education system's routine operations.

Zimbabwe's trajectory is best described as Consolidating (3.8/5) on the ECDE–Climate Resilience Maturity Scale. The country combines one of the most advanced policy frameworks in the region with early examples of climate-responsive budgeting and localized innovation. However, the gap between policy ambition and field execution remains significant, constrained by underfunding and inconsistent capacity development.

Looking ahead, Zimbabwe's key priorities for consolidating progress include:

1. Institutionalizing district-level accountability by embedding climate resilience indicators within EMIS and supervision tools.
2. Scaling resilient infrastructure through national adoption of green-school construction standards, integrating solar, ventilation, and rainwater harvesting technologies.
3. Expanding financing for ECDE resilience by operationalizing a dedicated funding window under MoPSE's education budget and leveraging climate finance instruments such as the Green Climate Fund (GCF) and Adaptation Fund.

By 2030, successful implementation of these measures could elevate Zimbabwe to a fully "advanced–consolidating" status ($\geq 4.5/5$), positioning it as a regional leader in climate-smart early learning. Its experience demonstrates that high policy maturity, when coupled with localized adaptation, can yield transformative outcomes for children's development, learning continuity, and resilience in the face of escalating climate risks.

5.5 Lesotho

Lesotho's Early Childhood Development and Education (ECDE) system reflects a strong commitment to inclusion, nutrition, and equity—but remains at an intermediate stage in terms of climate adaptation and environmental resilience. The country's geographic and climatic conditions—marked by severe winters, periodic droughts, and frost in the highlands—create unique challenges for sustaining safe, conducive, and thermally efficient early learning environments. While the national education policy framework integrates social inclusion and nutrition, it has yet to evolve toward a comprehensive climate-resilient ECDE agenda.

The policy framework is grounded in three key instruments:

1. The Inclusive Early Childhood Care and Development Policy (IECCD, 2018), which provides a rights-based, multi-sectoral approach to early childhood education, emphasizing inclusion of children with disabilities, vulnerable groups, and rural populations. Although it acknowledges environmental risks to child health and learning, its climate focus remains indirect.
2. The Education Sector Plan (ESP, 2016–2026), which positions ECDE as a foundation for lifelong learning and explicitly links it to national human capital objectives under Vision 2020. The plan calls for improved infrastructure, teacher capacity, and community participation, but stops short of defining adaptation measures for early learning environments affected by climate variability.
3. The Revised School Feeding Policy (2023), which operationalizes nutrition continuity across all education levels, including early childhood centres. The policy explicitly recognizes drought resilience and the use of home-grown food procurement as key strategies for maintaining learning continuity during climate shocks. This represents one of Lesotho's most tangible policy instruments bridging climate resilience and early learning.

Lesotho's climate exposure is multifaceted due to its topography. The lowlands face recurrent droughts that undermine agriculture and food supply, while the highlands experience frost, snow, and extreme cold that frequently lead to school closures and unsafe indoor conditions. Studies indicate that approximately 60% of preschools lack proper heating or insulation systems, making learning environments unsuitable during winter months (MoET, 2023). The rural mountain districts—Thaba-Tseka, Mokhotlong, and Qacha's Nek—are particularly affected, where both infrastructure fragility and logistical isolation exacerbate the challenges of maintaining attendance and nutrition programs.

Nevertheless, Lesotho's ECDE landscape benefits from strong social and community infrastructure, largely sustained through partnerships between the Ministry of Education and Training (MoET), local councils, and caregiver networks. These structures ensure high community ownership of early learning centres and effective implementation of nutrition programs, even under difficult climatic conditions. The integration of community caregivers, parent committees, and school feeding volunteers into local governance mechanisms provides a valuable entry point for introducing disaster-risk reduction (DRR) and environmental education components.

However, while the policy foundation for inclusion and social protection is well established, environmental and climate considerations remain peripheral. For example, neither the IECCD (2018) nor the ESP (2016–2026) includes explicit standards for energy-efficient, weather-resilient ECDE infrastructure or formal teacher training on climate risk management.

5.5.1. Systemic Strengths and Gaps

Table 10: Lesotho Systemic Strengths and Gaps

Dimension	Strengths	Gaps	Opportunities
Policy Integration	Strong emphasis on social inclusion, child protection, and feeding programs through the IECCD (2018) and School Feeding Policy (2023).	The ECDE–climate resilience nexus is only indirectly addressed through nutrition and inclusion components.	Integrate explicit ECDE climate resilience objectives and measurable indicators into the next Education Sector Plan (ESP) update (2026–2030) and future national adaptation frameworks.
Infrastructure	Nutrition-sensitive and energy-saving pilot projects (e.g., improved insulation, use of local building materials) introduced in mountain districts with WFP and UNICEF support.	Limited reach and sustainability of pilots; most ECDE centres lack thermal insulation, renewable energy, or heating systems.	Scale energy-smart and thermally efficient ECDE retrofits, leveraging renewable energy (solar heating, passive design) in highland preschools.
Community Systems	Strong caregiver networks and parent-led governance under MoET ensure continuity of feeding and attendance.	Caregiver and community groups have limited technical DRR knowledge or access to preparedness resources.	Build community-based resilience committees linked to local disaster management structures to enhance climate preparedness and recovery capacity.

Lesotho’s ECDE–climate resilience trajectory can be characterized as Moderate (2.8–3.0/5) on the regional maturity scale. The country has built a solid foundation of inclusion, nutrition, and community participation, but its environmental adaptation capacity remains nascent. While food security measures—such as the national feeding scheme—mitigate some effects of drought, thermal stress and infrastructure fragility continue to expose young learners to harsh weather conditions, especially in highland regions.

To advance toward an “advanced integration” trajectory, Lesotho could pursue several strategic priorities:

1. Mainstream ECDE climate resilience into the ESP revision cycle (2026–2030), linking infrastructure standards, teacher training, and DRR to national climate adaptation and financing frameworks.
2. Scale thermally efficient and renewable-energy ECDE prototypes, prioritizing mountain districts through partnerships with WFP, UNICEF, and the Lesotho Energy Authority.
3. Institutionalize DRR and environmental awareness in ECDE teacher training and caregiver development programs, emphasizing localized risk mapping and safe-school practices.
4. Strengthen climate-linked nutrition systems, expanding home-grown school feeding and integrating resilience indicators (food diversification, drought-resistant crops) into monitoring frameworks.

Lesotho's strong institutional cohesion and community-driven ECDE delivery provide a powerful platform for transformation. By embedding climate resilience into its inclusive education model and leveraging its nutrition policy as an adaptation anchor, the country can transition from moderate to advanced integration by 2030—becoming a model for how small, high-altitude nations can combine social inclusion, ecological adaptation, and child protection in early learning systems.

5.6 Eswatini

Eswatini's Early Childhood Development and Education (ECDE) sector stands at a nascent-to-emerging stage of integrating climate resilience into education systems. While the country has developed progressive national climate frameworks and is actively implementing education sector reforms with resilience components, ECDE-specific adaptation remains underdeveloped and largely uncoded. The growing alignment between the education and climate portfolios—through the Nationally Determined Contributions (NDC 3.0, 2024), National Disaster Risk Management (DRM) Strategy (2024–2029), and the World Bank-supported Strengthening Early Childhood Development and Basic Education Project (2023–2028)—provides an important policy foundation upon which a more climate-smart ECDE system can evolve.

