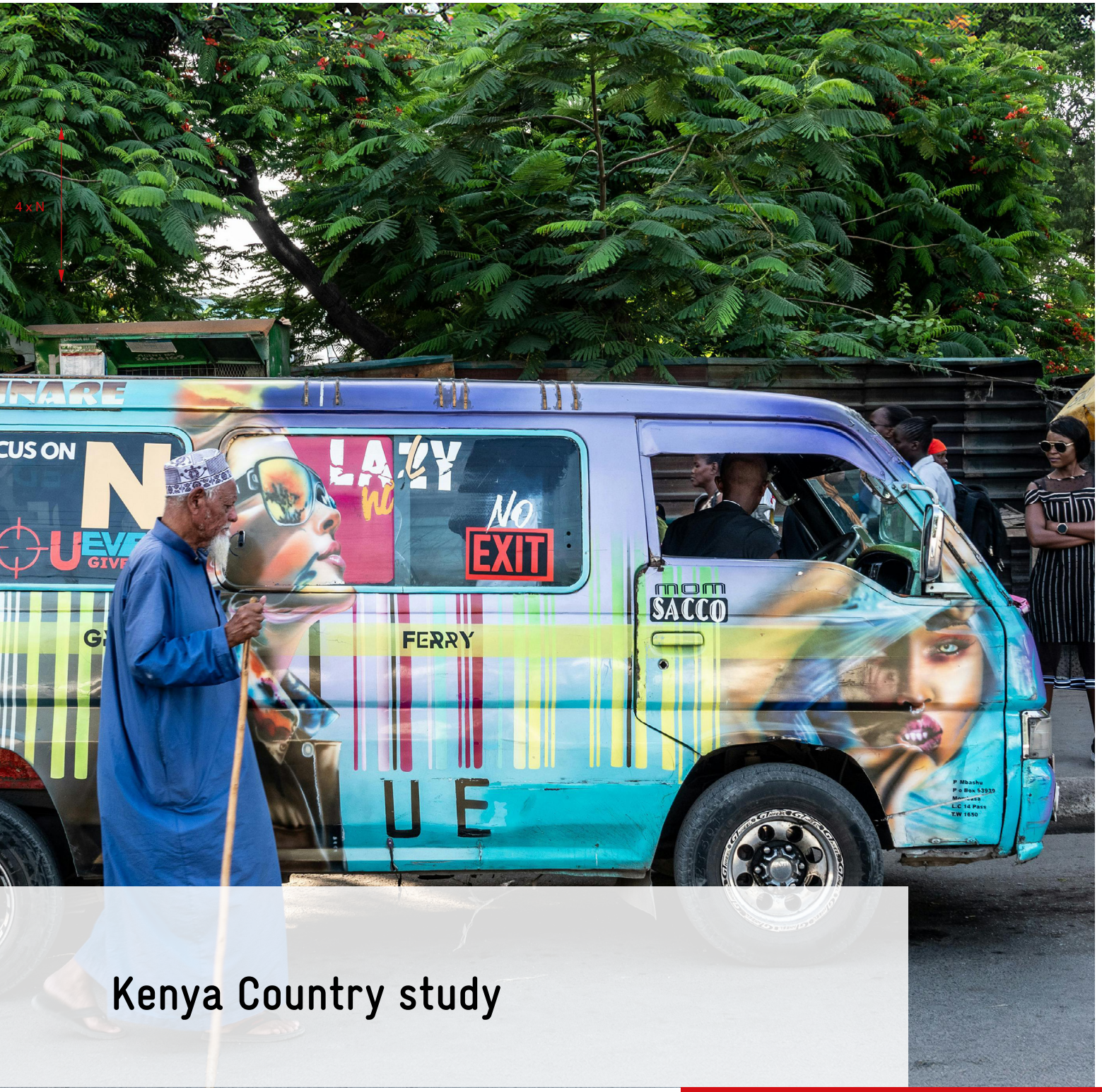

Kenya Country study

Skills development for the green economy with a focus on transport and agriculture

October 2025

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

This country study was conducted by independent external experts. The opinions expressed herein represent the views of the authors and are not necessarily shared by GIZ, its partners, or country representatives.

GIZ country studies in green skills and jobs

This project was commissioned by GIZ in March 2025 to develop in-depth country case studies on skills for a green and just economy in Brazil, Kenya, and Pakistan. Findings are integrated into a flagship document, which will be presented at the COP 30 in Belem, Brazil in November 2025.

Paeradigms

The research was carried out by Paeradigms, an NGO and social enterprise focused on transformational outcomes that lead to social change and economic impact. Paeradigms' work focuses on four thematic areas: (1) Education, (2) Renewable energy & climate change, (3) Gender, diversity & inclusion, (4) Communication & advocacy.

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We, as the research team, have been impressed by the commitment and engagement of all involved – particularly the thoughtful and in-depth conversations that took place. We are confident that GIZ and its partners are well positioned to implement the recommendations and to adapt effectively to the dynamic contexts in which we live and work today.

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PÆRADIGMS

Executive summary

This case study, prepared as part of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) contribution to the **Global Initiative on Jobs and Skills for the New Economy: An Action Agenda for a Human-Centred Climate Transition,** explores a critical link between skills development and climate action in Kenya. The urgency of developing and strengthening green skills in Kenya is significantly linked to the overarching global challenge of climate change, which imposes significant demands on workforce readiness for both climate mitigation and climate adaptation. The primary purpose of this study is to offer insights into the current and future green skills requirements, gaps, and opportunities to support Kenya's transition towards a green economy with a focus on the agriculture and transport sectors. Moreover, these insights may contribute to achieving the **updated Nationally Determined Contributions (NDCs) (Government of Kenya, 2020) and Kenya's Second Nationally Determined Contribution (2031–2035).**

Methodology

The analysis uses a mixed-methods approach: following the initial systematic literature review, priority sectors were selected through a stakeholder workshop facilitated by the Climate Change Directorate based on criteria including economic significance (Gross Domestic Product (GDP) contribution), workforce size, growth potential, climate vulnerability, and green transition priorities. A desk review and stakeholder interviews were then conducted to identify and assess existing green transition solutions and opportunities within selected sectors. Findings were validated through an in-country workshop with local partners.

Context

Kenya has established a comprehensive policy framework targeting a 32% reduction in greenhouse gas (GHG) emissions by 2030, in line with its Paris Agreement commitments. This goal is critical, as the country's economic growth is often undermined by climate change impacts, demanding targeted adaptation and resilience-building efforts. Policymakers have identified green skills development and green jobs creation as essential tools for achieving GHG emission reduction goals and growth in the private sector, particularly in the sustainable agriculture and transport sectors.

Responding to this need, Kenya has implemented green skills development and climate action policies that are closely aligned with several international treaties, policies, and frameworks (Box 1). Additionally, Kenya has started integrating green competences from basic education to technical vocational education and training (TVET) and tertiary education in its new competence-based education and training curriculum. However, translating existing policy frameworks into effective action has proven challenging.

Kenya has extensive climate change frameworks that span economic, educational, and labour policy areas. Effective implementation requires cross-sectoral integration of climate change response across sectors to meet GHG emission reduction targets. However, climate-smart agriculture (CSA) and e-mobility goals are not yet fully embedded within vocational training and workforce development strategies. Limited coordination between national and county governments risks creating policy silos, which may hamper unified implementation. Resource constraints further impede progress, with counties allocating less than 2% of their budgets to climate action and green skills development. Skills providers face shortages in funding and qualified instructors, particularly affecting vulnerable populations such as smallholder farmers and informal transport workers. Furthermore, static and insufficient data on green skills demand and supply prevent accurate identification of skill gaps, limiting strategic resource allocation for both mitigation and adaptation objectives.

Box 1. Policy frameworks

National Strategy on Green Skills and Jobs

(2025-2030), informed by CCA and NCCAP, provides a framework for equipping the Kenyan workforce with the knowledge and skills for a green economy.

CCA

Climate Change Act (2016), amended in 2023, serves as the primary legal framework for addressing climate change. It provides a coordinated and effective response to climate change through a low-carbon, climate-resilient development pathway.

NCCAP

NCCAP. National Climate Change Action Plan 2023-2027 and 2031-2035 outline ambitious targets for clean energy, sustainable agriculture, emissions reduction, climate-resilient and efficient transport systems, and enhanced mainstreaming of climate adaptation in the education system.

CSA

The Kenya Climate-Smart Agriculture Strategy (2016–2027) aims to reduce sectoral GHG emissions by 20% by 2026.

INTP

Integrated National Transport Policy addresses GHG emissions by promoting a shift towards electric vehicles, non-motorised transport, improving fuel efficiency, and encouraging sustainable aviation practices.

Sector analysis

Agriculture

The agriculture sector is critical to Kenya's economy, accounting for more than 40% of the country's employed population, and over 70% of those employed in rural areas (Government of Kenya, 2023a; Kenya National Bureau of Statistics [KNBS], 2022), with a substantial proportion of workers engaged informally. The sector accounted for a 22.5% share of GDP in 2024 (KNBS, 2025).

However, the economic importance of the sector comes with environmental challenges. In 2022, agriculture and forestry emitted 49.6 Mt CO2eq and 47.3 Mt CO2eq each, substantially exceeding the NDC targets of 33.1 Mt CO2eq and 13.4 Mt CO2eq, respectively (Government of Kenya, 2023a). The dual nature of agriculture – both as an economic driver and source of GHG emissions – creates compelling opportunities for transitioning to CSA, sustainable land and water use, and agroforestry practices to achieve agricultural sustainability, economic resilience, and GHG emissions reduction. **The adoption of Climate-Smart Agriculture (CSA) technologies, which enhance agricultural productivity, resilience, and sustainability, is expected to generate approximately 2'000 new jobs in Kenya by 2030.** These projections, however, do not include farmers. With the inclusion of farmers in data projections, enhanced financing, innovation by start-ups, and expanded service delivery accelerating CSA adoption, the employment potential is cited to be significantly higher. (FSD Africa, 2024).

Realising these opportunities requires addressing the following substantial green skills gaps:

- **Climate-smart farming and resource management.**

  Strong demand exists for expertise in soil health management, integrated pest and disease management, precision farming, and organic farming practices.

- **Sustainable land use and water management systems.**

  Skills are urgently needed in agroforestry, irrigation design and management, rangeland management, and conservation of agricultural biodiversity.

- **Post-harvest and agribusiness skills.**

  Critical shortages exist in post-harvest handling, storage and processing, quality control, marketing, financial management, and green finance.

- **Training and capacity building.**

  Agricultural TVET institutions face challenges with outdated curricula, underqualified trainers, inadequate equipment, and limited funding.

- **Digital and enabling skills.**

  Substantial gaps persist in digital competencies for accessing climate information services, early warning systems, market data, and precision agriculture technologies.

Kenya's agricultural green transition carries substantial social risks, requiring inclusive interventions that specifically address the needs of vulnerable groups – smallholder farmers, women, and youth – to prevent job displacement and ensure equitable access to new employment opportunities.

Transport

The transport sector serves as a key driver of Kenya's economic development, accounting for 12.7% of GDP in 2024. According to the KNBS (2025), **the transport and storage sector employed approximately 679'000 private sector employees and 23'500 public sector employees in 2024.** The informal sector employs even more workers, particularly on daily or task-based arrangements. Notable examples include the matatu industry in the Nairobi Metropolitan region, where approximately 63'000 workers support a broader ecosystem of bus-stop workers and service providers (Global Labour Institute, 2018; Kwoba et al., n.d.). The motorcycle (boda-boda) industry involves up to 5 million riders who transport passengers and parcels (Viffa Consult, 2025a).
While comprehensive data on green jobs in the transport sector remains limited, indicators suggest a rapidly expanding trend. Electric vehicle (EV) registrations have grown dramatically from 2'694 in 2023 to 9'047 in 2025, signalling increasing market activity and employment potential (Energy & Petroleum Regulatory Authority [EPRA], 2024b; Kenya Power and Lighting Company [KPLC], 2025). However, most available data focuses on projected rather than current employment figures, highlighting the nascent stage of Kenya's green transport transition.

This emerging green transition promises substantial job creation opportunities. **The planned Bus Rapid Transit (BRT) system is expected to generate 5'760 new jobs** (Manga, 2024), while electric mobility presents even greater potential. **By 2030, electric 2-wheelers (e-bicycles and motorcycles) are projected to create 14'200 new jobs** in assembly, maintenance, sales, and after-sales services. Battery swapping and charging point operations are expected to create an additional 4'200 jobs, bringing total e-mobility employment to 18'400 positions by 2030 (FSD Africa, 2024). While this represents a small part (~0.5%) of total transport sector employment, it signals a shift towards green jobs within the sector. Supporting infrastructure development, including Kenya Power's planned installation of 45 (EV) chargers across several counties, will further contribute to employment opportunities (EPRA, 2024a; KPLC, 2025).

Without targeted climate mitigation measures, Kenya's GHG emissions could reach 143 Mt CO2eq by 2030 under Business-as-Usual projections established for the National Climate Change Action Plan (NCCAP) 2013-2017. Transport would contribute 21 Mt CO2eq, representing 15% of total national GHG emissions and making it the fourth-largest emitting sector in the country (Government of Kenya, 2023a).

This climate challenge, combined with the sector's economic significance and ongoing green transition, presents opportunities for green jobs creation, particularly in GHG emission control

technologies, EV maintenance, sustainable infrastructure design, and renewable energy-powered charging solutions. However, insights from sector representatives indicate that critical gaps in green skills constrain this transition:

- **Lack of technical expertise.**

  Kenya lacks trained specialists for battery technologies and applications, circularity principles, charging infrastructure (CI) technologies and operations, hybrid EV technologies, and local assembly and manufacturing.

- **Gaps in curriculum and training.**

  Comprehensive e-mobility curricula are lacking, particularly for the Kenya National Qualifications Framework Levels 4-6. Skills providers face challenges with limited access to electric vehicles and essential diagnostic tools.

- **Absence of certification standards.**

  The absence of standardised certification for EV skills creates barriers to workforce development, while the implementation of new curricula encounters ongoing challenges, such as infrastructure capacity gaps, across TVET institutions.

Beyond skills gaps, the transition poses significant social risks. The transport sector's high degree of informality currently provides livelihoods for economically disadvantaged groups. Without careful management, the transition to e-mobility could lead to significant job losses for those in traditional internal combustion engine (ICE) occupations, given the highly formal nature of the e-mobility ecosystem (e-mobility is driven primarily by government initiatives and formal private sector firms). For instance, while the BRT system promises new jobs and efficient urban mobility, it also risks losing up to 30'000 existing jobs. Furthermore, substantial social risks persist for women and persons with disabilities (PWDs), as current ICE infrastructure does not adequately consider these groups (e.g accessibility, safety and security features). Failing to address these structural issues in the shift to e-mobility risks perpetuating systemic inequalities.

Additionally, the freight sub-sector, accounting for over 78% of transport GHG emissions along key corridors like the Northern Corridor, is undergoing its own green transition, driven by rising fuel costs, environmental pressures, and the demand for sustainable logistics. However, it faces distinct challenges, including high upfront costs for electric trucks, insufficient charging and maintenance infrastructure, and fragmented policies and incentives, which hinder the growth and development of green jobs (Kuehne Climate Center, 2025a).

Solutions assessment

Kenya is implementing innovative approaches to green skills development through targeted interventions that bridge skills gaps. Two flagship initiatives – D-TVET and 360° AgriJobs – have been selected as illustrative examples, demonstrating how integrated training models can align workforce development with climate-smart economic opportunities. Further examples can be found in the case study.

Dual Technical and Vocational Education and Training (D-TVET). Kenya faces critical skills mismatches that undermine its Vision 2030 goals. Youth unemployment rates are 16.3% for the 20-24 age group and 9.1% for the 25-29 age group, with 16.9% of youth classified as Not in Employment, Education, or Training (NEET). Industry skills shortages persist, particularly in emerging green technologies like EV maintenance and battery management systems (Ministry of Labour and Social Protection, 2023).

The Dual Technical and Vocational Education and Training (D-TVET) model addresses this challenge through a 50:50 block-release system where trainees alternate every three months between classroom learning and structured industry experience (Kenya Private Sector Alliance [KEPSA], 2024). Following a successful GIZ-supported pilot from 2019 to 2022 across seven institutions, the model has scaled to 60 TVET institutions and, through the Dual TVET Act (2025), will expand to all 2,756 (KNBS, 2025) accredited TVET institutions nationwide. The model operates through tripartite agreements among skills providers, trainees,

and employers, with shared funding, where the government supports classroom training while industry covers workplace training costs (AHK Eastern Africa, 2025). Industry partners now co-develop curricula and deliver training – such as through the PropelA Dual Apprenticeship Programme funded by the Hilti Foundation and Geberit AG (Swisscontact, 2025) – ensuring skills development directly meets labour market demands whilst embedding green competencies throughout curricula (KEPSA, 2024; Kenya School of TVET, 2024; Ministry of Education, n.d.). This integrated approach strengthens alignment between education and industry needs, positioning Kenya to better harness its human resources for economic development and the green transition.

360° AgriJobs Approach (GIZ & Private Sector Partners). Youth and women constitute a substantial proportion of Kenya's agricultural labour force, yet encounter significant barriers, including limited access to land, capital, markets, and training opportunities, that prevent them from realising their economic potential. The 360° AgriJobs approach aims to address these challenges by creating a comprehensive "learning to earning" ecosystem, anchored in four integrated pillars: training and qualification, business development, networking, and investor matching. Implemented by GIZ and private sector partners in five counties in Western Kenya (i.e. Bungoma, Kakamega, Kisumu, Siaya, and Vihiga), this multi-stakeholder cooperation ensures that services respond to local labour market needs and climate priorities. By June 2025, the initiative had trained over 7'000 youth in agribusiness, provided 3'000 participants with six months of coaching and mentorship, and facilitated the establishment of approximately 2'300 enterprises, primarily focused on CSA. The programme also strengthened five youth organisations with 3'500 members (one-third of whom are women) and accelerated the development of 10 agri-food small and medium-sized enterprises (SMEs). Monitoring data shows that 75% of participants improved their job prospects, 80% of supported businesses created new jobs, and 90% of youth rated the training as relevant to labour market needs (GIZ GmbH, 2023).

Agriculture Society of Kenya (ASK) Shows. Knowledge is critical to productivity, resilience, and innovation, yet Kenya's agricultural extension and information dissemination systems remain underdeveloped (Gwada, 2020). This has left many farmers without timely and practical guidance for climate adaptation. The ASK Shows play an important role in bridging this knowledge gap. Through 16 annual agricultural shows across Kenya, farmers gain access to expert advice, live demonstrations, practical training plots, and networking opportunities with researchers and private sector actors (Agricultural Society of Kenya [ASK], 2025b; Gwada, 2020).

This interactive approach fosters real-time learning, the adoption of modern technologies, and the development of green skills, providing an innovative and scalable model for inclusive rural development. ASK Shows are coordinated through a structured leadership hierarchy, with the President of Kenya as Patron, supported by national and county-level leaders. They reach participants via multi-channel outreach. In 2024, the Shows featured 1'500 exhibitors, 700'000 visitors, and 8'000 members (ASK, 2025).

Transport SACCOs (Savings and Credit Cooperative Organisations). High upfront costs and limited access to traditional credit constrain the expansion of green initiatives in the transport sector, limiting job creation and skill development within the informal transport workforce (Electric Mobility Association of Kenya [EMAK], 2025). Kenya's network of SACCOs offers an innovative financing model to overcome these barriers. In the transport sector, SACCOs facilitate the adoption of electric buses using BasiGo's "Pay-As-You-Drive" model (KII, SACCO, 2025), promoting green jobs and skill development. SACCOs mobilise internal capital through member savings and shares, offering a self-sustaining and scalable model for greening Kenya's transport sector.

Recommendations

General Recommendations:

1 **Strengthen multi-level climate governance to align green investments with jobs and skills.**

Kenya has established a strong policy base for its green transition, including the Climate Change Act (2016) and the National Strategy on Green Skills and Jobs (2025–2030). Yet fragmented implementation, weak coordination, and limited data systems prevent climate investments from fully supporting employment and skills development. Strengthening governance and integrating climate and labour market data are essential to link climate action with job creation. Implementation should reinforce AGSO's coordination role, align county planning with national strategies, and embed evidence-based monitoring to ensure inclusive and sustainable workforce outcomes.

2 **Localise and scale access to Green Skills and employment information via the AGSO Platform.**

Kenya's shift to a green economy requires accessible and inclusive labour market information on green skills and employment opportunities. The Alliance for Greening Skills and Opportunities (AGSO) has created a national data portal to address this need, but county-level access remains limited, particularly for youth, women, informal workers, and rural communities. To bridge this gap, AGSO's services should be scaled and localised through community hubs and offline channels. This approach would expand equitable access, improve job matching, and ensure that climate investments generate inclusive green employment across counties.

3 **Integrate a Just Transition Patient Capital Fund into county climate finance for MSMEs.**

Green Micro, Small, and Medium Enterprises (MSMEs) are central to Kenya's green economy, particularly in transport and agriculture, yet many cannot access suitable financing to expand, innovate, and create jobs. Traditional credit is poorly aligned with green business models, while existing climate finance mechanisms rarely provide the patient capital MSMEs require. A dedicated Just Transition Patient Capital Fund, integrated into county climate finance structures, would fill this gap by offering long-term, flexible financing linked to job creation and skills development, strengthening Kenya's green fiscal framework.

Sector-Specific Recommendations

Agriculture

4 **Establish a national Climate-smart Agriculture (CSA) skills delivery and coordination mechanism.**

CSA is a national priority for resilience and food security, yet skills development remains fragmented and poorly aligned with labour market demand. The Kenya Climate-smart Agriculture Implementation Framework (2018–2027) recognises training needs but does not provide a structured approach to build CSA competencies at scale. Establishing a National CSA Skills Delivery and Coordination Mechanism would address this gap by aligning training with national strategies, modernising curricula, and creating pathways from education to employment. This system would expand inclusive, demand-driven training and strengthen green jobs in agriculture.

5 Update and align curricula and training to reflect modern CSA practices.

Training for climate-smart agriculture (CSA) in Kenya is still centred on theory and does not fully prepare graduates for emerging practices such as digital farming, precision agriculture, or adaptation to climate change. Employers report skills gaps in areas like soil health monitoring with digital tools, interpreting climate data, and managing water sustainably. Updating curricula and strengthening trainer capacity would align CSA training with labour market needs. Practical modules, industry collaboration, and a national Train-the-Trainer programme would ensure learners gain relevant, hands-on competencies for green agriculture jobs.

Transport

6 Establish a green transport financing facility.

High upfront costs remain a major barrier to EV adoption in Kenya, particularly for matatu SACCOs and logistics companies. Innovative financing models like BasiGo's "Pay-As-You-Drive" demonstrate potential but remain limited in scale. Establishing a Green Transport Financing Facility under the National Treasury would de-risk investment, attract private capital, and accelerate adoption. By blending public, private, and climate finance, the facility would support matatu operators and logistics SMEs, while prioritising women, youth, and rural groups to ensure equitable access and create green jobs.

7 Decentralise green skills training to include informal workers.

The shift to EVs and BRT is reshaping Kenya's transport sector, but skills providers and training systems have not adapted. Outdated curricula (e.g. without EV-specific content), and missing programmes (e.g. on BRT) risk excluding many workers, especially those in the informal transport economy, from the green transition. Introducing updated modules on EV and BRT operations, combined with mobile training units, would provide flexible, practical skills directly at worksites and transport hubs. Recognition of prior learning would further enable informal workers to gain formal qualifications and secure opportunities in green mobility.

Conclusion

Kenya's transition to a green economy presents both significant opportunities and complex challenges that require coordinated action across multiple levels of governance and key economic sectors. This case study reveals that, despite Kenya having developed a robust policy framework for climate action and green skills, crucial gaps remain between the implementation processes of national ambitions and realities. The agriculture and transport sectors demonstrate substantial potential for green jobs creation, with CSA expected to generate about 70'000 new jobs and e-mobility projected to create 18'400 roles by 2030. However, current skills development systems and pathways remain inadequately equipped to support this transition.

The study identified three fundamental barriers to the transition: fragmented policy implementation that requires integration, inadequate multi-stakeholder coordination mechanisms that lead to stakeholders working in isolation and duplicating efforts, and inadequate data infrastructure that impedes evidence-based planning and decision-making. These challenges are worsened by resource constraints for climate action and systemic inequalities that risk excluding vulnerable and marginalised populations from green opportunities.

However, innovative solutions, such as the D-TVET model and the 360° AgriJobs Approach, demonstrate Kenya's potential for transformative change when stakeholders collaborate with shared objectives. These initiatives provide practical models for scaling green skills development while ensuring participation of vulnerable and marginalised groups.

