
Original Research Article

Economics and Planning of Education in Kenya: Policy, Resource Allocation, and Equity Considerations.

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Article No: 035 | **Accepted:** 07 August 2026 | **Published:** 10 August 2026

Abstract: This paper examines the economics and planning of Kenya's education system, with an emphasis on policy frameworks, financing strategies, enrollment dynamics, and equity challenges in achieving sustainable and inclusive educational outcomes. It analyzes the impact of significant reforms, including the Competency-Based Curriculum (CBC) introduced in 2017 and the expansion of Technical and Vocational Education and Training (TVET), in aligning education with Kenya's Vision 2030 and Sustainable Development Goal 4 (SDG 4). Drawing on national statistics, county-level case studies (e.g., Uasin Gishu's TVET model and Turkana's mobile schools), and global best practices, the study highlights persistent challenges such as regional disparities, inadequate financing (e.g., KES 1,420 per primary student under FPE), and infrastructural deficits, particularly in ASAL regions where secondary enrolment rates range from 20–50% compared to the national 70% (KNBS, 2023). It proposes a multifaceted approach to enhance efficiency and equity, including data-driven planning via the Education Management Information System (EMIS), county-specific interventions, performance-based financing modeled on Rwanda's success, and public-private partnerships to bridge funding gaps. Additional recommendations include scaling teacher training (only 60% of teachers are CBC-trained as of 2024), increasing capitation grants by 20% in high-need areas, and strengthening community engagement to address cultural barriers, such as early marriage. These strategies aim to optimize resource allocation, reduce disparities, and ensure education drives Kenya's socioeconomic development.

Keywords: Education Economics, Policy Frameworks, Competency-Based Curriculum, Resource Allocation, Educational Equity.

1. Introduction

Education is a cornerstone of Kenya's socioeconomic development, recognized as a fundamental right under Article 43 of the Constitution of Kenya (2010). It catalyzes human capital development, poverty reduction, and equitable growth, aligning with the country's long-term vision of achieving middle-income status by 2030, as outlined in Kenya Vision 2030 (Republic of Kenya, 2007). Since its independence in 1963, Kenya has pursued ambitious reforms to expand access, improve quality, and promote inclusivity in education. Landmark policies, such as the Free Primary Education (FPE) initiative launched in 2003 and the Free Day Secondary Education (FDSE) policy introduced in 2008, have significantly increased enrolment rates, with primary school enrolment rising from 5.9 million in 2002 to 7.4 million by 2004 and secondary enrolment growing by 30% within five years of FDSE implementation (UNESCO, 2015; KNBS, 2023). These achievements reflect Kenya's commitment to universal education and its alignment with global frameworks, such as the Sustainable Development Goals (SDGs), particularly SDG 4, which emphasizes the provision of inclusive and equitable quality education.

Despite these milestones, Kenya's education system continues to face persistent challenges that threaten its ability to deliver equitable and high-quality outcomes. Regional disparities, particularly in arid and semi-arid lands (ASALs) such as Turkana and Mandera, result in secondary enrolment rates as low as 20–50%, compared to the national average of 70% (KNBS, 2023). Infrastructural deficits, including inadequate classrooms, laboratories, and sanitation facilities, undermine learning quality, particularly in rural areas, where 50% of schools lack basic amenities such as clean water (KNBS, 2023). Financing constraints further exacerbate these issues, with capitation grants under FPE (KES 1,420 per primary student) and FDSE (KES 22,244 per secondary student) falling short of operational needs, forcing schools to rely on household contributions that disproportionately burden low-income families (Cheruiyot, 2024). Additionally, the devolved system of governance, introduced under the 2010 Constitution, has decentralized education planning to Kenya's 47 counties, creating opportunities for localized solutions but also revealing variations in capacity and resource allocation that lead to uneven outcomes (Majgaard & Mingat, 2020).

Recent policy shifts, such as the transition to the Competency-Based Curriculum (CBC) in 2017 and the expansion of Technical and Vocational Education and Training (TVET), aim to address these challenges by aligning education with labour market demands and fostering 21st-century skills like critical thinking and problem-solving (Republic of Kenya, 2019a). The CBC represents a paradigm shift from rote learning to competency-based education, emphasizing practical skills to enhance employability and global competitiveness. Similarly, TVET expansion seeks to tackle youth unemployment, which stood at 13.7% in 2023, by equipping learners with vocational skills tailored to local economies (KNBS, 2023). However, these reforms face significant implementation hurdles, including inadequate teacher training (only 60% of teachers are trained in CBC pedagogies), insufficient infrastructure, and funding gaps, particularly in marginalized regions (Ministry of Education, 2024). For instance, only 30% of secondary schools have

adequate laboratories to support CBC's practical assessments, limiting its effectiveness in rural areas (KNBS, 2023).

This paper adopts an economic and planning perspective to evaluate Kenya's education system, with a focus on cost-effectiveness, equity, and sustainability. It examines the interplay between policy frameworks, financing mechanisms, enrolment and transition trends, and county-level planning, with a particular emphasis on addressing disparities across Kenya's diverse socioeconomic and geographic contexts. Drawing on national statistics, county-level case studies (e.g., Uasin Gishu's TVET success and Turkana's mobile schools), and global best practices, the study identifies key challenges, such as inefficient resource allocation, regional inequities, and overreliance on donor funding. It proposes evidence-based strategies, including data-driven planning, public-private partnerships, performance-based financing, and community engagement, to optimize resource utilization and align education with Kenya's development goals.

The analysis is structured as follows: Section 2 reviews the literature on education policy, financing, and outcomes in Kenya, highlighting gaps and global perspectives. Section 3 presents a theoretical framework integrating human capital theory, cost-benefit analysis, equity-focused resource allocation, systems theory, and social capital to guide the evaluation. Section 4 analyzes education financing, including public funding, household contributions, and donor support. Section 5 examines enrolment and transition trends, focusing on regional and gender disparities. Section 6 explores county-level planning through case studies of Uasin Gishu, Nairobi, Kisumu, and Turkana. Section 7 discusses policy challenges, including infrastructure deficits and gaps in CBC implementation. Section 8 offers recommendations to enhance efficiency, equity, and sustainability, and Section 9 concludes with a synthesis of findings and their implications for Kenya's development agenda.

By addressing these issues, this paper aims to contribute to the discourse on education planning in Kenya, offering actionable insights for policymakers, educators, and stakeholders to strengthen the education system as a driver of inclusive and sustainable growth..

2. Literature Review

The literature on education in Kenya provides a robust foundation for understanding the interplay between policy, financing, and planning in achieving equitable and sustainable education outcomes. This section synthesizes key scholarly works, policy documents, and empirical studies, focusing on Kenya's education system, its alignment with national development goals, and the challenges of implementing reforms, such as the Competency-Based Curriculum (CBC) and the expansion of Technical and Vocational Education and Training (TVET). The review is organized into thematic areas: policy frameworks, financing mechanisms, equity and access, curriculum reforms, and global and regional comparisons.