The policy framework guiding Eswatini's climate and education agenda reflects strong institutional awareness of environmental risks but limited sectoral integration at the pre-primary level

1. The NDC 3.0 Framework (2024) positions education as one of the climate-vulnerable sectors, outlining cross-sector strategies to strengthen human capital development through climate adaptation and mitigation. However, ECDE is not yet treated as a discrete sub-sector with its own financing, targets, or indicators.
2. The National Disaster Risk Management Strategy and Action Plan (2024–2029) identifies education as a pillar for community preparedness and risk awareness, emphasizing the importance of resilient learning spaces and continuity during shocks. It provides a policy entry point for embedding early learning within disaster risk governance.
3. The Environmental and Social Management Framework (ESMF, 2023) under the World Bank's ECCD and Basic Education Systems Strengthening Project defines minimum construction standards for resilient schools and sets environmental safeguards, capacity-building requirements, and monitoring mechanisms to ensure sustainability. The ESMF represents Eswatini's first operational framework explicitly linking ECDE, infrastructure resilience, and environmental management.

However, the translation of these frameworks into tangible ECDE-level outcomes remains limited. The absence of a coded national ECDE climate adaptation plan and the fragmentation of institutional mandates between the Ministry of Education and Training (MoET), the National Disaster Management Agency (NDMA), and the Ministry of Tourism and Environmental Affairs (MTEA) have slowed implementation.

In terms of climate exposure, Eswatini faces recurrent multi-hazard risks, including droughts, flash floods, and heatwaves, particularly concentrated in the Lubombo and Hhohho regions. Between 2022 and 2024, multiple hydrometeorological events disrupted learning in rural preschools, damaged infrastructure, and strained WASH services. Approximately 31% of children under five are stunted, while over 70% of ECDE centres lack safe, durable structures or proper ventilation (World Bank, 2023; UNICEF, 2024). Drought-related food insecurity has intensified malnutrition and reduced preschool attendance, particularly in communities dependent on subsistence agriculture. Additionally, flash floods frequently render access roads impassable, isolating rural preschools for weeks and disrupting learning continuity.

The cumulative effects of these shocks extend beyond physical damage: teacher displacement, psychosocial stress, and unsafe learning environments contribute to deteriorating quality and attendance. Yet, early interventions under the World Bank’s ECCD project—such as the piloting of climate-resilient school designs and teacher capacity-building on environmental safeguards—represent a turning point for embedding adaptation into ECDE delivery.

5.6.1. Systemic Strengths and Gaps

Table 11: Eswatini Systemic Strengths and Gaps

Dimension	Strengths	Gaps	Opportunities
Policy Integration	Education is recognized as a climate-vulnerable sector under the NDC 3.0 Framework (2024) and DRM Strategy (2024–2029).	ECDE is not independently costed or prioritized within adaptation budgets; no measurable climate targets for early learning.	Develop a National ECDE Climate Adaptation Plan, aligned with the NDC and education-sector reforms, to define targets, budgets, and indicators.
Infrastructure	The ESMF (2023) provides detailed standards for safe, climate-resilient school construction, emphasizing environmental safeguards and sustainability.	Implementation remains at pilot stage; <10% of rural ECDE centres meet resilience standards.	Fast-track the rollout of climate-resilient ECDE prototypes under the World Bank project and expand WASH investments in rural centres.
Human Capacity	The ESMF includes provisions for training teachers and local contractors on environmental safeguards and sustainable practices.	Limited DRR, psychosocial, and climate literacy training among ECDE educators and caregivers.	Integrate DRR and resilience modules into teacher certification programs, and train ECDE supervisors in safe-school assessments and community preparedness.

Eswatini's ECDE–climate resilience trajectory is assessed as Nascent to Emerging (2.0–2.5/5) on the regional maturity scale. The country demonstrates strong policy awareness and foundational frameworks, but practical integration and financing mechanisms remain underdeveloped. While the ESMF and NDC 3.0 represent progressive entry points, their operational impact on ECDE remains minimal—reflecting the early stages of institutional learning and capacity-building.

To accelerate progress, Eswatini could pursue several strategic actions:

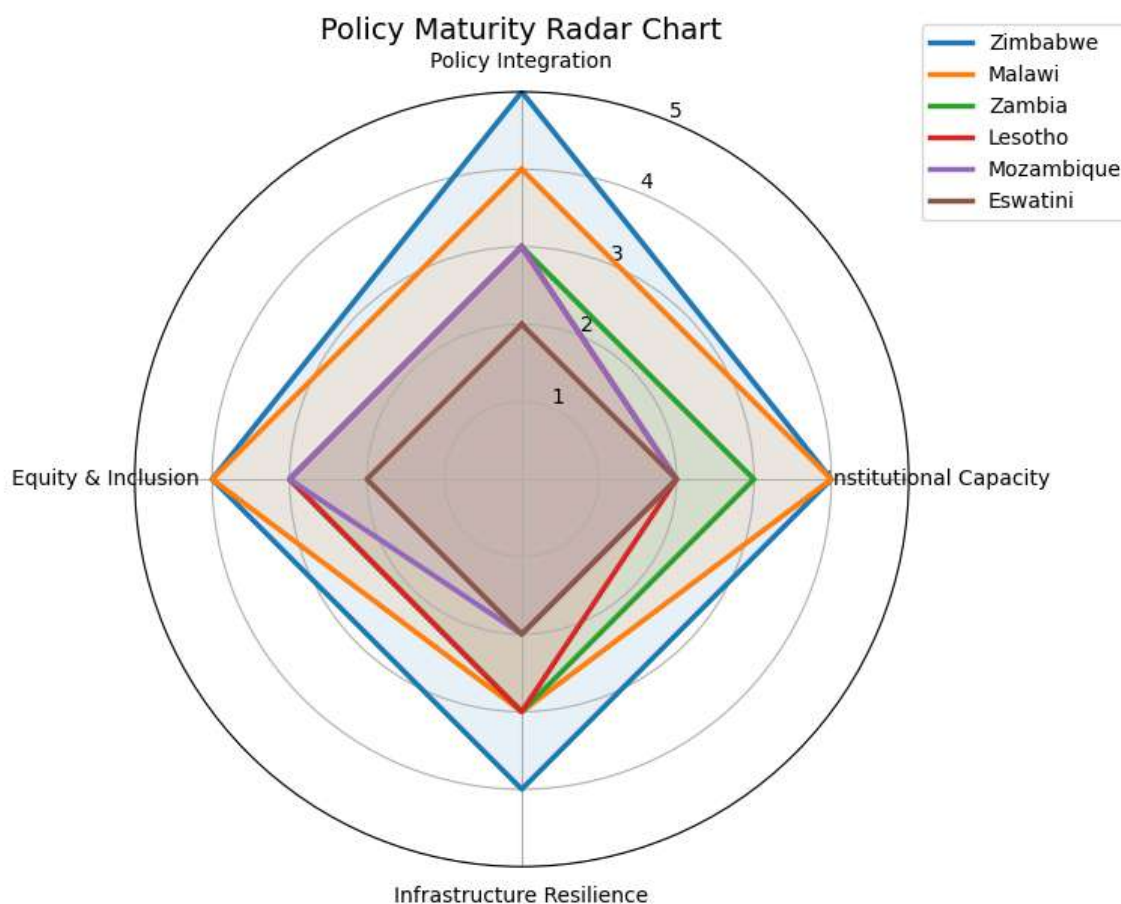
1. Develop and cost a National ECDE Climate Adaptation Plan (2025–2030), integrated into the education sector budget and aligned with the DRM Strategy. This would ensure accountability, define measurable outcomes, and attract climate finance.
2. Scale resilient infrastructure pilots under the World Bank ECCD project, prioritizing high-exposure districts such as Lubombo and Hhohho, and standardize climate-proof design templates for national adoption.
3. Institutionalize resilience in teacher training, expanding the Teaching in Crisis Contexts (TiCC) and Mental Health and Psychosocial Support (MHPSS) programs to include DRR, environmental education, and community engagement.
4. Strengthen inter-ministerial coordination between MoET, NDMA, and MTEA through a permanent Education and Climate Resilience Working Group, tasked with harmonizing data, budgets, and policy monitoring.