Contents

1. Introduction 13

1.1 Purpose of the study and structure of the document 15
1.2 Methodology 16
1.3 Limitations 18

Green terminology 19

2. Country context 21

2.1 Climate, economic trends and socioeconomic status 22
2.2 Key policy frameworks 24
2.3 TVET system 26

3. Sector analysis 32

3.1 Agriculture 33
3.2 Transport 45

4. Solutions assessment 66

4.1 Dual Technical and Vocational Education and Training (D-TVET) 68
4.2 360° AgriJobs approach 69
4.3 Agricultural Society of Kenya (ASK) Shows 70
4.4 Transport SACCOs (Savings and Credit Cooperative Organisations) 71

5. Conclusion 73

6. Recommendations 76

6.1 General recommendations 77
6.2 Sector-specific recommendations 83

7. References 90

8. Annexes 97

8.1 Overview of existing initiatives 97
8.2 Examples of green jobs and skills in the Kenyan agriculture sector 100
8.3 Overview of key policies for the green transition in transport 104
8.4 Fuel taxes and levies impacting the transport sector in Kenya 105

Figures and tables

Figures

Figure 1. Green terminology 15
Figure 2. The just transition 15
Figure 3. Green skills typologies 15
Figure 4. Green transition impact on the labour market 16
Figure 5. Kenya's key policy frameworks for climate 19
Figure 6. Stakeholders in the Kenyan TVET system 23
Figure 7. TVET policies related to green skills 24
Figure 8. Farming households' agricultural activities 26
Figure 9. Trends in agricultural emissions in Kenya: 2010-2050 27
Figure 10. Livestock systems 29
Figure 11. Agroforestry 29
Figure 12. Irrigation and water 30
Figure 13. Crop farming 31
Figure 14. Kenya's GHG emissions from transportation (2010-2050) 39
Figure 15. Avoid Shift Improve – Instruments 40
Figure 16. Finance and business models 43

Tables

Table 1. Different types of stakeholders covered in key informant interviews 13
Table 2. Agencies in Kenya's TVET sub-sector 21
Table 3. Farming population's education level by gender 25
Table 4. CSA Strategy & Implementation Framework – skills development priorities 31
Table 5. Social risk matrix: green transition in Kenya's agriculture sector 35
Table 6. Classification of the Kenyan transport sector 36
Table 7. Key employment figures and economic contributions of the Kenyan transport sector 37
Table 8. Gender composition of Kenya's transport sector workforce 38
Table 9. Summary: Green transition progress in transport in Kenya using the ASI framework 40
Table 10. Summary: BasiGo's "Pay-As-You-Drive" Model 44
Table 11. Costs Comparison: E-boda vs ICE boda 45
Table 12. Summary: Green job opportunities and skill gaps 48
Table 13. Summary of gaps in Kenya's green transport sector 49
Table 14. Social risks and mitigation strategies 50
Table 15. Examples of green jobs and skills in the Kenyan agriculture sector 70
Table 16. Policies and incentives supporting the green transition in transport 73
Table 17. Breakdown of key fuel taxes and levies in Kenya 74

Abbreviations

Acronym	English name
AGSO	Alliance for Green Skills and Opportunities
ANDE	Aspen Network of Development Entrepreneurs
ASALs	Arid and Semi-Arid Lands
ASI	Avoid-Shift-Improve
ASK	Agricultural Society of Kenya
ASTGS	Agricultural Sector Transformation and Growth Strategy
BRT	Bus Rapid Transit
CCCF	County Climate Change Fund
CDACC	Curriculum Development, Assessment and Certification Council
CDACC	Curriculum Development, Assessment and Certification Council
CSA	Climate-Smart Agriculture
D-TVET	Dual Technical and Vocational Education and Training
ECREA	Enhancing Climate Resilience in East Africa
ESD	Education for Sustainable Development
EV	Electric Vehicle
GCF	Green Climate Fund
GDP	Gross Domestic Product
GESIP	Green Economy Strategy and Implementation Plan
GHG	Greenhouse gases
ICE	Internal Combustion Engine
ILO	International Labour Organisation
IMF	International Monetary Fund
INTP	Integrated National Transport Policy
IoT	Internet of Things
IRENA	International Renewable Energy Agency
ITS	Intelligent Transport Systems
KCATS	Kenya Credit Accumulation and Transfer System
KCSAS	Kenya Climate-Smart Agriculture Strategy
KII	Key Informant Interview
KNBS	Kenya National Bureau of Statistics
KNQF	Kenya National Qualifications Framework
LT-LEDS	Long-Term Low Emission Development Strategy
NAP	National Adaptation Plan
NCCAP	National Climate Change Action Plan
NDC	Nationally Determined Contribution
NESSP	National Education Sector Strategic Plan
PRISMA	Preferred Reporting Items for Systematic reviews and Meta-Analyses
RPL	Recognition of Prior Learning
SACCO	Savings and Credit Cooperative Organisation
TVET	Technical and Vocational Education and Training
TVETA	Technical and Vocational Education and Training Authority
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
WEF	World Economic Forum

01

Introduction

- Purpose of the study and structure of the document
- Methodology
- Limitations

1 Introduction

The transition to a green economy is a global imperative and particularly critical for Kenya, given its vulnerability to climate change impacts such as recurring droughts, flooding, and unpredictable rainfall patterns that threaten agricultural productivity and food security. Kenya's shift towards sustainable development aligns with its Vision 2030 and the national commitment to achieving net-zero emissions by 2050.

This transition involves reconfiguring systems to achieve environmental sustainability while supporting the country's growing population and expanding economy (Paeradigms, 2023). Kenya's green economy transformation prioritises key sectors such as agriculture, energy, transport, sustainable tourism, green construction and water systems, all of which demand specialised skills development across the Kenyan workforce (Maclean et al., 2018).

This global momentum towards a green economy creates strong potential for job creation. Forecasts by the International Renewable Energy Agency (IRENA) and the International Labour Organisation (ILO) estimate that the transition represents a significant opportunity for large-scale employment across multiple sectors. The ILO (2024) estimates that up to 37 million new jobs could be created worldwide by 2030 through the green and digital transitions. Employment in renewable energy (RE) alone was projected to have reached 16.2 million jobs globally in 2023 (IRENA, 2022), up from 13.7 million jobs in 2022. This annual growth trajectory highlights the substantial job creation potential within the green transition. In Africa, 3.3 million of these new jobs are expected to emerge, with renewable energy projected to contribute to approximately 2 million, and agriculture and nature-based sectors anticipated to create up to 700'000 jobs (25% of the total). More than half of these, an estimated 377'000, are expected to result from climate-smart agricultural technologies by 2030 (FSD Africa, 2024).

While the green transition presents significant employment opportunities, it also carries the risk of job displacement in carbon-intensive and fossil fuel-dependent sectors. The number of workers in resource-extractive industries is projected to decline over time, leading to loss of livelihood. This highlights the need for policies that will provide for affected workers by offering social protection, retraining, and reskilling programmes. Without such measures, countries risk worsening existing unemployment rates, social exclusion, and inequality, particularly among vulnerable groups and communities. The redefinition of some occupations through the incorporation of green practices might also lead to temporary job disruptions and livelihood insecurity. To harness green job opportunities and mitigate social risks, Kenya requires innovative training and pedagogical approaches, inclusive policies, and sustained investment in capacity building and quality infrastructure (Sharpe & Martinez-Fernandez, 2021). It is also essential that policies balance environmental commitments with social justice principles.

Central to addressing these challenges is the concept of a "just transition" and equipping the workforce with "green skills", which are

fundamental both for approaching new jobs driven by new technologies and for succeeding in existing jobs as these require more sustainable practices. Key concepts and definitions used in this case study are outlined in the Green skills terminology insert, which follows this chapter. For example, a farmer adopting climate-smart agriculture practices to improve productivity and sustain their livelihood, or a transport operator shifting to electric vehicles from internal combustion engine (ICE) vehicles, illustrates the greening of existing jobs. These occupations and others like them require the reskilling and upskilling of the workforce through green skills in order to adapt to the evolving needs of the green economy. Policies and training programmes should anticipate and respond to these emerging green skills needs by identifying new and evolving occupations that require specialised training and supporting their skilling, including provisions for initial training targeted at new labour market entrants.

Education and training systems play a critical role in embedding green skills and sustainability into curricula, pedagogy, research, and institutional strategies. For these systems to be effective, a holistic and interdisciplinary approach is required, one that prepares individuals and wider society to address complex environmental challenges and contribute to a sustainable and just society. However, skills mismatch remains a global challenge in the green transition, particularly for high-skilled green jobs. The green transition creates a circular dependency: industries require training systems that produce skilled workers to support their sustainable business models, while training systems rely on industry cooperation and investment to meet evolving market demands. These interdependent needs are difficult to meet simultaneously, resulting in persistent skills shortages and mismatches that vary by sector and region. This underscores the need for targeted skills development initiatives that respond to region-specific requirements.

1.1 Purpose of the study and structure of the document

This Kenyan case study is part of GIZ's contribution to the Global Initiative on Jobs and Skills for the New Economy: An Action Agenda for a Human-Centred Climate Transition. It establishes the national context for green skills development by examining the policy landscape, institutional frameworks, and systemic conditions that shape Kenya's capacity to prepare a workforce for the green transition. The analysis focuses on agriculture and transport due to their significant economic contributions, high employment rates, substantial greenhouse gas (GHG) emissions, mitigation potential, and vulnerability to climate change.

The structure of this report begins with a summary of Kenya's economy, climate challenges, and an overview of existing initiatives, followed by a detailed analysis of the agriculture and transport sectors. It then assesses several solutions, identifying key skill gaps, policy frameworks, stakeholder roles, and financing mechanisms. Finally, the report concludes with actionable recommendations. These recommendations aim to promote job creation, environmental protection, and social equity, contributing to a green transition that is both effective and inclusive.

1.2 Methodology

This study employed a mixed-methods approach to provide comprehensive insights into the green transition context, identifying opportunities and risks that could potentially arise from the transition. The research design was structured around four sequential phases, each building on the findings of the previous phase, prioritising stakeholder engagement and knowledge co-creation. This approach aims to make the research findings relevant, actionable, and aligned with the practical needs and experiences of sector practitioners, researchers, policymakers, and skills providers.

1.2.1 Research questions

The key research questions include the following:

01

How is Kenya positioning itself to achieve its climate action commitments, and what efforts are required to meet these commitments in the agriculture and transport sectors?

02

What green opportunities are emerging in Kenya's agriculture and transport sectors, and what skills are required for these opportunities?

03

What innovative solutions and best practices exist for green skills development, and how can these be scaled to ensure a just transition?

04

How effective are Kenya's current skills development systems and interventions in supporting the green economy transition, and what gaps exist? How can skills development contribute to a just transition that addresses inequality and ensures that vulnerable groups benefit from the green economy transformation?

05

What are the key barriers to achieving effective green skills development in these sectors, and what policy and institutional reforms are needed?

1.2.2 Systematic Literature Review

A comprehensive systematic literature review (SLR) was conducted following established PRISMA protocols to establish an evidence base on green skills and green jobs globally and within national contexts. The SLR utilised Web of Science as the primary repository due to its comprehensive coverage of high-impact, peer-reviewed journals across multiple disciplines. The SLR method helped determine relevant research areas, understand applied methodologies, review key findings from extant literature, and detect knowledge gaps, offering a comprehensive overview of the landscape. The results informed the decision on which sectors to examine in-depth for each country.

1.2.3 Desk review

The desk review examined the selected sectors in the country context, further searching for relevant studies and reports in the country context, including academic and grey literature to capture theoretical frameworks and practical implementation experiences related to the topic in the national context. Policy documents including Nationally Determined Contributions (NDC), national development plans, climate change policies and initiatives, education and Technical and Vocational Education and Training (TVET) strategies, and sectoral implementation plans were analysed.

1.2.4 Stakeholder interviews

Key informant interviews (KIIs) were conducted with relevant stakeholders to gather in-depth, sector-specific insights on green skills requirements, current capacity, and development needs from practitioners and experts directly involved in the selected sectors. These interviews aimed to gather insights into current and needed public policies, training initiatives, technological and socioeconomic challenges in decarbonisation, and strategies to ensure a just transition. The stakeholder consultations encompassed a range of participants including skills providers, research institutes, civil society organisations and trade associations, private sector representatives (e.g. enterprises or employer organisations in the sector), government regulators, national and local government officials, and intermediary/ intergovernmental organisations as shown in Table 1.

Table 1. Different types of stakeholders covered in key informant interviews

Number of participants	Percentage	Stakeholder group
2	5%	Skills provider
2	5%	Research Institute
6	15%	CSO/ Trade association
11	28%	Private Sector
1	3%	Government – Regulator
9	23%	National Government
2	5%	Local Government
7	18%	Intermediary/ Intergovernmental Organisation
40		Persons interviewed

Data gained from the KIIs was analysed using thematic analysis, employing a hybrid approach combining deductive codes derived from the literature review framework and inductive codes emerging from interview data.

1.2.5 Country validation workshops

The main findings and associated recommendations were corroborated through a validation workshop held in June 2025 with relevant stakeholders covered during the KIIs. The workshop aimed to present preliminary findings, gather feedback, and refine recommendations to ensure their relevance, feasibility, and acceptability to key implementation actors within the selected sectors.

1.3 Limitations

This study acknowledges several methodological, data, and analytical limitations. The availability of up-to-date and sector-specific data on green jobs remains limited, as standardised definitions and classifications of green jobs and green skills vary across sources and contexts. Some findings are based on stakeholder perceptions and experiences from interviews, and some key stakeholders were unavailable during data collection timelines, thus the full range of stakeholder perspectives across the country may not be comprehensively reflected, which may limit the generalisation of findings.

The dynamic context of green skills landscapes, which are evolving quickly, affects the temporal relevance of findings. Additionally, the sectoral focus may limit generalisability to other key sectors of the economy, and time constraints led to a rapid assessment approach which may have limited depth in some analytical areas. These limitations do not compromise the overall validity of the research but highlight the need to interpret conclusions considering the qualitative nature of much of the evidence and current constraints in data availability.

Green terminology

Despite variations in terminology and emphasis across international frameworks, there is growing consensus on the need to align economic development with environmental sustainability and social justice. Green skills are a foundational element in this alignment, serving as a bridge between policy aspirations and practical implementation across labour markets and education systems (Figure 1).

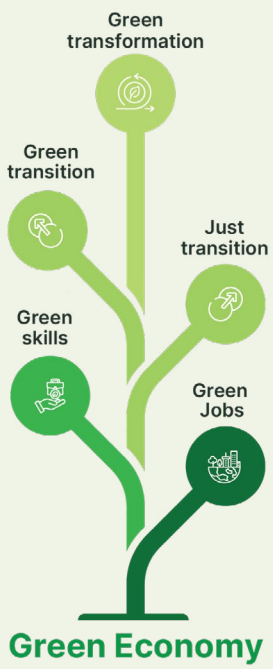


Figure 1. Green terminology
Source: Paeradigms, 2025

The global shift towards sustainability has placed increasing emphasis on the development of green skills – the knowledge, skills, values and attitudes needed to live in, develop, and support a sustainable and resource-efficient society (UNIDO, 2022). These competencies are essential for enabling individuals and institutions to navigate the green transition – the ongoing process of moving towards environmentally sustainable practices, technologies and policies across all sectors (GIZ, 2022).

The green transition drives a broader green transformation – a comprehensive systemic reconfiguration of economic, social, and political systems to achieve environmental sustainability while maintaining economic viability and social inclusion. This transformation is underpinned by the concept of a just transition, which refers to greening the economy in a way that is fair and inclusive, creating decent work opportunities, and ensuring that no one is left behind (ILO, 2024). It involves maximising the social and economic opportunities of climate action while minimising and carefully managing any challenges, engaging in social dialogue with those concerned, and respecting fundamental rights and labour principles. This approach recognises the need to balance environmental goals with social equity, ensuring that no group is disproportionately affected by the transition (Figure 2).

Figure 2. The just transition
Source• Paeradigms, 2024

Green jobs[1] – defined as decent jobs that contribute to preserving or restoring the environment – are central to this process. These jobs may be found in traditional sectors such as manufacturing and construction, or in emerging sectors such as renewable energy and energy efficiency (ILO, 2019). However, the emergence and transformation of such jobs require a workforce equipped with a broad spectrum of skills (ILO, 2021). Underpinned by personal values and attitudes – how a person responds to external situations – these skills encompass (Figure 3):

Technical skills: sector-specific skills

Skills for greening existing jobs: Technical skills for greening existing jobs to meet sustainability goals and changing labour-market needs.

Skills for new green jobs: Technical skills emerging from new occupational profiles in the green transformation.

Transversal skills

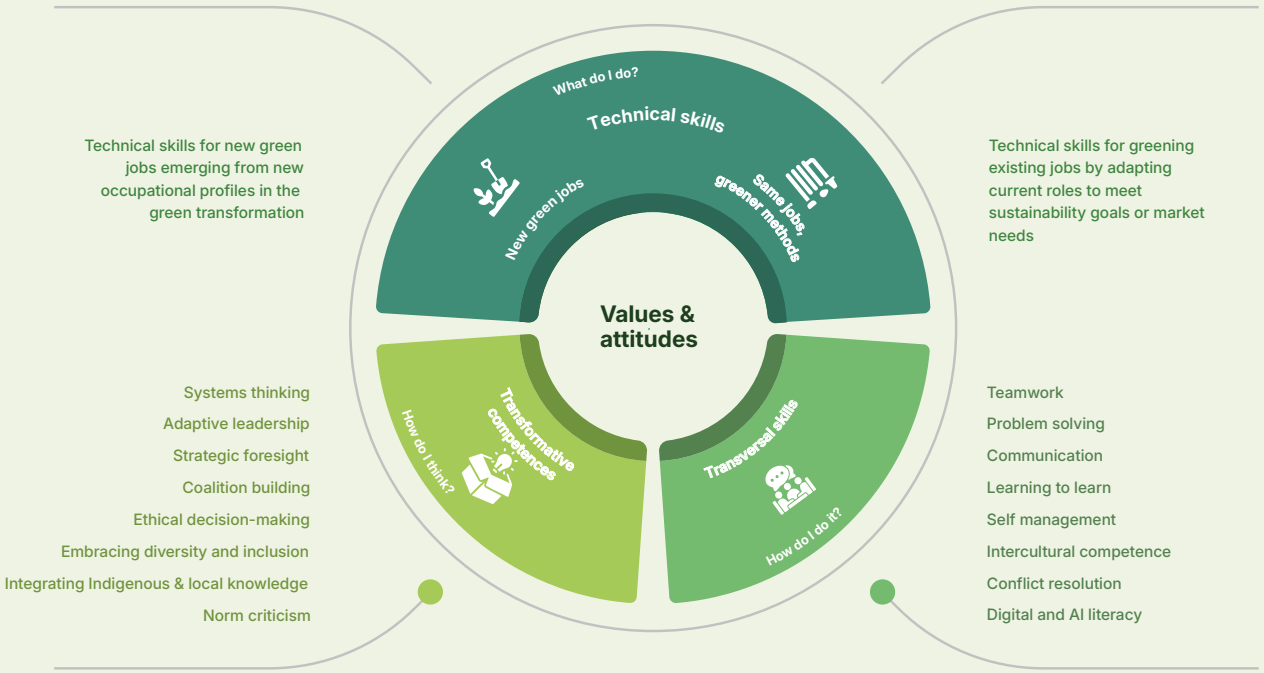
Generic green skills: transversal competencies ("core" skills) such as collaboration, critical thinking and resilience needed for green jobs

Transformative skills

competencies that enable systemic social and economic change, including disruptive thinking, political agency and valuing indigenous knowledge.

[1] For the full ILO definition of green jobs, see https://www.ilo.org/topics-and-sectors/just-transition-towards-environmentally-sustainable-economies-and-societies/what-green-job

Figure 3. Green skills typologies



Source: Paeradigms, 2025

Education and training systems play a pivotal role in embedding these skills. A holistic and interdisciplinary approach is required, integrating sustainability into curricula, pedagogy, research and institutional strategies. This includes fostering learner-centred, action-oriented education that prepares individuals to address complex environmental challenges and contribute to a sustainable and just society.

The effect on the labour market can be described as a combination of three elements as shown in Figure 4. Transforming existing jobs into "green" jobs would likely account for most of the transition, with workers in this category needing to "upskill" or acquire the technical skills necessary for adapting existing occupational profiles to match changing labour-market needs. Some new occupational profiles will emerge, and a few "unsustainable" jobs will cease to exist.
According to this model, workers holding these jobs would be reskilled into either new green jobs, or jobs that have become "greener".

Figure 4. Green transition impact on the labour market

Source: Paeradigms, 2025

Deutsche Gesellschaft für Internationale Zusammenarbeit. (2022). Green transformation. https://www.giz.de/en/downloads/giz2022-en-green-transformation.pdf
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02

Country context

- Climate, economic trends and socioeconomic status
- Key policy frameworks
- TVET system

2 Country context

2.1 Climate, economic trends and socioeconomic status

Kenya is highly vulnerable to climate change impacts, which manifest as increased frequency and intensity of extreme weather events, such as droughts and floods. These events erode an estimated 3% to 5% of gross domestic product (GDP) annually. Projections indicate that without climate action, these losses could rise to 6.5% to 8.5% of GDP per year between 2021 and 2050 (Government of Kenya, 2023b).

Although Kenya contributes less than 0.1% of global greenhouse gas emissions, it has committed to ambitious climate goals and has made substantial progress in integrating climate adaptation into national development planning. Its updated Nationally Determined Contribution (NDC) targets a 32% reduction in emissions below business-as-usual levels by 2030, with 21% of mitigation costs funded domestically. Key mitigation measures include expanding renewable energy (currently ~81% of grid supply), promoting climate-smart agriculture, and achieving 10% tree cover nationwide. Its National Adaptation Plan and participation in regional initiatives such as the Enhancing Climate Resilience in East Africa (ECREA) project, an initiative aimed at improving resilience and adaptive capacity of Eastern African countries to extreme weather, seasonal events and climate change, further highlight Kenya's commitment to addressing climate change. However, there are concerns that plans to develop coal-fired power plants could affect alignment with the Paris Agreement (Boehm et al., 2023).

These climate commitments are pursued within the framework of the country's broader development aspirations. Kenya is pursuing a low-carbon, climate-resilient development pathway, driven by environmental goals and national economic interests. The country has one of East Africa's largest economies and aims for middle-income status under its long-term development blueprint, Kenya Vision 2030. However, between 2012 and 2022, the actual GDP growth rate averaged 4.8%, falling short of the 10% annual target set for 2012 and sustained through to 2030 (Government of Kenya, 2025a). This economic underperformance is partly attributed to climate change impacts, demonstrating the interconnected nature of environmental and development challenges (Government of Kenya, 2022a, 2025a).

Linking climate action to economic development, Kenya is integrating climate resilience into public finance through mechanisms like the County Climate Change Fund (CCCF) and strategic partnerships with the Green Climate Fund (GCF). The CCCF, now operational in over 17 counties, enables local governments to embed climate priorities into budgeting and development planning. It explicitly supports sustainable economic growth by financing community-prioritised investments in sectors such as water, agriculture, and renewable energy (NDMA, 2021). Meanwhile, Kenya's GCF Strategy aims to strengthen national capacities to plan, access, and deploy climate finance in ways that support a low-carbon, climate-resilient economy (National Treasury & Planning, 2020). Though these mechanisms are in place, challenges remain in climate financing and coordination, especially at the county level (Climate Policy Initiative, 2021).

Kenya's development trajectory unfolds within a complex demographic and social landscape. The population is estimated at 53.3 million as of mid-2025, characterised by its youthfulness, with approximately 75% of the population aged below 35 years (KNBS, 2025). This demographic presents both an opportunity and a challenge for employment and social services. Despite economic growth, the country faces high youth unemployment, reported to be ~12% as of 2024 by the World Bank. Social equity challenges, such as poverty and regional disparities, are also prominent, particularly in Arid and Semi-Arid Lands (ASALs), which cover approximately 84% of Kenya's land area. Communities in ASALs, often reliant on climate-sensitive natural resources and pastoralism, face heightened vulnerability (Government of Kenya, 2023b, 2025a).

These demographic and economic challenges are compounded by climate change projections that will increasingly shape Kenya's socio-economic trajectory. Under moderate climate scenarios, GDP losses could reach 6.5% to 8.5% annually by 2050 if no action is taken, potentially exacerbating the youth unemployment rate and regional disparities already evident. Key risks include heat stress affecting labour productivity, water scarcity impacting irrigation and hydropower, and coastal degradation threatening trade and tourism infrastructure. However, this challenging context also presents strategic opportunities, for example, agricultural diversification in higher elevations, where crop yields may improve, and the potential for strategic investments in early warning systems, agricultural insurance, and water management for risk mitigation (African Climate Foundation & IFPRI, 2023).

The green economy is recognised as a means to address these constraints by creating new green jobs and enabling sustainable development. This is particularly relevant in sectors like transport, where informality persists due to specific incentives (e.g. tax avoidance for owners, flexible daily income for workers). However, while the green economy offers job creation opportunities, a just transition requires that these jobs are decent and accessible to all, including marginalised communities. This calls for aligning TVET curricula, skilling, re-skilling and up-skilling programmes, with targeted social protection, and improved access, especially for women and youth in marginalised areas (Government of Kenya, 2013, 2021, 2024a; Aspen Network of Development Entrepreneurs [ANDE], 2023).

For systemic change, coordinated action across multiple stakeholders is essential for an effective implementation of policies and strategies on the green transition. Multi-stakeholder platforms can bridge the gaps between different systems and actors that often prevent successful green economy transitions. Kenya's recently launched Alliance for Greening Skills and Opportunities (AGSO) provides an opportunity to strengthen and accelerate the impact of existing green transition strategies and initiatives. Established following an Inaugural National Green Jobs and Skills Development Workshop held on 3rd May 2024, AGSO unites government agencies, the private sector, academia, development partners, and youth organisations with the aim of advancing the greening of skills and opportunities in Kenya. Guided by its mission "to accelerate multi-sector collaboration and promote pathways toward greening skills and opportunities in Kenya" AGSO has already demonstrated measurable impact. This includes mobilising over 1'000 stakeholders for multi-sectoral collaboration on green skills projects, establishing a digital Green Skills and Opportunities Platform that connects job seekers with training and employment institutions, training 50'000 Kenyans in sustainable practices and environmental technology and creating over 2'000 green jobs in sustainable industries such as renewable energy, waste management, and sustainable agriculture (AGSO, 2025).

These efforts are significant in a country where one million Kenyans enter the job market annually, underscoring the urgency of equipping them with green skills to reduce the already high unemployment rates and support sustainable livelihoods. For youth in particular, initiatives like AGSO can serve as strategic platforms for creating accessible pathways to green skills and employment.

2.2 Key policy frameworks

Kenya's commitment to a green transition is underpinned by a comprehensive set of policies and strategies that drive green jobs and skill development (Figure 5). These frameworks guide the nation's efforts to integrate climate action with economic development, employment, and skills development, ensuring a coordinated approach towards a just and sustainable future.

Figure 5. Kenya's key policy frameworks for climate

Source: Paeradigms, 2025

2.2.1 Overarching Policies

Kenya's policy foundation for environmental sustainability is anchored in the Constitution of Kenya (2010), which guarantees every citizen the right to a clean and healthy environment (Article 42), mandates the sustainable use, conservation, and protection of the environment and natural resources (Article 69), and provides access to legal redress when Article 42 is violated (Article 70). These principles are operationalised through Kenya Vision 2030, the country's long-term development blueprint launched in 2008. Kenya Vision 2030 aims to transform the country into a newly industrialising, middle-income nation by 2030, with a high quality of life for all. It also aims to enhance environmental sustainability by increasing forest cover, improving waste management, and strengthening climate change adaptation; broaden the participation of women, youth, and vulnerable groups in economic opportunities; and reform education and training to align with national development priorities. Alongside the Constitution, it provides the overarching framework for Kenya's green transition initiatives and skills development.

