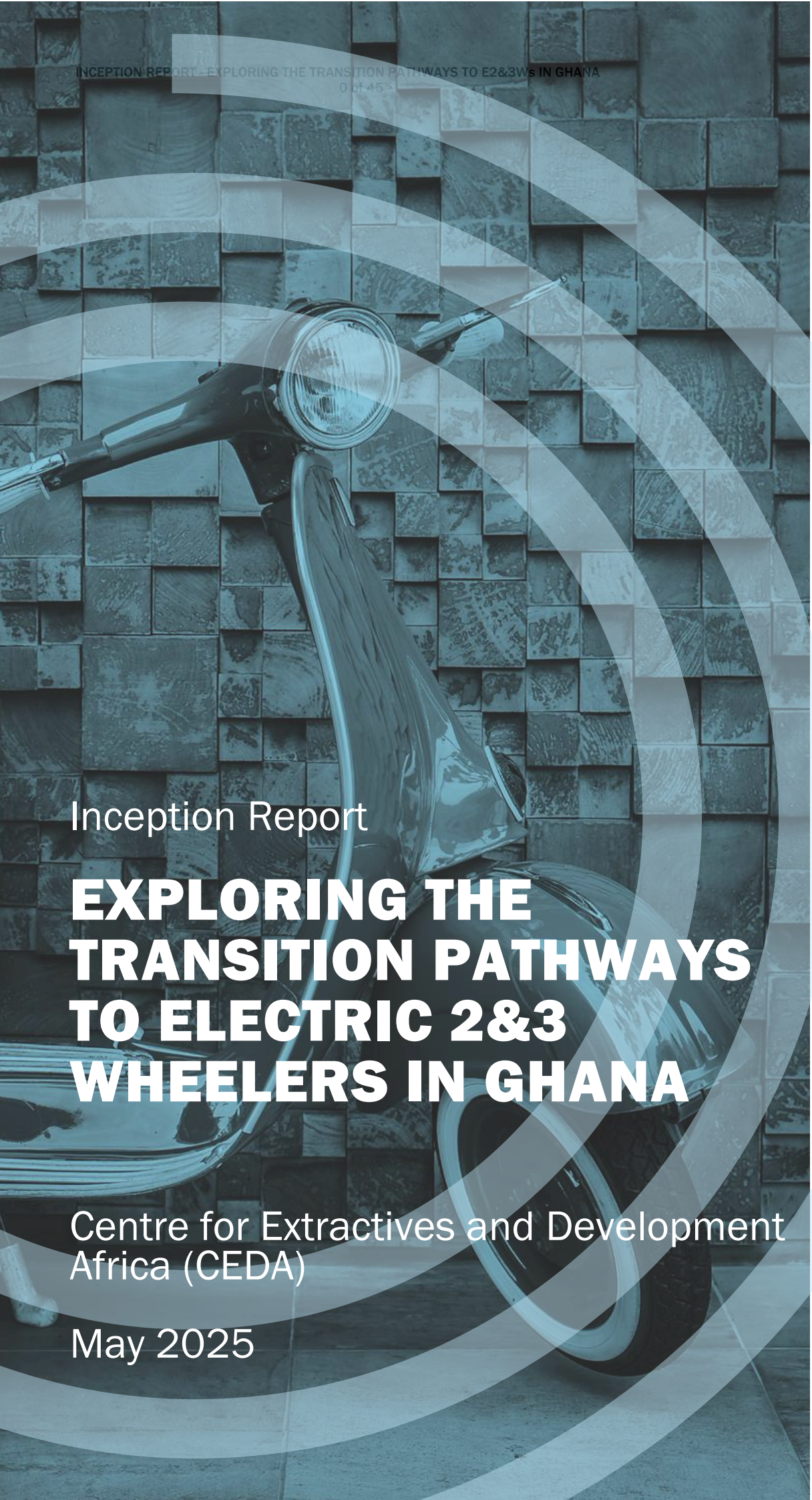

Inception Report

EXPLORING THE TRANSITION PATHWAYS TO ELECTRIC 2&3 WHEELERS IN GHANA

Centre for Extractives and Development Africa (CEDA)

May 2025

The views expressed in this material do not necessarily reflect the UK government's official policies.

Exploring the Transition Pathways to Electric 2&3 Wheelers in Ghana – Inception Report (PR1)

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Abbreviations and Acronyms

2&3Ws	Two- and Three-Wheelers
ACEP	Africa Centre for Energy Policy
ADP	Automotive Development Policy
CBA	Cost-Benefit Analysis
CDD	Ghana Center for Democratic Development
CEDA	Centre for Extractives and Development Africa
CCG	Climate Compatible Growth
E2&3Ws	Electric Two- and Three-Wheelers
E2Ws	Electric Two-Wheelers
E3Ws	Electric Three-Wheelers
EC	Energy Commission
ECG	Electricity Company of Ghana
EPA	Environmental Protection Agency
EU	European Union
EV	Electric Vehicle
DVLA	Driver and Vehicle Licensing Authority
FCDO	Foreign, Commonwealth and Development Office
FGD	Focus Group Discussion
GAC	GESI Advisory Committee
GESI	Gender Equality and Social Inclusion
GHG	Greenhouse Gas
GIS	Geographic Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GRA	Ghana Revenue Authority
GSA	Ghana Standards Authority
GSS	Ghana Statistical Service
ICE	Internal Combustion Engine
IMANI	IMANI Center for Policy and Education
ISSER	Institute of Statistical, Social and Economic Research
ITC	International Trade Centre
JET	Just Energy Transition
KII	Key Informant Interview
KNUST	Kwame Nkrumah University of Science and Technology
LI 2180	Legislative Instrument 2180 (Road Traffic Regulations)
LMIC	Low- and Middle-Income Country
MCDA	Multi-Criteria Decision Analysis
MEGT	Ministry of Energy and Green Transition
MEST	Ministry of Environment, Science and Technology
MMT	Metro Mass Transit
MSCCS	Office of the Ministry of State for Climate Change and Sustainability

MT	Ministry of Transport
NDC	Nationally Determined Contribution
NEDCo	Northern Electricity Distribution Company
NETF	National Energy Transition Framework
NEVP	National Electric Vehicle Policy
NRGI	Natural Resource Governance Institute
NRSA	National Road Safety Authority
OECD	Organisation for Economic Co-operation and Development
Okada	Commercial Motorcycle Taxi
ORA	Okada Riders Association
PESTEL	Political, Economic, Social, Technological, Environmental, Legal
PEV	Plug-in Electric Vehicle
PGPE	Political, Governance, and Political Economy
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PWD	Person with Disability
RIA	Regulatory Impact Assessment
SIAT	Social Inclusion Assessment Tool
STEM	Science, Technology, Engineering, and Mathematics
SWOT	Strengths, Weaknesses, Opportunities, Threats
TCO	Total Cost of Ownership
TNA	Training Needs Assessment
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UG	University of Ghana
VAT	Value Added Tax

1 INTRODUCTION

1.1 Project Context and Background

The global transition towards sustainable mobility is moving rapidly, driven by increasing awareness of climate change and air quality concerns. Electric mobility, particularly electric two- and three-wheelers, has emerged as a key area of focus, especially in Low- and Middle-Income Countries (LMICs). The United Nations Environment Programme (UNEP) highlights the growth of two- and three-wheelers (2&3-wheelers) as the fastest expanding mode of transport in LMICs, noting their affordability, energy efficiency, and suitability for urban environments[1]. Electric versions of these vehicles, characterised by lower production costs and adaptability to battery swapping technologies, offer an accessible entry point for LMICs to significantly reduce transport emissions.