By leveraging ongoing partnerships with the World Bank, UNICEF, and the Eswatini Education Sector Support Program, the country can build a coherent pathway toward resilient ECDE systems. The immediate priority is to bridge the gap between high-level policy recognition and grassroots implementation. If sustained investment and institutional coordination are achieved, Eswatini could transition from “nascent” to “moderate integration” by 2030—positioning itself as a model of small-state adaptation through targeted, education-led resilience building.

6. Comparative ECDE–Climate Resilience Policy and Exposure Analysis

6.1. Regional Overview

The Early Childhood Development and Education (ECDE) systems of Southern Africa are operating under mounting climate stress. Droughts, cyclones, floods, and prolonged heatwaves now routinely disrupt learning continuity, damage infrastructure, and exacerbate malnutrition. This analysis integrates findings from six countries—Mozambique, Malawi, Zambia, Zimbabwe, Lesotho, and Eswatini—to examine their respective policy maturity, climate exposure, institutional capacity, and resilience trajectories.



The radar chart provides a comparative snapshot of ECDE–climate resilience maturity across the six countries, illustrating how each system performs across four dimensions: policy integration, institutional capacity, infrastructure resilience, and equity and inclusion. Zimbabwe and Malawi display the strongest and most balanced profiles, indicating more advanced policy alignment and operational readiness. Zambia and Lesotho sit in the moderate range, showing partial integration with weaknesses in capacity and infrastructure. Mozambique and Eswatini remain at the emerging stage, with low scores across all dimensions, reflecting structural fragility, limited financing, and early-stage policy mainstreaming. Overall, the chart highlights clear disparities in readiness and identifies where each country must prioritise investment to strengthen climate-resilient ECDE systems.

In addition, evidence from the KIIs and desk review indicates that the region as a whole is also transitioning from policy awareness to partial institutionalization of climate-resilient ECDE systems. However, implementation remains uneven and heavily dependent on donor support. Across all six countries, 60–80% of rural ECDE centres operate in non-resilient structures, while teacher capacity, financing, and coordination remain persistent bottlenecks (UNICEF, 2024; ECM, 2020).

Country	Climate Exposure Level	Policy Integration	Infrastructure Resilience	Institutional Capacity	Overall Trajectory (1–5)
 Mozambique	 Very High (Cyclones, floods, cholera)	 3.0	 2.5	 3.0	2.8 – Emerging
 Malawi	 High (Floods, drought, disease)	 4.0	 3.5	 4.5	4.0 – Advanced
 Zambia	 Moderate (Drought, localized floods)	 3.0	 3.0	 3.0	3.0 – Moderate
 Zimbabwe	 High (Multi-hazard, food insecurity)	 4.5	 3.5	 4.0	3.8 – Consolidating
 Lesotho	 Moderate (Drought, frost)	 3.0	 2.8	 3.0	2.9 – Moderate
 Eswatini	 Moderate–High (Drought, flash floods)	 2.5	 2.0	 2.5	2.3 – Nascent

Scale: 1 = Nascent, 2 = Emerging, 3 = Moderate, 4 = Advanced, 5 = Consolidating
(Sources: UNICEF 2024; World Bank 2023; AU-CIEFFA 2023; Malawi NIECDP 2025; Zimbabwe ZELP 2023; Eswatini NDC 3.0 2024)

6.2. Climate Exposure and Systemic Stress

The degree of exposure closely mirrors geographic and climatic diversity.

- Mozambique, located along the Indian Ocean cyclone corridor, exhibits the highest multi-hazard exposure. Cyclones Idai (2019) and Freddy (2023) destroyed over 600 schools and disrupted learning for 297,000 children (UNICEF, 2024).
- Malawi experiences recurrent flooding and drought cycles affecting the Shire Valley and central plains, while cholera outbreaks during Cyclone Freddy exposed gaps in WASH-linked resilience.
- Zimbabwe and Zambia share semi-arid conditions with frequent drought-induced food insecurity, though Zimbabwe’s exposure to eastern tropical systems makes its risk profile more acute.
- Lesotho faces cold-related hazards—frost and snow in highlands, drought in lowlands—while Eswatini endures alternating droughts and flash floods, particularly in the Lubombo and Hhohho regions.

High-exposure contexts demonstrate stronger policy awareness but greater implementation fatigue: the recurrent reconstruction of damaged schools diverts resources away from systemic investment, locking ECDE into a reactive rather than adaptive cycle.