2.1 Policy Frameworks and Historical Context

Kenya's education policies have undergone significant evolution since independence, driven by the need to address access, quality, and equity while aligning education with national development objectives. The Basic Education Act (2013) is a cornerstone of this framework, mandating free and compulsory basic education for all children and prohibiting tuition fees to eliminate financial barriers (Republic of Kenya, 2012). This legislation builds on earlier policies, such as the Education Act of 1968, which established the structure of the 8-4-4 education system, and the Sessional Paper No. 1 of 2005, which introduced Free Primary Education (FPE) to boost enrolment (Republic of Kenya, 2014). The FPE policy, launched in 2003, led to a surge in primary enrolment from 5.9 million in 2002 to 7.4 million by 2004, demonstrating its impact on access (UNESCO, 2015). Similarly, the Free Day Secondary Education (FDSE) policy, introduced in 2008, resulted in a 30% increase in secondary enrollment within five years (KNBS, 2023).

Kenya Vision 2030, the country's long-term development blueprint, positions education as a critical pillar for achieving middle-income status by 2030 (Republic of Kenya, 2007). The policy emphasizes human capital development, skills alignment with labour market needs, and global competitiveness, aligning with international frameworks such as the Sustainable Development Goals (SDGs) and Education for All (EFA) goals (UNESCO, 2015). SDG 4, which calls for inclusive and equitable quality education, has shaped Kenya's commitment to universal access and lifelong learning opportunities. However, scholars like Glennerster et al. (2011) argue that while access has improved, quality and equity remain significant challenges, particularly in marginalized regions where infrastructural and human resource deficits persist.

2.2 Economics of Education and Human Capital Theory

The economics of education provides a theoretical lens for analyzing Kenya's education system, viewing education as both a consumption good (enhancing individual well-being) and an investment good (boosting productivity and economic growth) (Psacharopoulos & Patrinos, 2018). Human capital theory, as articulated by Becker (1964), posits that investments in education yield long-term economic returns through increased earnings, improved health outcomes, and reduced poverty. In Kenya, studies estimate that each additional year of schooling increases an individual's earnings by 8–12%, underscoring the role of education in socioeconomic mobility (Psacharopoulos & Patrinos, 2018). At the societal level, education contributes to economic growth by enhancing workforce productivity and fostering innovation, as evidenced by Kenya's push for TVET to address youth unemployment (Majgaard & Mingat, 2020).

Resource allocation models are central to the economics of education, guiding the distribution of scarce resources to maximize returns on investment. Lewin (2007) emphasizes three principles—efficiency, equity, and sustainability—as critical for effective education planning. In Kenya, inefficiencies in resource allocation, such as underutilized TVET facilities in rural areas and overcrowded urban schools, highlight the need for data-driven planning (Cheruiyot, 2024). Equity remains a challenge, with ASAL counties

such as Turkana and Mandera reporting secondary enrollment rates as low as 20–50%, compared to the national average of 70% (KNBS, 2023). Sustainability concerns arise from overreliance on donor funding and competing budgetary demands, which limit long-term investments in education (Majgaard & Mingat, 2020).

2.3 Financing Mechanisms and Challenges

Education financing in Kenya is a complex interplay of public funding, household contributions, and donor support. Public financing, primarily through the Ministry of Education's budget, accounts for approximately 20% of the national budget, covering teacher salaries, capitation grants, and infrastructure (Ministry of Education, 2024). However, studies highlight that capitation grants, such as KES 1,420 per primary student under FPE, are insufficient to cover operational costs, forcing schools to rely on parental contributions (Cheruiyot, 2024). This undermines the "free" education policy, particularly for low-income households, with household contributions accounting for up to 40% of secondary education costs (KNBS, 2023).

Donor funding, provided by organizations such as the Global Partnership for Education (GPE) and UNICEF, has been crucial for targeted interventions, including school feeding programs in ASAL regions, which have increased enrollment by 15% since 2020 (GPE, 2023). However, donor support is often project-based and short-term, raising concerns about sustainability. For instance, the completion of a World Bank-funded feeding program in 2022 led to a temporary decline in enrollment in northern Kenya (KNBS, 2023). Scholars like Al-Samarrai and Zaman (2018) argue that overreliance on external funding creates vulnerabilities, advocating for diversified financing models, such as public-private partnerships (PPPs) and education bonds.

PPPs have gained traction in Kenya, with private sector involvement in classroom construction and digital learning initiatives (Majgaard & Mingat, 2020). However, the lack of a clear regulatory framework has led to uneven implementation, with urban areas benefiting more than rural ones (Cheruiyot, 2024). Emerging financing innovations, such as social impact investing and education bonds, show promise but require robust monitoring to ensure accountability (Psacharopoulos & Patrinos, 2018). The Education Management Information System (EMIS) is highlighted as a critical tool for tracking resource utilization and outcomes, though its adoption remains inconsistent across counties (Lewin, 2007).

2.4 Competency-Based Curriculum (CBC) and Skills Development

The introduction of the Competency-Based Curriculum (CBC) in 2017 marks a significant shift from rote learning to skills-based education, aiming to equip learners with the competencies required for the 21st-century economy (Republic of Kenya, 2019b). The CBC emphasizes critical thinking, problem-solving, and practical skills, aligning with Kenya Vision 2030's focus on innovation and competitiveness. Studies suggest that competency-based approaches can improve learning outcomes by 10–15% compared to traditional curricula, particularly in STEM subjects (KICD, 2019). However,

implementation challenges include inadequate teacher training, insufficient learning materials, and infrastructural deficits, particularly in rural schools (Cheruiyot, 2024).

Teacher training is a critical bottleneck, with only 60% of teachers trained in CBC pedagogies as of 2024 (Ministry of Education, 2024). This has led to inconsistent curriculum delivery, with urban schools adapting more effectively than rural ones (Cheruiyot, 2024). Infrastructure requirements, such as laboratories and digital tools, further strain resources, with only 30% of secondary schools equipped with adequate facilities (KNBS, 2023). Scholars like Muralidharan and Niehaus (2017) emphasize the need for sustained investment in teacher capacity and infrastructure to realize the benefits of curriculum reform.

The expansion of Technical and Vocational Education and Training (TVET) is another key reform aimed at addressing youth unemployment and aligning education with labour market needs. TVET enrolment has doubled from 12% in 2015 to 24% in 2023, driven by government investments and partnerships with private sector players (Ministry of Education, 2024). However, challenges include low awareness of TVET opportunities, gender disparities (with female enrolment at 35%), and misalignment between training programs and local economic demands (UNESCO, 2020). For example, Uasin Gishu's success in aligning TVET with agriculture contrasts with the underutilization of facilities in counties like Tana River, highlighting the need for localized curriculum planning (Cheruiyot, 2024).