Ghana, like many developing countries, faces significant urban mobility challenges that have profound implications for economic development, environmental sustainability, and social inclusion. The transport sector has emerged as a critical area of focus, particularly as it contributes substantially to greenhouse gas emissions and air pollution, more so in the urban areas. The Environmental Protection Agency of Ghana estimated in 2022 that exhaust from road transport is the single largest source of energy-related emissions, accounting for about 48% of Ghana's energy-sector CO_2 emissions and 17% of total national emissions[2]. Transportation emissions have risen steadily at nearly 5% annual growth in CO_2 since 2010, in line with increasing vehicle use, which exceeded 3.2 million registered vehicles in 2022[3]. This underscores the urgent need for sustainable transport solutions that can mitigate environmental impacts while meeting the growing mobility demands of Ghana's population.

In Ghana, the global trend of steadfast adoption of 2&3-wheelers is clearly reflected in local mobility patterns and policy dialogues. The import and use of two- and three-wheelers have grown rapidly, becoming a critical component of urban transport systems. Two- and three-wheelers have become increasingly prevalent in Ghana's transport ecosystem, particularly in urban and peri-urban areas, where they serve as essential modes of transportation for both passengers and goods.
However, the rapid proliferation of these vehicles, particularly in the absence of comprehensive regulation, has given rise to a host of policy challenges that undermine the overall safety, efficiency, and sustainability of the transport sector.

Empirical evidence from the National Road Safety Authority (NRSA) and Ghana Police Service indicates a rising trend in road traffic accidents involving motorcycles and tricycles. In many urban centers, motorcycle-related incidents account for a disproportionate share of traffic-related injuries and fatalities. Key contributing factors include limited formal rider training, low compliance with helmet use, and weak enforcement of road traffic regulations. The informal nature of most commercial two-wheeler operations exacerbates these risks, with many riders lacking the requisite licenses or insurance. This poses a significant public health burden on emergency services and health facilities.

[1] United Nations Environment Programme. (2023). Global Electric Two- and Three-Wheeler Conference: Final Report. UNEP. https://sustmob.org/EMOB/pdf/Workshop_Report_E23W-Thailand.pdf
[2] Environmental Protection Agency (EPA), Ghana. (2022). Ghana's Fifth National Greenhouse Gas Inventory Report (1990–2019). United Nations Framework Convention on Climate Change (UNFCCC). https://unfccc.int/sites/default/files/resource/gh_nir5_15052022_final.pdf
[3] Aidam, G. S. K., Adjei, E. A., Opoku, R., Oppong, D. K., & Agyare, W. G. (2024). Ghana's electric vehicle policy: A path to aviation industry decarbonisation. Journal of the Ghana Institution of Engineering, 24(3), 1-8. https://doi.org/10.56049/jghie.v24i3.195

While two- and three-wheelers are often perceived as effective tools for navigating congested corridors, their unregulated deployment has, in some cases, contributed to traffic congestion and urban disorder. In cities such as Accra, Kumasi, and Tamale, the absence of designated parking areas and operational lanes for motorcycles and tricycles leads to haphazard movement patterns and obstructs traffic flow. Furthermore, the tendency of riders to disregard traffic signals and road demarcations intensifies gridlock, particularly in high-density commercial zones. This undermines efforts to promote sustainable and organized urban transport systems.

The environmental implications of the growing use of two- and three-wheelers are considerable. A substantial proportion of these vehicles are imported as used units, many of which lack modern emission control technologies. The reliance on older two-stroke fuel engines, in particular, contributes to elevated emissions of carbon monoxide (CO) and hydrocarbons (HC) which exacerbate urban air pollution. This poses serious health risks for urban residents, especially those in vulnerable groups such as children, the elderly, and informal workers exposed to roadside emissions. The environmental cost is further compounded by the absence of emission testing regimes and limited enforcement of vehicle maintenance standards

Despite their growing importance, the regulatory framework governing 2&3-wheelers remains ambiguous. Notably, motorcycle taxis, locally known as "Okada," continue to operate in a legal grey area, as they are technically prohibited under the Road Traffic Regulations (L.I. 2180) of 2012, yet are widely used across the country, particularly in high-density urban areas where they offer advantages in terms of navigating congested roads and providing last-mile connectivity.

The global context of transport electrification provides compelling evidence for prioritising electric 2&3-wheelers (E2&3-wheelers) in Ghana's transition to sustainable mobility. The International Energy Agency (IEA) projects that by 2030, there will be approximately 490 million E2&3-wheelers globally, far exceeding the projected 140 million light-duty plug-in electric vehicles (PEVs)[4]. E2&3-wheelers could therefore potentially deliver more immediate and widespread impacts on emissions reduction and energy transition compared to electric cars, especially in developing economies like Ghana. To add to this, import data from the International Trade Centre (ITC) reveals that between 2017 and 2021, Ghana imported 17,660 PEVs with E2&3-wheelers accounting for 96%[5]. This substantial proportion indicates an emerging market for E2&3-wheelers in Ghana, which is likely to grow in alignment with global trends if appropriately supported by enabling policies and infrastructure.