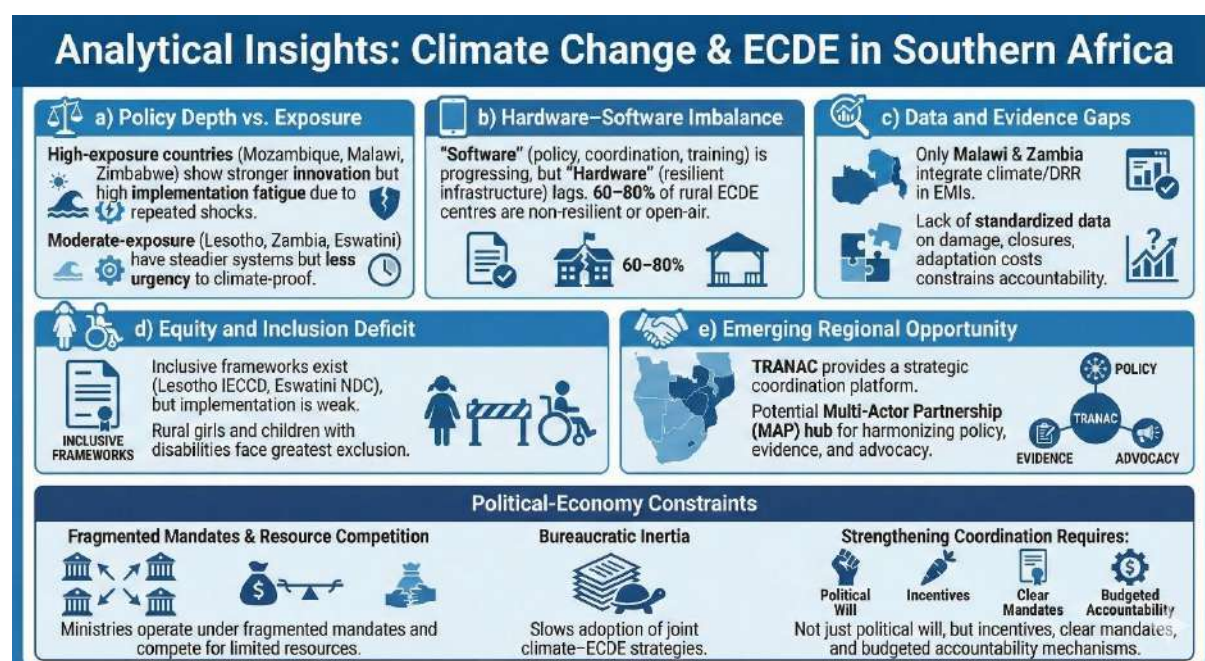
6.3. Comparative Policy Maturity

The comparative maturity analysis reveals three tiers of progress among the six countries as shown below.

Table 12: Comparative maturity analysis reveals of progress among the six countries

Tier	Countries	Characteristic Features
Advanced / Consolidating (≥ 3.8)	Zimbabwe, Malawi	Comprehensive policy integration; inter-ministerial coordination; budget sub-votes or integrated financing; early adoption of DRR and climate literacy.
Moderate (≈ 3.0)	Zambia, Lesotho	Established enabling frameworks; partial integration of DRR; moderate infrastructure pilots; limited financing.
Emerging / Nascent (< 2.8)	Mozambique, Eswatini	Foundational policy frameworks; donor-driven pilots; lack of costed ECDE adaptation plans; minimal resilience infrastructure.

The comparative maturity analysis shows three clear tiers: Zimbabwe and Malawi are the most advanced, with strong policy integration, coordinated systems, and early adoption of DRR and climate literacy; Zambia and Lesotho fall in the moderate range, with solid frameworks but only partial integration and limited financing; while Mozambique and Eswatini remain in the emerging category, constrained by uncoded plans, donor-driven pilots, and fragmented institutional capacity despite high climate exposure. Overall, the region demonstrates uneven progress, with strong policy foundations in some countries but major gaps in financing, infrastructure, and operational integration across others.



7. Comparative Policy, Strengths, and Gaps Analysis

7.1 Policy Convergence and Divergence

Policy Convergence and Divergence in ECDE Climate Adaptation			
Dimension	High Integration (4–5)	Moderate (3)	Low / Nascent (1–2)
 ECDE inclusion in climate/education policy	 ZELP 2023  NIECDP 2025	 ESP 2022–2026  IECCD 2018	 ENAMMC 2013–2030  NDC 3.0 2024
 Operational DRR integration in ECDE	 		  
 Budgeted adaptation lines for ECDE	 MoPSE 2023	 Education-Nutrition link	Others – none
 Teacher training on climate/psychosocial resilience	 		  
 Data systems / EMIS integration	 		Others – absent 

Across the region, all six countries show policy intent on ECDE and climate resilience, but implementation varies widely. Zimbabwe and Malawi lead with clear ECDE integration into climate and education systems; Zambia and Lesotho show moderate progress; while Mozambique and Eswatini have strong policy frameworks but limited, unfunded operationalization—highlighting a persistent “awareness-to-action” gap.

7.2 Regional Policy Maturity Scale

Regional Policy Maturity Scale		
Policy Domain	Average Regional Score (1–5)	Interpretation
 Legal and policy recognition of ECDE–climate link	3.2  3.2	Growing awareness; operational translation uneven.
 Financing and budget allocation	2.4  2.4	Limited costed plans; dependence on external aid.
 Infrastructure standards and enforcement	2.7  2.7	Designs exist, but enforcement weak in rural zones.
 Multi-sectoral coordination	3.0  3.0	Inter-ministerial committees exist; follow-through weak.
 Monitoring, data, and evidence use	2.5  2.5	EMIS integration limited to pilots (Zambia, Malawi).

The average score of 3.0/5 confirms that Southern Africa stands in a transition phase—policy frameworks are in place, but institutionalization, financing, and data integration lag behind.

7.3 Systemic Strengths and Persistent Gaps

Systemic Strengths and Persistent Gaps			
Dimension	Strengths	Gaps	Example
 Policy Coherence	✓ All six countries have DRM or climate policies referencing education.	✗ ECDE rarely integrated or costed in adaptation frameworks.	→ Malawi's NIECDP (2025) and Zimbabwe's ZELP (2023) are exceptions.
 Infrastructure Resilience	✓ Green-school pilots and resilient WASH models in Mozambique, Malawi, Eswatini.	✗ 60–80% of ECDE centres are semi-permanent.	→ Cyclone Freddy (2023) destroyed >4,200 classrooms in Mozambique & Malawi.
 Human Resource Capacity	✓ Training modules in DRR and PSS emerging in Zimbabwe, Malawi.	⚠ <65% of ECDE teachers trained in DRR or psychosocial recovery.	→ Malawi's TICC and Zimbabwe's ZINECDA pilots.
 Data and Accountability	✓ EMIS integration in Zambia and Malawi.	✗ Absent elsewhere; no national ECDE damage reporting.	→ Weak post-disaster recovery tracking.
 Equity & Inclusion	✓ Inclusion principles in Lesotho IECCD (2018), Eswatini NDC (2024).	✗ Disability and gender inclusion remain under-implemented.	→ Rural girls excluded during droughts due to caregiving roles. ✨

8. Opportunities and Strategic Pathways for TRANAC

The comparative policy assessment reveals that the next decade (2025 – 2035) offers a decisive window to embed climate resilience within the ECDE subsector across Southern Africa. With most countries having already established the policy “software,” the challenge now lies in operationalizing these frameworks through costed implementation, infrastructure investments, and locally owned delivery models. The following entry points—rooted in regional and country evidence—illustrate how Southern Africa can convert policy momentum into tangible resilience outcomes.