2.2.2 Climate Change Policies and Strategies

Kenya has developed a robust suite of climate-related policies. The Climate Change Act (2016) serves as the primary legal framework, establishing institutions such as the National Climate Change Council and the Climate Change Directorate to coordinate a low-carbon, climate-resilient development pathway. It mandated the preparation of National Climate Change Action Plans (NCCAPs) and establishment of the Climate Change Fund and carbon market mechanisms. The National Adaptation Plan (NAP) 2015-2030 outlines sectoral strategies for building resilience to climate impacts, including mainstreaming climate resilience into public sector performance, promoting CSA, climate-proofing infrastructure, rehabilitating catchment areas, supporting climate-resilient livelihoods for vulnerable groups, and integrating climate change into education and training curricula. Kenya's Updated NDC 2020-2030 commits to reducing greenhouse gas emissions by 32% below the business-as-usual scenario, conditional on international support. This is operationalised through the NCCAP III 2023-2027, which includes ambitious targets like 100% clean cooking by 2028 and full renewable electricity generation by 2030. While the updated NDC 2020-2030 does not include specific targets related to green skills and green jobs, the Second NDC (2031-2035) expands on its existing commitments and emphasises the implementation of the National Green Skills and Green Jobs Strategy, helping to ensure a just transition.

2.2.3 Economic and Sectoral Policies

To drive the green transition in key sectors, Kenya has adopted targeted strategies. The Agricultural Sector Transformation and Growth Strategy (ASTGS) 2019-2029 promotes youth inclusion, climate resilience, and digital agriculture. Complementing this are the Climate-Smart Agriculture Implementation Framework (2018-2027) and the Kenya Climate-smart Agriculture Strategy (KCSA) 2017-2026, which focus on capacity building and sustainable farming practices. The Kenya National Agroforestry Strategy 2021 supports agroforestry to enhance productivity. In industry, the National Industrialisation Policy Framework promotes sustainable manufacturing, while the Integrated National Transport Policy (INTP) encourages low-emission transport solutions, including electric vehicles and non-motorised transport. Additionally, the Green Economy Strategy and Implementation Plan (GESIP) 2016-2030 provides a strategic framework for integrating environmental sustainability into economic planning. In a bid to encourage a shift towards low-carbon, climate-resilient, and environmentally sustainable practices in production, consumption, and investment, Kenya has also drafted a National Green Fiscal Incentives Policy Framework (published in 2023 for public comment).

2.2.4 Education Policies and Strategies

Kenya's education sector is aligned to the green transition goals through several frameworks. The National Strategy on Green Skills and Jobs (2025-2030) focuses on institutional reform and industry-responsive skill development. The Dual TVET Act (2025) integrates theoretical and practical learning to equip learners with green skills. The National Education Sector Strategic Plan (NESSP) 2018-2022 / 2023-2027 supports curriculum modernisation and digital skills. The Draft National Skills Development Policy proposes a coordinated approach to skills planning, while the Education for Sustainable Development (ESD) Policy 2017 embeds sustainability across the education system. The Kenya National Qualifications Framework (KNQF) Regulations 2025 ensure harmonisation and recognition of qualifications, including those related to green skills.

2.2.5 Social Policies and Strategies

Social inclusion is addressed through policies that support vulnerable groups in the green transition. The Kenya Youth Development Policy (2019) promotes youth employability and environmental awareness. The National Employment Policy and Strategy (2017) identifies green jobs as a key employment frontier. The Ajira Digital Programme equips youth with digital skills relevant to smart agriculture and transport. Social protection initiatives such as the Youth Enterprise Development Fund, Women Enterprise Fund, and Kenya Youth Employment Opportunities Project (KYEOP) offer platforms that can be expanded to support green skilling and employment for marginalised populations. Kenya has also mainstreamed gender considerations into various policies including the NCCAP 2023-2027.

2.3 TVET system

Kenya's socio-economic development depends on its human resource capacity. The Technical and Vocational Education and Training (TVET) sub-sector is designed to address the needs of a changing labour market by equipping the workforce with skills for new sectors, including the green economy.

2.3.1 Structure of the TVET System

The Ministry of Education's State Department for Technical, Vocational Education and Training (SDTVET) oversees the Kenyan TVET system. Its mandate covers policy development, managing institutions such as National Polytechnics and Technical Training Institutes, registering institutions, and administering apprenticeships. The SDTVET operates through two technical directorates and a support department (Ministry of Education, 2024):

The Directorate of Technical Education (DTE)	is responsible for technical training, focusing on access, quality, and industry links. It oversees 24 National Polytechnics, the Kenya School of TVET (KSTVET), 201 Technical and Vocational Colleges (TVCs), and four specialised Technical Training Institutes (TTIs).
The Directorate of Vocational Education and Training (DVET)	focuses on the implementation of policies and the operational aspects of vocational education and training programs (1'222 public Vocational Training Centres [VTCs]), which are devolved to county governments. It also integrates Information and Communications Technology (ICT) and builds industry linkages.
The General Administration, Planning and Support Services Department	provides administrative, financial, and legal services.

The TVET sub-sector's structure also includes several autonomous and semi-autonomous government agencies (SAGAs) with specialised mandates as shown in the table below.

Agency	Description
Technical and Vocational Education and Training Authority (TVETA)	Primary regulator, accredits TVET institutions, develops standards, assures quality, advises government policy, promotes equitable access, and ensures compliance with standards through monitoring, evaluation, and collaboration with stakeholders.
TVET Curriculum Development, Assessment and Certification Council (TVET CDACC)	Designs curricula, conducts assessments, and provides competence certification.
Kenya National Qualifications Authority (KNQA)	Establishes and maintains the Kenya National Qualifications Framework (KNQF), sets standards to align national qualifications with global benchmarks and facilitate lifelong learning.
TVET Funding Board (TVETFB)	Mobilises funds for public TVET institutions. A 2023 report from the Presidential Working Party on Education Reforms (PWPER) recommended merging it with the Higher Education Loans Board (HELB) and University Funding Board (UFB).
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Kenya School of TVET (KSTVET)	Offers continuous Professional Development (CPD) for TVET trainers, undertakes research, and builds capacity for institutional boards.
National Polytechnics (NP)	24 NPs offering training up to the Higher National Diploma level, act as Qualification Awarding Institutions (QAIs), and conduct research. Collaborate with universities to offer degree programmes.

As of 2024, Kenya had 2'756 accredited TVET institutions (KNBS, 2025). These institutions offer a range of programmes from artisan and craft certificates to diploma levels designed to meet the needs of various industries. The system aims to bridge the gap between academic education and industry requirements, preparing individuals for direct entry into the labour market or for self-employment. The recent introduction of the Dual TVET model, which combines classroom learning with structured industry experience, further strengthens this practical orientation by ensuring a 50:50 block-release system where trainees rotate between TVET institutions and industry placements (KEPSA, 2024).

2.3.2 The Kenya National Qualifications Framework

Kenya National Qualifications Framework (KNQF) is an integrated national qualifications system that seeks to address challenges in human capital development. Its objectives include establishing national standards for education, facilitating the transfer of qualifications nationally and internationally, and creating a national qualification database. It is a learning-outcome-based framework that focuses on what learners can do rather than the duration of study.

The KNQF operates using two key mechanisms:

- **Recognition of Prior Learning (RPL):** This provides a formal system to assess and certify skills acquired through work experience or informal training. This is important for sectors like agriculture and informal transport where many workers have practical skills that are not formally recognised. The Technical and Vocational Education and Training (Amendment) Act, 2025, embeds RPL within the TVET system, creating a pathway to include informal workers in the national skills architecture.

- **Kenya Credit Accumulation and Transfer System (KCATS):** This system promotes lifelong learning by allowing learners to transfer credits between different institutions, programmes, and levels. It facilitates vertical progression (such as from a diploma to a degree) and horizontal mobility between TVET and academic pathways, creating flexible learning journeys.

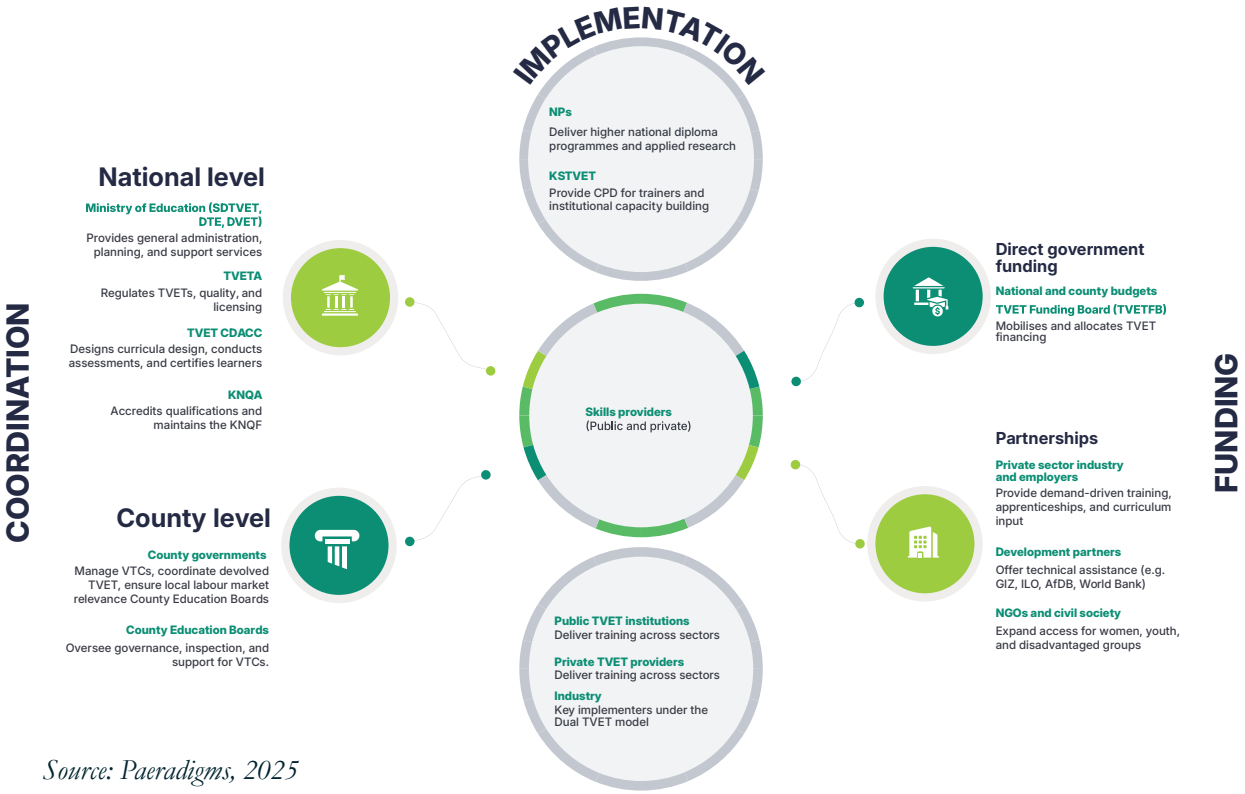
The KNQF uses a 10-level hierarchy that provides a single architecture for all qualifications in Kenya, from basic literacy to doctoral degrees. The hierarchy aligns with the East African Community Qualifications Framework (EACQF) for regional comparability and includes three sub-frameworks: Academic, TVET, and Industry/Skills. Each level is defined by a set of descriptors specifying expected learning outcomes. These are categorised into three domains: Knowledge (theoretical understanding), Skills (practical abilities), and Competence (the application of knowledge and skills with autonomy). Assigning a qualification to a level involves mapping its learning outcomes against these national descriptors.

The KNQF structure targets the skills mismatch in the Kenyan economy by aligning training outcomes with the competencies required by the labour market, particularly in emerging green sectors. The framework's structure provides a standardised system to value all forms of learning and align training with these market needs. This system allows for the mapping of competencies for green jobs to specific, nationally recognised levels, creating a common standard for learners, educators, and employers.

2.3.3 Key stakeholders

Kenya's TVET system involves a multitude of stakeholders whose collaboration is essential for its effectiveness and responsiveness to green transition goals (Government of Kenya, 2025c; Ministry of Education, 2024), as shown in Figure 6.

Figure 6. Stakeholders in the Kenyan TVET system



Source: Paeradigms, 2025

2.3.4 TVET governance

The governance of the TVET system is primarily centralised under the Ministry of Education, with regulatory functions delegated to TVETA and TVET CDACC. This aims to ensure standardisation and quality across the numerous institutions (Ministry of Education, 2024). The Dual TVET Act (2025) has further formalised the involvement of industry in governance by promoting tripartite agreements among institutions, trainees, and employers. This shared governance model seeks to ensure that training remains relevant to labour market needs and that industry has a direct stake in curriculum design and delivery. Funding for TVET is allocated by the government, with the State Department for Vocational and Technical Training receiving KES 23.1 billion (~USD 178.45 million) in the 2024/25 financial year. This funding supports institutional operations, infrastructure, and student loan schemes.

Relevance of key policies and strategies to the system

Several national policies and strategies are directly relevant to the TVET system's capacity to support the green transition (Figure 7):

- **Kenya National Qualifications Framework (KNQF) Regulations 2025:** These regulations provide the legal framework for the KNQF, ensuring the harmonisation and recognition of qualifications across all levels of education and training, including those related to green skills. This promotes consistency and quality in green skills certification (Government of Kenya, 2025c).

- **National Strategy on Green Skills and Jobs in Kenya (2025-2030):** This strategy provides a framework for equipping the Kenyan workforce with the knowledge and skills required for a green economy. It directly influences TVET by advocating for institutional reform, industry-responsive skill development, and sustainable financing (Government of Kenya, 2025a).

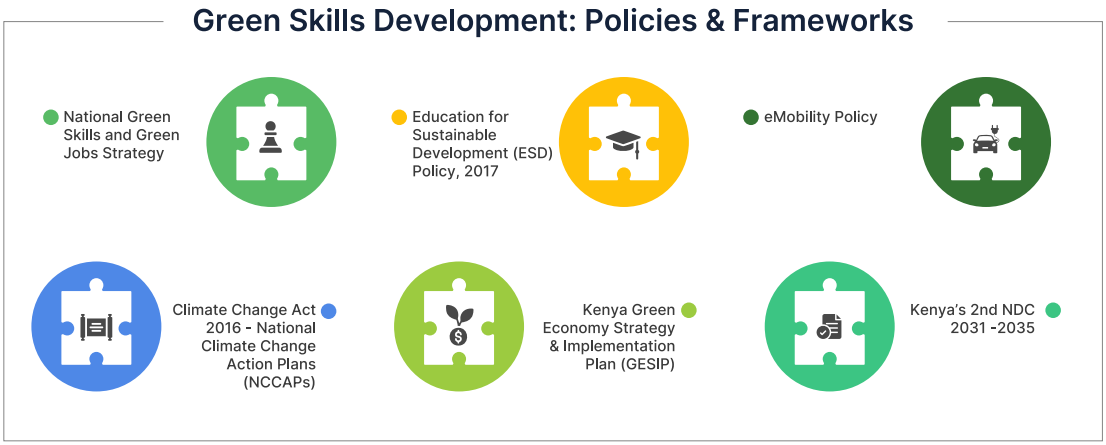
- **National Skills Development Policy (Draft):** This policy proposes a coordinated national approach to skills planning and development, which would streamline efforts to identify and address green skill gaps across sectors (Ministry of Labour and Social Protection, 2023).

- **Dual TVET Act (2025):** This Act is pivotal, as it legally recognises and promotes the dual training model. This model is particularly relevant for green skills development as it facilitates the creation of a workforce equipped to address climate change and other environmental challenges through practical, on-the-job training. It allows for stronger alignment between skills development and industry needs.

- **Education for Sustainable Development (ESD) Policy 2017:** This policy mandates the integration of sustainability principles into curricula, pedagogy, research, and institutional strategies across the education system, including TVET. This ensures that learners are prepared to address complex environmental challenges (Ministry of Education, 2017).

- **National Education Sector Strategic Plan (NESSP) 2018-2022 / 2023-2027:** This plan focuses on curriculum modernisation, digital skills, and industry linkages, all of which are critical for integrating green skilling into TVET programmes (Government of Kenya, 2024a).

Figure 7. TVET policies related to green skills



Source: Paeradigms, 2025

2.3.5 Strengths and weaknesses of the system

The Kenyan TVET system possesses strengths that can be leveraged for the green transition, but also faces significant weaknesses:

Strengths

- **Policy framework:** A growing policy framework, including the Dual TVET Act and the National Strategy on Green Skills and Jobs, provides a foundation for integrating green skills.
- **Dual training model:** The GIZ-supported Kenyan-German TVET Initiative has successfully piloted and scaled a dual training model to 60 TVET institutions, improving industry relevance and practical skills acquisition.
- **Recognition of Prior Learning (RPL):** The Technical and Vocational Education and Training (Amendment) Act, 2025, now recognises prior learning, offering a pathway to formalise informally-acquired skills, which is crucial for the existing workforce in transitioning to green jobs (Government of Kenya, 2025c, 2025d).

Weaknesses

- **Skills mismatch:** Despite efforts, a significant mismatch persists between the skills supplied by TVET institutions and the demands of the green economy, as noted by participants from educational institutions and ministries. Curricula often become obsolete due to rapid advancements in green technologies, particularly in climate-smart agriculture and e-mobility.
- **Trainer capacity:** Many instructors lack the necessary technical expertise in green technologies and climate-smart agriculture, leading to a shortage of qualified experts for hands-on green skills training. There is no national train-the-trainer strategy specifically for green sectors.
- **Inadequate training facilities and equipment:** Most TVET institutions lack modern facilities, laboratories, and other key infrastructure resources required for effective practical training in green skills, including essential diagnostic tools for electric vehicles.
- **Insufficient funding for skills development:** The budget allocated for green skills training is often inadequate, contributing to a supply-demand mismatch and limited support for greening sectors. TVET institutions are generally underfunded, hindering the implementation of transformative programmes like Competency Based Education and Training (CBET) and RPL, and weakening institutional effectiveness in areas like quality assurance and recruitment of trainers (Ministry of Education, 2024).
- **Limited industry engagement:** While encouraged, systematic private sector involvement in curriculum design and the provision of green apprenticeships or internships remains inconsistent, with few incentives for employer-led training.
- **Data and career pathways:** A lack of a national green jobs classification or a comprehensive tracking system for TVET graduate outcomes in green sectors makes it difficult to identify precise skill needs and allocate resources effectively. Learners also lack clear career guidance for green career pathways.
- **Inclusion and access:** Access to green skills programmes for women, youth in Arid and Semi-Arid Lands (ASALs), and informal workers is limited. Training models are often not flexible enough for working adults, and targeted financing (e.g. green scholarships) is absent.

03

Sector analysis

- Agriculture
- Transport

3 Sector analysis

3.1 Agriculture

3.1.1 Overview

Agriculture is central to Kenya's economy, contributing 22.5% to GDP in 2024 (Government of Kenya, 2023a) and about 65% of exports. It comprises crops, livestock, and fisheries, with export crops such as tea, coffee, and horticulture, and staple crops such as maize, securing food supply. Livestock dominates the arid and semi-arid lands (ASALs), which make up 80% of the country. The sector employs over 40% of workers, 80% of whom are women (KNBS, 2022), and supports most of the rural population. It is also a safety net for vulnerable groups but is increasingly threatened by climate risks.

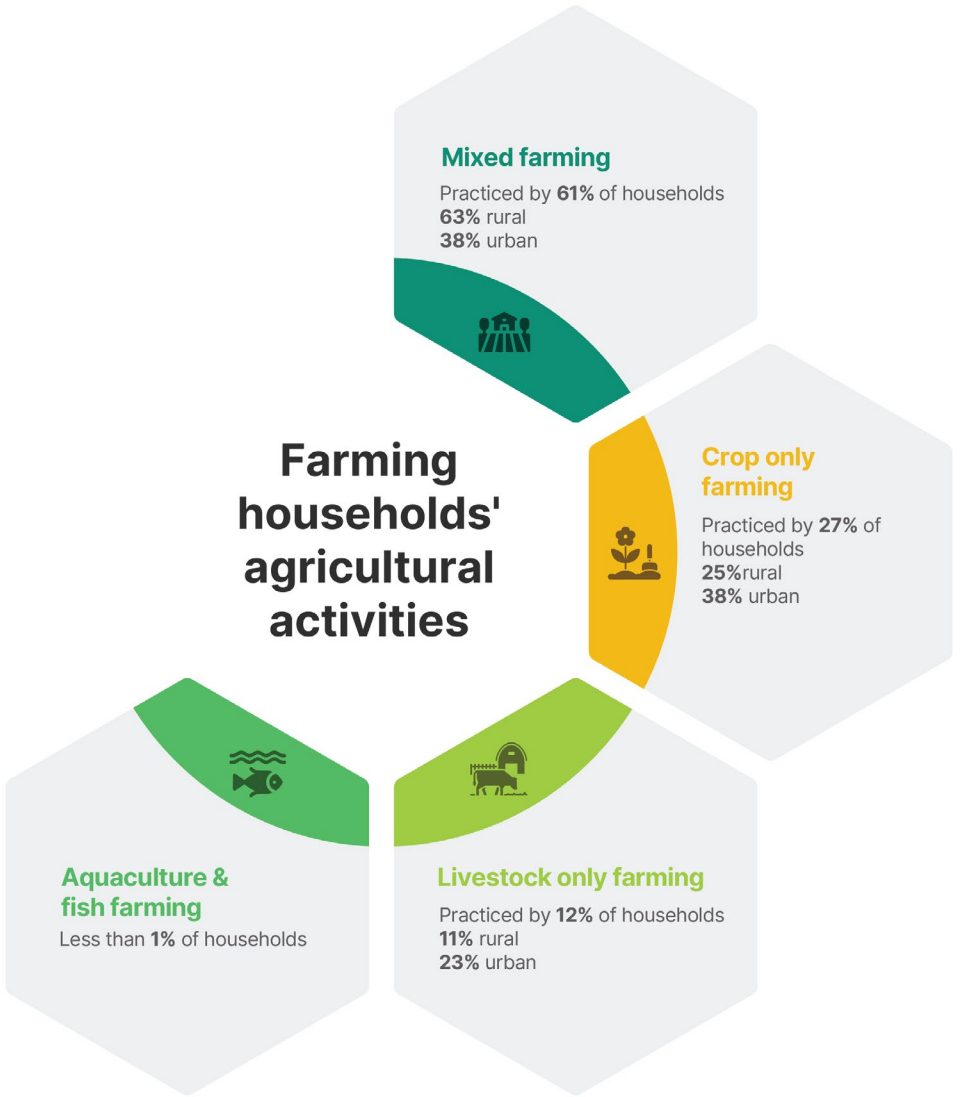
Youth (18–34 years) account for only 24.2% of agricultural workers (KNBS, 2022). Stakeholders noted difficulties in attracting and retaining young people, though green-linked occupations and technology adoption are gradually increasing participation. Education levels remain low, with most workers completing only primary schooling, limiting uptake of modern practices and climate-smart technologies.

Women provide most on-farm labour, often through traditional methods, while men dominate higher-paying, mechanised, or value-added roles (Awuor & Rambim, 2022)(EfD, 2022). Despite their contributions, women hold only 10% of land titles and 1.63% of agricultural land (Government of Kenya, 2023a), limiting access to credit and investments. This imbalance reinforces systemic exclusion and restricts productivity gains.

Table 3. Farming population's education level by gender

Education Level	Male			Female		
	Rural	Urban	Total	Rural	Urban	Total
No formal education	22.0%	13.2%	21.3%	26.9%	16.5%	26.1%
Primary	43.8%	31.7%	42.9%	45.2%	36.3%	44.5%
Secondary	22.7%	32.6%	23.4%	19.2%	30.1%	20.1%
Tertiary	6.9%	18.9%	7.8%	4.5%	14.0%	5.3%
Other (Informal)	1.9%	1.6%	2.7%	2.7%	1.7%	2.7%

Figure 8. Farming households' agricultural activities



Source: Paeradigms, 2025

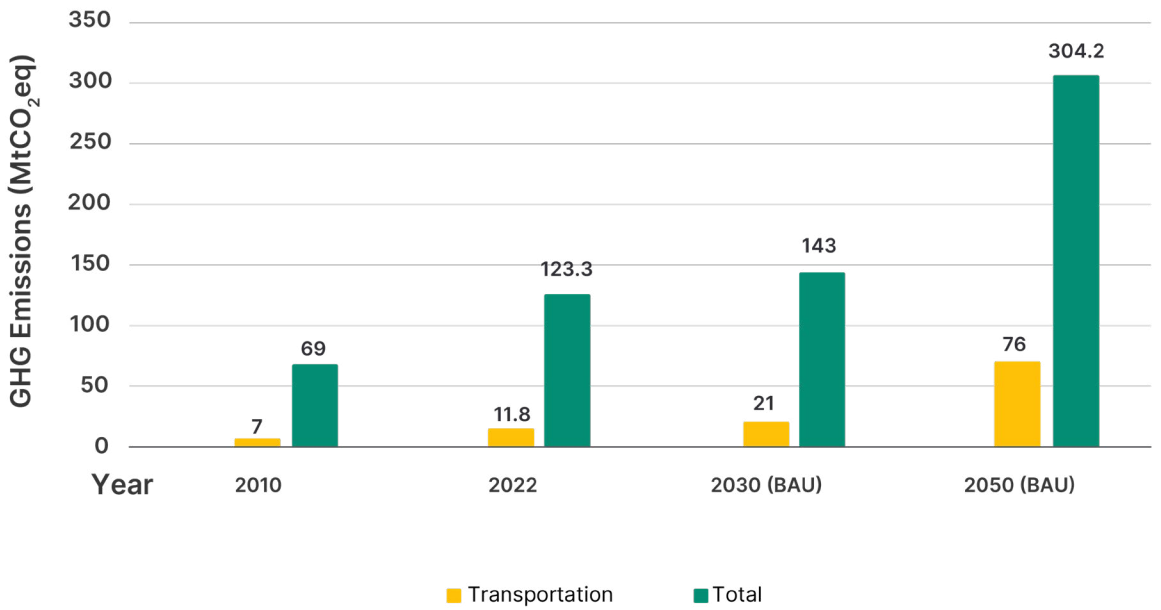
Kenya's diverse climate creates distinct farming systems. High rainfall areas cover 10% of arable land but produce 70% of commercial output, while semi-arid regions contribute 20%. Major farming zones include the western and central highlands, the Rift Valley, and coastal regions, with livestock concentrated in ASALs and fisheries in coastal and western areas (KNBS, 2022). Figure 8 illustrates household farming activities. These geographic differences drive labour disparities. Central and Western Kenya and parts of the Rift Valley provide higher-paying, secure jobs in commercial farming and agro-processing, with better access to markets and services. In contrast, ASALs rely on subsistence and seasonal labour, with low productivity and volatile incomes. Informality compounds the problem, as most workers lack stable contracts or social protection.