The economic context further strengthens the case for prioritising E2&3-wheelers in Ghana's electrification strategy. The World Bank's Ghana Macro Poverty Outlook[6] projects an increase in Ghana's poverty rate to 31.55% by 2025 compared to 29.5% in 2023. E2&3-wheelers offer a more accessible and affordable transportation option for a significant portion of the population, particularly for those in the lower income category. Cost of ownership analyses conducted by Ghana's Energy Commission Drive Electric Initiative (DEI-Gh) in 2022 demonstrate that electric 2-wheelers achieve cost parity with their

[4] International Energy Agency. (2022). Global EV Data Explorer. I.E. Agency, Editor. 2022: Paris.
[5] International Trade Centre. (2023). Motor cars and other motor vehicles principally designed for the transport of persons (Product code: 8703) https://www.trademap.org/Product_SelProductCountry
[6] The World Bank (2023) Ghana Macro Poverty Outlook. WDI, Macro Poverty Outlook, and official data. https://thedocs.worldbank.org/en/doc/bae48ff2fefc5a869546775b3f010735-0500062021/related/mpo-gha.pdf

internal combustion engine (ICE) counterparts after just two years of ownership, while electric 3-wheelers are more economical from the outset and 470% less expensive to own by the fifth year. [7]

While two- and three-wheelers help navigate congested areas, their unregulated use contributes to traffic disorder in cities like Accra, Kumasi, and Tamale due to the absence of dedicated lanes and rider non-compliance with traffic rules. Operators face economic insecurity, with earnings affected by fuel prices, competition, and unstable demand. Despite the cost benefits of electrification, high upfront costs and limited financing options hinder adoption among low-income riders. Working conditions are often hazardous, with limited safety measures, training, or insurance. For delivery service workers, challenges include algorithmic control, lack of contracts, and exploitative pay structures, leading to deepening job insecurity amidst rising demand for delivery services.

Despite these compelling economic and environmental arguments, Ghana's policy landscape presents notable gaps regarding E2&3-wheelers across multiple key frameworks. The recently published National Electric Vehicle Policy (2023) lacks clear and definitive policy objectives or strategies specifically for E2&3-wheelers, focusing predominantly on four-wheeled vehicles. Similarly, Ghana's Automotive Development Policy (2019) emphasizes conventional vehicle manufacturing and assembly without adequately addressing the emerging E2&3-wheeler market. The National Transport Policy (2020) acknowledges non-motorized and intermediate modes of transport but falls short of comprehensive provisions for electric mobility in this segment. Additionally, Ghana's Updated Nationally Determined Contributions (2020-2030) and the National Energy Transition Framework (2023) both recognize the transport sector's contribution to emissions but provide limited specific pathways for E2&3-wheeler electrification. These policy omissions collectively represent significant missed opportunities, particularly given the potential of E2&3-wheelers to deliver substantial emissions reductions, improve urban mobility, create green employment opportunities across the value chain, and address socio-economic challenges for low-income populations.

1.2 Project Justification and Overview

The evident policy gaps, combined with the economic, environmental, and social potentials of E2&3-wheelers, underscore the urgent need for comprehensive research to inform evidence-based policymaking in Ghana. This project responds to this need by providing robust analysis and actionable recommendations that can guide the development of appropriate policies, regulatory frameworks, and implementation strategies for the successful transition to E2&3-wheelers in Ghana.

The significance of this research extends beyond immediate policy implications to encompass broader development objectives. By facilitating the transition to E2&3-wheelers, Ghana can simultaneously address multiple development challenges, including reducing transport-related emissions, improving urban air quality, enhancing mobility options for underserved populations, creating green jobs, and fostering technological innovation. Additionally, by developing a comprehensive approach to E2&3-wheeler electrification, Ghana has the opportunity to position itself as a regional leader in sustainable urban mobility, potentially influencing similar transitions across West Africa.

[7] Energy Commission. (2022). Ghana electric vehicles baseline survey report. Drive Electric Initiative (DEI-Gh), Energy Commission of Ghana. https://repository.energycomlibrary.org/items/3b7b65c4-c461-4cd0-84bf-d543aacbc08c

The timing of this research is particularly opportune, as Ghana continues to refine its climate commitments and sustainable development strategies. The findings and recommendations generated through this project can directly inform the updating of Nationally Determined Contributions (NDCs), the implementation of the National Energy Transition Framework, and the development of sector-specific strategies that align with both climate and transport objectives. To ensure this, the project will adopt a targeted engagement approach involving key institutions such as the EPA, MESTI, Ministry of Climate Change and Sustainability, Ministry of Energy, and Ministry of Transport. Findings will be formally shared with the NDC review committee and the lead consultant overseeing the update process, through policy briefs, technical presentations, and participation in stakeholder consultations. This engagement strategy ensures that the project contributes directly to ongoing national policy processes and enhances the relevance and impact of its outcomes.

Against this backdrop, the project aims to accelerate Ghana's inclusive transition to E2&3-wheelers by addressing urban mobility challenges and emissions reduction goals through comprehensive policy analysis, multi-stakeholder engagement, and feasibility assessments. This will culminate in an evidence-based roadmap for integrating E2&3-wheelers into Ghana's policy framework. Specifically, the project seeks to achieve the following objectives:

1. **Review and analyse current research, policies, and regulatory frameworks** relevant to E2&3-wheelers in Ghana.
2. **Identify critical policy gaps and propose evidence-based recommendations** for consideration by policymakers.
3. **Assess the long-term prospects for local assembly, manufacturing, and servicing** of E2&3-wheelers, considering economic viability and capacity building needs.
4. **Explore feasible pathways for electrification**, addressing infrastructure constraints such as grid capacity, power reliability, and innovative charging solutions like battery swapping.
5. **Evaluate the potential impact of E2&3-wheelers adoption** on employment, mobility, and Ghana's climate goals.
6. **Develop a roadmap for integrating E2&3-wheelers** into Ghana's transport ecosystem, aligned with national socio-economic development priorities.

The implementation methodology adopts a multi-dimensional framework that recognises the complex interplay of social, economic, technical, and political factors influencing the transition to E2&3-wheelers. The project employs a mixed-methods approach, combining qualitative and quantitative research techniques to ensure comprehensive analysis and robust findings. Throughout the research process, the cross-cutting themes depicted in Figure 1 are integrated to enhance the relevance and impact of the project.