8.1 Immediate Entry Points

Leveraging Area	Strategic Opportunities
Policy Alignment	Integrate ECDE explicitly within upcoming Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs) (2025–2027). Most NDCs in the region currently list education under “capacity building,” not as a front-line adaptation sector. Elevating ECDE within these plans would unlock access to global climate-finance windows. For instance, Malawi’s NIECDP (2025) provides a precedent by defining early learning centres as community adaptation hubs. Mozambique and Eswatini could replicate this by developing ECDE-specific adaptation indicators under their next NDC cycles, ensuring that school rehabilitation, WASH upgrades, and nutrition interventions qualify for climate funding under the GCF Readiness Programme.
Finance Innovation	Expand and institutionalize Green School Funds and Resilient Infrastructure Windows. The UNICEF–World Bank model piloted in Malawi and Zimbabwe demonstrates how joint financing can support construction of solar-powered, flood-resistant ECDE centres. Through pooled mechanisms linked to the Global Partnership for Education (GPE) and Adaptation Fund, countries such as Lesotho and Zambia could leverage concessional financing for mountain-region heating retrofits or drought-resilient feeding schemes. Integrating these funds within national Medium-Term Expenditure Frameworks (MTEFs) would reduce project fragmentation and sustain recurrent maintenance costs.
Curriculum and Teacher Training	Embed climate literacy, disaster-risk reduction (DRR), and psychosocial adaptation within national teacher-training curricula. Zimbabwe’s ZELP (2023) and Malawi’s TiCC modules have demonstrated the feasibility of training pre-service teachers to deliver nature-based and resilience-oriented learning. Zambia’s Teacher Education and Professional Development Framework (TEPDF) could add DRR competencies for ECDE educators, while Mozambique’s Instituto de Formação de Professores Primários (IFPP) could integrate early-learning climate modules developed under the Education in Emergencies (EiE) programme. Regional standardization through SADC’s Teacher Education Quality Framework would ensure alignment and certification portability.
Community Systems	Strengthen School Development Committees (SDCs), caregiver associations, and local DRR committees as the first line of adaptation. In Malawi, more than 13,000 Community-Based Childcare Centres (CBCCs)

Leveraging Area	Strategic Opportunities
	already mobilize parents for feeding and WASH maintenance, demonstrating scalable models of social capital in resilience. Lesotho's caregiver networks could be formalized to manage early warning and resource pooling for drought periods. Community-based mapping of climate hazards, supported by participatory digital tools (e.g. KoboCollect or mWater), would empower local action and feed data directly into EMIS.
Regional Collaboration	Utilize TRANAC (Transnational Network on Early Childhood Development in Africa) as the anchor for a regional Multi-Actor Partnership (MAP) on ECDE and Climate Resilience. TRANAC can convene ministries of education, environment, finance, and social protection to align regional policy standards, create a shared monitoring framework, and broker cross-border research. Through joint technical working groups, TRANAC could pilot a Regional Climate-Resilient ECDE Scorecard, harmonizing data collection and enabling countries to access regional climate-finance instruments via SADC and the AU CIEFFA platforms.

Collectively, these entry points position the region to transition from fragmented, donor-dependent models to integrated, nationally-owned, climate-resilient ECDE systems.

8.2 Regional Trajectory and Scaling Pathways

The region's trajectory toward climate-resilient ECDE follows a discernible three-stage continuum. The countries in nascent stages require baseline data and pilots, emerging countries need institutionalization and financing integration, and advanced countries must scale innovation and share learning through regional mechanisms like TRANAC.

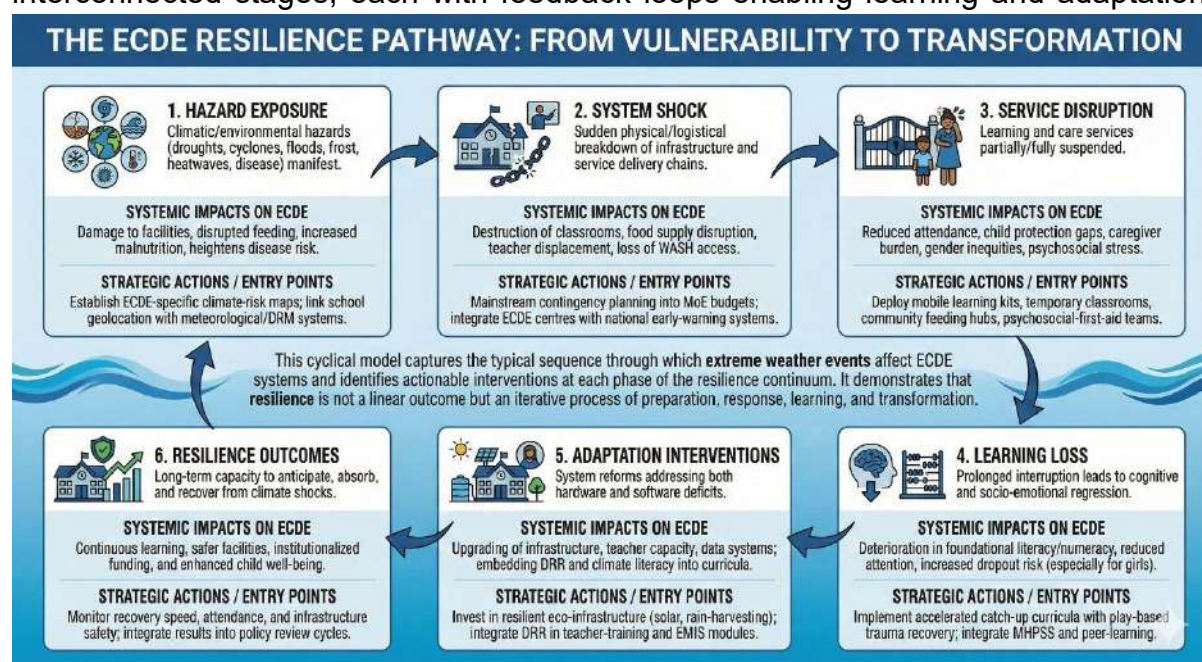
Region's Trajectory Toward Climate-Resilient ECDE			
Trajectory Stage	Countries	Strategic Focus for Acceleration	Examples
 Stage 1 – Nascent (< 2.5)	 	Establish ECDE–climate taskforces; conduct hazard mapping; pilot resilient centres and teacher modules.	→ Mozambique's post-Cyclone Freddy rehabilitation (2024) and Eswatini's World Bank ECCD Project offer starting points.
 Stage 2 – Emerging (2.5–3.0)	 	Institutionalize teacher training, EMIS climate indicators, and sub-national adaptation plans.	→ Zambia's EMIS pilot and Lesotho's mountain-school retrofits exemplify scalable innovation.
 Stage 3 – Advanced (> 3.5)	 	Consolidate cross-sector integration; expand climate-finance access through GCF and SDG-aligned funds.	→ Malawi's CBCC network and Zimbabwe's budgeted ZELP framework provide replicable models.

9. Regional Gaps-to-Action Framework

The resilience of Early Childhood Development and Education (ECDE) systems in Southern Africa hinges on their ability to anticipate, absorb, and recover from climate-related shocks while maintaining continuity of learning and protection for young children. This Regional Gaps-to-Action Framework operationalizes this by linking the systemic vulnerabilities identified across the six focus countries—Mozambique, Malawi, Zambia, Zimbabwe, Lesotho, and Eswatini—to a cyclical adaptation pathway that emphasizes preventive, responsive, and transformative measures. This framework serves as both an analytical lens and an implementation guide, aligning national education systems with broader adaptation agendas under the Paris Agreement, Sendai Framework for Disaster Risk Reduction (2015–2030), and SADC Education and Training Protocol (2024–2030).