Agriculture is predominantly rain-fed, leaving it highly exposed to erratic rainfall, droughts, and extreme weather. This vulnerability underlines the need for climate-smart agriculture (CSA), which can sustain productivity while building resilience. CSA also improves resource efficiency, soil health, and reduces greenhouse gas emissions, allowing Kenya to meet climate goals while protecting food security and rural livelihoods.

3.1.2 Climate-smart agriculture and the green transition

Agriculture is central to Kenya's economy but also a major emitter, contributing at least 40% of greenhouse gases (Figure 9) through livestock, land-use change, and conventional practices (Government of Kenya, 2023a).

Figure 9. Trends in agricultural emissions in Kenya: 2010-2050



Source: Government of Kenya, 2023a

CSA has emerged as a key approach to addressing these challenges, integrating economic viability, social equity, and environmental sustainability (FAO, 2013; Government of Kenya, 2017, 2018). Supporting this priority, Kenya has put in place a Climate-smart Agriculture Strategy 2017–2026 and a Climate-Smart Agriculture Implementation Framework 2018-2027.

The adoption of CSA in Kenya is expected to transform the agricultural labour market by shifting jobs from traditional, labour-intensive practices to more mechanised roles that incorporate regenerative agriculture and digital technologies (Government of Kenya, 2025a). As CSA practices are scaled across subsectors, new roles, particularly in extension services, advisory support, and crop diversification, will grow along the value chains. A study by Financial Sector Deepening (FSD) Africa projects that CSA adoption could result in generating 700'000 jobs within the broader "agriculture and nature" sector by 2030 in Africa, with Kenya, South Africa and Nigeria providing a combined 25% of the workforce in green jobs (FSD Africa, 2024). Of these, about 53% are projected to be within climate-smart agriculture, based on a low adoption scenario. These jobs are expected to emerge across the agricultural value chain, especially in inputs and production, harvesting, packaging, distribution, and retail. The study also outlined that as agri-tech startups and service providers continue to innovate, more solutions will emerge, and the projections on the jobs created will increase. Moreover, increased investment in financing is also expected to improve CSA adoption rates, increasing the number of jobs (FSD Africa, 2024). IRENA (2023) forecasts that Kenya has significant potential for green job creation through the development of renewable energy-powered systems in agriculture. These systems, such as solar PVs used for irrigation, milling, storage, and fertiliser production using green hydrogen, will require a wide range of technical skills, including installation, maintenance, and system design. As these technologies are scaled, they are expected

to generate approximately 70'000 green jobs. In addition to employment generated by startups and service providers, policy targets are expected to further expand job opportunities, making skills development a critical enabler of Kenya's green transition in agriculture.

For instance, the NCCAP 2023-2027 has outlined several targets to be met by June 2028, which will create demand for new roles and skills such as soil testing, organic input production, and advisory services (Government of Kenya, 2023a). Given its strong inter-sectoral linkages, the plan outlines how targets under agroforestry, irrigation, and water management will enhance job creation. Figure 11 shows that adoption of agroforestry under the CSA practices will create at least 5'000 enterprises by young people, who will provide seedlings to farmers across the country. Additionally, the irrigation and water management targets in Figure 12, demonstrate the need for specific jobs such as renewable energy installers and technicians, sustainable irrigation system designers and technicians, and integrated water resource management officers, all of which will emerge in the design and implementation stages of these targets. Similarly, expansion of lands under irrigation will see a significant number of jobs being created, including irrigation and agricultural engineers. Targets that seek to transform crop farming and livestock systems under the plan are expected to increase the number of jobs associated with agroforestry practices and adoption of CSA technologies, respectively, as shown in Figure 10.

A Ministry of Agriculture official captured the scale of this transformation:

It is definite that all jobs will change in one way or another across the value chains in the sector. If a person wants to shift into organic farming, it does not mean that they will stop being farmers, but they will have to learn how to farm organically, from the inputs to harvesting. Similarly, for those in water management, as a conservationist, I will need to learn the best water management techniques that can be applied in my ecology for better results. It is the same for livestock management and fisheries. Value addition will cut across these subsectors, and therefore, all farmers must learn the technique that is relevant to their trade.

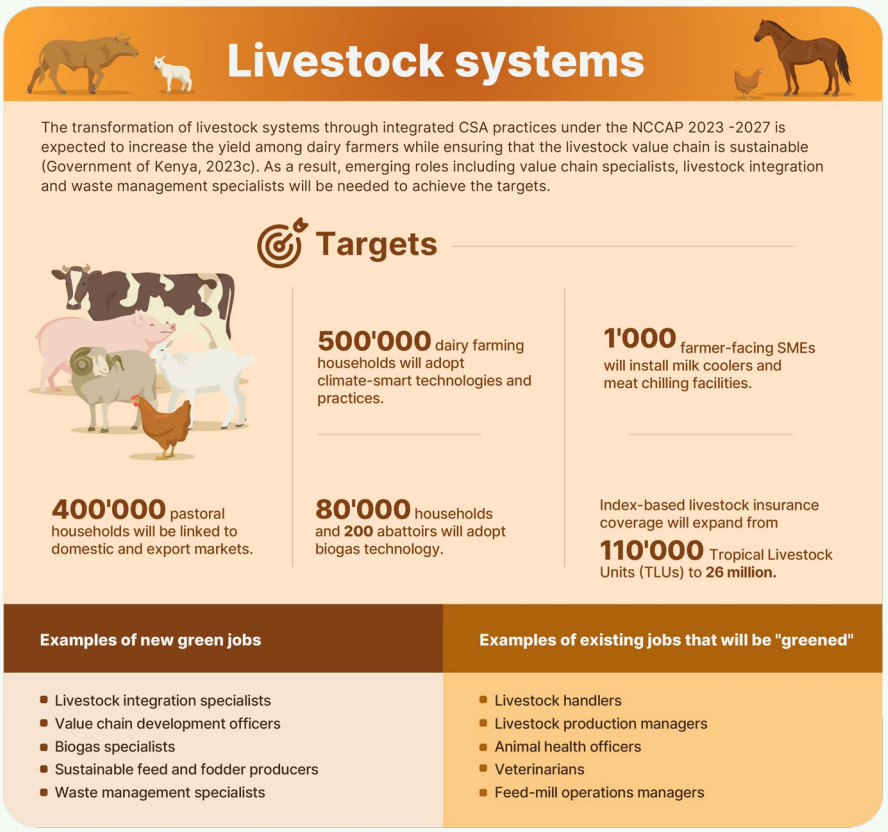
(KII, Ministry of Agriculture, 2025)

Even though the adoption of Climate-Smart Agriculture (CSA) practices and technologies is expected to contribute to the growth of green jobs and create new opportunities, many of these jobs will likely begin as informal or semi-formal occupations. This is because the agricultural workforce remains largely informal and dominated by smallholder farmers. As a result, emerging occupations will be decentralised and driven by immediate needs, highlighting the importance of formalisation efforts to ensure decent wages and promote sustainable livelihoods.

Most of our farmers who really want to adopt the CSA practices and irrigation systems can only afford to pay for themselves, for those willing to. In such cases, they will train their farm hands and other employees who are relevant to the skill they need on the farm. This means that we shall still continue seeing the informality of the sector until such a time when most workers receive proper training and add better value on the farms. That is when we shall have formalisation of jobs in the sector, which will mean good pay and better contractual benefits. Mobility of the skills will be easier and will increase competition, making agriculture attractive even to young people.

(KII, Private Sector and CSO, 2025)

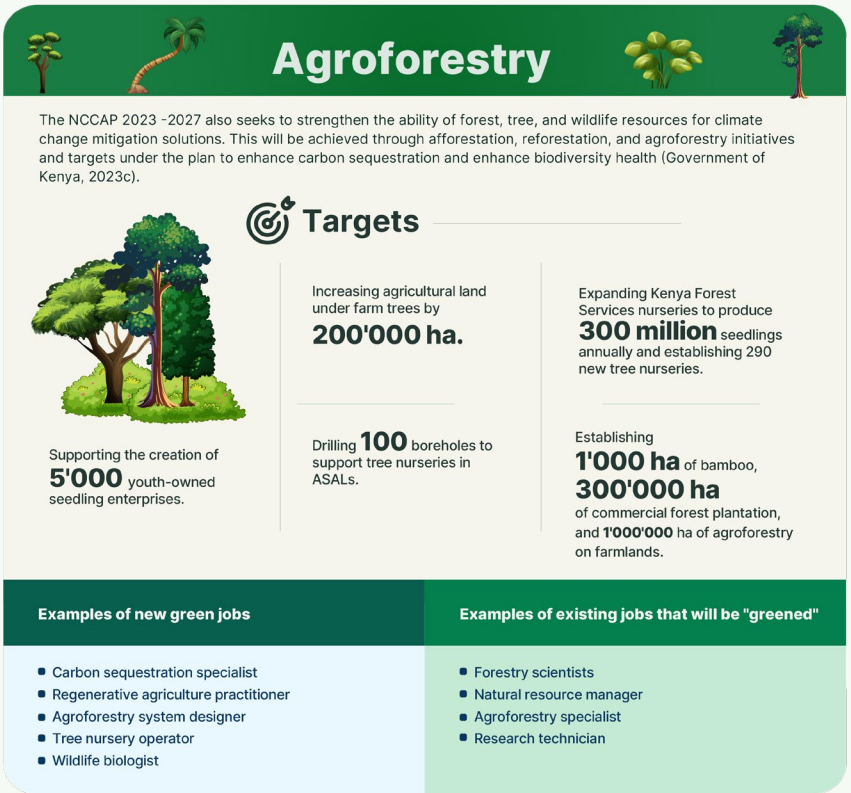
Figure 10. Livestock systems



Transforming livestock systems for green jobs

Embedding climate-smart technologies, renewable energy, and sustainable value chains into livestock production can generate new green jobs, as well as reshape traditional roles. The adoption of climate-smart practices by dairy farmers, investment in biogas by households and abattoirs, and installation of cooling facilities by micro, small, and medium-sized enterprises (MSMEs) will require new skills. Expanding pastoral households' access to domestic and export markets, and scaling livestock insurance from 110'000 to 26 million Tropical Livestock Units, can safeguard rural livelihoods and reduce vulnerability.

Figure 11. Agroforestry



Youth-led agroforestry enterprises and green employment

Agroforestry expansion under CSA practices is projected to create at least 5'000 enterprises led by youth, who will provide seedlings to farmers across the country. This represents a significant opportunity for rural youth employment while supporting ecosystem restoration and carbon sequestration objectives. These enterprises require skills in tree nursery management, species selection for different agro-ecological zones, and business development for sustainable seedling supply

Irrigation & Water

Planned investments in improved irrigation and water harvesting will lead to better productivity. It will also result in development of skills for roles like solar pump technicians, irrigation system designers, installers and technicians among others (Government of Kenya, 2023c). This will help to achieve targets on increasing productivity.

Targets

Increasing households harvesting water for agricultural production from **300'000 to 1 million.**

Expanding total irrigated area from **202'000 ha** to **486'000 ha.**

Increasing rice acreage under intermittent irrigation from **25'000 ha** to **140'677 ha.**

Expanding rain-fed agricultural area from **44'255 ha** to **140'677 ha.**

Examples of new green jobs	Examples of existing jobs that will be "greened"
• Renewable energy technicians (on farms) • Irrigation system installers and technicians • Integrated water resource managers • Soil management specialists	• Agricultural engineers • Irrigation engineers • Water harvesting specialists

Technical job opportunities in irrigation and water management

Irrigation and water management targets create demand for highly specialised technical occupations including renewable energy installers and technicians, sustainable irrigation system designers and technicians, and integrated water resource management officers. These positions emerge during both design and implementation stages of irrigation infrastructure development. The planned expansion of irrigated land will generate substantial employment for irrigation and agricultural engineers, representing high-skilled job opportunities that can attract technical graduates to rural areas.

Green jobs and formalisation challenges in smallholder agriculture

Despite the fact that adoption of CSA practices and technologies will contribute to the growth of green jobs and create new ones, it is expected that most of these jobs will take on an informal or semi-formal structure at the inception stages of adoption. This is because the sector's workforce is still largely informal and at the smallholder level. This implies that jobs that will emerge will be decentralised and on a need basis, needing formalisation efforts to ensure decent wages, training and as such, promoting sustainable livelihoods.

Crop farming

The adoption of CSA practices is expected to expand green employment opportunities across Kenya. To achieve this, the Government of Kenya, through the NCCAP 2023-2027, has outlined several targets to be met by June 2028, which will create demand for new roles and skills such as soil testing, organic input production, and advisory services (Government of Kenya, 2023c).

Targets

2.5 million farmers to adopt adaptive crop varieties.

2 million farmers to access climate-smart post-harvest technologies.

2.5 million farmers on **1'000'000 ha** of farmland to adopt soil and water conservation measures.

The area under integrated soil nutrient management to increase by **2'500'000 ha.**

100'000 youth farmers to be engaged in CSA practices, supported by **10 youth-led agri-hubs.**

Area under rehabilitated rangelands to expand to **5'000'000 ha.**

Index-based crop insurance beneficiaries to grow from **1.6 million** to **3.5 million**

Examples of new green jobs	Examples of existing jobs that will be "greened"
• Climate-Smart Agriculture (CSA) specialists • Precision agriculture technicians • Sustainable farming consultants: Compost specialists, soil managers and pest control specialists	• Conventional farmers • Agricultural extension workers • Climate change and adaptation manager • Community development officer • Agricultural machinery operators

There is evidence of CSA practices being taken up, such as soil fertility management, improved livestock systems, water conservation, agroforestry, and drought-tolerant seeds (Autio et al., 2021). In addition, technologies such as digital tools, precision farming (Foster et al., 2023) and solar-powered irrigation (Mati, 2023) are gradually being adopted. As this shift accelerates, traditional occupations will transform and new types of knowledge will be required, for instance, farmers will require skills on adopting drought-resistant crops and conservation agriculture, while extension officers will require skills in climate risk assessment and digital platforms. Farm managers, technicians, and water managers will also require knowledge on using renewable energy systems and advanced irrigation methods. The CSA strategy recognises skills development as a critical enabler for CSA adoption and scaling, while the framework provides guidance on operationalising skills development (Table 4).

Table 4. CSA Strategy & Implementation Framework – skills development priorities

Priority Area	Focus
Farmer Training	Build capacity in CSA practices, especially for smallholders, women, youth, and vulnerable groups.
Extension Services	Strengthen public and private extension systems; improve access to advisory services.
Digital Advisory Tools	Promote ICT-enabled platforms for climate and market information.
Institutional Capacity	Enhance skills within government, research institutions, and cooperatives.
Certification & Standards	Develop training and certification systems for CSA, especially for export markets.

The CSA implementation framework, however, does not present a coherent or detailed strategy for skills development across the agricultural sector. While it mentions training for farmers and extension officers, it lacks a structured approach to developing CSA competencies at scale. There is no clear articulation of how skills will be developed across different levels, from grassroots farmers to policymakers, and no roadmap for integrating CSA into formal education, TVET or lifelong learning systems. One of the most significant gaps is the limited engagement with TVET institutions and universities.

A review of the curriculum for Agricultural Extension Level 4 and Level 6 (TVET CDACC, 2018, 2019) shows that while foundational training in areas such as crop and livestock production, soil and water management, and environmental literacy, are offered, there is only partial alignment to the CSA implementation framework. The curriculum lacks CSA-specific content, such as climate risk assessment, climate-smart technologies, and monitoring frameworks, and no direct linkage to national CSA policy targets or NDC commitments, limiting the strategic relevance of training outcomes. Additionally, emerging green occupations like solar irrigation technicians and climate data analysts are not reflected in the occupational standards. The curriculum also lacks modular, short-term pathways for upskilling, which are essential for adapting to rapidly evolving CSA practices and technologies. This disconnect risks undermining the sustainability and scalability of CSA practices, as future agricultural professionals may not be adequately equipped with the necessary knowledge and skills.

This disconnect between curriculum content and CSA policy priorities was echoed by a higher education stakeholder, who emphasised the need for a more transformative approach to skills development:

Most policies talk about capacity building. However, you notice that these are basic trainings that are not transformative in nature. In my opinion, green skills development is more than capacity building, which is basic training. I would urge ministries and government agencies to target skills development from a different perspective altogether, where they incorporate research exchange programmes, and 3-to-6-months training targeting specific skills development?.. Otherwise, as it is now, these policies will not directly address the skills gaps.

(KII, Higher Education, 2025)

Other gaps include limited engagement of young people and weak mechanisms for skills transfer, private sector engagement in skills development, and lack of a monitoring and evaluation framework. Although youth are acknowledged as a key demographic, the framework lacks targeted initiatives to equip them with relevant CSA skills such as digital agriculture, entrepreneurship, and climate-resilient farming techniques. Additionally, there are no structured approaches to facilitate intergenerational knowledge exchange, particularly from older farmers with indigenous expertise. The role of the private sector in CSA skills development is also underutilised. The framework does not propose collaborative efforts with agribusinesses or SMEs to co-design training programmes, apprenticeships, or certification schemes. This restricts the potential for innovation and employment creation in green agriculture. Furthermore, the absence of a dedicated monitoring and evaluation framework for skills development means there are no indicators to assess the effectiveness of training, track progress, or identify emerging needs, making it difficult to ensure that CSA capacity-building efforts are inclusive, responsive, and impactful.

The CSA strategy is further supported by other national policies such as the NDCs for 2020 and 2031-2035, the National Strategy on Green Skills and Jobs 2025 and the GESIP 2016-2030, which reinforce workforce development as critical to climate adaptation and mitigation. A review on their alignment, however, reveals several gaps in coordination, particularly around skills development, youth engagement, private sector involvement, and monitoring systems.

- **Skills development and capacity building** – the CSA Strategy recognises the need for capacity building but does not provide a detailed roadmap for skills development. In contrast, the National Strategy on Green Skills and Jobs 2025 offers a structured approach to equipping the workforce, especially youth, with green skills through competency-based curricula and institutional reforms. This creates a gap in alignment, as the CSA Strategy does not fully integrate with national efforts to build a green-skilled workforce.
- **Youth and Inclusion** – the CSA Strategy mentions vulnerable groups, but it lacks targeted interventions for youth and women. The Green Skills Strategy and NDCs (2020 & 2031–2035) prioritise inclusive approaches, including locally led adaptation, gender-responsive planning, and youth empowerment. The CSA Strategy could better align by incorporating specific programmes for youth engagement and inclusive capacity building.

- **Monitoring and Evaluation (M&E)** – the CSA Strategy does not outline a robust M&E framework for tracking progress in skills development or CSA adoption. Both the NDCs and GESIP emphasise the importance of M&E systems to ensure transparency, learning, and accountability. This misalignment limits the CSA Strategy's ability to contribute effectively to national climate goals and green economy transitions.

- **Private sector engagement** – the CSA Strategy underutilises the role of the private sector in scaling CSA technologies and training. In contrast, the GESIP and Green Skills Strategy highlight the private sector as a key driver of innovation, job creation, and investment in green technologies. Strengthening partnerships with agribusinesses, SMEs, and industry associations would enhance alignment and impact.

- **Financing and resource mobilisation** – while the CSA Strategy acknowledges financing challenges, it lacks a clear mechanism for resource mobilisation. The NDCs and GESIP propose blended financing models, international support, and domestic resource mobilisation strategies. Aligning CSA implementation with these financing pathways would improve feasibility and sustainability.

Visibly, there have been challenges in mobilising the resources required to ensure a sustainable transition in CSA. Interviewed stakeholders from academia, agricultural research institutions and government agencies indicated that the country's ambitions in the key policies driving the green transition cannot be met when assessed against the current investment landscape. Budgetary allocations are currently between 2% and 3%, a notably low proportion compared to the required 10% of the total budget as agreed upon by the Maputo Declaration (AUDA-NEPAD, 2003). Funding for the agriculture sector, as detailed in the declaration, targets the adoption of CSA, expansion of required extension services, and pilot projects. However, this still remains a challenge for most Sub-Saharan African countries, Kenya included (Bastiaensen, 2025). Some of the interviewed stakeholders argued that the country is faced with competing development priorities and consequently impedes a timely green transition in the agriculture sector. This also slows the scaling of pilot projects.

A draft National Green Fiscal Incentives Policy Framework, that's currently undergoing public review, proposes tools such as a green investment bank, carbon tax, and green bonds. Stakeholders warn that the draft is vague and risks duplicating existing policies. Stronger coherence, clearer targets, and explicit green skills investment are needed. As one government official explained:

The draft policy as is, if it will be passed in parliament, will not bring about much change and investment in the green economy. The reason is that the objectives of the policy are not clear. The general recommendations cannot be evaluated at the implementation stage. The roadmap is not clear either. The government needs to revise the policy and seek technocrats to help them be specific so that we are not repeating things that are already in other policies and strategies.

(KII, Government, 2025)

Kenya's CSA transition faces a web of interconnected challenges, including limited access to knowledge, technology, finance, markets and infrastructure, climate risk, lack of data, and short-term project-based approaches. These barriers reinforce each other in problematic ways: inadequate infrastructure directly limits technology access, while data gaps prevent policymakers from effectively targeting interventions. The prevalence of short-term project interventions rather than sustained programmatic approaches undermines long-term capacity building and institutional development. Climate vulnerability acts as a threat multiplier, worsening all existing challenges and making it even harder to plan and invest in green skills and practices.

I am aware that a farmer's registry system was being built under the Ministry of Agriculture with support from a development partner. The private sector players like myself were later to be included as part of the supply chain module in the system for real-time support to farmers to adopt CSA inputs from us. However, this is yet to be implemented, and the government is still struggling with giving farmers quality inputs, lowering the yield every season.

(KII, Private Sector, 2025)

Despite these challenges, private sector pilots like Twiga Foods demonstrate scalable potential (CGIAR, 2023). Scaling such initiatives and addressing these clustered issues requires coordinated synergy between practice, policies, and institutions to realise Kenya's climate-smart agriculture and green employment opportunities (FAO, 2013).

3.1.3 Skills gaps in climate-smart agriculture

The agriculture sector suffers from a persistent shortage of skilled personnel across all value chains, particularly in soil regeneration, digital agriculture, renewable energy systems, climate modelling, Monitoring, Reporting, and Verification (MRV), and agroecology, especially in remote and ASAL areas (FAO, n.d.; ILO, 2020). Critical skill gaps also exist in renewable energy applications for agriculture, where the growing demand for solar irrigation technicians exceeds the supply of qualified workers by nearly 80% (Efficiency for Access, 2023), with 19% having a medium demand for technical occupations and 59% having a high demand for sales and marketing occupations. These skills gaps stem from outdated curricula in training institutions and inadequately trained instructors lacking expertise in CSA practices and technologies, leaving trainees ill-equipped to support the green transition.

Green skills within the agriculture sector cover a wide range of competencies (Annex 8.2). Technical skills are often job-specific, while transversal skills can be clustered into five categories: communication and collaboration, problem-solving and critical thinking, adaptability and learning, leadership and management, and ethics and values.

Despite progress, skill gaps still constrain the sector's transformation. Interviewed stakeholders from the private sector, government, and research institutions point out barriers to the adoption and scaling of sustainable practices, particularly among smallholder farmers, who lack access to updated knowledge and expertise in CSA techniques. In Western Kenya, limited access to finance is a major constraint to receiving training and adopting CSA techniques. Although Kenya leads in agritech innovations, many farmers do not benefit due to low digital literacy, particularly in rural areas. This mismatch highlights the need for tailored skills development for specific technologies. Stakeholders identified several priority areas:

- **Climate-smart farming and resource management,** including soil conservation tillage, water harvesting, drip irrigation, and resilient crops and livestock practices.
- **Sustainable land use systems,** such as agroforestry design, rangeland management and conservation of agricultural biodiversity.
- **Post-harvest and marketing skills,** covering food processing, packaging, traceability, and access to green finance and markets.

3.1.4 Social risks in climate-smart agriculture

While the green transition is expected to create substantial new employment opportunities, it also risks exacerbating existing inequalities. Agriculture in Kenya is largely informal, seasonal and characterised by low and unstable income, occupational hazards, and limited social protection (CAFOD 2019; Government of Kenya, 2022a). However, green practices can enhance job quality by diversifying production into high-value, climate-resilient crops or livestock, creating safer conditions, and encouraging formalisation of employment. With change, come risks. Mechanisation and digitalisation increase efficiencies and reduce hazardous labour, but without safeguards, they have the potential to exacerbate existing inequalities rather than resolve them. Ensuring that green practices do not displace labour without providing viable alternatives is a critical consideration for a just transition.

For instance, about 5'000-7'000 jobs are at risk within Kenya's tea sector due to the implementation of harvesting machines, which tea companies argue will cut production costs by more than half (The Fuller Project, 2024). These job losses will mainly affect women, who represent the largest workforce. Table 5 outlines key social risks, groups affected, and suggested mitigation strategies to promote an inclusive, just transition.

Table 5. CSO led outreach

Risk category	Description	Groups affected	Potential mitigation strategies affected
Access & affordability	High costs of technologies, limited credit & training	Smallholders, women, youth	Subsidised inputs, microfinance schemes, inclusive extension services, tailored training
Land tenure insecurity	Few land titles (10% women), discourages investment	Women, indigenous groups, smallholders	Joint land titling, land registration support, tenure reform initiatives
Exclusion from planning	Weak participation, loss of local knowledge	Women, youth, pastoralists	Community consultations, participatory planning processes, integration of indigenous knowledge
Livelihood disruption (ASALs)	Carbon projects reduce grazing, restrict mobility	Pastoralists, ASAL dwellers	Community-led rangeland management, co-benefit project design, livelihood diversification
Market access	Barriers to premium markets (certification, infrastructure)	Smallholders, women-led co-ops	Group certification, investment in rural roads, digital market platforms, support women-led cooperatives
Gender disparities	Limited access to inputs, finance, training, land	Women farmers	Women-focused training, gender-sensitive finance, female extension officers
Youth exclusion	Few targeted programmes, limited outreach	Rural youth, graduates	Youth agritech/CSA incubators, stipends, internships
Weak coordination	Fragmented ministries & partners	All groups	Establish coordination units, integrate green skills into devolved development plans
Low awareness	Limited knowledge of green opportunities	Rural farmers, informal workers	Awareness campaigns, local media, CSO led outreach

Additionally, the sector is dominated by smallholder farmers, who face challenges in accessing finance, technology, and training for green initiatives. According to interviewed stakeholders in the private sector, most climate-smart agriculture technologies and training programmes are offered by private entities that charge for these products. However, due to the low wages earned by smallholder farmers, acquisition of CSA technologies and training proves to be unaffordable. Furthermore, due to the nature of their livelihood, it is harder for these farmers to access credit to invest in technical and knowledge resources. As a result, green innovations and solutions that are intended to shift these jobs into sustainable livelihoods remain out of reach for the farmers and perpetuate their exclusion.