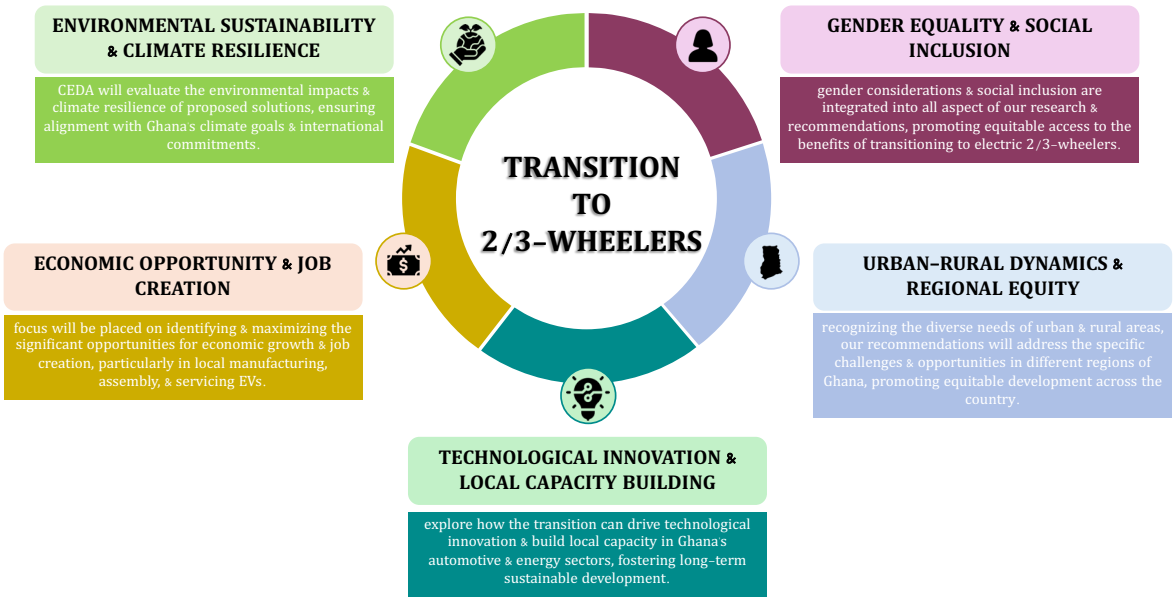


Figure 1: Cross-cutting themes informing project design and delivery

1.3 Objectives for the Inception Phase

The inception phase of the project was designed to establish a solid foundation for subsequent research activities, ensuring that the project is well-aligned with stakeholder needs, contextually sound, and methodologically appropriate. The specific objectives of this phase, and the achievements against them, are outlined below:

1.3.1 To Establish Stakeholder Relationships and Secure Buy-in

The inception phase aimed to identify and engage key stakeholders from government, private sector, civil society, and academia to secure their support and participation in the project. Through a series of consultative meetings and formal introductions, the project team established initial contact with relevant ministries, departments, and agencies, including the Ministry of Transport, Ministry of Energy and Green Transition, and the Energy Commission. Relationships were also initiated with private sector actors in the mobility and energy sectors, as well as civil society organisations focused on sustainable development and transport issues.

These early engagements yielded valuable preliminary insights into stakeholder perspectives, priorities, and concerns regarding E2&3-wheelers. The relationships established during this phase will serve as the foundation for ongoing stakeholder engagement throughout the project lifecycle, facilitating data collection, validation of findings, and eventual uptake of recommendations.

1.3.2 To Incorporate Feedback and Refine Project Design

The inception phase was designed to gather initial feedback from stakeholders and use this to refine the project approach and implementation plans. This iterative refinement process will continue throughout the project lifecycle, allowing for adaptive management based on emerging findings and stakeholder

feedback. The inception phase has established effective channels of communication with key stakeholders, facilitating ongoing dialogue and collaborative problem-solving as the project progresses.

1.3.3 To Map Relevant Data Sources and Identify Information Gaps

This objective focused on identifying available data sources and determining where primary data collection would be necessary to address information gaps. Through desk research and consultations with key institutions, the project team has compiled a comprehensive inventory of relevant secondary data sources, including government reports, academic publications, industry analyses, and statistical databases. The team has also identified potential sources of administrative data held by government agencies and private sector organisations that could inform the research.

The data gaps identified will inform the design of primary data collection strategies, including surveys, focus group discussions, and key informant interviews, which will be implemented in subsequent phases of the project.

1.3.4 To Conduct Preliminary Policy Analysis and Define the Policy Landscape

This objective aimed to establish a baseline understanding of the current policy environment relevant to E2&3-wheelers in Ghana. Through comprehensive desk research, the project team has mapped the existing policy landscape, identifying relevant policies, regulations, and strategic documents that either directly or indirectly affect the electrification of 2&3-wheelers. This initial policy mapping provides a foundation for the more detailed policy gap analysis that will be conducted in the next phase of project delivery to develop the **Comprehensive Review and Gap Analysis Report (D1),** a detailed analytical report documenting the current state of 2&3-wheeler electrification in Ghana, regulatory frameworks, and critical policy gaps

1.3.5 To Establish the Gender, Equality, and Social Inclusion (GESI) Framework

The inception phase aimed to develop a structured approach for integrating GESI considerations throughout the project. The GESI Advisory Committee (GAC), discussed in detail in Section 3, was to be established comprising representatives from various marginalised groups. The GAC will provide ongoing guidance on GESI issues throughout the project lifecycle. In addition, a GESI analysis was conducted to identify who is left behind in Ghana's e-mobility transition, why exclusion occurs, and what impacts this may have on different social groups to directly inform project design and delivery, ensuring research activities and policy recommendations address barriers to inclusion.

2 Materials and Methods

2.1 Literature review

An initial literature review underpinned the inception phase of this project, systematically capturing current knowledge, identifying research gaps, and informing project design and stakeholder engagement strategies.

- **Policy and regulatory frameworks:** Detailed analysis of national documents such as the National Transport Policy (2020), National Electric Vehicle Policy (2023), and the revised NDCs under the Paris Agreement (2020-2030).

- **Technical and market analyses:** Reviewing available data on the importation, adoption rates, infrastructure, market readiness, and technological trends associated with electric two- and three-wheelers.
- **Stakeholder mapping and engagement:** Identifying stakeholders through literature on existing market actors, regulatory agencies, community groups, and civil society organizations involved in transport and energy sectors.
- **Gender Equality and Social Inclusion (GESI) considerations:** Reviewing literature related to social and gender impacts within the transport sector to guide inclusive stakeholder engagement and inform the GESI analysis.

The initial review serves as a foundational resource, to be expanded through further targeted literature review, expert consultations, and specific data requests initiated with stakeholders towards the development of the **Comprehensive Review and Gap Analysis Report (D1)** and further project delivery. The iterative review process will ensure continuous incorporation of emerging research, updated policy frameworks, and feedback from ongoing stakeholder consultations.

The full list of resources consulted are provided in Appendix A.

2.2 Stakeholder Mapping

Stakeholders in Ghana's electric mobility and energy transition space vary in mandate but operate within active ecosystems of coordination, advocacy, and policy dialogue. Identifying the key players as well as understanding these interaction patterns is essential for shaping a targeted and effective engagement strategy.

Civil society organizations (CSOs) often coordinate through structured coalitions and thematic networks that support joint advocacy and resource sharing. The Ghana Energy Transition Consortium (GETC) is a key example, offering CSOs a platform to align goals, influence policy, and engage government and donors. These coalitions frequently contribute to national processes, such as the NDC review, by providing technical input and participating in consultations. Donors play an enabling role by funding CSOs and hosting regular coordination meetings to align sector support.