9.1 Conceptual Model of the ECDE Resilience Pathway

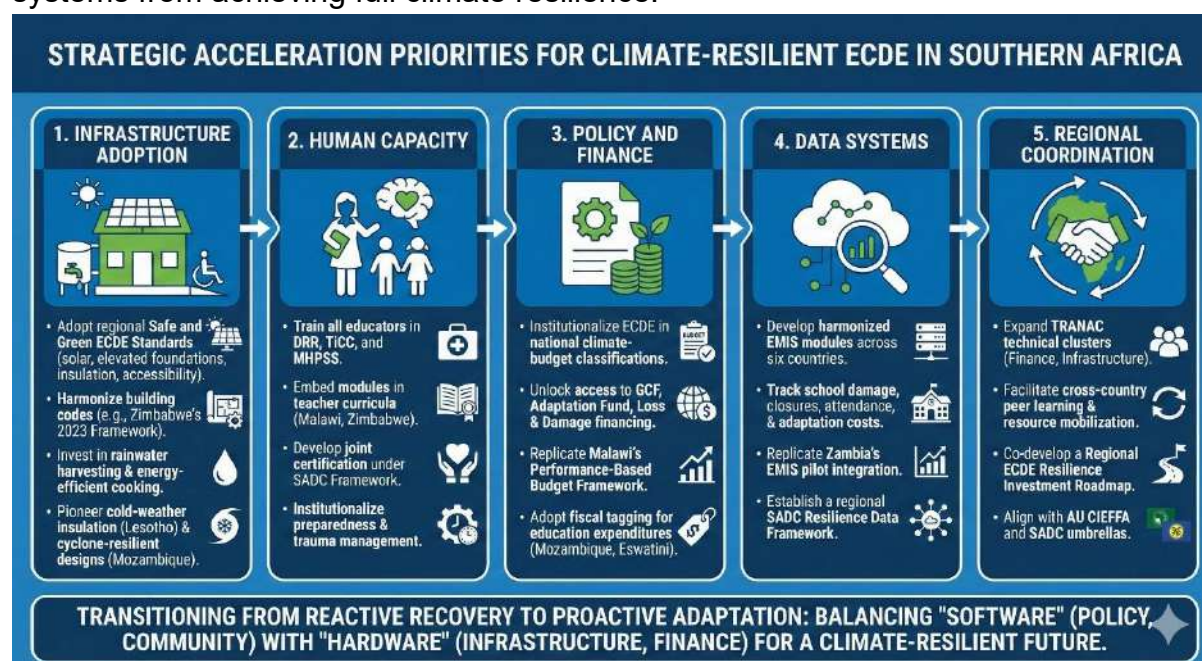
The *ECDE Resilience Pathway* represents a dynamic and cyclical system describing how climatic hazards affect early learning environments and how policy, infrastructure, and human capacity can transform vulnerability into resilience. It moves through six interconnected stages, each with feedback loops enabling learning and adaptation.



The ECDE Resilience Pathway shows how climate hazards trigger a chain of impacts—from exposure and system shock to service disruption and learning loss—before moving into adaptation and long-term resilience. Each stage outlines the specific risks faced by young children and early learning systems, alongside practical entry points such as risk mapping, continuity planning, temporary learning solutions, accelerated recovery, resilient infrastructure, and data-driven monitoring. Overall, the model illustrates that building ECDE resilience is a continuous cycle of preparation, response, adaptation, and system strengthening.

9.2 Strategic Acceleration Priorities

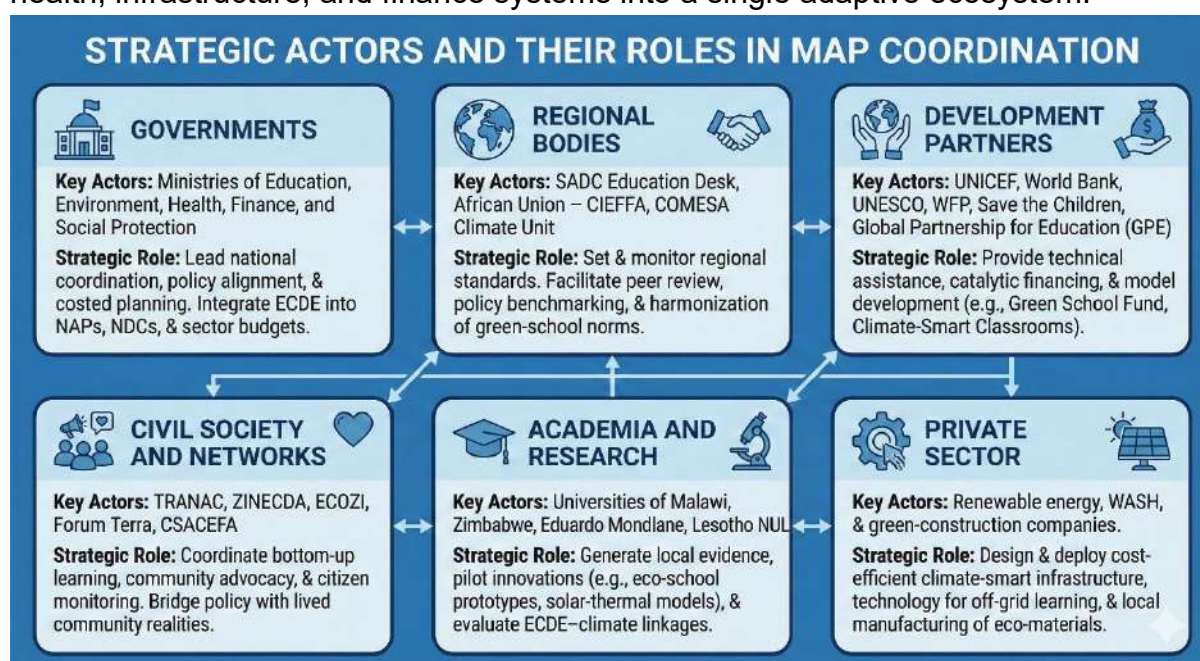
Building on the cyclical framework above, five regional acceleration priorities emerge—each addressing a critical gap that constrains Southern Africa's ECDE systems from achieving full climate resilience.



10. Toward a Regional Multi-Actor Partnership (MAP) Framework

10.1 Strategic Actors and Their Roles

Building resilience within Early Childhood Development and Education (ECDE) systems across Southern Africa requires a coordinated and institutionalized Multi-Actor Partnership (MAP) anchored in shared mandates, complementary expertise, and joint accountability mechanisms. The MAP model recognizes that resilience cannot be achieved through the education sector alone; it must integrate climate, health, infrastructure, and finance systems into a single adaptive ecosystem.