2.5 Regional and Gender Disparities

Regional and gender disparities remain persistent challenges in Kenya's education system. ASAL counties, such as Turkana and Mandera, face significant barriers due to nomadic lifestyles, limited infrastructure, and cultural practices like early marriage, which disproportionately affect girls (UNESCO, 2020). Only 30% of girls in Mandera complete secondary education, compared to a national average of 65% (KNBS, 2023). Urban counties, such as Nairobi and Kiambu, report near gender parity but struggle with quality disparities. Low-income areas, like Kibera, experience lower academic performance due to overcrowding and teacher shortages (Cheruiyot, 2024).

Studies highlight the need for targeted interventions to address these disparities. School feeding programs, scholarships, and boarding facilities have proven effective in ASAL regions, increasing enrolment by 10–15% (GPE, 2023). Community sensitization programs, as demonstrated in Turkana, have also improved female enrolment by engaging local leaders (UNESCO, 2020). However, scaling these interventions requires increased funding and coordination between national and county governments (Majgaard & Mingat, 2020).

2.6 Devolution and County-Level Planning

The devolution of education planning under the Constitution of Kenya (2010) has shifted responsibilities to county governments, aiming to address local needs more effectively. However, variations in county capacity have led to uneven outcomes. Counties

like Kisumu have excelled in capitation management, achieving a secondary GER of 85%, while others, like Turkana, struggle with low enrolment and infrastructure deficits (KNBS, 2023). Scholars like Oketch and Ngware (2012) argue that devolution offers opportunities for localized solutions but requires stronger coordination and capacity building to ensure equity.

County-level case studies, such as Uasin Gishu's TVET success and Nairobi's infrastructure challenges, highlight the importance of aligning education with local contexts (Ministry of Education, 2024). However, bureaucratic inefficiencies and limited technical expertise in some counties hinder effective planning and resource utilization (Cheruiyot, 2024). Strengthening county-level governance and leveraging platforms like the Council of Governors can facilitate knowledge sharing and replication of best practices (Majgaard & Mingat, 2020).

2.7 Global Perspectives and Comparative Insights

Comparative studies provide valuable insights for Kenya's education system. Rwanda's performance-based financing model, which links funding to outcomes like transition rates and learning achievements, has improved efficiency and accountability, offering a potential model for Kenya (Psacharopoulos & Patrinos, 2018). Similarly, Brazil's education bonds have mobilized private capital for infrastructure, demonstrating the potential of innovative financing (Majgaard & Mingat, 2020). These global examples underscore the importance of diversified funding, robust monitoring and evaluation (M&E) systems, and stakeholder engagement, which can be adapted to Kenya's context to address financing and quality challenges.

2.8 Gaps in the Literature

While the literature provides a comprehensive overview of Kenya's education system, several gaps remain. First, there is limited research on the long-term impact of the CBC on learning outcomes and employability, particularly in rural areas (Cheruiyot, 2024). Second, the effectiveness of PPPs in education is underexplored, with few studies examining their impact on equity and sustainability (Majgaard & Mingat, 2020). Third, the role of devolution in education planning requires further investigation to identify best practices and scalable models across counties (Oketch & Ngware, 2012). This paper addresses these gaps by analyzing recent data, county-level case studies, and policy interventions to provide actionable recommendations.

3. Theoretical Framework

The analysis of Kenya's education system is grounded in a robust theoretical framework that integrates economic, sociological, and planning perspectives to evaluate the interplay between education policy, resource allocation, and socioeconomic outcomes. This framework draws on key theories, including human capital theory, cost-benefit analysis, equity-focused resource allocation models, and systems theory, to provide a comprehensive lens for understanding the challenges and opportunities in education planning. These theories are applied to assess the efficiency, equity, and sustainability of Kenya's education

system, with a focus on aligning educational investments with national development goals, such as Kenya Vision 2030 and the Sustainable Development Goals (SDGs).

3.1 Human Capital Theory

Human capital theory, developed by Becker (1964), posits that investments in education enhance individual and societal productivity by equipping individuals with knowledge, skills, and competencies that translate into economic returns. Education is viewed as both a consumption good—improving quality of life through personal development—and an investment good—generating economic benefits through increased earnings, improved health outcomes, and reduced poverty (Psacharopoulos & Patrinos, 2018). In Kenya, human capital theory underpins the rationale for policies like Free Primary Education (FPE) and Free Day Secondary Education (FDSE), which aim to expand access to education as a means of building a skilled workforce to drive economic growth.

Empirical evidence supports the application of human capital theory in Kenya. Studies estimate that each additional year of schooling increases individual earnings by 8–12%, with higher returns for secondary and tertiary education (Psacharopoulos & Patrinos, 2018). At the societal level, education contributes to economic development by fostering innovation, reducing unemployment, and promoting social cohesion. For instance, the expansion of Technical and Vocational Education and Training (TVET) in counties like Uasin Gishu has increased graduate employability by 15% since 2018, aligning with local economic needs such as agriculture and manufacturing (Ministry of Education, 2024). However, disparities in access, particularly in ASAL regions, limit the equitable distribution of these benefits, necessitating targeted investments to maximize returns on human capital (UNESCO, 2020).

3.2 Cost-Benefit Analysis in Education

Cost-benefit analysis (CBA) provides a framework for evaluating the economic efficiency of education investments by comparing the costs of educational interventions with their expected benefits. In Kenya, CBA is crucial for assessing the allocation of scarce resources across competing priorities, including teacher salaries, infrastructure development, and curriculum reform. Psacharopoulos and Patrinos (2018) highlight that education investments yield high social returns, particularly at the primary level, where benefits include reduced poverty, improved health, and increased labour productivity. However, diminishing returns at higher levels of education, such as tertiary, require careful prioritization to ensure cost-effectiveness.

In Kenya, CBA can guide decisions on capitation grants and infrastructure investments. For example, the current primary capitation grant of KES 1,420 per student is insufficient to cover operational costs, resulting in quality compromises and a reliance on household contributions (Cheruiyot, 2024). A cost-benefit analysis could justify increasing capitation rates in high-need areas, such as ASAL counties, where additional investments in infrastructure and teacher incentives could yield significant improvements in enrolment and learning outcomes. Similarly, investments in TVET programs aligned with local labour

markets, as seen in Uasin Gishu, have demonstrated high returns, with 65% of graduates securing employment within one year (Ministry of Education, 2024). CBA emphasizes the need for data-driven planning to prioritize interventions with the highest social and economic returns.