At the technical level, events like the Future of Energy Conference and the Energy Commission's Drive Electric series foster peer learning, policy dialogue, and multi-sector networking among all stakeholder groups. These conferences also spur smaller-scale exchanges, including one-on-one discussions between vendors and government, donor-CSO meetings, and expert roundtables, which often shape policy and investment priorities.

Government coordination is led through inter-ministerial platforms and committees, for example, the Inter-Ministerial Committee on Ghana's Energy Transition Plan. Chaired by MESTI, this body brings together key ministries and agencies to align policies, clarify roles, and address implementation challenges, particularly around EV infrastructure and regulation. It also facilitates engagement with international partners and technical stakeholders.

Private sector players such as EV assemblers and logistics companies coordinate through associations like the Ghana Automotive Dealers Association and AGI. These platforms help members advocate for incentives, contribute to regulatory development, and co-create implementation strategies.

The stakeholder table below reflects the range and interdependence of actors shaping Ghana's e-mobility transition.

Table 1: Key Stakeholder Groups and Their Roles

Sector	Main Institution	Role
Government	Ministry of Transport (MT)	Sets policy direction and manages the transport sector. • Promote sustainable transportation. • Develop electric vehicle infrastructure. • Encourage cleaner fuels.
	Ministry of Energy and Green Transition (MEGT)	Sets overall policy direction and manages the power sector. • Increase the share of renewable energy in the power generation mix. • Modernize grid infrastructure. • Encourage private sector participation.
	Ministry of Environment, Science and Technology. (MEST)	Sets policy direction and manages environmental issues. • Strengthen regulatory capacity. • Promote environmental impact assessments (EIAs). • Encourage best practices for environmental management.
	Office of the Ministry of State for Climate Change and Sustainability (MSCCS)	Implements the Ghana National Climate Change Policy, which focuses on adaptation, social development, and mitigation.
	Energy Commission (EC)	Regulates and supervises the utilization of energy resources, including renewable energy. • Licensing, regulation, and supervision of energy resource utilization.
	Driver and Vehicle Licensing Authority (DVLA)	Registers and licenses vehicles. • Implement regulations and standards for vehicle emissions and efficiency. • Promote electric vehicle adoption.
	Driver and Vehicle Licensing Authority (DVLA)	Promotes road safety and reduces accidents. • Enhance road safety measures and regulations. • Promote eco-friendly transportation practices
	National Road Safety Authority (NRSA)	Promotes road safety and reduces accidents. • Enhance road safety measures and regulations. Promote eco- • friendly transportation practices.
	Ghana Standard Authority (GSA)	Formulating and enforcing technical standards for EVs and their associated infrastructure.
Private	Wahu Mobility	Electric bicycle manufacturing and distribution for gig economy workers and commuters in Ghana
	Solar Taxi	Manufacturing E mobility Vehicles and 2 -3 wheelers
	Charge Express	Establishing rapid charging stations
	Apsonic Moto	Importers of 2-3 wheelers
	Okada Ridders Association (ORA)	Drivers and Users of 2 wheelers for commercial purposes.
	Financial Institutions (Banks)	Providing financial assistance for the private sector in the E-mobility sector.
Academic Institutions (AI)	UG, KNUST, The Brew Hammond Energy Centre, ISSER etc.	Providing technical knowledge and research in the E-mobility sector.

Civil Society Organization (CSOs)	NRGI, CDD, IMANI, ACEP, CEDA etc.	Advocating for the adoption of Electric 2-3 Wheelers. Past studies and reports, and evaluations of E-mobility markets, projects and readiness.
Development Partners (DP)	FCDO (JET Programme), EU, UNDP, GIZ, World Bank and AfDB	Providing financial and technical support, facilitating knowledge transfer, and fostering partnerships between public and private sectors. Past studies, reports, and evaluations of E-mobility markets, projects and readiness.

2.3 Stakeholder Engagement

Stakeholder engagement has been a foundational element of the project's inception phase, designed to foster inclusive, cross-sectoral collaboration and ensure the research is both contextually grounded and policy-relevant. The inception meeting held on 24 April 2025 convened a diverse group of stakeholders, including representatives from key government institutions such as the Ministry of State for Climate Change and Sustainability, Energy Commission, and Ghana Standards Authority as well as private sector actors like Solar Taxi, Wahu Mobility, and Charge Express. In total, 39 participants drawn from government agencies, developmental partners, CSOs, private organisations and media graced the inception meeting. The event also included participants from civil society organizations, academia, and development partners such as UNDP and GIZ. These engagements generated valuable insights into prevailing challenges such as policy ambiguity, infrastructure constraints, and financial barriers and produced actionable recommendations, including the need for net metering reform, development of battery recycling frameworks, and a phased strategy to transition from internal combustion engine vehicles.

Beyond the inception meeting, the project team undertook systematic stakeholder mapping to identify critical actors across government, industry, academia, and civil society. This process ensured inclusive participation and informed the development of a robust engagement framework for the project's lifecycle. A key milestone was the establishment of the GAC (see Section 3), which reflects the project's commitment to Gender Equality and Social Inclusion (GESI). The GAC will provide strategic guidance on integrating the perspectives of women, youth, persons with disabilities, and other marginalized groups throughout the research and policy formulation processes. By fostering iterative dialogue and co-creation with stakeholders, the project strengthens ownership, enhances legitimacy, and lays the groundwork for a just and equitable transition to electric two- and three-wheelers in Ghana.

3 Inception Phase – Delivery and Key Results

3.1 Research Design and Methodology Finalized

The research methodology that will guide the various research activities has been developed and finalized during the project inception phase.

3.1.1 Case Study Design and Methodology

The project will adopt case study research design – an empirical research approach that investigates a case using multiple data sources - based on the nature of the various research outputs and the characteristics of the respondents and stakeholders. This will enable us to systematically observe the key research variables and to generalize the case in a wider context. Based on the nature of the project, case study design correctly addresses the questions and the overall objective of understanding regulatory and policy gaps, evaluating economic feasibility and proposing actionable pathways for the infrastructure development and local manufacturing capabilities of electric two and three wheelers.

The project will adopt nine case study districts across the Coastal, Middle and Northern Belts of Ghana, providing the basis for comparing the adoption of E2&3-wheelers in distinct districts across the country. The districts have been selected based on their unique project-focused characteristics, as shown in Error! Reference source not found..