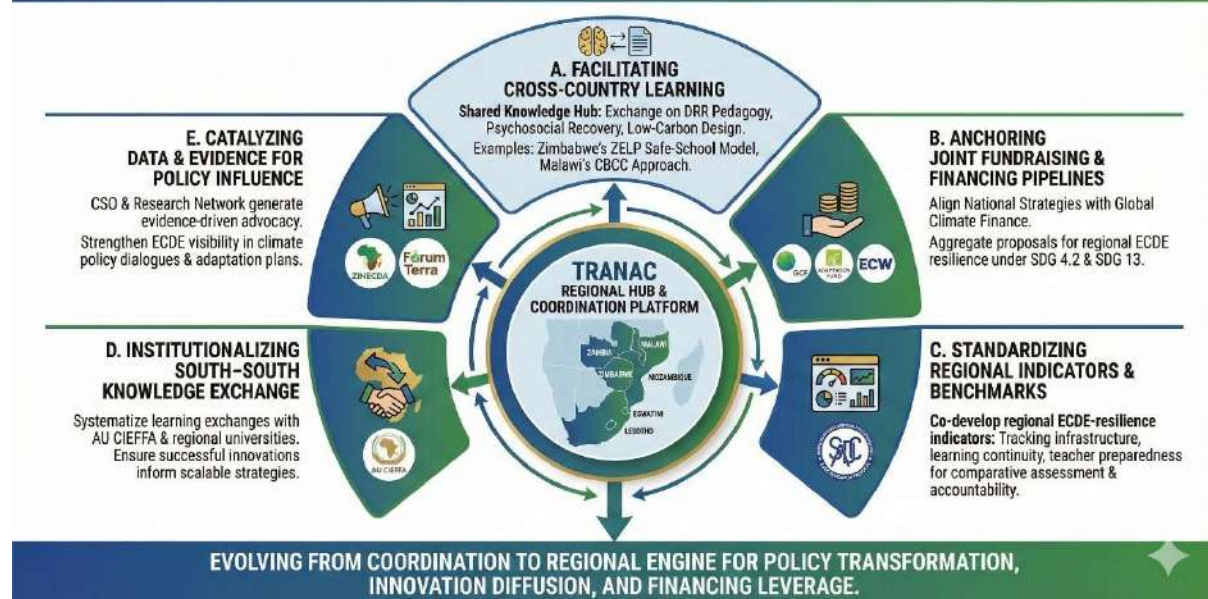


These actors collectively form the foundation of a regional public–private–academic alliance, aligning domestic policy reforms with regional investment pipelines. For instance, the World Bank’s Resilient Basic Education Programme in Eswatini and UNICEF’s Green School pilots in Mozambique demonstrate scalable partnerships where local governments, private contractors, and communities jointly deliver climate-proof ECDE facilities.

10.2 TRANAC’s Regional Value-Add

The Transforming Education in Climate-Resilient and Adaptive Contexts (TRANAC) platform provides a unique, ready-made architecture to institutionalize regional cooperation on ECDE climate resilience. Operating across Mozambique, Malawi, Zambia, Zimbabwe, Lesotho, and Eswatini, TRANAC serves as both a policy think-tank and an implementation accelerator, bridging evidence, policy, and practice. Within the MAP framework, TRANAC can anchor a Regional ECDE Climate Action Cluster (R-CAC) tasked with the following tasks

TRANAC: REGIONAL ECDE CLIMATE ACTION CLUSTER (R-CAC) – VALUE-ADD & FUNCTIONS



Convening these actors around a coherent results framework would help TRANAC to also evolve from a coordination platform into a regional engine for policy transformation, innovation diffusion, and financing leverage.

10.3 Strategic Pathway and Implementation Outlook

The transition toward climate-resilient ECDE systems in Southern Africa requires a phased, multi-actor approach anchored in both national ownership and regional coordination. This pathway builds on existing institutional frameworks (e.g., *ZELP 2023*, *NIECDP 2025*, *ENAMMC 2013–2030*) and leverages TRANAC's facilitative role to translate policy intent into tangible system-wide transformation. The following phased strategy outlines key milestones, timeframes, and lead actors.

Table 13: Strategic Pathway and Implementation Outlook

Phase	Timeline	Strategic Focus
Phase I – Foundation (2025–2026)	This foundational stage focuses on building the enabling environment. Each country will establish a National ECDE–Climate Taskforce comprising representatives from education, environment, finance, and health ministries. These taskforces will conduct vulnerability mapping, indicator harmonization, and capacity assessments aligned with SADC and AU-CIEFFA guidelines. UNICEF and TRANAC will serve as conveners—providing technical assistance for baseline development, coordination of risk dashboards, and integration of ECDE data into national adaptation systems such as EMIS and NAP monitoring platforms.	Ministries of Education, supported by TRANAC and UNICEF providing technical guidance on resilience diagnostics and baseline mapping.
Phase II – Consolidation (2026–2028)	The consolidation phase transitions from planning to scaling adaptation practice. It will expand <i>Green and Safe School</i> pilots across rural and hazard-prone districts, embedding climate adaptation and psychosocial recovery within early childhood pedagogy. Teacher training institutions, with support from UNESCO and the World Bank, will integrate	National Governments, in collaboration with the World Bank (WB), UNESCO, and WFP, leading

Phase	Timeline	Strategic Focus
	climate literacy, DRR, and Teaching in Crisis Contexts (TiCC) modules. Parallely, governments will align ECDE budget lines with climate adaptation priorities—allowing integration into national climate funds and education sector budgets. WFP’s experience in school feeding will be leveraged to strengthen <i>climate-smart nutrition and water systems</i> within ECDE centres.	the infrastructure, curriculum, and financing components respectively.
Phase III – Transformation (2028–2030)	This stage aims for institutional and financial sustainability across the region. Countries will operationalize climate-resilient ECDE frameworks, formalize cross-sector coordination mechanisms, and establish a regional pooled financing mechanism managed under SADC’s Education and Environment portfolios. TRANAC and AU-CIEFFA will facilitate south–south learning exchanges, develop a regional ECDE–Climate Investment Framework, and ensure integration with the African Union’s CESA 16–25 and Agenda 2063. Development partners such as UNICEF, GPE, and the Green Climate Fund will anchor long-term investment pipelines to sustain resilience beyond project cycles.	TRANAC, AU-CIEFFA, and Development Partners (including UNICEF, GPE, and the Green Climate Fund) co-lead the regional governance and financing architecture.

The phased roadmap provides a coherent pathway for Southern Africa to shift from reactive crisis management to proactive, system-wide climate resilience in Early Childhood Development and Education (ECDE). By 2026, foundational data systems, coordination mechanisms, and national taskforces will be operational; by 2028, climate-resilient infrastructure, teacher training, and curricula will be scaled and sustainably financed; and by 2030, resilience will be fully institutionalized across ECDE policies, budgets, and monitoring frameworks. This strategic trajectory positions Mozambique, Malawi, Zambia, Zimbabwe, Lesotho, and Eswatini to safeguard early learning through adaptive systems that are inclusive, safe, and climate-smart, while advancing regional and global commitments under SDG 4.2 (Early Childhood Education), SDG 13 (Climate Action), and SADC’s Regional Climate Strategy (2024–2030).

10.4 Conclusion

Southern Africa’s ECDE systems stand at a pivotal moment in their climate adaptation journey. With a regional composite resilience maturity of 3.0/5, the foundations for transformation—policy frameworks, institutional mechanisms, and cross-sectoral mandates—are largely in place, yet their impact hinges on coordinated action and sustained investment. Leveraging the TRANAC platform as a regional advocacy and coordination mechanism will be critical to embed ECDE within national climate, education, and disaster frameworks, driving evidence-based policy influence and resource mobilization. The strategic ambition is to move beyond fragmented, reactive interventions toward anticipatory, system-wide resilience that safeguards children’s learning and well-being. Ultimately, the vision is for every child in Mozambique, Malawi, Zambia, Zimbabwe, Lesotho, and Eswatini to learn and thrive in a safe, inclusive, and

climate-adaptive environment—laying the foundation for a resilient, equitable, and sustainable human capital future for the region.