3.3 Equity-Focused Resource Allocation Models

Resource allocation models, as articulated by Lewin (2007), emphasize three core principles—efficiency, equity, and sustainability—in distributing scarce resources to maximize educational outcomes. Efficiency ensures optimal use of funds to achieve desired results, such as improved learning outcomes or higher transition rates. Equity addresses disparities in access and outcomes across regions, socioeconomic groups, and genders. Sustainability ensures the long-term viability of the education system amidst fiscal constraints and external dependencies.

In Kenya, inefficiencies in resource allocation are evident in the underutilization of TVET facilities in rural counties, such as Tana River, where enrollment is below 50% capacity, and overcrowding in urban schools, with pupil-teacher ratios reaching 60:1 (KNBS, 2023). Equity challenges are pronounced in ASAL regions, where secondary enrolment rates are as low as 20–50% compared to the national average of 70% (KNBS, 2023). Sustainability is threatened by overreliance on donor funding, which accounted for 15% of education financing in ASAL regions in 2023 but is often short-term and project-based (GPE, 2023). Lewin's model advocates for data-driven resource allocation, utilizing tools such as the Education Management Information System (EMIS) to identify high-need areas and optimize investments. For example, reallocating funds to address teacher shortages in Turkana or infrastructure deficits in Wajir could enhance both equity and efficiency.

3.4 Systems Theory and Education Planning

Systems theory, as applied to education by Banathy (1991), views the education system as a complex, interconnected network of inputs, processes, and outputs that interact with external factors, such as economic conditions, cultural norms, and policy frameworks. This holistic approach is particularly relevant in Kenya's devolved system, where education planning involves coordination among national and county governments, schools, communities, and external partners, including donors and private sector players.

Systems theory emphasizes feedback loops and adaptability to ensure the effectiveness of a system. In Kenya, inputs (e.g., funding, teachers, infrastructure) are processed through policies such as the CBC and TVET expansion to produce outputs (e.g., enrollment rates, learning outcomes, employability). Feedback mechanisms, such as EMIS data and performance audits, are critical for identifying gaps and adjusting interventions. For example, the inconsistent implementation of the CBC, with only 60% of teachers trained as of 2024, highlights a breakdown in the system's feedback loop, necessitating targeted training programs (Ministry of Education, 2024). Similarly, coordination

challenges between national and county governments, as seen in delays in donor fund utilization, underscore the need for stronger systemic linkages (Majgaard & Mingat, 2020).

Systems theory also accounts for external influences, such as economic pressures and cultural barriers, which shape educational outcomes. In ASAL regions, nomadic lifestyles and early marriage practices necessitate adaptive interventions, such as mobile schools and community sensitization, as exemplified by the Turkana mobile school program, which serves 5,000 learners (Ministry of Education, 2024). By viewing education as a dynamic system, this framework supports the design of flexible, context-specific policies that address Kenya's diverse needs.

3.5 Social Capital and Community Engagement

Social capital theory, as developed by Coleman (1988), emphasizes the role of social networks, trust, and community engagement in enhancing educational outcomes. In Kenya, community involvement is critical for addressing cultural and socioeconomic barriers, such as early marriage and child labour, which hinder enrolment, particularly for girls in ASAL regions (UNESCO, 2020). Social capital can facilitate collective action, such as community-led monitoring of school attendance or partnerships with local leaders to promote education.

In Turkana, for example, community sensitization programs involving elders have increased female enrolment by 10% since 2023 by challenging cultural norms around early marriage (GPE, 2023). Similarly, parent-teacher associations (PTAs) and community education committees can enhance accountability and resource mobilization, as seen in Kisumu's efficient capitation management (Ministry of Education, 2024). Social capital theory emphasizes the importance of participatory planning, where communities are actively involved in identifying needs and implementing solutions, thereby enhancing the sustainability and effectiveness of educational interventions.

3.6 Application to Kenya's Education System

The integrated theoretical framework, which combines human capital theory, cost-benefit analysis, equity-focused resource allocation, systems theory, and social capital, provides a comprehensive lens for analyzing Kenya's education system. Human capital theory justifies investments in education to drive economic growth, as evidenced by the 65% employability rate of TVET graduates in Uasin Gishu (Ministry of Education, 2024). Cost-benefit analysis highlights the need to prioritize high-return interventions, such as increasing capitation grants in ASAL regions to improve enrolment and retention (Cheruiyot, 2024). Equity-focused models advocate for targeted resource allocation to address disparities, such as low secondary enrolment in Turkana and Mandera (KNBS, 2023). Systems theory emphasizes the importance of coordination and feedback, using tools like EMIS to align national and county-level planning (Lewin, 2007). Social capital theory emphasizes the importance of community engagement in overcoming cultural barriers, as illustrated by Turkana's sensitization programs (GPE, 2023).

This framework informs the evaluation of Kenya's financing mechanisms, enrolment trends, and policy interventions, guiding the development of recommendations that balance efficiency, equity, and sustainability. By addressing systemic challenges and leveraging local contexts, the framework supports the alignment of education with Kenya's development goals, fostering a skilled, inclusive, and productive workforce.

4. Education Financing in Kenya

4.1 Structure of Financing

Kenya's education system is financed through a multifaceted approach involving public funding, household contributions, and donor support, each playing a critical role in sustaining educational access and quality:

Public Funding: The Ministry of Education's recurrent and development budgets, funded through the national exchequer, are the backbone of education financing. These funds cover teacher salaries, capitation grants, infrastructure development, and operational costs. In 2024, education accounted for approximately 20% of Kenya's national budget, underscoring its priority status (Ministry of Education, 2024). However, competing budgetary demands for sectors such as health, infrastructure, and security often limit the allocation to education, creating funding gaps, particularly in under-resourced regions (Majgaard & Mingat, 2020).

Household Contributions: Despite policies such as FPE and FDSE, households still bear significant out-of-pocket costs, including uniforms, boarding fees, transportation, and supplementary tuition. These costs are particularly burdensome for low-income families, contributing to inequities in access and retention, especially at the secondary and tertiary levels of education. For instance, a 2021 study found that household contributions accounted for up to 40% of total education costs in secondary schools, undermining the "free" education policy (Cheruiyot, 2024). In rural areas, additional costs, such as transportation to distant schools, further exacerbate financial barriers, leading to higher dropout rates among vulnerable populations (UNESCO, 2020).

Donor Support: International partners, including the Global Partnership for Education (GPE), UNICEF, and the World Bank, provide targeted funding for programs addressing specific challenges, such as school feeding initiatives, infrastructure development in marginalized areas, and teacher training for the CBC. For example, the GPE has supported school feeding programs in ASAL counties, resulting in a 15% increase in enrollment since 2020 (GPE, 2023). However, donor funding is often project-based, short-term, and subject to global economic fluctuations, raising concerns about sustainability. Additionally, coordination challenges between national and county governments can lead to inefficiencies in the utilization of funds, with some counties struggling to absorb allocated resources due to bureaucratic delays (Majgaard & Mingat, 2020).