3.2 Transport

Kenya's socio-economic development depends on its human resource capacity. The Technical and Vocational Education and Training (TVET) sub-sector is designed to address the needs of a changing labour market by equipping the workforce with skills for new sectors, including the green economy.

3.2.1 Overview

Kenya's transport sector is a strategic enabler of economic and social development, contributing 12.7% to GDP in 2024. Road transport has experienced remarkable growth, rising approximately 70% from KES 1.54 trillion (~USD 11.91 billion) in 2020 to a projected KES 2.62 trillion (~USD 20.26 billion) in 2024. While passenger transport dominated the sector at 56.9% of total output (KES 1.48 trillion/~USD 11.50 billion), freight transport showed faster growth, at 6.7% compared to passenger transport's 3.9% between 2023-2024. This growth rate in freight reflects expanding commercial operations, logistics networks, and e-commerce growth, highlighting the need for balanced infrastructure investment in both passenger and freight systems (KNBS, 2025). Table 6 provides a summary classification of Kenya's transport sector by geography (intracity, intercity, and rural), mode (motorised and non-motorised), and function (passenger and goods).

Kenya road transport at a glance (2024)

Total road transport value:
KES 2.62 trillion (USD 20.26 billion)

Passenger transport:
KES 1.48 trillion
(56.9% of total)
- o Growth rate: 3.9% (2023-2024)
- o Key players: matatu sector, bodas, ride-hailing platforms

Freight transport:
KES 1.13 trillion
(43.1% of total)
- o Growth rate: 6.7% (2023-2024)

Overall sector growth:
70% (2020-2024)

GDP contribution:
12.7%

Table 6. Classification of the Kenyan transport sector

Sector	Description	Transport Type	Examples
Intracity	Passenger	Non-Motorised Transport (NMT)	Walking/cycling pathways
		Motorised Transport	*Matatus* (privately owned minibuses used as share taxis), two-wheelers (bodas), three-wheelers (tuk-tuks), taxis, rail
	Goods/Freight	Last Mile Delivery	Pushcarts, handcarts, *bodas*, tuk-tuks
		Heavy Commercial	Pickup trucks, light commercial vehicles, food trucks, specialised trucks (refrigerated trucks, concrete mixers, dump trucks)
Intercity	Passenger	Motorised Transport	*Matatus,* rail, aeroplanes
	Goods/Freight	Motorised Transport	Pickup trucks, medium-to-heavy duty trucks, specialised trucks, trailer trucks, rail, air
Rural	Passenger	NMT	Walking/cycling pathways
		Motorised Transport	*Matatus,* bodas
	Goods/Freight	NMT	Human porterage (on head, shoulders, or back), wheelbarrows, handcarts, animal-drawn carts, bicycle
		Motorised Transport	*Bodas,* pickup trucks, light commercial vehicles

Source: KII Private Sector, Kenya, 2025

Kenya's transport sector is dominated by informality. Transport modes like matatus and bodas used for passenger and goods movement, present regulatory challenges that complicate green transition planning:

Matatus have dominated Nairobi's intracity transport since 1992, with over 21'000 vehicles operating across 146 routes. The fleet composition (59% 14-seaters, 28% 33-seaters, and 4.8% minibuses) creates significant congestion, as small-capacity vehicles operate without fixed stops or fares (Kwoba et al., n.d.). Their radial routes centred on the Central Business District (CBD) require multiple passenger transfers and exacerbate traffic problems, while attempts to ban them from the CBD have failed due to public resistance.

Bodas provide essential last-mile connectivity in urban and rural areas, generating over one million jobs and contributing approximately KES 202 billion (~USD 1.8 billion) annually to the economy. The government collects about KES 60 billion (~USD 464.20 million) in fuel taxes from this sector (Massawe, 2024; Viffa Consult, 2025). Bodas transport an estimated 40% of all goods, making them vital for urban logistics (Viffa Consult, 2025). However, their informal nature creates regulatory challenges including inadequate training, traffic rule non-compliance, and increased accidents and crime.

3.2.1.1 Employment dynamics and demography

Kenya's transport sector is a significant employer, characterised by a large informal segment that plays a critical role in national livelihoods. This informal segment often operates on daily or task-based arrangements, contributing significantly to the economy and providing essential income opportunities. The matatu industry characterises this dynamic, with each vehicle typically employing at least two onboard crew members, including a driver, a main conductor, and often an assistant conductor for larger vehicles (Global Labour Institute, 2018; Kwoba et al., n.d.). Beyond the direct crew, the sector supports a broader ecosystem of informal workers, including callers who solicit passengers, porters and loaders, vendors, and service providers such as mechanics, electricians, and vehicle washers.

The boda sector further illustrates the economic importance of informality in transport. While 2 million boda riders are formally registered, estimates suggest the total number could be as high as 5 million, many of whom operate informally or share motorcycles (Viffa Consult, 2025). Beyond boda operators' direct earnings, the sector indirectly supports more than 100'000 jobs in repair, spare parts, and maintenance services, with operators spending an average of KES 4'000 (~USD 30.89) monthly on upkeep.

In recent years, digital ride-hailing platforms, including Uber, Bolt, and Little Cab, have transformed the transport labour market by creating new income opportunities for boda riders and private car owners. Bolt currently supports at least 50'000 driver partners and couriers (Barden, 2024). Similarly, Uber provides direct jobs to no fewer than 20'000 Kenyans (National Assembly of Kenya, 2025a), while Little Cab has 10'000 drivers operating in Nairobi (Africa News, 2024).

Notably, a significant portion of workers in the transport sector often operate without formal contracts, lack access to social protections, and experience income volatility (Table 7). Addressing this requires policy attention to identify formalisation pathways or the establishment of alternative social safety nets to ensure that the benefits of sectoral growth are equitably distributed and that a just transition is achievable.

Table 7. Key employment figures and economic contributions of the Kenyan transport sector

Category	Data Point	Value	Comment
Formal Employment (2024)	Private Sector Wage Employees	679'000	The officially recognised and regulated workforce.
Informal Employment (Estimated)	Public Sector Wage Employees	23'500	Government's direct employment in the sector.
	Total Informal Workers	506'900	A large, often unregulated, segment of the workforce.
	Matatu Industry (National)	~160'000	Significant employment within a largely informal urban transport system.
	Boda Riders (Total)	Up to 5'000'000	Massive scale of informal employment, crucial for last-mile connectivity.
Economic Contributions	Boda Daily Earnings	KES 1 billion (~USD 7.73 million)	Demonstrates substantial daily economic activity and livelihood generation.
	Boda Support Jobs (Repair/Maintenance)	>100'000	Indicates a wide ecosystem of indirect employment.
	Boda Annual Insurance Contribution	~KES 7 billion (~USD 54.05 million)	Shows contribution to formal financial sectors despite informality.
	Boda Annual Microfinance Loans	~KES 15 billion (~USD 115.83 million)	Reflects reliance on debt financing for asset acquisition.
	Uber Rides Contribution to Kenyan Economy	KES 14.1 billion (~USD 108.94 million)	Illustrates significant economic value generated by digital platforms.
	Uber Eats Additional Value for Restaurants	KES 534 million (~USD 4.13 million)	Shows inter-sectoral economic linkages and benefits of digital services.
	KRA Collection from Digital Taxi/Delivery (2022/23-2023/24)	KES 16 billion (~USD 123.62 million)	Indicates growing fiscal benefits to the government from the digital economy.
Sector Growth Indicators (2020-2024)	PSV Licenses Registered	274'221	Signifies increasing formalisation and professionalisation of drivers.
	New Motor Vehicles & Motorcycles Registered	1'342'830	Reflects overall expansion and investment in the transport fleet.

The informal transport sector, particularly matatu and boda subsectors, serves as a critical entry point into the labour market for Kenya's youth, with an estimated 1 million young people entering annually. A 2018 survey of 300 Nairobi matatu stakeholders revealed that 60% were aged 25-39, 20.7% aged 40-59, and 10.3% aged 18-24, indicating young male dominance. Education levels are low, with 60.7% of matatu workers completing secondary education and 18% achieving college graduation (Global Labour Institute, 2018). Among boda riders, 82% have below secondary education – 43.7% completed only primary education and 42.5% started but didn't finish secondary education (Viffa Consult, 2025). The sector is markedly male dominated, as shown in Table 8, a characteristic evident across various sub-sectors and professional levels. Low female representation in operational occupations (10% of matatu drivers, 8.5% in road freight, 8% in engineering) and predominantly low education levels create barriers to equitable green transition. Limited formal education constrains access to further training and income mobility, restricting transitions into higher-value occupations. Without targeted, accessible, and gender-sensitive skills development programmes, emerging green transport jobs, such as EV maintenance or BRT operations, will primarily benefit better-educated, male-dominated groups, perpetuating existing inequalities and excluding women and lower-educated workers from green transition opportunities.

Table 8. Gender composition of Kenya's transport sector workforce

Category	Demographic composition
Matatu industry	Women drivers: 1 in 10; women conductors: 3 in 10
Boda industry	1 in 6 rider associations have female members
Transport sector office workers	Women: ~50%, mainly in secretarial and service occupations
Engineering workforce	Women: 8% (civil, mechanical, electrical engineers)
Informal transport operators	Women: 13.6%
Broader transport and communications industry workers	Women: 9.2%
Kenya Bus Service Management Ltd.	Women: 7.17 of workforce
Transport worker unions	Women: 15% of members
Road freight sector	Women: 8.5% of 14'923 registered members

3.2.1.2 Geographical concentration and regional disparities

Urban residents typically exhibit higher disposable incomes and a greater reliance on motorised transport; for instance, only 48.2% of all daily trips in the Nairobi Metropolitan area are made via NMT (Odhiambo, 2022). Owing to their higher volumes of economic activity, population density, and digital penetration, urban areas offer more frequent job opportunities and higher earnings. For example, the emergence of digital ride-hailing services such as Uber, Bolt, and Little Cab is currently confined to cities. The growing demand for transport is also fuelled by the uptake of digital platforms and e-commerce, as residents increasingly order food and goods online. This, in turn, has spurred demand for delivery services and logistics networks, stimulating employment across a wider transport ecosystem that includes mechanics, vehicle spare part vendors, petrol station attendants, and cleaning services.

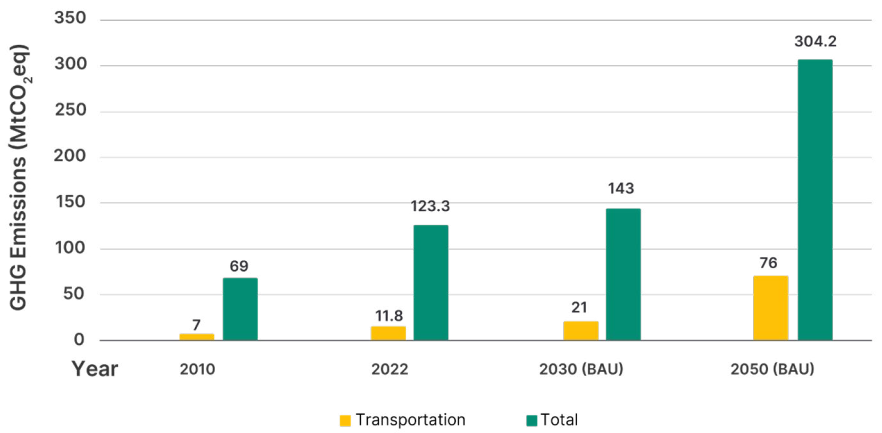
In contrast, rural areas are defined by a greater reliance on NMT, including human porterage, wheelbarrows, handcarts, animal-drawn carts, and bicycles. Lower purchasing power and infrastructure challenges, such as poor road networks, constrain the adoption of mechanised transport and reduce demand for transport services in these regions. Additionally, the slower uptake of digital platforms and technologies in rural areas further marginalises these regions from the evolving transport economy. This results in a pronounced spatial and economic inequality within the transport sector, with urban regions capturing a disproportionate majority of job opportunities, particularly those linked to innovation, digitisation, and the green transition.

3.2.2 Transport and the green transition

The transport sector is a significant contributor to Kenya's GHG emissions, making its decarbonisation an environmental imperative. In 2022, it contributed 11.8 MtCO2eq, a figure that already exceeded the NCCAP target of 11.5 MtCO2eq. Projections indicate an alarming trajectory, with emissions expected to rise dramatically from 11.8 MtCO2eq in 2022 to 76 MtCO2eq by 2050 (Figure 14) (Government of Kenya, 2023a). This projected near seven-fold increase positions it as a critical focus for Kenya's updated NDC (2020-2030) and its second NDC (2031–2035), which prioritise the transition to low-carbon systems.

A key aspect of these emissions is the dominant role of the freight sub-sector. Freight alone accounts for over 78% of transport emissions along vital economic arteries such as the Northern Corridor (Kuehne Climate Center, 2025). This highlights freight as a critical leverage point for impactful decarbonisation strategies within the sector. Investments in electric trucks, expansion of rail freight, and improvements in fuel efficiency across logistics operations will yield the greatest returns in terms of emission reduction. Furthermore, it highlights the need for policies that specifically target the freight sector, such as incentives for fleet electrification and improved logistics efficiency. Nevertheless, improvements in passenger transport are still needed to meet overall NDC targets, alongside freight emissions (KII, UN Organisation, 2025).

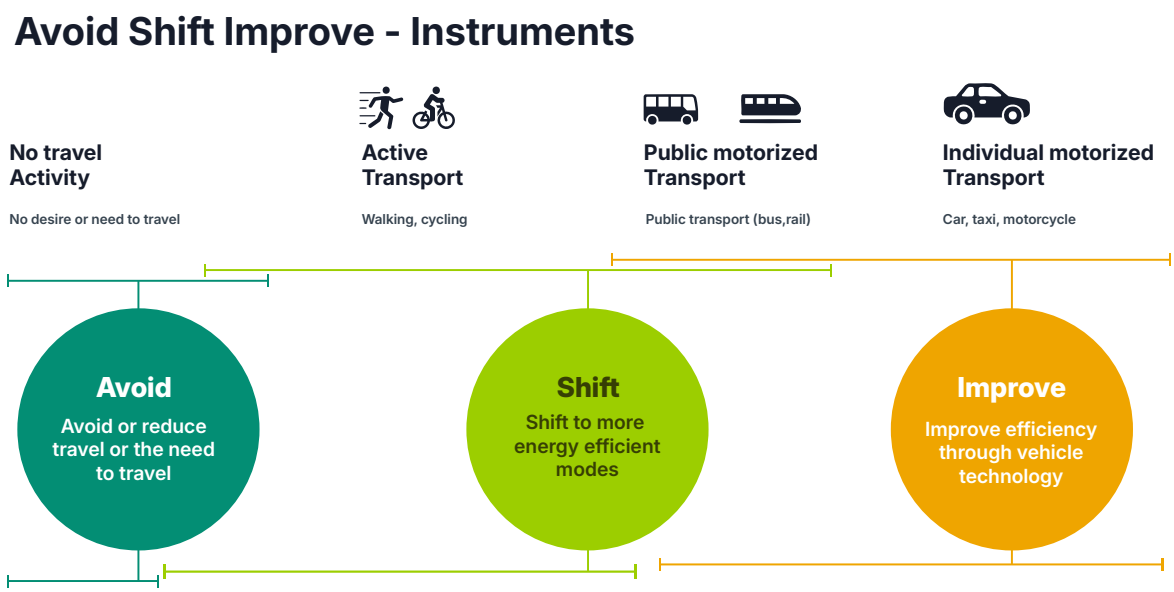
Figure 14. Kenya's GHG emissions from transportation (2010-2050)



Source: KII Private Sector, Kenya, 2025

Kenya's transport sector decarbonisation can be guided by the Avoid-Shift-Improve (ASI) framework (see Figure 15), a strategic approach increasingly defined by the 'CASE' principles: Connected, Autonomous, Shared, and Electric (KII, Private Sector, 2025). This framework prioritises reducing travel demand (Avoid), shifting to sustainable modes (Shift), and improving vehicle efficiency (Improve). Kenya's progress using the ASI framework to move towards the green transition in transport sector is detailed in Table 9.

Figure 15. Avoid Shift Improve – Instruments



	Systemic Efficiency	Active Transport (NMT)	High-Capacity Public Transport (BRT)	Efficient Freight	E-mobility Adoption	E-mobility (Passenger)	E-mobility (Freight)
	Reduce motorized travel demand, trip length	Design, construct, and maintain 500 km of walkways and cycle lanes by June 2028	Implement 5 BRT lines: complete 70 km of BRT corridors by June 2028	Adopt more efficient freight options	Accelerate EV purchase	Promote electric boda-bodas and buses	Promote electric freight
	Critical strategic direction for future urban planning; not explicitly structured currently.	48.2% of daily trips in Nairobi County are NMT (2.27M walking, 55K cycling trips).	5 BRT lines planned; Projected to create 5,760 new jobs.	25 Euro 5 trucks achieved 16.26% fuel efficiency, 500'000 kg CO_2e reduction	Registrations grew from 2'694 (2023) to 9'047 (2025). Kenya Power plans to install 45 EV chargers	MOGO and BasiGo have innovative business models	ElandX eFaaS, Kabisa, JAC Motors: T8 EV light-duty trucks in use, N75 medium-duty gaining interest are all working on freight

Source: Adapted from the Transformative Urban Mobility Initiative (TUMI) 2019

Table 9. Summary: Green transition progress in transport in Kenya using the ASI framework

Pillar	Initiative	Target	Progress/Status
Overall Emissions	GHG emissions	Projected to grow from 11.8 MtCO2eq (2022) to 76 MtCO2eq by 2050	Exceeded 2022 NCCAP target of 11.5 MtCO2eq. Freight accounts for >78% of emissions.
Avoid/Reduce	Systemic efficiency	Reduce motorised travel demand, trip length	Critical strategic direction for future urban planning; not explicitly structured currently.
Shift/Maintain	Active transport (NMT)	Design, construct, and maintain 500 km of walkways and cycle lanes by June 2028	48.2% of daily trips in Nairobi County are NMT (2.27M walking, 55K cycling trips).
	High-capacity public transport (BRT)	Implement 5 BRT lines: complete 70 km of BRT corridors by June 2028	5 BRT lines planned; Projected to create 5'760 new jobs.
	Efficient freight	Adopt more efficient freight options	25 trucks (Euro 5 standard) achieved 16.26% fuel efficiency, 500'000 $kgCO_2eq$ reduction.
Improve	E-mobility adoption	Accelerate EV purchase	Registrations grew from 2'694 (2023) to 9'047 (2025). Kenya Power plans to install 45 EV chargers. EPRA intends to review its Time of Use (TOU) framework to further incentivise e-mobility customers.
	E-mobility (Passenger)	Promote electric bodas and buses	Battery swapping networks, fleet management and BasiGo's "Pay-As-You-Drive" business models are increasing adoption.
	E-mobility (Freight)	Promote electric freight	ElandX eFaaS, Kabisa, JAC Motors: T8 EV light-duty trucks in use, N75 medium-duty gaining interest are all working on freight.

Source: Paeradigms, 2025

3.2.2.1 Non-Motorised Transport

Walking serves as the default mode of transportation for many low-income Kenyan residents. For 39.2% of pedestrians, walking is a necessity due to an inability to afford public transport, another 10.3% walk because public transport is unavailable for their routes. The majority of walking trips (65.8%) are for the purpose of commuting to and from work, followed by shopping (8.8%). Most walking journeys (54.8%) range from 20 to 60 minutes, with peak hours in the mornings (6:30 AM to 8:30 AM) and evenings (5:00 PM to 6:45 PM) (Odhiambo, 2022).

Despite its widespread use, walking remains challenging for pedestrians in Nairobi due to numerous challenges infrastructure and safety issues. A significant portion of walkers(44.5%) rate their journey as difficult or very difficult, primarily due to congestion (40.9%) and lack of sidewalks (26.7%) (Odhiambo, 2022). Encroachment on NMT spaces by bodas, parked cars, and street vendors also presents a challenge. Pedestrians are exposed to dust, vehicular emissions, roadside garbage, open sewage, and industrial smoke, particularly in the eastern part of the city near major employment zones like the Industrial Area. Additionally, pedestrian corridors often have limited access to green spaces and lack adequate shade, reducing the comfort and appeal of walking. Safety concerns are also prominent, with muggings and poor street lighting posing significant risks, particularly at night and in morning hours of darkness.

Given the current conditions, NMT in Nairobi represents a significant, yet often undignified, low-carbon mobility option, as for most residents, walking is a necessity rather than a choice. Beyond investing in walkways and cycle lanes, the concept of a "20-minute city," where most daily needs are accessible within a 20-minute walk, cycle, or local public transport trip, could deliver wide-ranging benefits for Nairobi. This approach could improve public health, reduce traffic, lower emissions, and restore dignity to daily commutes (KII, Private Sector, 2025).

3.2.2.2 Bus Rapid Transport

Bus Rapid Transit (BRT) systems are widely recognised as an effective, cost-efficient, and rapidly deployable mass transit solution, particularly for cities in Sub-Saharan Africa. The Kenyan government's primary objective in introducing BRT in Nairobi and its environs is to enhance efficient movement of people and alleviate urban congestion. The conceptualisation of this project dates to 2009, with the Nairobi Metropolitan Area Transport Authority (NaMATA) established in 2017 to lead its implementation efforts. The Government of Kenya intends to implement five BRT lines comprising five interconnected corridors, each named after one of Kenya's "Big Five" animals: Ndovu, Simba, Chui, Kifaru, and Nyati. The completion of 70 km of BRT corridors is targeted for June 2028, and the development is projected to create 5'760 new jobs (Government of Kenya, 2023a; Manga, 2024). Key corridors identified for BRT infrastructure include the A104 (Mombasa Road, Uhuru Highway, and Waiyaki Way), Kenyatta Avenue, Moi Avenue, Jogoo Road, and Langata Road. Notably, Jogoo Road, a busy corridor serving high-density residential areas such as Umoja, Kayole, and Donholm, is proposed as the location for an elevated Light Rail Transit (LRT) section in the CBD. This plan also includes a proposed BRT loop within the CBD, covering Haile Selassie, Moi Avenue, and University Way, to enhance urban accessibility (JICA 2018; NaMATA, 2025a, 2025b).

While BRT system development is a strategic priority, its implementation faces significant challenges. During interviews, concerns emerged regarding the operational viability and sustainability of publicly managed transport systems in Kenya, specifically concerning governance and corruption issues. (KII, Non-Profit Organisation, 2025; KII, SACCO, 2025; KII, UN Organisation, 2025). Another concern raised about the BRT initiative is the slow pace of implementation, as current plans remain largely conceptual. In contrast, Senegal, which commenced planning after Kenya, has already implemented its BRT system. Interviewed stakeholders expressed frustration with this slow progress, with many now suggesting that Kenya should reconsider its BRT plans altogether (KII, Non-Profit Organisation, 2025; KII, UN Organisation, 2025). Interviewees also cited failures of BRT in other locations where the model Kenya intends to implement has been adopted. For instance, in Tanzania, buses on routes intended for market access were not designed with sufficient luggage capacity for market sellers (KII, UN Organisation, 2025).

3.2.2.3 Electric mobility

Kenya's electric mobility transition is driven by the need to reduce its reliance on fossil fuel imports and mitigate GHG emissions. These efforts align with Kenya's Updated NDC to cut CO2 emissions by 32% by 2030, the Second NDC (2031-2035), the National Climate Change Action Plan (NCCAP) 2023-2027, and the Long-Term Low Emission Development Strategy (LT-LEDS) 2022-2050. The Kenya Energy Transition and Investment Plan, launched in November 2024, also details pathways for Net Zero development of the energy sector, specifically covering transport. Other supporting policies can be found in Annex 8.3. The success of these policies depends on financing and business mechanisms that address challenges in the emergent electric mobility sector (Figure 16). Models such as Battery-as-a-Service (BaaS), often implemented through battery swapping networks, fleet management, BasiGo's "Pay-As-You-Drive", and Fleet-as-a-Service (eFaaS) have gained traction as the transition to eMobility has gained prominence in the country.

Two-Wheeler finance and business solutions

1. **(Battery-as-a-Service (BaaS)**

   For BaaS, companies operate the networks, allowing riders to exchange depleted batteries for fully charged ones at designated stations. This approach alters the ownership proposition by removing the expensive battery component from the initial purchase price of the vehicle, thereby reducing the upfront cost for riders significantly. It also cuts down on vehicle downtime, as a battery swap can take less than two minutes, a process much quicker than traditional refuelling. The traction of this model is clear by its prevalence. Battery swapping stations constitute the majority of EV charging infrastructure in Kenya, particularly in urban centres like Nairobi (Arc Ride, 2025; Energy 4 Impact, 2023; limeundwa, 2025).

2. **Fleet management + BaaS business model**

   For fleet management, companies lease electric bikes to riders, providing comprehensive support that includes training on smart systems and application usage, as well as ongoing maintenance and operational assistance. This model is then combined with BaaS. Riders using fleet management in addition to BaaS, generally experience higher access to customers, contributing to increased earnings compared to those using BaaS only. An interviewed rider mentioned that for this combined model, repair costs are typically covered as part of the service (KII, E-boda Operator, 2025).

Financing and business models

The expansion of the EV market in Kenya is driven by innovative financing mechanisms that address the high upfront costs of EVs. These include end user/ consumer financing, business/ infrastructure financing, and policy-based support.