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Annex 1. Country-Specific Recommendations

(Sequenced to each country's maturity stage and aligned with TRANAC's advocacy and policy-influence focus)

11.1 Mozambique — Stage 1 (Nascent → Emerging)

Strategic Goal: Establish a foundational ECDE-climate resilience framework that combines policy reform, institutional coordination, and local-level adaptation pilots.

Policy & Governance

- a) Advocate for a Ministerial Resolution establishing an *ECDE–Climate Resilience Task Force* co-chaired by MINEDH and MTA, integrated into district DRM committees. TRANAC and UNICEF could serve as technical conveners, providing an entry point for inter-ministerial coordination and donor engagement.
- b) Influence inclusion of ECDE indicators in SIGE/EMIS, tracking shock-related absenteeism, infrastructure loss, WASH downtime, and recovery time to build the national adaptation evidence base.
- c) Lobby for revision of ECDE construction standards (via Ministerial Circular) mandating DRR and climate-adaptive design features—ventilation, elevated foundations, and shaded play areas.

Infrastructure & Operations (Hardware)

- a) Promote climate-proof retrofitting in Sofala, Zambézia, Nampula, and Inhambane, using low-cost prototypes and local contractors.
- b) Advocate for inclusion of ECDE sites in the World Bank's *Education Sector Support Project* to access financing for solar systems, rainwater harvesting, and flood drainage.

Human Capacity & Curriculum (Software)

- a) Support MINEDH and INDE to integrate DRR, climate awareness, and psychosocial first aid into INSET and pre-service training.
- b) Use TRANAC's advocacy platform to promote ECDE teacher certification in climate-smart pedagogy.

Finance & Delivery

- a) Advocate creation of a dedicated ECDE-Resilience Sub-Vote under MINEDH and link it to climate-finance instruments (GCF, Adaptation Fund, or PPAs).

11.2 Malawi — Stage 3 (Advanced Software / Moderate Hardware)

Strategic Goal: Consolidate strong community-based systems under the *NIECDP (2025)* into a national model for climate-resilient CBCCs.

Policy & Systems

- a) Influence adoption of a costed implementation plan for *NIECDP Policy Statement 4* (Green Environment & Climate), with district quotas for resilient CBCCs.
- b) Advocate integration of CBCCs into DoDMA's early-warning system to institutionalize closure/re-opening and emergency feeding protocols.

Infrastructure & Nutrition

- a) Promote climate-smart, home-grown feeding schemes (sorghum, cowpea, orange-fleshed sweet potato) supported by water-harvesting irrigation.
- b) Lobby for inclusion of ECDE retrofitting in Local Development Fund budgets to ensure national ownership.

Teachers & Caregivers

- a) Institutionalize DRR/psychosocial recovery modules in teacher colleges and create a formal CBCC volunteer certification scheme through MIE.

11.3 Zambia — Stage 2 (Emerging)

Strategic Goal: Use *EMIS* and *ESP (2022–2026)* as policy levers to mainstream ECDE resilience.

Policy & Data

- a) Advocate for MoGE circular adding ECDE climate indicators to EMIS and provincial dashboards.
- b) Push inclusion of ECDE standards in the next *School Infrastructure Design Manual* revision.

Infrastructure & Human Resources

- a) Prioritize adaptation in rural centres (flood resilience in Luapula/Western; heat mitigation in Lusaka/Copperbelt).
- b) Engage teacher-training colleges to adopt micro-credentials on DRR, EIE, and trauma-responsive teaching.

11.4 Zimbabwe — Stage 3–4 (Advanced/Consolidating)

Strategic Goal: Expand the *ZELP (2023)* and *NCCRS* frameworks into universal, financed climate-resilient ECDE coverage.

Policy & Finance

- a) Sustain and expand the MoPSE ECDE sub-vote; advocate performance-based resilience grants for SDCs in high-risk districts.
- b) Push for curriculum revision (2025–2030) to embed climate literacy, risk mapping, and psychosocial recovery within ELDS.

Infrastructure & Integration

- a) National solar + rainwater programme targeting all rural ECDE centres.
- b) Formalize MoPSE–MoHCC collaboration for routine health and outbreak surveillance at ECDE sites.

11.5 Lesotho — Stage 2 (Emerging)

Strategic Goal: Climate-proof ECDE in high-altitude environments, leveraging *IECCD (2018)* and the *School Feeding Policy (2023)*.

Policy & Design

- a) Advocate inclusion of ECDE climate standards (insulation, passive heating) in the upcoming *ESP revision (2026–2030)*.
- b) Lobby EMIS update to capture thermal-comfort and winter-closure data for planning.

Operations

- a) Expand winter nutrition and heating kits (stoves, insulated mats).
- b) Strengthen teacher training on cold-weather pedagogy, access routes, and psychosocial support.

11.6 Eswatini — Stage 1–2 (Nascent / Emerging)

Strategic Goal: Translate strong national intent (*NDC 3.0, DRM Strategy 2024–2029*) into a costed ECCDE resilience programme.

Policy & Planning

- a) Advocate for a costed ECCDE Climate Action Plan under the World Bank ECCD Project (P173151).
- b) Facilitate inter-ministerial ECCDE–DRR Coordination Node linking Education, NDMA, Health, and Local Authorities.

Infrastructure & Human Resources

- a) Prioritize flood and heat resilience in Lubombo and Shiselweni (storm-resistant roofing, safe water, shaded play).
- b) Integrate DRR and EIE modules into pre- and in-service training using TRANAC’s open-source curriculum.

Annex 2. Regional Recommendations

12.1 Medium-Term (2–4 Years)

Regional Architecture & Standards

- a) Develop and lobby SADC endorsement of a *Regional ECDE Safe and Green Infrastructure Standard* (covering site selection, WASH, energy, and accessibility).
- b) Advocate establishment of a SADC-wide EMIS schema for climate-education indicators (downtime, damage, WASH status, recovery time).

Finance & Innovation

- a) Support creation of a SADC Climate-Education Facility to blend GCF/Adaptation Fund and bilateral funds for ECDE retrofits.

Capacity & Knowledge

- a) Form an ECDE Climate Education College Network (AU-CIEFFA / UNESCO / TRANAC) to co-develop open INSET curricula on DRR, climate pedagogy, and psychosocial recovery.
- b) Launch a Regional Learning and Accountability Consortium (universities + CSOs) to produce comparative research and policy briefs for ministers and SADC councils.

12.2 Long-Term (5–10 Years)

- a) Universal climate-resilient ECDE coverage in all high-risk districts, guided by a SADC benchmark and monitored through TRANAC scorecards.
- b) Integrated social-protection linkages to advocate for *shock-responsive cash transfers* for young children’s households post-disaster and disability-inclusive reconstruction.
- c) TRANAC to lead annual *Southern Africa ECDE Climate Forum*—a policy dialogue space feeding into AU CIEFFA and SADC ministerial councils, ensuring ECDE remains a recognized adaptation sector under SDG 13 and Agenda 2063.