4.2 Capitation Grants

Capitation grants under FPE and FDSE are designed to reduce financial barriers to education by covering tuition and operational costs. The current rates, as of 2024, are as follows:

Table 1: Government Capitation Rates (2024)

Level	Amount per Student (KES)	Key Components
Primary (FPE)	1,420	Learning materials, exams, and infrastructure support
Secondary (FDSE)	22,244	Tuition, operations, maintenance
TVET	30,000 + HELB loan	Tuition, training materials
Source: Ministry of Education, Kenya (2024)		

While capitation grants have significantly expanded access, they are often insufficient to meet the rising operational costs of schools. For instance, the KES 1,420 per student for primary education does not adequately cover learning materials, infrastructure maintenance, or administrative costs, forcing schools to rely on parental contributions or local fundraising (Cheruiyot, 2024). This shortfall is particularly acute in low-income and rural areas, where schools often lack alternative revenue sources, resulting in compromises in quality, such as overcrowded classrooms and outdated materials (Table 1).

In secondary education, the KES 22,244 capitation grant covers tuition and operational costs. However, it does not account for boarding fees or additional expenses, such as uniforms, which can exceed KES 20,000 annually per student (KNBS, 2023). This places a significant financial burden on households, particularly in regions with limited access to day schools. For TVET institutions, the capitation grant of KES 30,000, supplemented by HELB loans, has supported enrollment growth; however, access to loans is restricted for students from low-income backgrounds due to stringent eligibility criteria and concerns about repayment (Ministry of Education, 2024).

Inflationary pressures and regional cost disparities further undermine the adequacy of capitation grants. For example, urban schools face higher operational costs due to elevated prices for utilities and services. In contrast, rural schools in ASAL regions require additional investments in infrastructure, such as water and electricity, to create conducive learning environments (UNESCO, 2020). Addressing these gaps requires revising capitation rates to reflect actual costs and implementing targeted subsidies for areas with high needs.

4.3 Donor Contributions and Sustainability Challenges

Donor funding has played a crucial role in bridging the gaps in public financing, particularly in marginalized regions. The GPE, for instance, has supported initiatives such as the Kenya Primary Education Development Project, which improved infrastructure and learning outcomes in ASAL counties, resulting in a 10% increase in primary enrollment between 2018 and 2023 (GPE, 2023). Similarly, UNICEF has funded teacher training

programs to support the implementation of CBC, while the World Bank has invested in TVET infrastructure to enhance skills development (Majgaard & Mingat, 2020).

However, donor dependency poses significant risks to sustainability. External funding is often tied to specific projects with fixed timelines, creating uncertainty when these projects come to an end. For example, the completion of a World Bank-funded school feeding program in 2022 led to a temporary decline in enrolment in some ASAL counties until alternative funding was secured (KNBS, 2023). Additionally, donor priorities may not always align with national needs, leading to fragmented interventions that fail to address systemic challenges.

Coordination between national and county governments is another critical issue. Devolution has decentralized education planning; however, many counties lack the capacity to manage donor funds, resulting in delays and underutilization. For instance, a 2021 audit revealed that 30% of donor-funded education projects in northern Kenya were delayed due to bureaucratic inefficiencies (Cheruiyot, 2024). Strengthening county-level capacity and enhancing coordination mechanisms are crucial to maximizing the impact of donor support.

4.4 Public-Private Partnerships (PPPs) in Education Financing

Public-private partnerships have emerged as a promising strategy to supplement public and donor funding. Private sector involvement can alleviate financial pressures on the government and households by supporting infrastructure development, teacher training, and skills programs, particularly in TVET. For example, partnerships with organizations such as Safaricom and Equity Bank have facilitated the construction of classrooms and the provision of digital learning tools in underserved areas (Majgaard & Mingat, 2020).

However, PPPs are not without challenges. Private sector priorities may prioritize profit over equity, leading to investments in urban areas with higher returns rather than marginalized regions. Additionally, the lack of a clear regulatory framework for PPPs in education has led to inconsistencies in implementation, with some counties benefiting more than others (Cheruiyot, 2024). Developing a national policy on PPPs, with guidelines for equitable distribution of resources, is critical to harnessing their potential.

4.5 Innovations in Financing

To address funding gaps, Kenya has explored innovative financing mechanisms, such as education bonds and social impact investing. Education bonds, modeled after successful initiatives in countries such as Brazil, involve raising capital from private investors to fund education infrastructure, with returns tied to measurable outcomes, including improved enrollment or learning achievements (Psacharopoulos & Patrinos, 2018). Social impact investing, which links funding to social outcomes, has also gained traction, with pilot projects in Nairobi and Mombasa demonstrating potential to improve learning outcomes in low-income schools (Majgaard & Mingat, 2020).

These innovations require robust monitoring and evaluation systems to ensure accountability and effectiveness. The Education Management Information System (EMIS) can play a critical role in tracking outcomes and ensuring that funds are allocated to

high-impact areas. Additionally, engaging communities in financing decisions can enhance transparency and ensure that interventions address local needs (Lewin, 2007).

5. Enrolment and Transition Trends

5.1 Secondary and Tertiary Enrolment

Secondary enrolment has improved, with a GER of 70% in 2023, but transition rates from primary to secondary education remain a concern, with only 80% of primary graduates progressing to secondary school (KNBS, 2023). Financial constraints, distance to schools, and cultural factors, such as early marriage in pastoralist communities, contribute to these gaps. Tertiary enrolment, particularly in TVET, has grown significantly, from 12% in 2015 to 24% in 2023, driven by government investment in vocational training to address youth unemployment (Ministry of Education, 2024).

5.2 Gender and Regional Disparities

Gender disparities in enrolment are pronounced in ASAL regions, where girls are less likely to transition to secondary school due to cultural practices and economic pressures (UNESCO, 2020). In contrast, urban counties like Nairobi and Kiambu report near gender parity in enrolment but face challenges related to quality and overcrowding. These disparities highlight the need for targeted interventions to address both access and quality gaps.

6. County-Level Planning: Selected Case Studies

Kenya's devolved system of governance, established under the Constitution of Kenya (2010), has shifted significant responsibilities for education planning and implementation to the 47 county governments. This decentralization aims to address local needs more effectively, but it also introduces variations in capacity, resource allocation, and outcomes across counties. The following case studies provide a detailed examination of education planning and resource allocation in four counties—Uasin Gishu, Nairobi, Kisumu, and Turkana—highlighting successes, challenges, and lessons that can be replicated. These cases illustrate how local contexts impact educational outcomes and underscore the need for targeted interventions to achieve equity and efficiency.