End-user/consumer financing

Consumer asset financing (finance leases and hire purchase

This involves finance leases and hire purchase agreements, primarily for electric two-wheeler (E-boda) consumers. It reduces the upfront cost and provides a pathway to ownership with a low-down payment. Key players in this market include M-KOPA, Mogo, Watu Credit, and 4G Capital (EMAK, 2025).

Integrated financing packages

These bundle solutions under a service model, simplifying financing and reducing barriers for operators. Examples include BasiGo's "Pay-As-You-Drive" (PAYD) model for electric buses customers and battery swapping for E-bodas (EMAK, 2025).

Business/infrastructure financing

Inventory finance and project finance

These are increasingly important for funding stock purchases and charging infrastructure development (EMAK, 2025). They enable the scaling of operations thus building of the necessary physical backbone for the EV ecosystem.

Private equity/ venture capital:

Specialised funding is available for early to mid-stage startups, often supported by Development Finance Institutions (DFIs). For example, Roam securing USD 24 million and BasiGo raising USD 42 million in 2024 to fund research, development, production efforts, and fleet expansion.

Blended financing facilities

These are offered by regulated financial institutions, often supported by donors, providing lower interest rates and longer repayment periods. A notable example is Kenya's first electric-motorcycle financing scheme, a partnership between local e-mobility maker Roam, micro-lender Fortune Credit, and climate-finance specialist GreenMax Capital Advisors, which leverages a concessional "Green for Access Fund" to offer friendlier terms to riders (Kwabe, 2025). While local banks have expressed interest in "green financing," based on stakeholder interviews, these products are not yet available for e-mobility players (KII, Private Sector, 2025; KII, SACCO, 2025).

Policy-based support

Government fiscal incentives

The Finance Act 2023 introduced VAT zero-rating for EV batteries, e-bicycles, e-motorcycles, and electric buses, along with reduced excise duties, Railway Development Levies (RDL), and Import Declaration Fees (IDF) to encourage adoption (Government of Kenya, 2023b). This has materially reduced the cost of ownership, operations, and investment in the sector. Unassembled EV kits benefit from reduced import duty (10%) and are exempt from excise duty.

Public transport and commercial solutions

3. BasiGo's Pay-As-You-Drive

Among the electric bus financing models evaluated, BasiGo's "Pay-As-You-Drive has emerged as a particularly successful example in Kenya's public transport sector (Table 10). This success has inspired other operators to seek similar financing arrangements. A SACCO leader interviewed for this research expressed interest in acquiring additional buses through financial institutions, but acknowledged that they would first need to replicate BasiGo's streamlined operational standards to ensure battery longevity and manage operational costs effectively before securing such financing. (KII, SACCO, 2025).

Table 10. Summary: BasiGo's "Pay-As-You-Drive" Model

Feature	Details
Lease terms	Low security deposit + mileage-based fee.
Mileage-based fee	KES 65-70 per kilometre, with a minimum daily km over 30 days.
Fee Coverage	▪ Charging at BasiGo depots. ▪ Maintenance. ▪ Cleaning. ▪ Roadside assistance. ▪ Comprehensive insurance.
Operator costs	Employee costs and running costs (e.g. crew, operations).
Monthly profits	KES 80'000 to 100'000 (approximately USD 619.20 to 773.99) after expenses (KII, SACCO, 2025). Exceeds ICE vehicle earnings due to lower maintenance and the elimination of "other charges[1]," a benefit derived from integrated cameras in the buses.
Matatu SACCO perspective	*We specialise in what we're best at doing and they specialise in what they're best at doing. And they make a lot of money at the end of the day. We make money too – though it could be adjusted a bit more in our favour* (KII, SACCO, 2025).
Market traction	▪ 105 buses in service. ▪ 4.9 million electric kilometres. ▪ 2'236 tonnes of CO2 emissions avoided. ▪ Electric buses are particularly preferred by older Kenyan passengers due to their enhanced spaciousness.
Future growth	▪ Over 100 reservations. ▪ Expansion beyond Nairobi to intercity routes with long-distance matatus (BasiGo, 2025).

[1] A note from this report's research team – this advantage is likely an ecosystem anomaly that will probably be "fixed" once the e-mobility ecosystem expands sufficiently to impact the collectors

4. **Fleet-as-a-Service (eFaaS)**

Beyond public transport, the Fleet-as-a-Service (eFaaS) model is gaining traction for commercial vehicles. Companies like ElandX are purchasing and leasing electric trucks to fleet operators, effectively eliminating diesel costs and providing long-term cost stability through lease and charging contracts spanning 7 to 15 years (ElandX, n.d.-b). These solutions are tailored to specific payload and range requirements of individual clients. ElandX's initial focus is on blue-chip corporate clients, including trucking and logistics companies, and industrial businesses with captive transport fleets in East Africa (ElandX, n.d.-a). Roam has also entered this space, partnering with logistics startups to roll out electric cold-chain delivery networks, demonstrating the rising demand for low-cost, low-emissions transport solutions in food distribution (The Independent, 2025).

Market evidence and policy Implications

Kenya's electric mobility sector presents a well-founded case for strategic investment, driven by strong economic fundamentals and growing market acceptance. The economic case is compelling: E-bodas save KES 159.02 per 80 kilometres compared to ICE vehicles with daily earnings of KES 1'500-2'250 and negligible repair costs (Viffa Consult, 2025; KII, E-boda Operator, 2025). These cost savings are clearly demonstrated in operational data (Table 11).

Table 11. Costs Comparison: E-boda vs ICE boda

Category	Range (KMs)	Cost per 80 KMs	Daily Average Cost
E-boda	80	KES 240 (1 full charge)	KES 240
ICE boda	80	KES 399.02 (2 litres petrol)	KES 399.02

Beyond the financial advantages, market behaviour reveals strong consumer acceptance of electric alternatives. As one dual operator explained. As one dual operator explained:

I have both motorbikes (ICE boda and e-boda). For the E-boda, with the app (ride hailing app), I get customers as soon as I open the app. I never have an issue getting them. However, even when I stop somewhere without the app, say after dropping a client, almost always, someone will see the bike and negotiate with me directly. Hence, I rarely stop even when off the app. At my ICE boda stage back home, the other boda riders refuse to let me stand with them if I have the e-boda. They always tell me to go back home and get the ICE boda because customers will prefer the e-boda.

(KII, ICE Boda Operators, 2025)

Despite these positive market signals, barriers to wider adoption remain. A key obstacle is misinformation about costs – ICE operators incorrectly believe E-bike purchases cost KES 700'000 when actual prices are significantly lower, highlighting the need for better outreach and accurate information dissemination (KII, ICE Boda Operators, 2025).

The existing innovative business models have succeeded by mitigating high upfront costs and operational risks with, private sector financing mechanisms playing a critical role in enabling adoption in informal transport sectors. As the sector matures and scales, the transition extends beyond vehicle substitution, creating demand for new green skills – from battery maintenance to fleet management – while transforming existing jobs into higher-earning, lower-emission occupations. Widespread adoption of electric vehicles will ultimately depend on financing mechanisms that address specific risk perceptions and capital constraints.

Though electric two-wheelers dominate by sheer numbers, the strategic imperative lies with electric buses and commercial vehicles, which deliver disproportionately large impacts on emissions reduction due to their higher mileage and larger size. Policy should therefore strategically target these segments to maximise both environmental benefits and demonstrate economic viability at scale.

Kenya's electric mobility experience demonstrates that sustainable transport transformation is achievable when appropriate financing structures align with strong market demand and strategic policy focus. This integrated approach delivers multiple dividends: environmental gains through reduced emissions, economic benefits through cost savings and new business opportunities, and social outcomes through enhanced livelihood opportunities across the transport value chain. The sector's evolution from niche technology to mainstream adoption illustrates how emerging markets can leapfrog traditional development pathways when innovation addresses real market needs and barriers.

Challenges to eMobility adoption

1. Regulatory misalignment: Electric freight

Kenya's transport sector demonstrates a strong theoretical alignment with national climate goals and international Sustainable Development Goals (SDGs), with solutions implemented under the 'Shift' and 'Improve' pillars of the ASI framework directly supporting these objectives. However, the primary challenge lies in translating broad policy aspirations into effective implementation.

Despite clear policy alignment, e-mobility in Kenya's road freight sector faces significant regulatory hurdles. Existing vehicle load control policies, including the East African Community (EAC) Vehicle Load Control Regulations (2018), were designed for ICE vehicles and fail to account for Electric Vehicles (EVs). EVs are inherently heavier than ICE counterparts due to battery weight, which adds approximately 2 tonnes. Consequently, an electric freight vehicle carrying the same net load as an ICE vehicle registers higher gross vehicle weight (GVW) at weighbridges and is classified as overloaded under current regulations.

If you load the same amount of cargo on an ICE vehicle and an electric one, the electric one is heavier from the outset due to batteries. To get the same weight for both, the electric one has to reduce cargo size, hence carry less cargo. Given the distance that cargo is taken (say Mombasa to Busia), carrying less cargo is not an attractive business proposition. So, we need to redesign our weighbridges to accommodate electric freight. Currently, stakeholders are working with Kenya Bureau of Standards to see how that can be done.

(KII, Non-Profit Organisation, 2025)

This regulatory gap leads to several adverse implications that actively disincentivise the adoption of electric freight vehicles. Operators face substantial financial penalties and legal exposure, as an EV operating with a standard load would consistently be deemed overloaded. This can result in fines of up to KES 400'000 (~USD 3015.97), daily impoundment charges of USD 50 after a three-day grace period, and even the possibility of imprisonment for up to 2 years (East African Community, 2018; Government of Kenya, 2015). Furthermore, it leads to reduced profitability for EV operators, who would be compelled to carry approximately 2 tonnes less actual load compared to an ICE vehicle of similar design, to comply with weight restrictions. This directly impacts profit optimisation, making electric freight vehicles less economically attractive despite their environmental benefits.

2. Regulatory misalignment: Fuel taxes

Kenya's fuel pricing mechanism involves international market dynamics, exchange rate fluctuations, and multi-layered domestic taxes and levies. The Energy and Petroleum Regulatory Authority (EPRA) determines monthly pump prices incorporating crude oil prices, USD/KES exchange rates, freight costs, and regulated margins (Government of Kenya, 2022b; Muia, 2025). A significant component is the Road Maintenance Levy Fund (RMLF) at KES 25 per litre for both petrol and diesel (Musau, 2025) representing a major revenue stream at risk from EV adoption. Other taxes are listed in annex 8.4. Kenya also faces substantial short-term fiscal challenges for widespread electric mobility adoption due to declining revenue from fuel-dependent taxes and levies. This fiscal erosion is global – the UK's Office for Budget Responsibility projected £2.1 billion in lost tax receipts by 2026-27 from increased EV uptake (Office for Budget Responsibility, 2022). Additional concerns arise from EVs being slightly heavier than ICE vehicles,

potentially contributing inadequately to the RMLF. The Kenya Roads Board (KRB) has studied this effect, creating pressure for heavy taxes on the nascent EV sector.

To address revenue decline, the government has introduced new VAT on electric bikes and buses, plus an eco-tax on batteries (National Assembly of Kenya, 2025b). However, these taxes are ill-informed and will stifle the EV sector by deterring investment and impeding adoption. The approach ignores substantial economic offsets. Decreased fossil fuel tax revenue is accompanied by reduced foreign exchange outflow from petroleum imports, which cost approximately USD 5.1 billion in 2022 (24% of total imports) (WITS, n.d.). This foreign exchange saving serves as a significant economic offset, directly benefiting the national balance of payments and improving the country's economic stability.

However, interviewees noted current government approaches appear to ignore this advantage. Additionally, according to stakeholders, the Treasury and Ministry of Transport "speak different languages" – one welcoming reduced foreign currency outflows, the other concerned about diminishing tax levies. Independent government agencies dependent on fuel levies are developing separate plans likely to negatively impact e-mobility private sector. This is likely to cause confusion (KII, Private Sector, 2025).

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3. Technical challenges: The electric grid

Kenya has an installed capacity of 3'811.6 MW, with peak demand of at least 2'200 MW and off-peak demand of approximately 1'100 MW (EPRA, 2025). However, assumptions of ample overcapacity are misleading due to capacity factor limitations and prohibitive costs of dispatching certain power plants. The substantial off-peak margin presents opportunities for EV charging, but the existing e-mobility tariff structures have created challenges for large consumers. The tariff caps off-peak charging at KES 8.00 per unit for consumption up to 15'000 units per metre. Beyond this threshold, consumers face standard domestic/commercial rates with off-peak pricing of KES 10.09, a 26.1% increase (KII, Private Sector, 2025), forcing many to install multiple metres to maintain access to the lower rate.

This structure was established in 2022-2023 when Kenya had only about 1'000 EVs and electricity consumption of 29,000 kWh in July 2023 (EPRA, 2024a).

Since then, the market has grown rapidly to over 6'000 EVs, with consumption reaching 1.81 GWh by December 2024 (EPRA, 2025). In response to this expansion, EPRA has recently announced plans to remove the 15'000 kWh monthly consumption cap, a move expected to accelerate EV adoption and infrastructure investment (Mutegi, 2025).

Right now, we have installed multiple meters to get around the 15'000 units per meter limit. It's expensive and does not really make sense because it's the same consumer. But we have to do that or else we'll lose a lot of money on electricity costs.

(KII, Government, 2025)

The tariff was initially established in 2022-2023 when Kenya had only about 1,000 EVs and electricity consumption of 29,000 kWh in July 2023 (EPRA, 2024a). Kenya has since experienced rapid growth to over 6,000 EVs with consumption reaching 1'810,000 kWh (1.81 GWh) by December 2024 (EPRA, 2025). The tariff is now due for review to adapt to this expansion.

Kenya's grid faces vulnerabilities that make peak-hour EV charging challenging, particularly during droughts when hydropower generation decreases (IEA, 2024). Key challenges include:

- **Rising demand:** Electricity demand is projected to increase 6.5% annually between 2025-2027, driven by population growth, urbanisation, and industrialisation (Sollay Kenyan Foundation, 2025).
- **Frequent blackouts:** Multiple nationwide power outages have occurred recently, raising reliability concerns (IEA, 2025; Wasike, 2024).
- **Aging infrastructure:** Power losses reached 23% in 2023 due to technical problems, theft, and billing inefficiencies (IEA, 2025).

Unmanaged home charging during evening peak hours could increase daily peak electricity demand by 24% if Kenya achieves its 5% EV adoption target. Proactive charging behaviours (plugging in at 45% vs. 30% battery level) can amplify peak demands by 2.5 times. This concentrated demand accelerates transformer aging, with replacement costs estimated at USD 100'000 for early replacements, up to USD 6.5 million within five years for widespread private EV uptake (Lukuyu et al., 2025).
In contrast, paratransit EVs (buses and matatus) and commercial fleets often charge during off-peak hours, enhancing grid efficiency. However, e-motorbikes require multiple daily recharging events due to operational demands and limited range, creating challenges in congested areas like Imaara Daima, which are optimal locations for charging infrastructure due to high traffic flow and route convergence (Lukuyu et al., 2025).

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4. Financing, skills, and institutional capacity gaps

Despite progress in reducing upfront costs, Kenya's transport sector still faces major financing gaps, particularly for mid-sized fleet operators, rural communities, and underrepresented groups such as women and youth. These groups often fall into a "missing middle" between consumer and large-scale business financing. Fixed monthly payment structures, common in current financing models, also do not reflect the seasonal and irregular income patterns of informal transport workers, limiting their ability to adopt electric mobility solutions. Rural areas are also especially disadvantaged due to the urban concentration of financial services and infrastructure.
A shortage of green skills further slows adoption, as many operators lack access to trained technicians and EV maintenance expertise. This is particularly acute in rural areas and within Transport SACCOs, where traditional automotive skills dominate. The absence of certified training programmes and standardised curricula compounds the issue, creating operational risks that deter investment even when financing is available. SACCOs could help bridge this gap by organising group training and leveraging their cooperative structures to access green skills development at scale.
Transport SACCOs also offer untapped potential to address financing challenges. While some, like 4NTE and Manchester Travellers Coach, have partnered with providers such as BasiGo, most financiers still focus on individual lending. SACCOs' existing group lending and savings mechanisms could be adapted for EV financing, but they require technical support and capital investment. Additionally, SACCOs could facilitate collective procurement of charging infrastructure, group insurance schemes, and formalisation of members' credit histories, enabling inclusive growth beyond urban, male-dominated early adopters.

3.2.3 Skills gaps in transport

The transition to a greener transport system in Kenya will involve both job transformation and creation and the emergence of new occupations. The shift is driven by the planned expansion of sustainable infrastructure, the adoption of modern transport systems like Bus Rapid Transit (BRT) and Electric Vehicles (EVs), and the integration of advanced technologies such as Intelligent Transport Systems (ITS) and digital logistics.

A key aspect of this transition involves the re-skilling and up-skilling of the existing informal workforce. A significant portion of current transport sector workers, including Internal Combustion Engine (ICE) mechanics, matatu drivers, and boda riders, will require substantial training to adapt to new interfaces, technologies, and maintenance requirements associated with green transport. Without targeted and accessible modular training programmes, specifically tailored to the informal sector's learning needs and constraints, there is a high risk of widespread job displacement. Such displacement would undermine the principle of a "just transition," leaving a large segment of the workforce unprepared for the evolving demands of the green economy. Therefore, the success of green job creation hinges on effective and inclusive reskilling strategies.

Kenya's transport sector's green transition creates significant skill gaps for both employers and employees, despite the projected growth in green jobs (Table 12). Interviews with transport sector representatives consistently revealed deficiencies across several critical areas, including technical expertise, curriculum development, training infrastructure, and certification mechanisms. These gaps will be examined in detail in the subsequent analysis.

Table 12. Summary: Green job opportunities and skill gaps

Job Title (New or Changing)	Nature of Change or New Occupation	Required Technical Skills (New or Greening Existing)	Required Transversal Skills (Generic or Transformative)	Identified Skill Gaps (Technical Expertise, Curriculum, Training, Certification)
Automotive Engineers	Shift from ICE systems to EV drivetrain design and battery integration	EV drivetrain design, battery integration, power electronics	Critical thinking, problem-solving, collaboration	Technical expertise in battery technologies; comprehensive e-mobility curriculum.
Mechanical Engineers	Involved in designing, developing, and testing components and systems for EVs	EV component design, vehicle dynamics, thermal management	Creativity, systems thinking, adaptability	Technical expertise in EV components; access to EV diagnostic tools.
Electricians	Shift to installing and maintaining EV charging stations	EV charging station installation, maintenance, grid integration, safety protocols	Problem-solving, attention to detail, digital literacy	Technical expertise in CI technologies; standardised certification for EV skills.
Drivers (Matatu, Truck, Boda)	Adapt to operating EVs, understanding new interfaces, range, charging procedures	EV operation, battery management basics, regenerative braking	Flexibility, digital literacy, customer service	Lack of accessible, modular training for informal sector; certification for EV drivers.
Automotive Service Technicians/ Mechanics	Shift from mechanical repairs to diagnosing and repairing EVs	EV diagnostics, battery repair/replacement, high-voltage safety	Problem-solving, analytical thinking, continuous learning	Limited access to EVs and diagnostic tools in training; lack of standardised certification.
BRT System Planners/ Operators	New occupations for high-capacity public transport systems	BRT planning, operations, management, maintenance, ITS integration	Collaboration, decision-making, public engagement	Comprehensive BRT-specific curriculum; interdisciplinary training.
E-mobility Platform Managers	Managing digital platforms for ride-hailing, delivery, charging	ICT, data analytics, software development, platform management	Digital inclusion, ethical AI inclusion, adaptability	Technical skills in ITS and e-mobility platforms; digital literacy.
Green Freight Logistics Specialists	Optimising logistics for reduced emissions, managing EV fleets	Logistics optimisation, green supply chain management, carbon accounting	Systems thinking, problem-solving, collaboration	Technical expertise in circularity principles; integrated logistics skills.

Source: Paeradigms, 2025

Motorised transport

To ensure a successful green transport transition, a concerted effort is required to address the gaps outlined in Table 13.

Table 13. Summary of gaps in Kenya's green transport sector

Category	Type of Gap	Summary of Gaps
Electric mobility	Technical expertise shortages	There is a high demand for specialised skills in areas such as battery management, charging infrastructure, and diagnostics exists, but the current workforce and training systems cannot keep pace. High training costs, limited access to modern equipment, and proprietary manufacturer data further exacerbate these shortages (Hakeenah, 2025; Smidt & Balthasar, 2024).
	Curriculum and certification gaps	The National Industrial Training Authority (NITA) is slowly developing a curriculum (Swisscontact, 2025). However, existing automotive curricula are outdated and do not cover EV-specific technology. Several private training programmes– including NobleProg, the Advanced Mobility Centre and the Academy of EV Technology (AEVT) (Academy of EV Technology, 2025; Advanced Mobility, 2025; NobleProg, 2025) – offer EV-specific courses, but they often lack formal accreditation and alignment with the Kenya National Qualifications Framework (KNQF) (Capital News, 2024; 2018).
	Training gaps in the TVET system	There is a lack of specific EV training programmes in TVET institutions (Smidt & Balthasar, 2024). The infrastructure is inadequate, with a shortage of actual electric vehicles, diagnostic tools, and modern equipment for hands-on experience (Ministry of Education, 2024). A shortage of certified EV trainers is also a significant barrier.
BRT	Technical expertise shortages	The local workforce's skills, rooted in traditional matatu operations, do not align with the specialised requirements of BRT systems, which include planning, design, operations, management, and maintenance of complex technology (ALG Global, 2017; APTA 2010). This creates a risk of perpetual reliance on external expertise.
	Curriculum and certification gaps	Kenya lacks a comprehensive, nationally standardised curriculum for BRT formally accredited by the KNQA or mapped to KNQF levels (KII, UN Organisation, 2025). Training is fragmented and relies on ad-hoc programmes, which leads to inconsistent skill levels and a lack of a sustainable local talent pipeline for the BRT project.
	Training gaps in the TVET system	There are no specific TVET programmes for BRT operations or maintenance, and university courses are often inaccessible to informal workers who face job displacement. Additionally, instructor expertise in modern BRT systems is largely lacking. Many TVET trainers received their pedagogical training before the advent of such advanced transport technologies, and there is a general shortage of qualified trainers,

Intelligent Transport Systems (ITS) & Digital Logistics	Technical expertise shortages	particularly in emerging fields (Ministry of Education, 2024). This means that even if equipment were available, the human capacity to deliver specialised BRT training is limited.
	Curriculum and certification gaps	These fields require highly specialised skills beyond what traditional ICT and logistics courses offer. The necessary expertise includes transport-specific data analytics, real-time control and optimisation, integration of diverse systems, AI for transport flow and logistics, and green transport techniques. Professionals also need proficiency in blockchain, cloud computing, Internet of Things (IoT) and sensor network management, cybersecurity, and e-ticketing and digital payment systems. The current gap between these demands and the foundational knowledge provided by existing curricula is a leading cause of the widespread skills shortage.
	Training gaps in the TVET system	There is no comprehensive, nationally standardised curriculum for ITS or digital logistics. Existing curricula are generic and do not cover the specific applications required for transport network optimisation, e-mobility platform integration, or green freight logistics. TVET programmes do not address these digital and green sub-fields. There is a digital divide among the existing workforce, and institutions lack the modern equipment and simulation tools necessary for hands-on training (Ministry of Education, 2024). A shortage of instructors proficient in these advanced technologies is also a key issue.

3.2.4 Social risks in transport

The green transition, if not explicitly designed with social equity and inclusion at its core, risks exacerbating existing vulnerabilities and inequalities, rather than alleviating them. The quality of jobs within Kenya's current transport sector varies widely, presenting significant social risks that could be worsened by the green transition if not carefully managed. A large portion of the informal transport service sector is characterised by long working hours, relatively low and unstable income, limited job security, poor road safety, and inadequate social protection mechanisms (Global Labour Institute, 2018). While the transition to greener transport modes offers the potential for improved job quality through formalised occupations, stable wages, regulated hours, and access to social protection, there are substantial risks of job displacement. For example, the implementation of the first four BRT lines could displace at least 35'193 existing jobs, where only 5'760 new jobs are expected, resulting in a net loss of approximately 30'000 jobs. Informal ICE mechanics and matatu workers are particularly vulnerable to losing their livelihoods in this transition (Manga, 2024).

Women working in and making use of the transport sector face huge safety concerns. These include verbal abuse and inappropriate physical contact while waiting for or boarding matatus, and heightened anxiety during journeys. Research by Flone Initiative indicates that 46% of women workers in the transport sector have experienced sexual harassment, with most failing to report it due to a lack of clear reporting mechanisms (Flone Initiative, 2023).

Workwise, the culture and systems within the matatu sector are not appealing, deterring more women from entering or remaining in occupations like driving or conducting. With regard to employing women, electric buses mostly staffed by women conductors; however, there were no women drivers. When asked why, interviewees stated women are preferred for the conductor position, with cleanliness cited as the key reason, but no explicit reason for the lack of female drivers was provided (KII, SACCO, 2025).

Similarly, persons with disabilities (PWDs) face significant barriers in accessing public transport. For example, 77% of polled users report that matatus not easy to board or alight, and 94% find that seats are not adapted for their needs. PWDs also report undignified handling and discrimination, with 60% stating they have been left behind by a matatu due to their disability (Flone Initiative, 2021). Risks, groups affected, and potential mitigation strategies are outlined in Table 14.

Risk Area	Description of Risk	Affected Groups	Potential Mitigation Strategies
Job Displacement	BRT implementation could lead to a net loss of approximately 30'000 jobs, particularly for informal ICE mechanics and PSV workers.	Informal workers, matatu operators, ICE mechanics	Re-skilling programmes tailored for green jobs; targeted subsidies for transitioning workers; job placement services.
Affordability of Green Transport	New EV and BRT systems may have higher costs, making them inaccessible for low-income users.	Low-income urban and peri-urban users	Fare subsidies or tiered pricing models; expansion of affordable NMT options; improved last-mile connectivity.
Unequal Infrastructure Access	Deployment of EV charging infrastructure and BRT lines may be concentrated in urban/ affluent areas, excluding other regions.	Rural and informal settlements	Equitable infrastructure planning and national rollout frameworks; incentives for rural EV/BRT development.
Skill Gaps	Green jobs may require new skills, potentially excluding local labour lacking training pathways.	Youth, informal mechanics, existing informal workforce	Modular Technical and Vocational Education and Training (TVET) programmes; local training centres; on-the-job apprenticeships.
Lack of Voice in Transition	Limited engagement of workers, unions, and communities in transition planning may lead to overlooked needs.	All stakeholder groups, especially informal workers	Establishment of advisory councils with diverse representation; regular stakeholder forums for inclusive planning.
Women's Safety	Pervasive safety concerns including verbal abuse, inappropriate contact, and anxiety during commutes.	Women commuters and workers	Implementation of clear sexual harassment policies with robust reporting mechanisms; improved public transport security (CCTV, lighting); gender-sensitive urban planning.
PWD Accessibility	Inaccessible vehicles, undignified handling, discrimination, and unadapted infrastructure.	Persons with Disabilities (PWDs)	Enforcement of universal design standards for vehicles and infrastructure (ramps, adapted seating); mandatory disability etiquette training for transport staff; accessible information and communication.