Table 2: Profiles of Selected Case Study Areas

Geographical Zone	Region	District	Population Statistics	Project-focused Characteristics	Methodology
Coastal Zone	Greater Accra Region	Accra Metropolitan Assembly	**Population:** 284,124 **Population Density (persons/km²):** 13,930	• Central business district of the capital city • High traffic congestion, making 2&3-wheelers a preferred mode of transport • Companies and businesses within the CBD enclave rely heavily on 2 wheelers for delivery services • Waste management companies have adopted 3 wheelers for waste collection and disposal • Mineral water companies use 3 wheelers to reach households and businesses	**Data Sources:** • Primary data will be acquired from respondents using questionnaires and interview guides • Secondary data will be acquired from the records of government agencies in case study districts **Data Collection Methods:** • Develop and administer questionnaires to users' of 2/3 wheelers in project case study districts to understand the socio-economic and cultural factors affecting the adoption of 2/3 wheelers in Ghana • Develop and use interview guides to engage key sub-national government and private sector stakeholders in case study districts to understand the economic, regulatory and institutional barriers in the adoption of e-2&3 wheelers **Study Population:** • The population of the study will mainly consist of users of 2/3 wheelers in the case study districts • Key individuals in government agencies and private sector companies will also be involved in the study
		Ayawaso West Municipal Assembly	**Population:** 75,303 **Population Density (persons/km²):** 2,158	• Extremely urbanized district, with high concentration of educated and affluent individuals with the capacity to purchase E2&3-wheelers • Prevalence of charging stations in the municipality (AnC Mall and Distrikt 24) • Waste management companies have adopted 3 wheelers for waste collection and disposal • Mineral water companies use 3 wheelers to reach households and businesses	
		Ayawaso East Municipal Assembly	**Population:** 53,004 **Population Density (persons/km²):** 16,499	• Densely populated district, having numerous slums and informal settlements which are only accessible by 2&3-wheelers • Ethnic orientation of the district, with majority of residents being northerners who traditionally prefer 2&3-wheelers as a mode of transport • Waste management companies have adopted 3 wheelers for waste collection and disposal • Mineral water companies use 3 wheelers to reach households and businesses	
Middle Belt Zone	Ashanti Region	Kumasi Metropolitan Assembly	**Population:** 443,981 **Population Density (persons/km²):** 9,348	• Central business district of the region • High traffic congestion, making 2&3-wheelers a preferred mode of transport • Companies and businesses within the CBD enclave rely heavily on 2 wheelers for delivery services • Extremely urbanized district, with high concentration of educated and affluent individuals with the capacity to purchase E2&3-wheelers	

				• Waste management companies have adopted 3 wheelers for waste collection and disposal • Mineral water companies use 3 wheelers to reach households and businesses	**Sampling Techniques:** • The case study will adopt convenience sampling technique to select users' of 2/3 wheelers • Purposive sampling technique will also be adopted to select key individuals in government agencies and private sector companies **Data Analysis Techniques:** • Use SPSS/excel and content and thematic analysis techniques to analyze quantitative and qualitative data respectively **Ethical Considerations:** • Follow community entry procedures by respecting community structures and norms prior to engaging study respondents, and obtain informed consent
		Asokore Mampong Municipal Assembly	**Population:** 191,402 **Population Density (persons/km²):** 7,918	• Densely populated district, having numerous slums and informal settlements which are only accessible by 2&3-wheelers • Ethnic orientation of the district, with majority of residents being northerners who traditionally prefer 2&3-wheelers as a mode of transport • Waste management companies have adopted 3 wheelers for waste collection and disposal • Mineral water companies use 3 wheelers to reach households and businesses	
	Bono East Region	Techiman Municipal Assembly	**Population:** 243,335 **Population Density (persons/km²):** 375.8	• Central business district of the region • Companies and businesses within the CBD enclave rely heavily on 2 wheelers for delivery services • Influx of northern migrants, who traditionally prefer to use 2&3-wheelers as a mode of transport • Waste management companies have adopted 3 wheelers for waste collection and disposal • Mineral water companies use 3 wheelers to reach households and businesses	
Northern Zone	Northern Region	Tamale Metropolitan Assembly	**Population:** 374,744 **Population Density (persons/km²):** **n/a**	• Central business district of the region • 2-wheelers the most preferred mode of transport in the city • Ethnic orientation of the district, with overwhelming majority of residents being northerners who traditionally prefer 2/3 wheelers as a mode of transport • Cultural acceptability of females using 2 wheelers as a mode of transport • Urbanized district, with high concentration of educated and affluent individuals with the capacity to purchase E2&3-wheelers	

		Tolon District Assembly	**Population:** 118,101 **Population Density (persons/km²):** n/a	• 2-wheelers the most preferred mode of transport in the community • Ethnic orientation of the district, with overwhelming majority of residents being northerners who traditionally prefer 2&3-wheelers as a mode of transport • Cultural acceptability of females using 2 wheelers as a mode of transport • Rural population, with residents mostly engaged in agricultural activities which relies heavily on 2&3-wheelers • Low educational level • Low-income level	
	Upper East Region	Bolgatanga Municipal Assembly	**Population:** 139,864 **Population Density (persons/km²):** n/a	• Central business district of the regional • 2-wheelers the most preferred mode of transport in the community • Ethnic orientation of the district, with overwhelming majority of residents being northerners who traditionally prefer 2&3 wheelers as a mode of transport • Cultural acceptability of females using 2 wheelers as a mode of transport	

3.1.2 Data Sources

To comprehensively explore the transition pathways to electric 2 and three wheelers in Ghana will require a contextually relevant data sourcing and mapping methodology that addresses the unique characteristics of the Ghanaian transportation landscape. The context of Ghana presents distinctive opportunities and challenges for electric mobility adoption due to its developing infrastructure, growing urban centres, and the significant role that two and three wheelers play in both personal and commercial operations.

Government agencies including the Driver and Vehicle Licensing Authority (DVLA), the Ghana Statistical Service (GSS), Ministry of Energy, Ministry of Transport, Ministry of Trade, Environmental Protection Authority (EPA), the Electricity Company of Ghana, and Ghana Revenue Authority (Customs Division) were identified as primary sources of data of official records on vehicle registration, transport policies, electricity tariffs, and import duties, emissions data and urban infrastructure.