6.1 Uasin Gishu County

Uasin Gishu, located in Kenya's Rift Valley, is an agricultural hub with a growing youth population and high unemployment rates. The county has capitalized on the national push for Technical and Vocational Education and Training (TVET) to address these challenges, aligning education with local economic priorities. Since 2018, the county government has invested in 13 vocational training centres, focusing on skills relevant to agriculture (e.g., agribusiness and mechanized farming) and manufacturing (e.g., textile production and food processing). These centres have been equipped with modern facilities, including workshops and digital learning tools, through partnerships with private sector players like the Agricultural Development Corporation (ADC) and local cooperatives (Ministry of Education, 2024).

The alignment of TVET curricula with local value chains has yielded impressive results. A 2024 report indicates that 65% of TVET graduates in Uasin Gishu secured employment or started businesses within one year of graduation, compared to the national average of 50% (Ministry of Education, 2024). For example, the Eldoret Polytechnic has introduced courses in dairy processing and irrigation technology, directly addressing the needs of the county's dairy and horticulture sectors. Additionally, the county has implemented a mentorship program linking TVET students with local entrepreneurs, enhancing employability and fostering innovation.

However, challenges remain. The high initial cost of establishing and equipping TVET centres has strained county budgets, and some rural areas still lack access to these facilities due to poor road networks and limited electricity (Cheruiyot, 2024). Furthermore, gender disparities persist, with female enrolment in TVET programs at only 35%, reflecting cultural biases that prioritize male participation in technical fields (UNESCO, 2020). To address these issues, Uasin Gishu has piloted mobile training units to reach remote areas and introduced scholarships for female students, with early results showing a 10% increase in female enrolment since 2022 (Ministry of Education, 2024).

The Uasin Gishu model demonstrates the importance of aligning education with local economic opportunities and leveraging partnerships to overcome resource constraints. Other counties can replicate this approach by conducting labour market assessments to identify high-demand skills and engaging private sector partners to co-finance training programs.

6.2 Nairobi County

As Kenya's capital and economic hub, Nairobi County faces unique challenges due to rapid urbanization, population density, and a proliferation of private schools. The county boasts a high secondary Gross Enrolment Rate (GER) of over 95%, driven by a dense network of public and private schools (KNBS, 2023). However, learning outcomes vary significantly across socioeconomic groups, with low-income areas, such as Kibera, Mathare, and Korogocho, reporting lower academic performance due to overcrowded classrooms, inadequate infrastructure, and teacher shortages (Cheruiyot, 2024).

In Kibera, for instance, public schools often have pupil-teacher ratios exceeding 60:1, far above the recommended 40:1, leading to reduced instructional time and poor learning outcomes (Ministry of Education, 2024). The proliferation of low-cost private schools in informal settlements has attempted to fill this gap; however, these institutions often lack qualified teachers and adequate facilities, further exacerbating existing inequities. A 2020 study found that students in low-cost private schools in Nairobi scored 15% lower on national exams compared to their counterparts in public schools with better resources (UNESCO, 2020).

Nairobi's county government has responded with initiatives aimed at improving public school infrastructure and teacher recruitment. For example, the county has partnered with organizations like the Nairobi Metropolitan Services (NMS) to construct additional

classrooms and rehabilitate existing ones in underserved areas. Since 2021, over 200 classrooms have been built in Kibera and Mathare, resulting in a 20% reduction in overcrowding (Ministry of Education, 2024). Additionally, the county has introduced digital learning programs, such as tablet-based instruction in select schools, to enhance access to quality learning materials.

However, these interventions have been unevenly distributed, with wealthier areas, such as Westlands and Lang'ata, benefiting more than informal settlements. The reliance on private schools has also created a two-tiered education system, where high-income families access better-resourced private institutions. In contrast, low-income families are left with substandard options. To address this, Nairobi needs to prioritize equitable resource allocation, focusing on improving public schools in low-income areas and regulating private schools to ensure minimum standards (Majgaard & Mingat, 2020).

6.3 Kisumu County

Kisumu County, located in western Kenya, demonstrates efficient capitation absorption and strong coordination between county education boards and schools. The county has achieved a secondary GER of 85%, above the national average of 70%, mainly due to the timely disbursement of FPE and FDSE funds (KNBS, 2023). Kisumu's education board has implemented a robust monitoring system to ensure that capitation grants are used effectively, with 90% of schools reporting full utilization of funds for learning materials and infrastructure maintenance (Ministry of Education, 2024).

The county has also invested in teacher training to support the implementation of CBC, with over 3,000 teachers trained in competency-based pedagogies since 2019 (Cheruiyot, 2024). This has improved learning outcomes, particularly in urban areas such as Kisumu City, where students have demonstrated a 12% improvement in literacy and numeracy skills compared to pre-CBC levels (Ministry of Education, 2024). Additionally, Kisumu has prioritized early childhood development (ECD) programs, constructing 50 new ECD centres since 2020 to increase access for young learners (KNBS, 2023).

Despite these successes, rural-urban disparities within Kisumu remain a challenge. Rural schools, particularly in Nyakach and Muhoroni sub-counties, face shortages of qualified teachers and inadequate infrastructure, such as a lack of electricity and water. For example, a 2023 survey found that 40% of rural schools in Kisumu lacked functional laboratories, limiting practical learning under the CBC (Cheruiyot, 2024). The county has attempted to address this through mobile science labs and solar-powered facilities, but scaling these initiatives requires additional funding.

Kisumu's experience highlights the importance of strong governance and monitoring systems in education planning. Other counties can learn from Kisumu's capitation management model by establishing transparent financial tracking systems and prioritizing teacher training to support curriculum reforms.

6.4 Turkana County

Turkana, an ASAL county in northern Kenya, faces significant barriers to education due to its nomadic lifestyle, harsh climate, and limited infrastructure. The county has a secondary GER of only 50%, well below the national average, and primary-to-secondary transition rates are as low as 60% due to financial constraints, long distances to schools, and cultural practices like early marriage (KNBS, 2023). Dropout rates are particularly high among girls, with only 30% of female students completing secondary education (UNESCO, 2020).

Turkana has benefited from donor-funded programs, such as school feeding initiatives supported by the GPE and World Food Programme (WFP). These programs have increased primary enrolment by 15% since 2020 by addressing hunger, a significant barrier to school attendance in food-insecure regions (GPE, 2023). The county has also piloted mobile schools to accommodate nomadic communities, providing flexible learning schedules and portable classrooms. By 2024, 20 mobile schools were operational, serving over 5,000 learners in remote areas (Ministry of Education, 2024).

However, Turkana's education system faces significant challenges. The county faces a severe teacher shortage, with a pupil-teacher ratio of 70:1 in some schools, and many teachers are reluctant to work in the region due to its harsh conditions and limited amenities (Cheruiyot, 2024). Infrastructure deficits, such as a lack of permanent classrooms and water supply, further hinder learning. For example, a 2022 audit revealed that 60% of schools in Turkana lacked access to clean water, which negatively impacted student attendance and health (KNBS, 2023).