04

Solutions assessment

- Dual Technical and Vocational Education and Training (D-TVET)
- 360° AgriJobs approach
- Agricultural Society of Kenya (ASK) Shows
- Transport SACCOs (Savings and Credit Cooperative Organisations)

4 Solutions assessment

Kenya's strategic response to the imperative of a green and just transition in its transport sector involves a range of innovative interventions designed to bridge critical skills gaps and foster sustainable economic development. This section analyses key initiatives, assessing their mechanisms and potential impact in aligning workforce development with climate-smart opportunities.

4.1 Dual Technical and Vocational Education and Training (D-TVET)

4.1.1 Challenge

Kenya's Vision 2030 aspires to develop a competitive and adaptive human resource base. However, the realisation of this goal could be impeded by a persistent skills mismatch (Ministry of Labour and Social Protection, 2023). While the overall unemployment rate is 6.6%, there is widespread youth unemployment, estimated at 16.3% for the 20-24 age group and 9.1% for the 25-29 age group. Additionally, 16.9% of youth are Not in Employment, Education, or Training (NEET). It is evident that Kenya's population is not being effectively harnessed. From an industry perspective, the available skills are often inadequate to meet current needs, particularly in light of the ongoing rapid technological changes (Ministry of Labour and Social Protection, 2023). This mismatch, in turn, means that TVET graduates cannot sufficiently meet to the needs of a labour market that is rapidly changing to meet the demands of the green transition. For example, a shortage of skilled mechanics with knowledge of battery management systems and charging infrastructure installation is a barrier to the growth and widespread adoption of EVs. This demonstrates a need for stronger linkages between industry and education and training systems, as well as highlighting the need for employer involvement in the development of curricula to ensure that the skills being developed are driven by real demand.

4.1.2 Solution

The Dual Technical and Vocational Education and Training (D-TVET) model directly addresses this challenge by integrating classroom learning with structured industry experience through a 50:50 block-release system. Under this model, trainees are expected to rotate between the TVET and in-industry placements every 3 months until the completion of their course (KEPSA, 2024). Currently, D-TVET targets diploma-level trainees and is guided by tripartite agreements among institutions, trainees, and employers.

D-TVET is a GIZ-supported Kenyan-German TVET Initiative that piloted a dual training model from 2019 to 2022, where 50% of learning took place at 1 of 7 national TVET institutions, and 50% in partner firms to prepare trainees in selected trades for the world of employment (GIZ, n.d.; Lah, 2023). Following a successful pilot and the incorporation of key lessons, the model was scaled up and implemented across 60 TVET institutions in Kenya. As of 2024, Kenya had 2'756 accredited TVET institutions (KNBS, 2025). Trough the Dual TVET Act (2025), dual training is expected to be extended to all institutions and expanded to cover a broader range of trades. If adequately implemented, this initiative will strengthen the alignment between skills development and industry needs.

4.1.3 Implementation

Implementation involves coordinated efforts by government, led by the Ministry of Education and agencies such as the Technical and Vocational Education and Training Authority (TVETA) and the Curriculum Development, Assessment and Certification Council (CDACC), alongside industry, skills providers, and GIZ and other development partners. The national D-TVET Policy supports this model and explicitly promotes green skills development by embedding climate sustainability in curricula and integrating sector-specific and transversal green competencies.

Notably, industry now co-develops and delivers training. For example, through the PropelA Dual Apprenticeship Programme – funded by the Hilti Foundation and Geberit AG – Swisscontact now leads in designing the training, co-creating the accredited Level 6 curriculum together with the NITA, providing real job-site training, and mentoring apprentices to meet business needs (Swisscontact, 2025). This D-TVET model helps ensure that the training being delivered is relevant to labour market needs (KEPSA 2024; Kenya School of TVET, 2024; Ministry of Education, n.d.).

Funding is shared, with the government supporting institutional training and industry covering in-company training costs. This is managed under a governance structure that ensures quality and scalability (AHK Eastern Africa, 2025).

4.2 360° AgriJobs approach

4.2.1 Challenge

Vulnerable groups like youth and women often face limited access to dignified employment and entrepreneurial opportunities in the agriculture sector. Women make up a significant portion of the agricultural labour force in Kenya but hold only 10% of land titles and only 1.63% of agricultural land (Government of Kenya, 2023a). This lack of land ownership restricts their ability to access credit, invest in productivity-enhancing technologies, or expand their agricultural enterprises. Similarly, many young people lack the essential resources to succeed in the agri-food sector, including access to information, start-up capital, markets, networks, and appropriate training. The 360° AgriJobs Approach seeks to tackle this issue.

4.2.2 Solution

The AgriJobs Approach addresses this challenge by establishing a comprehensive "learning to earning" ecosystem with greening as a foundational principle. The approach is anchored in four integrated pillars:

- **Training and qualification**
- **Business development**
- **Networking**
- **Investor matching**

This strategy equips participants with green skills in CSA, supports business incubation, and facilitates market linkages.
In Kenya, the initiative targets youth and women in five counties in Western Kenya: Bungoma, Kakamega, Kisumu, Siaya, and Vihiga.

By 2025, the initiative had provided agribusiness training to over 7'000 youth, offered six months of coaching and mentorship to 3'000 individuals, and facilitated the establishment of approximately 2'300 enterprises focused on CSA. The documented success, with 75% of participants improving job prospects and 80% of supported businesses creating new jobs, demonstrates its effectiveness in fostering green entrepreneurship and sustainable livelihoods. The model's scalability is evidenced by its ongoing replication across other African countries, including Burkina Faso, Malawi, and Mozambique. This highlights its potential for broader application in green skills development across various sectors.

4.2.3 Implementation

The initiative is implemented by GIZ, in collaboration with private sector partners, under its Global Project on Rural Employment with a Focus on Youth and funded by the German Federal Ministry for Economic Cooperation and Development (BMZ). The design and delivery of activities reflect multi-stakeholder cooperation to ensure that services respond to local labour market needs and climate priorities. GIZ provides coordination and technical support, and private sector actors contribute to business development, investor matching, and employment linkages.

4.3 Agricultural Society of Kenya (ASK) Shows

4.3.1 Challenge

Addressing the critical agricultural knowledge gap, particularly concerning climate-smart practices and sustainable farming innovations, is essential for enhancing food security and climate resilience in Kenya. Despite knowledge being a critical enabler of productivity, resilience, and innovation, Kenya's agricultural extension and information dissemination systems remain underdeveloped (Gwada, 2020). Therefore, many farmers still lack access to reliable, timely, and practical information required to enable climate adaptation.

4.3.2 Solution

In this context, the Agricultural Society of Kenya (ASK) Shows play a crucial role in bridging the agricultural knowledge gap. Founded in December 1901, the ASK serves as a pivotal institution dedicated to promoting agricultural excellence, CSA adoption, trade development, and knowledge exchange. A core strategy of the ASK is the organisation of 16 annual agricultural shows across Kenya's regions, serving as critical platforms for farmer learning, innovation exposure, and networking. The Shows offer farmers face-to-face engagement with experts, researchers, and private sector actors. Activities include live demonstrations, exhibit interactions, and practical training plots (ASK, 2025b; Gwada, 2020).

In 2023, the ASK adopted the theme "Promoting Climate-smart Agriculture and Trade Initiatives for Sustainable Economic Growth," aligning its outreach with national priorities on climate adaptation and inclusive development. The Shows' direct and interactive nature promotes real-time learning and the adoption of modern technologies, making them an innovative and scalable model for advancing CSA and inclusive rural development by promoting green skills and fostering public-private partnerships.

4.3.3 Implementation

The implementation of the ASK Shows is achieved through a structured leadership hierarchy: the President of Kenya serves as the Patron; the deputy president as the Deputy Patron; the Cabinet Secretary for Agriculture and Livestock Development as the First Vice Patron; followed by a national chairman, a deputy national chairman, a financial advisor, a legal advisor, and a CEO. County Governors in the

16 counties in which the Shows take place each serve as County Patrons, supported by branch chairpersons and council members.
The Shows are coordinated through a multi-channel outreach strategy that includes SMS, email, radio, television, newspapers, a website, and social media. Exhibitors are notified approximately five months in advance, with interested parties registering and often promoting their participation independently.
Funding comes from exhibitor fees, visitor fees, and membership fees. In 2024, the Shows featured 1'500 exhibitors and hosted 700'000 visitors and 8'000 members. Public and private stakeholders both participate, with exhibitors engaging directly with visitors and fellow participants. To enhance access for vulnerable smallholder farmers – primarily driven by financial and logistical barriers – government and NGO initiatives play a key role. The KENAFF Agribusiness Champions Training Programme builds entrepreneurial and technical capacity at the county level (KENAFF, n.d.), while SACDEP-Kenya's supports marginalised farmers through group-based training and cooperative mobilisation (SACDEP-Kenya, n.d.). Additionally, One Acre Fund, in partnership with the Mastercard Foundation, provides young smallholder farmers with training, market access, and financial tools to support their participation in commercial agriculture and related events (Mastercard Foundation, 2023).

4.4 Transport SACCOs (Savings and Credit Cooperative Organisations)

4.4.1 Challenge

The expansion of green initiatives in Kenya, particularly in the e-mobility sector, is often constrained by significant financial barriers, including high upfront costs and limited access to traditional credit (EMAK, 2025). This poses a challenge to job creation and skill development, as the informal transport workforce may not have access to the resources needed to transition to greener transport.

4.4.2 Solution

Kenya's extensive network of Savings and Credit Cooperative Organisations (SACCOs) offers an innovative and accessible financing model to overcome these challenges. SACCOs are recognised by the Government of Kenya as indispensable instruments for achieving the medium- and long-term economic and social development goals of Kenya Vision (Willis et al., 2024). They are embedded across both formal and informal sectors and mobilise internal capital through member savings and shares, providing a self-sustaining funding source for collective investments in green projects. They hold significant potential for co-owning green infrastructure, as demonstrated by community-led solar mini-grid projects, advancing local employment and reducing long-term sustainability costs (Energy for Development (e4D), 2019).

In the transport sector, SACCOs offer an innovative model for advancing green transport through internal capital mobilisation, where members pool resources via savings and shares or through green asset acquisition. A notable example of green asset acquisition is the adoption of BasiGo's "Pay-As-You-Drive" model by matatu SACCOs for electric buses (KII, SACCO, 2025). This model significantly reduces the upfront capital expenditure for bus owners by covering charging, maintenance, and insurance through a mileage-based fee, thereby making electric bus adoption economically attractive and operationally efficient. This and other cooperative models are highly scalable, given SACCOs' national footprint, substantial asset base, government support, and cross-sectoral flexibility.

4.4.3 Implementation

The solution is coordinated by matatu SACCOs or registered companies, which are responsible for the welfare of their stakeholders, including drivers, conductors, SACCO workers, and vehicle owners (Global Labour Institute, 2018; ILO, n.d.). A SACCO or company creates new posts and establishes a framework for staff training and development. This helps ensure that staff have the necessary knowledge, skills, and qualifications. For example, stakeholders in the matatu sector expressed interest in participating in the Flone Initiative training on sexual harassment, which addresses the needs of women who make up most of their clientele (KII, Sacco, 2025).

This demonstrates a willingness to engage in professional development and the existence of a sustainable model for job creation and skills development driven by the private sector. The innovative funding model is financed through member savings and shares making it self-sustaining. E-mobility is promoted by shifting from large upfront investment to usage-based payments that cover operational costs. This approach enables matatu SACCOs to adopt EVs, contribute to decarbonisation, and maintain their pivotal role in Kenya's economic transformation.

05

Conclusion

5 Conclusion

Kenya's transition to a green economy faces significant systemic and operational challenges that require prioritised interventions to unlock the country's potential for sustainable development and green job creation. The findings of this case study suggest, despite Kenya having a well-developed policy framework for climate action, green jobs, and skills development – including the Climate Change Act (2016), National Climate Change Action Plan (2023-2027), National Strategy on Green Skills and Jobs (2025-2030), Updated Nationally Determined Contribution (2020-2030), and Second Nationally Determined Contribution (2031-2035) – key gaps across sectors collectively limit the nation's ability to scale green skills development and employment opportunities.

Kenya's transition to climate-smart agriculture encounters a complex array of mutually reinforcing obstacles that collectively hinder sustainable agricultural development. Governance fragmentation across administrative levels results in poor coordination, duplicated interventions, and weakened institutional capacity that constrains program effectiveness. Small-scale producers face significant barriers in securing credit, acquiring appropriate technologies, and obtaining relevant training, as most sustainable farming solutions are exclusively provided on a commercial scale at unaffordable rates. The agricultural workforce lacks adequate expertise in critical areas such as soil restoration, precision agriculture, and clean energy applications, largely due to obsolete educational programs and insufficient instructor competency. While consumer appetite for organic produce continues to grow, market failures persist through elevated production costs, deficient quality assurance systems, and limited product tracking capabilities. These constraints are interdependent and require coordinated interventions that target a systemic shift.

The transport sector presents equally challenging barriers, particularly regarding financing mechanisms for green mobility solutions. The absence of diverse and accessible financing options for EV adoption is a significant obstacle for public transport operators, matatu SACCOs, and freight companies seeking to transition to cleaner technologies. High upfront costs for EVs, combined with limited understanding of green finance and business models among traditional lenders, restrict broader market participation in Kenya's emerging green transport economy. This financing gap is further exacerbated by inadequate training infrastructure that fails to prepare transport workers for the sector's green transformation.

Existing automotive curricula lack EV-specific content, comprehensive BRT training programs remain underdeveloped, and informal transport workers, who are the backbone of urban mobility, risk exclusion from the green transition due to their limited access to formal training opportunities.

These sectoral challenges reflect broader systemic issues including fragmented policy implementation and governance structures, limited multi-stakeholder coordination mechanisms, inadequate technical capacity at county levels, and inadequate data and information systems to match green skills supply with labour market demand. However, this analysis also identifies a path forward grounded in existing solutions – models that demonstrate the power of collaboration between the public sector, private sector, and communities. Examples include:

The **D-TVET model,** piloted and supported by GIZ, combines classroom learning and structured industry training to produce graduates ready for emerging green occupations.

The **360° AgriJobs Approach,** implemented by GIZ and private sector partners, provides a holistic pathway for youth and women in the agricultural labour force, linking training, finance, and market access.

Agriculture Society of Kenya Shows, coordinated under a structured leadership hierarchy with the President of Kenya as Patron, offer smallholder farmers access to expert advice, live demonstrations, practical training plots, and networking opportunities.

SACCO-based financing models, built on collective action and internal capital mobilisation, show how member-driven initiatives can accelerate the greening of Kenya's transport sector.

To enable the green transition, Kenya's main priority should be to scale proven models that address the interconnected challenges identified. This requires coordinated policy interventions, innovative financing mechanisms, and inclusive training approaches that can bridge the gap between Kenya's green economy aspirations and current implementation realities. Without addressing these fundamental barriers, the country risks missing key opportunities to leverage its green transition for inclusive economic growth and sustainable job creation.

06

Recommendations

The recommendations presented in this case study are derived from research findings and are intended to stimulate dialogue. Any suggested implementation steps are illustrative examples only, provided to clarify the recommendations. They are not prescriptive and should not be interpreted as definitive guidance. Final design and execution of policies or programmes rests with the respective country stakeholders, who are best positioned to adapt and contextualise approaches in line with national priorities and capacities.

6.1 General recommendations

Recommendation and rationale

Kenya has laid a strong policy foundation for a green transition through the Climate Change Act (2016), the National Strategy on Green Skills and Jobs (2025–2030), and sectoral frameworks. However, fragmented implementation, weak coordination, and limited data integration continue to hinder the alignment of climate investments with green jobs and skills development. Coordination between national and county governments remains inconsistent, with many counties lacking the capacity to effectively integrate climate and labour market priorities.

Evidence from the Financing Locally-Led Climate Action (FLLoCA) programme shows that devolved climate finance can be effective when supported by robust governance and community participation. Yet, the lack of integrated climate and labour market data impedes evidence-based planning. Kenya's Climate Information Portal (KCIP) and Labour Market Information System (KLMIS) operate in silos, limiting their utility for workforce planning. To ensure climate action translates into inclusive and sustainable job creation, Kenya must strengthen multi-level governance (horizontal coordination across ministries and also vertical integration with counties and local institutions), improve policy coherence, and integrate climate and labour market data across national and county levels.

Responsible stakeholder

- Ministry of Environment, Climate Change and Forestry
- National Climate Change Council (NCCC)
- National Treasury and Economic Planning
- State Department for Labour and Skills Development
- Climate Change Directorate (CCD)
- Alliance for Greening Skills and Opportunities (AGSO)
- Council of Governors (CoG)
- Kenya National Bureau of Statistics (KNBS)
- County Climate Change Units (CCCUs)
- Jacobs Ladder Africa
- Private sector, Civil Society
- Development partners (UNDP, GCF, UK FCDO, GIZ, SIDA)

1 Policy & governance

Strengthen multi-level climate governance to align green investments with jobs and skills

Implementation

- **Strengthen AGSO's role in facilitating policy coherence across the green economy.** o address fragmented policy implementation and ensure climate investments support green employment and skills development, reinforce the coordination role of AGSO by formally expanding its mandate to include facilitation of policy coherence across national and county frameworks. This could include leading regular policy dialogues, mapping overlaps and gaps, and guiding harmonised implementation of green economy initiatives.

- **Integrate climate and labour market data to support workforce planning.** To improve evidence-based planning, Kenya should link climate data systems - such as Kenya Climate Information Portal (KCIP) and the Kenya Climate Change Knowledge Portal (KCCKP) - with labour market platforms like Kenya Labour Market Information System (KLMIS) and AGSO. This integration would enable real-time tracking of green job trends, inform training programme design, and monitor employment outcomes from climate investments. Shared dashboards and reporting tools can support counties, training institutions, and employers in planning and decision-making.

- **Align county climate planning with the National Green Skills Strategy.** Support counties to embed green employment and skills development targets into their Climate Change Planning Committees, Ward Climate Change Committees, and County Climate Information Services (CIS) Plans. These targets should be aligned with the National Strategy on Green Skills and Jobs and integrated into CCCF-funded projects. This will ensure that local climate investments contribute directly to workforce development and inclusive employment.

- **Facilitate policy learning and accountability.** Use existing reporting mechanisms under the Climate Change Act to track progress on green employment and skills development. Facilitate peer learning exchanges between counties and publish knowledge products such as case studies, toolkits, and a Green Governance Scorecard to promote continuous improvement and policy coherence.

2

Data, research & foresight

Localise and scale access to Green Skills and employment information via the AGSO Platform

Recommendation and rationale

Kenya's transition to a green economy is hindered by limited access to inclusive, locally relevant labour market information on green skills and employment opportunities. The Alliance for Greening Skills and Opportunities (AGSO), a multi-stakeholder coalition, has developed a national data portal to address this gap. However, its reach is constrained by the digital divide, limited county-level data, and insufficient engagement with underserved groups, such as youth, women, informal workers, and rural communities.

To ensure equitable access and effective job matching, it is essential to scale and localise AGSO's platform through existing community-based channels and hubs, while strengthening offline outreach and promoting peer learning among counties. This approach avoids duplication, leverages existing infrastructure, and supports sustainable, cost-effective dissemination of green skills information.

Responsible stakeholder

- Ministry of information, Communications and the Digital Economy
- AGSO (Alliance for Greening Skills and Opportunities)
- County Governments
- Jacob's Ladder
- Skills providers
- Private Sector and Employers
  Civil society (Youth, Women's, and Informal Sector Organisations)
- Development partners (e.g. GIZ, UNESCO, UNDP, UNCTAD, ILO)

Implementation

- **Undertake a county-level needs assessment.** To identify priority areas for localisation, collaborate with AGSO and Jacobs Ladder Africa to select three to five counties that demonstrate strong potential for green employment but face challenges in digital access. Assess existing community hubs to determine their capacity to integrate green skills information services. Additionally, map local employment demand in key sectors, including Climate-smart Agriculture, transport, and renewable energy.

- **Localise AGSO data and services.** To ensure that green skills and employment information are relevant and accessible at the county level, county-specific dashboards should be developed using AGSO's national portal. These dashboards must reflect the unique economic and social contexts of each county, enabling more targeted decision-making and job matching. In order to address the digital divide, particularly in rural and marginalised communities, online content should be converted into offline formats such as printed guides, radio broadcasts, and community noticeboards. Outreach strategies should be co-designed in partnership with youth, women's, and informal sector organisations to ensure that the information is inclusive, culturally appropriate, and responsive to local needs.

- **Strengthen community-based dissemination channels.** To effectively deliver and apply the localised information, it is essential to engage with existing community hubs and organisations that already serve as trusted access points. These may include youth centres, TVET institutions, and local innovation hubs. Green skills and employment information should be embedded into their ongoing services to maximise reach and impact. Facilitators within these hubs should be provided with training and practical toolkits to enable them to interpret and use AGSO data effectively for career guidance and job matching.

- **Monitor, evaluate, and share learning.** Establish a monitoring framework to track the usage of localised information, the effectiveness of outreach efforts, and the resulting employment outcomes. Feed insights and data back into the AGSO portal to enhance its quality and relevance, and to inform national policy development. Document successful models and approaches to support replication and scaling in other counties. Additionally, peer learning exchanges should be promoted among counties to encourage the sharing of knowledge products, experiences, and best practices, thereby fostering a collaborative approach to scaling green employment initiatives.

3 Finance & investment

Integrate a Just Transition patient capital fund into county climate finance for MSMEs

Recommendation and rationale

Green Micro, Small and Medium Enterprises (MSMEs) in Kenya face persistent barriers to accessing financing, including high perceived risk, limited collateral, and a lack of tailored financial products. Traditional lenders often lack understanding of green business models and their potential for job creation and climate impact. This is particularly critical in the transport and agriculture sectors, which together employ over half of Kenya's workforce and contribute significantly to GDP.

While Kenya has made progress in establishing climate finance mechanisms, such as the National Climate Change Fund, County Climate Change Funds (CCCFs), and the Financing Locally-Led Climate Action (FLLoCA) programme, these instruments do not consistently provide patient capital tailored to the needs of green MSMEs. The Draft Green Fiscal Incentives Policy Framework recognises the importance of concessional loans, guarantees, and interest rate subsidies in unlocking private investment. However, it does not yet offer a dedicated pathway for long-term, flexible finance linked to green job creation.

To avoid duplication and fragmentation, this recommendation proposes the integration of a Just Transition Patient Capital Fund as a county-anchored blended finance window within existing climate finance structures. This window would provide long-term, low-cost, and flexible financing to green MSMEs, directly linking financial support to enterprise-led green skills development and job creation. It would strengthen Kenya's green fiscal architecture while addressing a critical financing gap for inclusive, climate-resilient growth.

Responsible stakeholder

- National Treasury
- Ministry of Environment, Climate Change and Forestry
- Ministry of Education / TVET Authority
  County Governors
  Kenya Private Sector Alliance (KEPSA)
- Kenya Development Corporation Ltd
- Local financial institutions and intermediaries (SACCOs, Microfinance institutions, Commercial Banks and Development Finance Institutions, DFIs)
- Sector specific associations
- Civil Society and knowledge institutions
- Development partners (e.g Acumen, GCF, AfDB)
- Skills providers

Implementation

- **Conduct a national green MSME and finance ecosystem assessment.** Map green MSMEs in key sectors such as transport and agriculture, identifying workforce size, expansion plans, financing needs, and barriers. Quantify job creation potential and financing requirements per job created. Use data from FSD Kenya, KCIC, the National Treasury's climate finance tracking, and CCCF performance reports in counties with strong local climate finance delivery.

- **Design a county-anchored blended finance window.** Structure the fund to combine public, concessional, and private capital, with borrowers required to meet green job creation targets. Position the Kenya Development Corporation (KDC) as fund manager, leveraging its MSME mandate. Use patient capital instruments, such as long-term loans and guarantees, tailored to meet the cash flow needs of MSMEs. Engage SACCOs, micro-lenders, and county governments as delivery partners. Establish a multi-stakeholder steering committee to ensure inclusive governance and alignment with national and county priorities.

- **Mobilise funding through blended finance instruments.** Allocate a portion of the National Climate Change Fund to green MSMEs, with a focus on job creation and skills development. Seek concessional finance from partners such as AfDB and GCF through accredited entities. Blend concessional capital with commercial funding from local banks and microfinance institutions to reduce the cost of capital. Introduce risk-sharing mechanisms such as first-loss provisions and partial credit guarantees to encourage lending to previously "unbankable" enterprises. Structure access through financial intermediaries, direct lending facilities, guarantee schemes, and skills development grants channelled via counties.

- **Pilot tailored financial products linked to green jobs and skills.** Co-design financial products with SACCOs and micro-lenders that reflect MSME cash flows and incentivise job creation, skills development, and emissions reduction. Examples include low-interest loans conditional on job creation, training grants, wage subsidies for youth and women, and performance bonuses for exceeding employment targets. Pilot in 3–5 counties with strong CCCF structures and active green MSMEs.

Establish a Monitoring, Evaluation, and Learning Framework. Develop a results framework with indicators for green jobs, skills development, enterprise growth, and climate impact. Leverage existing systems under the National Climate Change Action Plan (NCCAP 2023–2027) and FLLoCA for tracking and reporting.

6.2 Sector-specific recommendations

6.2.1 Agriculture

Recommendation and rationale

The Kenya Climate-smart Agriculture Implementation Framework (2018–2027) outlines strategic priorities for CSA adoption but lacks a dedicated mechanism to operationalise green skills development across the sector. While it references training for farmers and extension officers, it does not provide a structured approach to developing CSA competencies at scale, nor does it align with national green skills strategies or labour market needs. This has resulted in fragmented training efforts, limited engagement with TVETs and universities, and weak integration of CSA into formal education and workforce development systems.