These data sources provide the understanding landscape of the structural and regulatory environment for electric vehicle adoption and will be complemented with information from the private sector and beyond to understand current market for two and three wheelers in Ghana:

- Data from private institutions (e.g., Wahu, Solar Taxi and Kofa) will be essential in understanding the current market offerings, production cost, and operational challenges.
- Ride-hailing platforms (e.g., Jumia, Bolt and Yango) will provide information on vehicle usage pattern, rider behaviour, and two and three-wheeler fleet segmentation.
- Transport unions and commercial operators will provide valuable firsthand data through interviews and focus group discussions, particularly on economic viability, user preferences and barriers to adoption of E2&3-wheelers.
- Academic institutions and Development partners bridge data gaps. Institutions such as ISSER, The Brew Hammond Energy Centre, CSIR, FCDO (JET Programme), EU, UNDP and GIZ will be consulted for existing pilot studies and feasibility reports, and evaluations of EV projects in the Region. These sources provide information and insights from past projects, providing in-depth and contextual significance.

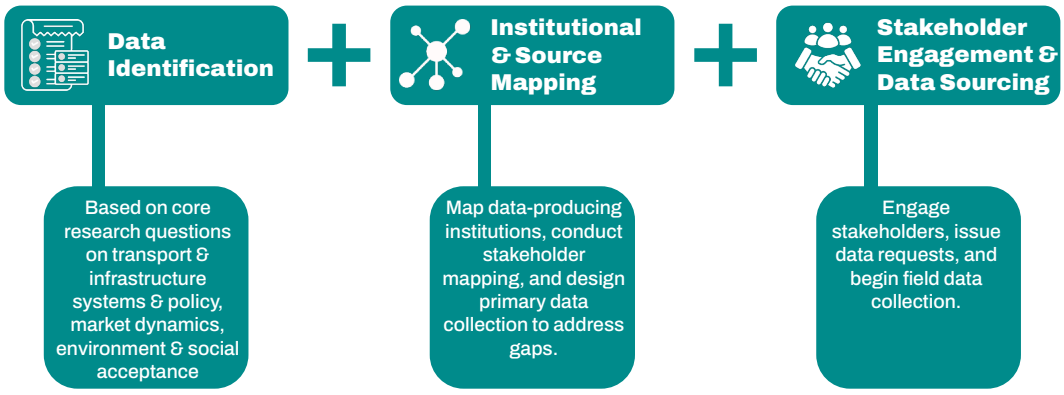


Figure 2: Data Sourcing and Mapping

The data sourcing and mapping process depicted in Figure 2 will ensure that the research draws upon diverse, well documented and contextually relevant set of data supporting holistic and evidence-based analysis of Ghana's transition to electric two and three wheelers. The specific data to be sourced from the relevant governmental agencies, private and other partners is shown in Table 3.

Table 3: Identified Data Sources

Agency	Category	Key Data to Be Collected
Driver and Vehicle Licensing Authority (DVLA)	Government	• Number of two and three-wheeler registration statistics (Regional Segmentation) • Number of licensed operators of • Energy source for two and three wheelers • Number of commercial registration verses number of private registration of two and three wheelers • Vehicle inspection compliance rate
Ghana Revenue Authority (Customs Division)	Government	• Import volumes and values of two and three wheelers • Energy sources for two and three wheelers • Import duties on two and three wheelers • Taxation receipt from imported two and three wheelers • Subsidies on electric vehicles and components • Spare parts trends for two and three wheelers
Energy Commission	Government	• Renewable energy integration potential for EV charging • Licensing data for charging infrastructure operators • Energy consumption forecasting for transportation electrification
Electricity Company of Ghana (ECG)/ Northern Electricity Distribution Company (NEDCo)	Government	• Grid stability and reliability metrics by region • Load capacity for additional EV charging demand
Environmental Protection Authority	Government	• Air quality measurement in all regions • Emissions data from current transportation fleet • Carbon footprint for transition scenarios • Air quality targets
Ghana Standards Authority	Government	• Technical specifications for electric vehicles • Safety standards for batteries and charging
National Road Safety Authority	Government	• Accident statistics involving two and three wheelers • Safety comparison data between ICE motors and electric motors • Vehicle inspection compliance rate
Ghana Statistical Service	Government	• Household transportation data • Demographic profiles of vehicle owners and users • Economic contribution metrics for two and three wheelers
Ghana Investment Promotion Centre	Government	• Foreign Direct Investment data in transportation sector • Market entry strategies • Investment incentives for investment
National Petroleum Authority	Government	• Petroleum consumption in the transport sector • Fuel price trends and subsidies
Okada Riders Association	Trade Union	• Daily revenue statistics

		• Operating cost of ICE two and three wheelers vis a vis operations cost of electric two and three wheelers • Consumer preference data • Market penetration by brands
Private Organizations	Private sectors	• Local manufacturing capacity • Cost of operations • Fleet number • Fleet segmentation (ICE, and EV)
Development Partners	International Organizations	• Financing mechanism • Financing viability • Environmental impact projections of transport transition • Infrastructure investment requirements • Pilot project performance data
Academic Institutions and CSOs	Think Tanks	• Socioeconomic impact assessment data • Business model innovations • Charging technology innovations

3.1.3 Data Collection Techniques and Instruments

Questionnaire and interview guide will be the two main data collection tools that will be used in the collection of primary data for the various research activities under the project. While questionnaires will be prepared and administered to users' of 2/3 wheelers across the project case study districts in the country to understand the socio-economic and cultural factors affecting the adoption of 2/3 wheelers in Ghana, interview guides will be used to engage key government and private sector stakeholders to understand the economic, regulatory and institutional barriers in the adoption of e-2&3 wheelers and identify actionable recommendations for infrastructure development and local manufacturing capabilities for e-2/3 wheelers.

After administering a questionnaires and interview guides, the research instrument will be cross-checked and edited to ensure that all questions applicable to the respondents were correctly answered and recorded.

3.1.4 Data Analysis Techniques

Following the field data collection activity, collated data will be cleaned and analysed with the aid of appropriate tools and techniques. In the case of quantitative data, statistical software such as SPSS or excel will be used to analyze the data, whereas in the case of qualitative data, which is the renowned data collection approach for case studies, content and thematic analysis techniques will be used to express the views and perceptions of research respondents. Field data obtained will also be adjusted for content validity and consistency in the questions and responses supplied.

3.2 Stakeholder Inception Meeting

The project inception meeting was held on 24 April 2025 to launch the 22-month project aimed at evaluating the policy, economic, and infrastructure readiness for the adoption of electric two- and three wheelers (E2&3-wheelers) in Ghana. The event convened a diverse group of stakeholders, including representatives from the Ministry of State for Climate Change and Sustainability, the Energy Commission, Ghana Standards Authority (GSA), as well as private sector actors such as Solar Taxi, Wahu Mobility, Charge Express, and the Okada Riders Association. Civil society organizations, academia, and development

partners, including the UNDP and GIZ were introduced to the research methodology, share contextual insights, and gather inputs to guide the project's implementation. The full participant list is included as Appendix 1.