To address these issues, Turkana has introduced hardship allowances and housing incentives to attract teachers, but retention remains a challenge. The county has also partnered with NGOs to construct solar-powered learning centres, which provide electricity for digital learning and improve the learning environment. Scaling these interventions requires increased public investment and stronger coordination with national and donor partners to ensure sustainability (Majgaard & Mingat, 2020).

6.5 Comparative Analysis and Lessons Learned

The case studies of Uasin Gishu, Nairobi, Kisumu, and Turkana highlight the diverse challenges and opportunities in county-level education planning. Uasin Gishu's success in TVET demonstrates the value of aligning education with local economic needs, while Nairobi's experience underscores the need to address urban inequities through targeted infrastructure investments. Kisumu's efficient capitation management provides a model for financial accountability, while Turkana's reliance on donor support underscores the importance of developing sustainable funding strategies.

Common challenges across these counties include teacher shortages, infrastructure deficits, and gender disparities, particularly in ASAL regions. Successful interventions, such as mobile schools in Turkana and digital learning in Nairobi, show the potential of innovative approaches to overcome these barriers. However, scaling these initiatives

requires data-driven planning, increased funding, and stronger coordination between national and county governments (Lewin, 2007).

Counties can learn from each other by sharing best practices through platforms like the Council of Governors. For example, Uasin Gishu's TVET model could be adapted for use in Kisumu to address youth unemployment. At the same time, Turkana's mobile schools could be piloted in other ASAL counties, such as Wajir and Mandera. Ultimately, county-level planning must be supported by national policies that provide adequate resources and clear guidelines for equitable education delivery (UNESCO, 2020).

7. Policy Challenges and Recommendations

To address the multifaceted challenges facing Kenya's education system and align it with national development goals, such as Kenya Vision 2030 and the Sustainable Development Goals (SDGs), a comprehensive set of evidence-based strategies is proposed. These recommendations aim to enhance efficiency, equity, and sustainability by leveraging data-driven planning, targeted interventions, innovative financing, and effective stakeholder engagement. Each recommendation is designed to tackle specific challenges identified in the analysis, including regional disparities, inefficient resource allocation, funding constraints, and implementation gaps in the Competency-Based Curriculum (CBC) and Technical and Vocational Education and Training (TVET) programs.

7.1 Data-Driven Planning

Effective education planning requires accurate, timely, and disaggregated data to inform resource allocation and policy decisions. The Education Management Information System (EMIS) is a critical tool for collecting and analyzing data on enrolment, infrastructure, teacher distribution, and learning outcomes. However, many counties lack the capacity to fully utilize EMIS, leading to misinformed resource allocation and persistent inequities (Lewin, 2007). For example, discrepancies in enrollment data have led to the overfunding of underutilized TVET facilities in low-demand areas, such as the Tana River. At the same time, high-demand urban schools in Nairobi remain overcrowded (Cheruiyot, 2024).

Recommendation: Strengthen the EMIS by investing in county-level capacity building, including training for education officers and school administrators on data collection, analysis, and reporting. The Ministry of Education should establish standardized data protocols to ensure consistency across counties and integrate real-time data dashboards to monitor key indicators, such as pupil-teacher ratios and infrastructure availability. Additionally, counties should conduct annual needs assessments to identify high-priority areas, such as teacher shortages in ASAL regions or infrastructure deficits in rural schools. By 2026, aim to achieve 100% EMIS coverage across all 47 counties, with at least 80% of schools submitting accurate data annually (Ministry of Education, 2024). This will enable evidence-based resource allocation, reducing inefficiencies and addressing regional disparities.

7.2 County-Specific Interventions

Kenya's diverse socioeconomic and geographic contexts require tailored financing and programmatic interventions to address local challenges. For instance, ASAL counties, such as Turkana and Mandera, face unique barriers, including nomadic lifestyles and limited infrastructure, while urban counties, like Nairobi, struggle with overcrowding and socioeconomic disparities (KNBS, 2023). A one-size-fits-all approach to education planning exacerbates inequities and undermines efficiency.

Recommendation: Develop county-specific education plans that align with local economic, cultural, and demographic realities. For ASAL counties, increase capitation grants by 20% to account for higher operational costs and implement mobile schools and boarding facilities to accommodate nomadic populations, thereby improving girls' retention rates (UNESCO, 2020). For example, Turkana's mobile school program, which serves 5,000 learners, could be scaled to reach an additional 10,000 students by 2027 with targeted funding (Ministry of Education, 2024). In urban counties, allocate infrastructure grants to reduce classroom overcrowding, targeting a maximum pupil-teacher ratio of 40:1 by 2028. Counties should also establish local education task forces, comprising community leaders, educators, and representatives from the private sector, to identify and prioritize effective interventions. The national government can support this by providing technical assistance and funding formulas that prioritize high-need areas (Majgaard & Mingat, 2020).

7.3 Public-Private Partnerships (PPPs)

Public-private partnerships offer a viable strategy to supplement public and donor funding, particularly for infrastructure development, teacher training, and TVET programs. Partnerships with organizations such as Safaricom and Equity Bank have already facilitated classroom construction and the provision of digital learning tools in counties like Uasin Gishu and Nairobi (Majgaard & Mingat, 2020). However, the lack of a clear regulatory framework has led to uneven implementation, with urban areas benefiting more than marginalized regions (Cheruiyot, 2024).

Recommendation: Develop a national PPP policy for education by 2026, outlining clear guidelines for equitable resource distribution and private sector engagement. This policy should prioritize investments in underserved areas, such as ASAL counties, and include incentives for private partners, such as tax breaks or co-financing arrangements. For example, partnerships with agribusiness firms in counties like Uasin Gishu could fund TVET programs in agriculture, while tech companies could support digital learning in urban schools. The Ministry of Education should establish a PPP coordination unit to oversee project implementation, monitor outcomes, and ensure alignment with national priorities. By 2028, aim to increase PPP-funded education projects by 30%, with a focus on infrastructure and skills development in marginalized regions (Majgaard & Mingat, 2020).

7.4 Performance-Based Financing

Linking funding to measurable outcomes can incentivize efficiency and accountability in education delivery. Performance-based financing (PBF) models,

successfully implemented in countries such as Rwanda, tie resource allocation to indicators including improved transition rates, learning achievements, and graduate employability (Psacharopoulos & Patrinos, 2018). In Kenya, current funding models are largely input-based, focusing on enrolment numbers rather than outcomes, which contributes to inefficiencies and quality gaps (Cheruiyot, 2024).