To address these gaps, a National CSA Skills Delivery and Coordination Mechanism should be established to provide a structured, inclusive, and accountable system for CSA skills development. This mechanism should be aligned to Kenya's Green Economy Strategy and Implementation Plan (GESIP), National Strategy on Green Skills and Jobs (2025), Kenya's Nationally Determined Contributions (NDCs) 2020 and 2031–2035, and TVET and higher education reforms. This will improve curriculum relevance and ensure that CSA skills development is demand-driven, inclusive, and scalable.

Responsible stakeholder

- Ministry of Education
- Ministry of Agriculture and Livestock Development
- Ministry of Gender
- Technical and Vocational Education and Training Authority (TVETA)
- Curriculum Development, Assessment and Certification Council (CDACC)
- National Industrial Training Authority (NITA)
- County Governments
- Farmer organisations and private sector
- Development partners (e.g. IDRC, UNDP, GIZ)
- Skills providers

4 Policy & governance

Establish a national Climate-smart Agriculture (CSA) skills delivery and coordination mechanism

Implementation

- **Establish a CSA skills taskforce.** Set up a multi-stakeholder taskforce, including representatives from government, the private sector, farmer organisations, and development partners, to oversee the development of the CSA skills framework. The taskforce should define job roles, salary scales, required competencies, and career progression pathways for each identified occupation.

- **Conduct a CSA skills and Labour Market Assessment.** Undertake a situational analysis to assess current workforce capacity against demand for green agriculture jobs. This should map existing CSA training provision, institutional capabilities, and pedagogical approaches, while identifying agro-ecological and demographic needs. The assessment should also establish partnerships with employers willing to recruit trained workers and outline clear employment pathways from training to placement.

- **Develop a CSA skills implementation roadmap.** Produce a detailed roadmap informed by the assessment, setting out specific milestones, deliverables, timelines, and accountability mechanisms. The roadmap should include CSA practice standards, competency frameworks, curriculum modernisation plans, inclusive delivery models (particularly for underserved areas), institutional roles, financing strategies, and a monitoring and evaluation system with clear indicators. It should also ensure alignment with national strategies such as the Green Skills Strategy, Kenya's NDCs, and GESIP. Detailed examples of considerations include:

  - **A sustainable financing strategy.** A comprehensive financing plan that leverages county budget allocations, development partner support, climate funds, and blended finance options. The strategy should also include incentives for private sector investment in CSA training and employment.

  - **Expanding private sector and inclusive partnerships.** Approaches for engaging agribusinesses, cooperatives, and SMEs to co-design and deliver training programmes, apprenticeships, and certification schemes. Targeted interventions should be developed for youth and women, including modular training pathways, digital agriculture skills, and entrepreneurship support, with clear targets for participation and placement.

  - **Supporting CSA enterprise development.** Approaches for linking CSA training to business incubation and acceleration programmes, particularly for youth and women-led enterprises. Providing mentorship, seed funding, and market access to promote job creation, self-employment, and innovation in climate-smart agriculture.

5 Education & training systems

Update and align curricula and training to reflect modern CSA practices

Recommendation and rationale

Most TVET institutions and HEIs in Kenya are delivering CSA training using outdated pedagogical methods and technical content that are inadequate for preparing trainees to meet current agricultural challenges. These include digital farming technologies, precision agriculture, and climate adaptation strategies. Existing CSA curricula rely heavily on theoretical instruction with limited practical application and often fail to integrate modern technologies such as Internet of Things (IoT) sensors, drone applications, and data analytics, largely due to limited access to relevant data. Additionally, they fail to address emerging climate adaptation techniques. Feedback from employers highlights skills gaps in areas such as soil health monitoring using digital tools, climate data interpretation, and sustainable water management systems.

Responsible stakeholder

- Ministry of Education
- Ministry of Agriculture and Livestock Development (MoALD)
- Curriculum Development, Assessment and Certification Council (CDACC)
- Kenya School of TVET (KSTVET)
- Kenya School of Agriculture (KSA)
- Kenya Private Sector Alliance (KEPSA)
- Agricultural CBOs (farmers networks)
- Development partners (e.g ILO, GIZ, AUDA-NEPAD)

Implementation

The proposed approaches should be aligned and refined through the CSA framework development process.

Curriculum update

- **Integrate emerging topics** such as digital agriculture, precision farming, carbon literacy, climate finance, and climate adaptation strategies. These modules should be embedded within existing TVET and HEI programmes and aligned with the Kenya National Qualifications Framework (KNQF) levels 4–6. Content should be co-developed with industry partners to ensure alignment with labour market needs and technological trends.

- **Incorporate hands-on learning on using tools** such as IoT sensors for soil and water monitoring, drones for crop surveillance, and open-source platforms for climate data interpretation. This should be aligned with CDACC's approved occupational standards and modular curricula.

Capacity development

- **Implement a national Train-the-Trainer (ToT) programme through** the Kenya School of TVET (KSTVET). The programme should be linked to the updated curricula and contain:
  - A modular curriculum covering CSA technologies, digital pedagogy, and learner-centred approaches.
  - Practical attachments at agritech hubs or demonstration farms.
  - Certification aligned with KNQF and CPD standards.
  - Enhanced digital pedagogy through training instructors in blended delivery methods, problem-based learning, and the use of digital tools. This can be supported by KSTVET's ongoing efforts to promote technology integration and CBET delivery in TVET institutions.
- **Track trainer development and institutional performance** using the Kenya Education Management Information System (KEMIS), which is being rolled out to unify education data across all levels, including TVET and HEIs.

6.2 Sector-specific recommendations

6.2.2 Transport

6 Finance & investment

Establish a green transport financing facility

Recommendation and rationale

High upfront costs of electric vehicles (EVs) remain a major barrier to adoption in Kenya's transport sector, particularly for public transport operators, such as matatu Savings and Credit Cooperative Organisations (SACCOs), and freight and logistics companies. While innovative financing models, like BasiGo's "Pay-As-You-Drive" and eFleet-as-a-Service (eFaaS), offer promising solutions, they remain limited in scope and scale. The absence of diverse and accessible financing mechanisms constrains broader market participation.

To unlock Kenya's EV potential, a Green Transport Financing Facility should be established as a flagship initiative under the Draft Green Fiscal Incentives Policy Framework, designed to de-risk investments for public transport and logistics operators, catalyse green job creation, and accelerate climate-smart mobility. Anchoring the facility within the National Treasury's green finance coordination structure will ensure coherence with national fiscal reforms and climate finance strategies. The facility should also prioritise inclusion of women, youth, and rural operators to ensure equitable access to green transport opportunities.

Responsible stakeholder

- National Treasury
- Ministry of Roads and Transport
- Ministry of Energy
- Ministry of Environment and Climate Change
- Ministry of Cooperatives and MSME Development
- County Governments
- Kenya Private Sector Alliance (KEPSA)
- Private Sector (Transport Savings and Credit Cooperative Organisations, Logistics Small-and Medium Enterprises, and EV Industry)
- Skills providers
- Commercial banks

Implementation

- **Design a blended finance facility** aligned with the Draft Green Fiscal Incentives Policy Framework that combines funding from government (including project guarantees, subsidies, and tax incentives), development partners, climate funds, and commercial banks and microfinance institutions. The aim is to lower investment risks and attract private capital into EV adoption by matatu SACCOs and freight/logistics SMEs. The facility should also be aligned with Kenya's Green Economy Strategy, National Strategy on Green Skills and Jobs, and Nationally Determined Contributions (NDCs) to ensure policy coherence and unlock additional technical and financial support. To ensure effective governance and coordination, the facility should be overseen by a multi-stakeholder steering committee led by the National Treasury, with representation from the Ministry of Roads and Transport, the Ministry of Environment and Climate Change, Development Finance Institutions (DFIs), SACCO federations, and private sector actors.
- **Deploy tailored financial instruments.** These can include:
  - Low-interest loans for EV and charging infrastructure acquisition.
  - Credit guarantees through development finance institutions like the AfDB and guarantee schemes by the Ministry of Transport. To address concerns about high default rates, guarantees should be structured with partial risk-sharing, performance-based disbursements, and prioritisation of SACCOs with strong repayment history.
  - Grants or subsidies for pilot EV fleet projects in urban and peri-urban transport.
  - Green bonds to mobilise capital for large-scale EV deployment.
- **Establish technical assistance and capacity-building programmes,** coordinated with the Ministry of Education and TVET institutions, to support SACCOs and SMEs with financial literacy, fleet management, and EV maintenance. Training should be delivered through certified programmes and standardised curricula, aligned with the National Strategy on Green Skills and Jobs, with a focus on building green skills among youth and women in both urban and rural areas. Financing mechanisms could be drawn from budgetary support through Kenya's Climate Change Fund, co-financing through county governments, EV private sector, SACCO contributions, and cost sharing.
- **Monitor impact and scale strategically.** Track adoption rates, repayment performance, green job creation, and skills development. Integrate monitoring indicators into the fiscal policy's national reporting framework to ensure consistency and reduce duplication.

General recommendations

Transport

7

Education & training Systems

Decentralise Green Skills training to include informal workers

Recommendation and rationale

Kenya's transport sector is rapidly transforming with the introduction of EVs and BRT systems. However, skills providers have not kept pace. Existing automotive curricula are outdated and lack EV-specific content, and comprehensive BRT training programmes are still missing. Informal transport workers, who form the backbone of urban mobility, risk being excluded from the green transition due to their limited formal qualifications and lack of access to training. Mobile training units can deliver flexible, practical training directly at worksites and in informal setups, ensuring that transport workers gain the skills necessary to participate fully in the green economy.

Responsible stakeholder

- Ministry of Education
- Ministry of Transport & Roads
- Technical and Vocational Education and Training Authority (TVETA)
- Nairobi Metropolitan Area Transport Authority (NaMATA)
- Transport SACCOs
- Private sector associations
- Development partners (e.g AfDB, GIZ)
- Skills providers

Implementation

- **Update curricula to include green competences in relation to EV** technology, battery maintenance, charging infrastructure, and BRT system operations, in collaboration with NaMATA, TVETs, industry stakeholders, and development partners.
- **Introduce mobile training units** to deliver hands-on, on-site green skills training to informal transport workers who may not access formal skills providers, in partnership with TVETs and private sector actors. These units should be deployed in key transport hubs and informal operator zones across counties.
- **Pilot and fast-track a recognition of prior learning (RPL) certification system** for informal transport workers, allowing them to gain formal qualifications for green skills they already possess and access pathways into green mobility occupations.

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8 Annexes

8.1 Overview of existing initiatives

Kenya, driven by its climate commitments and the need to balance economic growth with environmental sustainability, is experiencing a gradual green transition in its economic sectors. Climate change impacts and shocks are well researched and the government, together with development partners and the private sector are highly aware of the significant risks caused by climate change. However, the green jobs and green skills discourse is relatively new and is yet to be mainstreamed in labour and employment strategies and plans. Persistent structural challenges like private sector investment due to high capital costs and inadequate infrastructure continue to limit formal green opportunities. Majority of jobs continue to be generated in low-productivity informal activities, particularly in agriculture and transport.

Kenya's TVET and higher education institutions have begun integrating green skills into their curricula, but efforts remain fragmented, and coverage is insufficient to meet the demands of emerging green sectors. An integrated approach is needed to both green existing economic activities and strengthen skills development systems to prepare workers for future opportunities. Despite these constraints, the study has identified promising initiatives in agriculture and transport that demonstrate how green transitions can generate decent jobs. These include i) climate-smart agriculture and agroforestry programmes, ii) youth-focused agribusiness and value-chain projects, iii) electric mobility pilots and public transport electrification efforts, and iv) clean energy ventures for transport. These initiatives, discussed in the following section, highlight practical pathways for greening Kenya's economy while expanding employment opportunities.

Public-Private Finance Initiatives

- Vi Agroforestry (Via) in collaboration with the Kenya government through the Kenya Agricultural Carbon Project (KACP) has reached more than 60'000 farmers (compared to the initial target of 30'000 farmers) to equip them with skills on sustainable agriculture land management (SALM). This is in response to the challenge of farmers facing low incomes and the need for sustainable ways to contribute to climate change mitigation while earning additional revenue. Farmers who use these methods help capture carbon dioxide which is converted into carbon credits (one tonne of carbon dioxide is equivalent to one carbon credit) that are sold to organisations and individuals. Income yielded goes to the farmers increasing their incomes.
- Similarly, land degradation and farmer poverty limit agricultural productivity and environmental sustainability in Central Kenya. As a result, Farm Africa is implanting a regenerative agriculture and agroforestry pilot project within Embu and Tharaka Nithi counties that has so far reached over 20'000 smallholder farmers over 14'000ha of farms. This initiative (ACORN – Agroforestry CRUs for the Organic Restoration of Nature) funded by Rabobank and AGRA has resulted in farmers gaining 80% of income generated from CRUs, where one carbon credit fetches between KES 3'000 and KES 4'650, supplementing income.

Private sector initiatives

- To cater to concerns of soil fertility decline and inefficient fertiliser use, reducing crop yields and increasing farming costs, CropNuts (Crop Nutrition Laboratory Ltd) is currently implementing soil testing and nutrient mapping across different agroecological zones throughout the country using mobile laboratories (currently 13). They have reached more than 70'000 farmers offering GIS and satellite mapping, precision fertiliser recommendations and remote soil sampling kits.

- SunCulture, a private sector initiative that provides solar-powered drip irrigation systems for horticulture farmers. The initiative uses a pay-as-you-grow business model that uses remote system diagnostics for farm processes. The technology comes with battery and irrigation systems combined. These systems are a solution to problems of water scarcity and high irrigation costs that limit farmers' ability to maintain consistent crop production.

- LishaBora, a dairy production digital solution that aims to help farmers produce climate-smart feeds from agro-waste. This is to reduce the increasing costs of livestock feeds and agricultural waste management which reduce dairy farming profitability. Framers incorporate production with less GHGs though circular principles resulting in high-nutrition eco-feeds. They also support dairy farmers with AI based feeding plans to ensure high yields.

- iShamba initiative which aims to provide real time weather and climate data, early warning information for farmers and climate-smart practices delivered in local languages.

- Safaricom Digifarm, an initiative by Safaricom whose goal is to leverage on the existing customer base, most who are farmers, to provide mobile-based advisory and record keeping services, climate-smart inputs and credit scoring using farm data to allow farmers to access finance and insurance products.

- M-Kopa Agri is currently piloting the asset financing for solar and agri-tech solution for smallholder farmers. The initiative aims to provide a bundled solar, CSA agri-inputs and smartphones for rural farmers and they would pay back through the integrated mobile money platform. Kühne Foundation, Daimler Truck, and Smart Freight Centre E-Truck Pilot: This collaborative pilot project aims to introduce electric freight transport along a section of the Northern Corridor in East Africa. It involves the deployment of Daimler eActros electric trucks for local testing, focusing on urban distribution use cases.

- ElandX eFleet-as-a-Service (eFaaS) Model: Offers EV leasing, charging, solar power, and servicing, reducing costs by 20-25% and carbon emissions by over 120 tons per vehicle annually. Includes driver training.

- Kabisa EV Highway and Charging Network: Building an EV highway from Kigali to Mombasa with superchargers reducing downtime to 15-25 minutes. Supports heavy-duty electric trucks, cutting operating costs by up to 80% and offsetting over 151 tons of CO_2 per truck annually.

- DHL's Euro 5 Truck Deployment with EABL and Scania: Deployed 25 Euro 5 trucks, achieving 16.26% fuel efficiency improvement and reducing 500'000 kgCO_2eq since May 2024, supported by driver training (Kuehne Climate Center, 2025).

- Pontypridd holdings (transport and logistics): She Delivers Initiative is a women empowerment initiative by Pontypridd Holdings Ltd, which was launched in September 2023, to address historically low representation of women in the transport and logistics sector. It aims to break entry barriers and create an inclusive environment. Program methodology: Offers a 6-month apprenticeship combining 85% on-job training and 15% classroom study, with curriculum administered by practicing professionals. Pillars: Focuses on training (skilling interns), technology (leveraging tech as an equaliser), community (consolidating alumni and stakeholders), holistic human development (emotional intelligence, personal branding, finance, mental wellness, ESG), and industry voice (sharing information and presenting a unified voice) (KII, Private Sector, 2025).

Private sector training initiatives

Flone Initiative is a women-led Pan-African organisation focused on creating safe, sustainable, and accessible public transport spaces for women and vulnerable groups in Africa. Key initiatives include:

- Usalama Wa Uma Program: Trains public transport providers (primarily male workers) on sexual harassment prevention, gender sensitisation, customer service, and professional development.
- Report It! Stop It!: A crowd-mapping platform for survivors and victims of sexual harassment and assault in public transport to report their experiences, informing intervention areas.
- Women in Transport (WIT) Program: Aims to attract, retain, and promote women in the transport sector through professional and personal development training. This includes launching WIT chapters (e.g. Machakos WIT chapter), establishing self-help groups for financial support, and maintaining a WIT database to connect women professionals with potential employers (KII, Non-Profit Organisation, 2025).

8.2 Examples of green jobs and skills in the Kenyan agriculture sector

Job Title	Nature of Change	Required Technical SkillsChange	Required Transversal Skills	Identified Skills Gaps
Climate-Smart Agriculture Extension Officer (New)	Emerging role to support smallholder farmers in adopting climate-resilient practices	Drought-resistant crop varieties selection Soil health assessment and management Integrated pest management Weather data interpretation Climate risk assessment Precision agriculture technologies	Systems thinking for integrated approaches Communication for farmer education Problem-solving for site-specific solutions Leadership for community mobilisation Adaptability to changing climate conditions	Limited knowledge of climate data interpretation Insufficient training in drought-resistant varieties Lack of practical experience with precision agriculture Weak understanding of climate risk assessment tools
Solar-Powered Irrigation Technician (New)	New technical occupation for installation and maintenance of solar irrigation systems	Solar panel installation and maintenance Pump system design and operation Electrical systems for agriculture Water flow calculations System troubleshooting and repair Energy efficiency optimisation	Technical problem-solving Customer service for farmers Continuous learning for technology updates Safety consciousness Time management for maintenance schedules	Limited solar technology expertise in rural areas Insufficient electrical skills for agricultural applications Lack of skills providers for solar irrigation Poor understanding of water-energy nexus
Water Resource Manager (Changing)	Traditional water management expanding to include climate adaptation and efficiency	Hydrology and watershed management Water quality testing and monitoring	Strategic planning for long-term sustainability Stakeholder engagement with farming communities	Outdated training in traditional irrigation methods Limited climate adaptation knowledge

8.2 Examples of green jobs and skills in the Kenyan agriculture sector

Job Title	Nature of Change	Required Technical SkillsChange	Required Transversal Skills	Identified Skills Gaps
		Irrigation efficiency technologies Climate data analysis Water conservation techniques GIS and remote sensing for water mapping	Data analysis for decision-making Project management Environmental awareness	Insufficient GIS and data analysis capabilities Weak understanding of water-climate interactions
Digital Agriculture Specialist (New)	Emerging occupation to implement digital solutions for climate-smart farming	IoT sensors and monitoring systems Agricultural data analytics Mobile app development for farmers Drone operation for crop monitoring Satellite imagery interpretation Database management for agricultural data	Innovation mindset Communication across education levels Change management Critical thinking for data interpretation Collaboration across technical disciplines	Significant digital skills shortage in rural areas Limited understanding of agricultural IoT applications Insufficient data analytics capabilities Lack of training in agricultural technology integration
Smallholder Farmer (Changing)	Tradition al farming practices evolving to incorporate climate-smart techniques	Climate-smart crop selection Water-efficient irrigation methods Soil conservation practices Weather forecasting utilisation Post-harvest handling improvements Basic financial literacy for green investments	Adaptability to new practices Decision-making under uncertainty Learning agility for continuous improvement Collaboration for cooperative approaches Resilience building	Low literacy affecting technology adoption Limited access to climate information Insufficient knowledge of improved varieties Weak financial planning skills for green investments

8.2 Examples of green jobs and skills in the Kenyan agriculture sector

Job Title	Nature of Change	Required Technical SkillsChange	Required Transversal Skills	Identified Skills Gaps
Agricultural Mechanisation Technician (Changing)	Traditional equipment maintenance expanding to include climate-smart and electric machinery	Electric and hybrid agricultural equipment Precision farming machinery operation GPS-guided equipment calibration Energy-efficient equipment maintenance Diagnostic tools for modern equipment Renewable energy integration for farm machinery	Technical problem-solving Continuous learning for evolving technologies Customer education and training Safety management Quality assurance	Limited training on electric agricultural equipment Insufficient knowledge of precision agriculture tools Lack of diagnostic skills for modern machinery Poor understanding of renewable energy systems
Climate Data Analyst for Agriculture (New)	New occupation to provide climate intelligence for agricultural decision-making	Meteorological data interpretation Statistical analysis for climate patterns Agricultural modelling software Early warning system development Climate projection analysis Risk assessment methodologies	Analytical thinking Communication of complex data to farmers Strategic planning Research methodology Interdisciplinary collaboration	Shortage of qualified meteorological analysts Limited agricultural climate modelling Insufficient training in early warning systems Weak capacity in climate projection analysis
Sustainable Agriculture Advisor (Changing)	Traditional agricultural advisory services incorporating sustainability and climate considerations	Organic farming practices Carbon sequestration techniques Biodiversity conservation methods Sustainable livestock management	Holistic thinking for ecosystem approaches Facilitation for farmer group training Cultural sensitivity for community engagement Ethical decision-making	Limited training in agroecological approaches Insufficient knowledge of carbon farming Weak understanding of biodiversity conservation

8.2 Examples of green jobs and skills in the Kenyan agriculture sector

Job Title	Nature of Change	Required Technical SkillsChange	Required Transversal Skills	Identified Skills Gaps
		Agroforestry systems design Environmental impact assessment	Empathy for smallholder challenges	Lack of holistic farm system design skills
Water Efficiency Specialist (New)	New occupation focused on optimising agricultural water use efficiency	Drip irrigation system design Water auditing and measurement Crop water requirement calculations Soil moisture monitoring technologies Water recycling and treatment for agriculture Hydroponic and aquaponic systems Green finance and climate funding mechanisms	Innovation for water-scarce environments Project management for irrigation projects Training and capacity building Resource optimisation thinking Sustainability consciousness	Limited expertise in modern irrigation technologies Insufficient training in water efficiency methods Lack of soil moisture monitoring skills Poor understanding of alternative growing systems
Agribusiness Development Officer (Changing)	Traditional agricultural business occupations expanding to include green finance and sustainable value chains	Sustainable value chain development Environmental compliance requirements Market analysis for green products Supply chain sustainability assessment Digital platforms for agricultural marketing	Entrepreneurial mindset Networking for market linkages Negotiation for fair trade practices Strategic thinking for sustainable business Financial planning and analysis	Limited knowledge of green finance opportunities Insufficient understanding of sustainable certification Weak digital marketing capabilities Poor grasp of environmental compliance requirements

Source: Paeradigms, 2025

8.3 Overview of key policies for the green transition in transport

Table 16. Policies and incentives supporting the green transition in transport

Policy	Description
Draft National E-Mobility Policy	Unveiled in March 2024, this draft policy aims to replace internal combustion engine (ICE) vehicles with electric alternatives across all transport modes, with targets including 5% of all vehicle imports being electric by 2025 and 100% by 2050. The policy has received Cabinet approval, with legislative updates to the Traffic Act underway to accommodate emerging technologies (Ministry of Roads and Transport, 2024).
Fiscal incentives	To accelerate EV adoption, the Finance Act of 2023 reduced excise duty on EVs from 20% to 10% and eliminated Value Added Tax (VAT) for fully electric vehicles. Reduced import duties (10% for locally manufactured compared to up to 35% for ICE vehicles) are also meant to make EVs more affordable (Government of Kenya, 2023b).
Infrastructure development	There are plans to establish 10'000 charging stations by 2030 as per the Draft National E-Mobility Policy. The National Building Code 2024 mandates that 5% of parking spaces in commercial buildings be reserved for EV charging and charging stations will benefit from discounted electricity tariffs (Government of Kenya, 2024b; Ministry of Roads and Transport, 2024)
E-mobility tariff and off-peak Time of Use (TOU) tariff	In 2023, EPRA implemented an e-mobility tariff of KES 16 per kWh. Additionally, EPRA introduced an off-peak TOU tariff for e-mobility customers, offering a 50% discount after the initial 15'000 kWh consumed per month (EPRA, 2024b). This means that for any consumption exceeding 15'000 kWh in a given month, customers are charged a reduced rate of KES 8 per kWh, significantly incentivising EV charging.
EV Charging and Battery Swapping Infrastructure Guidelines (2023)	EPRA has developed guidelines for setting up nationwide charging stations. These guidelines specify requirements for design, installation, operation, and maintenance, and mandate licenses for public charging stations (EPRA, 2023).
Non-fiscal incentives	The Ministry of Roads and Transport has introduced green-coloured license plates for all electric vehicles, including two-wheelers, to raise awareness and encourage adoption (Ministry of Transport, 2024).
Local manufacturing and assembly	Policies are being formulated to promote local manufacturing and assembly of EVs, including a condition for local manufacturers to source at least 30% of the vehicle's value locally to qualify for VAT exemption.

8.4 Fuel taxes and levies impacting the transport sector in Kenya

Table 17. Breakdown of key fuel taxes and levies in Kenya

Levy/Tax Component	Rate (KES/Litre or %)	Primary Purpose/ Beneficiary	Details
Road Maintenance Levy Fund (RMLF)	KES 25/litre (Petrol & Diesel)	Road maintenance, infrastructure development	KES 18 for routine maintenance, KES 7 securitised.
RMLF Securitised Portion	KES 7/litre (Petrol & Diesel)	Clearing KES 175B pending bills for road contractors, reviving stalled projects	Sold to SPV
Value Added Tax (VAT)	16% of taxable value	General government revenue	Applied to petroleum products.
Excise Duty	Variable	General government revenue	Adjusted for inflation.
Railway Development Levy (RDL)	Variable	Railway infrastructure development	Depends on Cost, Insurance, Freight (CIF) of products.
Import Declaration Fee (IDF)	Variable	General government revenue, customs administration	Depends on CIF of products.
Petroleum Development Levy	Variable	Pump price stabilisation, petroleum sector development	Administration and use subject to specific regulations.

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