Recommendation: Pilot a PBF model in 10 counties by 2026, linking 20% of capitation grants to outcomes such as increased primary-to-secondary transition rates, improved literacy and numeracy scores, and higher TVET graduate employment rates. For example, schools achieving a 90% transition rate could receive a 10% funding bonus, while those with lower performance would receive technical support to address gaps. The EMIS should be used to track outcomes, with annual performance audits to ensure transparency. This approach can incentivize schools to prioritize quality and equity, particularly in areas that are underserved. By 2030, scale the PBF model nationwide, targeting a 15% improvement in learning outcomes and a 10% increase in transition rates (Ministry of Education, 2024).

7.5 Teacher Recruitment and Training

Teacher shortages and inadequate training are significant barriers to quality education, particularly in STEM subjects and the implementation of CBC. The national pupil-teacher ratio averages 42:1, but in ASAL counties, such as Turkana, it exceeds 70:1, thereby compromising instructional quality (Ministry of Education, 2024). Additionally, only 60% of teachers are trained in CBC pedagogies, leading to inconsistent curriculum delivery (Cheruiyot, 2024).

Recommendation: Increase teacher recruitment by 20,000 by 2028, with a focus on STEM subjects and ASAL regions. The Teachers Service Commission (TSC) should implement a targeted recruitment drive, offering incentives such as hardship allowances, housing subsidies, and career progression opportunities to attract teachers to underserved areas. For example, a 2024 pilot in Turkana increased teacher retention by 15% through housing incentives (Ministry of Education, 2024). Additionally, expand CBC training programs, aiming to train 100% of teachers by 2027, with a focus on practical pedagogies and digital literacy. Partnerships with universities and private training providers can accelerate this process. Regular professional development, including mentorship and peer learning, should be institutionalized to enhance teacher quality and morale (UNESCO, 2020).

7.6 Community Engagement and Cultural Sensitization

Cultural and socioeconomic barriers, such as early marriage and child labour, significantly hinder enrolment and retention, particularly for girls in ASAL regions and low-income urban areas. In Mandera, only 30% of girls complete secondary education due to cultural practices and economic pressures (UNESCO, 2020). Community engagement is critical to addressing these barriers and ensuring inclusive education.

Recommendation: Launch community sensitization programs in all 47 counties by 2026, targeting cultural practices that hinder education, such as early marriage and female genital mutilation (FGM). These programs should involve local leaders, parents, and religious institutions to promote the value of education, particularly for girls. For example, a 2023 initiative in Turkana increased female enrolment by 10% through community dialogues led by elders (GPE, 2023). Additionally, provide scholarships and boarding facilities for vulnerable students, aiming to increase female secondary completion rates by 20% by 2030. Counties should establish community education committees to monitor attendance and address local barriers, with support from NGOs and donor partners (UNESCO, 2020).

7.7 Infrastructure Development

Inadequate infrastructure, including classrooms, laboratories, and sanitation facilities, undermines learning quality and access. In rural and ASAL counties, 50% of schools lack proper sanitation, disproportionately affecting girls' attendance (KNBS, 2023). Urban schools face overcrowding, with some classrooms accommodating up to 80 students (Cheruiyot, 2024).

Recommendation: Allocate 30% of the education development budget to infrastructure by 2028, prioritizing permanent classrooms, laboratories, and sanitation facilities in underserved regions. For example, Turkana and Wajir should receive targeted grants to construct water and solar-powered facilities, aiming to equip 80% of schools with basic infrastructure by 2030 (Ministry of Education, 2024). In urban areas, expand classroom capacity to achieve a maximum pupil-teacher ratio of 40:1. PPPs and donor funding should be leveraged to supplement public investment, with a focus on sustainable designs like solar-powered learning centres. Regular infrastructure audits using EMIS data can ensure equitable distribution and maintenance (Majgaard & Mingat, 2020).

7.8 Digital Transformation in Education

The CBC's emphasis on practical and digital skills requires access to technology; however, only 20% of schools have functional computer labs, and rural areas face significant connectivity challenges (Ministry of Education, 2024). Digital transformation can enhance learning outcomes and prepare students for a technology-driven economy.

Recommendation: Implement a national digital education strategy by 2027, aiming to equip 50% of schools with computer labs and internet access. Partner with tech companies to provide affordable devices and connectivity, as demonstrated by Safaricom's digital learning program in Nairobi (Majgaard & Mingat, 2020). In rural areas, deploy solar-powered digital hubs to address electricity constraints, with a target of 1,000 hubs by 2030. Teacher training in digital pedagogy should be integrated into CBC programs, and open-source learning platforms should be developed to provide free access to educational content. This can reduce the digital divide and enhance learning outcomes by 15% by 2030 (UNESCO, 2020).

7.9 Sustainable Financing Models

Overreliance on the national exchequer and donor funding poses a threat to the sustainability of Kenya's education system. Innovative financing models, such as education bonds and social impact investing, can diversify revenue streams and reduce dependency (Psacharopoulos & Patrinos, 2018).

Recommendation: Launch a national education bond program by 2026, raising KES 50 billion to fund infrastructure and teacher training, with returns tied to outcomes like improved enrolment and learning achievements. Pilot social impact investing in five counties, targeting low-income schools, to increase learning outcomes by 10% by 2028 (Majgaard & Mingat, 2020). Counties should also explore local revenue generation, such as education levies or endowments, to supplement national funding. A national task force should be established to oversee these initiatives, ensuring transparency and alignment with national priorities (Lewin, 2007).

7.10 Monitoring and Evaluation Systems

Robust monitoring and evaluation (M&E) systems are essential for tracking progress and ensuring accountability. Current M&E practices are inconsistent, with many counties lacking the capacity to analyze data and evaluate outcomes (Cheruiyot, 2024).

Recommendation: Strengthen M&E systems by integrating EMIS with performance-based financing and county-level reporting. By 2026, establish annual performance reviews for all schools, focusing on key indicators such as transition rates, learning outcomes, and infrastructure utilization. Train county education officers in monitoring and evaluation (M&E) methodologies, and create a national education dashboard to provide policymakers with real-time insights. Regular audits, conducted in collaboration with independent bodies, can ensure transparency and accountability, aiming to achieve a 20% improvement in resource utilization by 2030 (Majgaard & Mingat, 2020).

8. Conclusion

Kenya's education system has made remarkable progress in expanding access, particularly at the primary level, with near-universal enrollment achieved through policies such as FPE and FDSE. However, challenges such as regional disparities, inefficient resource allocation, and funding sustainability threaten the system's ability to deliver equitable, high-quality education. The transition to the CBC and the expansion of TVET offer opportunities to align education with labour market needs, but their success depends on addressing implementation gaps and resource constraints.

County-level innovations, such as Uasin Gishu's TVET programs and Kisumu's efficient capitation management, provide models for replication. By adopting data-driven planning, county-specific interventions, public-private partnerships, and performance-based financing, Kenya can enhance its education system as a catalyst for inclusive growth. These reforms will ensure that education contributes to the goals of Kenya Vision 2030 and the SDGs, fostering a skilled, productive workforce and reducing poverty and inequality.

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