Opening remarks were delivered by Mr. Cedric Dzelu, Technical Director at the Ministry of State for Climate Change and Sustainability, on behalf of Hon. Seidu Issifu. Mr. Dzelu emphasized the critical role of the project in addressing the current policy vacuum concerning electric two- and three-wheelers, which are not adequately captured under Ghana's National Electric Vehicle Policy. He welcomed the initiative's potential to drive emissions reduction, job creation, and improved transport accessibility, while reaffirming the government's commitment to establishing a Climate Change and Sustainability Hub to catalyze innovation and policy dialogue.

Mr. Samuel Bekoe, the project lead, provided an overview of Ghana's e-mobility landscape, emphasizing the role of E2&3-wheelers in enhancing affordability, rural access, and youth employment. He presented the project's research methodology, expected deliverables, and stakeholder engagement framework.

A plenary discussion explored critical thematic areas such as incentive structures, infrastructure barriers, standards compliance, and gender inclusion. Stakeholders offered feedback to sharpen the project's focus and stressed the importance of context-specific policy responses. Several practical issues and forward-looking recommendations emerged from the discussions:

One of the most prominent issues highlighted was the persistent lack of accurate baseline data, particularly concerning the types of fuel used by registered motorcycles and tricycles. Stakeholders, participants highlighted that current transport data systems are inadequate for informing evidence-based policy decisions. It was suggested that the project should explore opportunities for data collaboration with regulatory agencies, especially by integrating disaggregated fuel-type data collection into routine certificate renewal processes.

The conversation around infrastructure was equally revealing. Numerous participants raised concerns about the economic and technical barriers facing private actors seeking to establish EV charging stations. High costs associated with installing dedicated transformers, sourcing copper cables, and importing essential electrical components have discouraged investment. Additionally, solar-powered charging infrastructure while promising remains hampered by weak net metering policies and tariff structures that disincentivize energy contributions to the grid. The group emphasized the urgent need for regulatory reform, including strengthening ECG's net metering framework and providing targeted incentives for solar battery imports.

Battery waste and end-of-life management also emerged as critical issues. While some companies such as Solar Taxi have begun repurposing used EV batteries for secondary applications, there is no formal national recycling policy or infrastructure in place. Stakeholders emphasized the importance of developing battery repurposing and recycling systems as part of Ghana's broader energy transition agenda. The Ghana Standards Authority noted ongoing efforts to support battery safety and lifecycle protocols through national standards and inter-agency collaboration.

Another important area of reflection concerned the structure and scope of incentives currently available for electric mobility adoption. Although public sector actors like Metro Mass Transit benefit from VAT exemptions, private operators, including delivery companies and independent service providers, remain largely excluded. There was consensus on the need to revise existing incentive policies to align more closely

with practical use cases and market realities. This includes expanding access to import duty exemptions and establishing financial support mechanisms for private sector innovators.

The meeting also addressed the need for a formal exit strategy for internal combustion engine (ICE) vehicles. While Ghana's National Energy Transition Framework outlines long-term targets for phasing out ICE vehicles by 2045–2070, there is currently no operational plan to guide this transition. Concerns were raised about the risk of Ghana becoming a dumping ground for obsolete ICE vehicles, akin to past challenges with e-waste. Participants advocated for clear import restrictions and a phased policy for retiring outdated vehicle technologies.

From a financing perspective, it was acknowledged that the success of Ghana's e-mobility transition will depend heavily on the involvement of financial institutions. The Natural Resource Governance Institute (NRGI) stressed the importance of engaging banks and other financiers from the outset to ensure that emerging projects meet criteria for investment-readiness. Discussions highlighted the need to define what constitutes a "bankable" e-mobility venture and to address financing gaps through strategic policy interventions.

Finally, reflections on gender and social inclusion (GESI) highlighted a practical and entrepreneurial approach to integration. Participants agreed that while deeply entrenched social norms may be difficult to change within the scope of this project, economic empowerment provides a tangible pathway to inclusion. The work of Solar Taxi, which has implemented a Female Engineering Academy and inclusive employment programs for persons with disabilities, was cited as a best practice.

3.3 Establishment of the Project Gender Advisory Committee (GAC)

Without an intentional focus on gender equality and social inclusion, the transition to e-2/3 wheelers risks reinforcing existing inequalities in transport access, missing opportunities for women's economic empowerment, creating policies that fail to address the specific needs of marginalized groups, and implementing infrastructure that overlooks safety and accessibility requirements. Recognizing this systemic challenge, and to ensure that project activities and outputs are gender-responsive, CEDA established the Project Gender Advisory Committee (GAC). Comprising of representatives from women's organizations, disability rights groups, and other relevant stakeholders with expertise in Gender, Equality, and Social Inclusion (GESI), the committee will ensure that gender equality and social inclusion considerations are mainstreamed throughout the project. Specifically, the committee will;

- **Provide Strategic Guidance**: Offer expert advice on integrating GESI considerations across all project components and deliverables
- **Review Research Design and Methodology:** Ensure research approaches are gender-responsive and inclusive, particularly for data collection instruments and analysis frameworks
- **Contribute to Implementation:** Support the implementation of gender-specific project activities, especially stakeholder consultations and skills assessment workshops
- **Validate Findings:** Review draft outputs to ensure they adequately address gender and social inclusion dimensions
- **Enhance Impact:** Help identify pathways for translating research findings into gender-responsive policies and interventions

The GAC was officially inaugurated on Thursday 24th April 2025 during the organization of the project inception meeting, reinforcing the project's commitment to embedding GESI principles across its research design, policy recommendations, and stakeholder engagements. The members of the committee are as follows:

- Georgette Barnes, President, Women in Mining Ghana
- Chibeze Ezekiel, Executive Coordinator, SYND Ghana
- Nafi Chinery, Africa Director, Natural Resource Governance Institute
- Rushaiya Ibrahim-Tanko, Project Director, Energy for Growth Hub
- Eunice Biritwum, Executive Secretary, Ghana Energy Commission
- Dr. Steve Manteaw, Co-chair, Ghana Extractives Industries Transparency Initiative
- Joshua Addy, National Coordinator, National Council Persons with Disability
- Valerie Labi, Co-founder and CEO, Wahu Mobility Ltd

Figure 3: Inauguration of the GAC at Project Inception & Launch

3.4 Stakeholder Influence-Interest matrix

Following the identification of project stakeholders and their respective roles, CEDA conducted a stakeholder influence-interest assessment to enable us to understand the level of influence and interest of key project stakeholders, guiding the cultivation of a collaborative relationship with the various stakeholders to achieve desired project outcomes. The outcome of the stakeholder influence-interest assessment is presented in the matrix below:

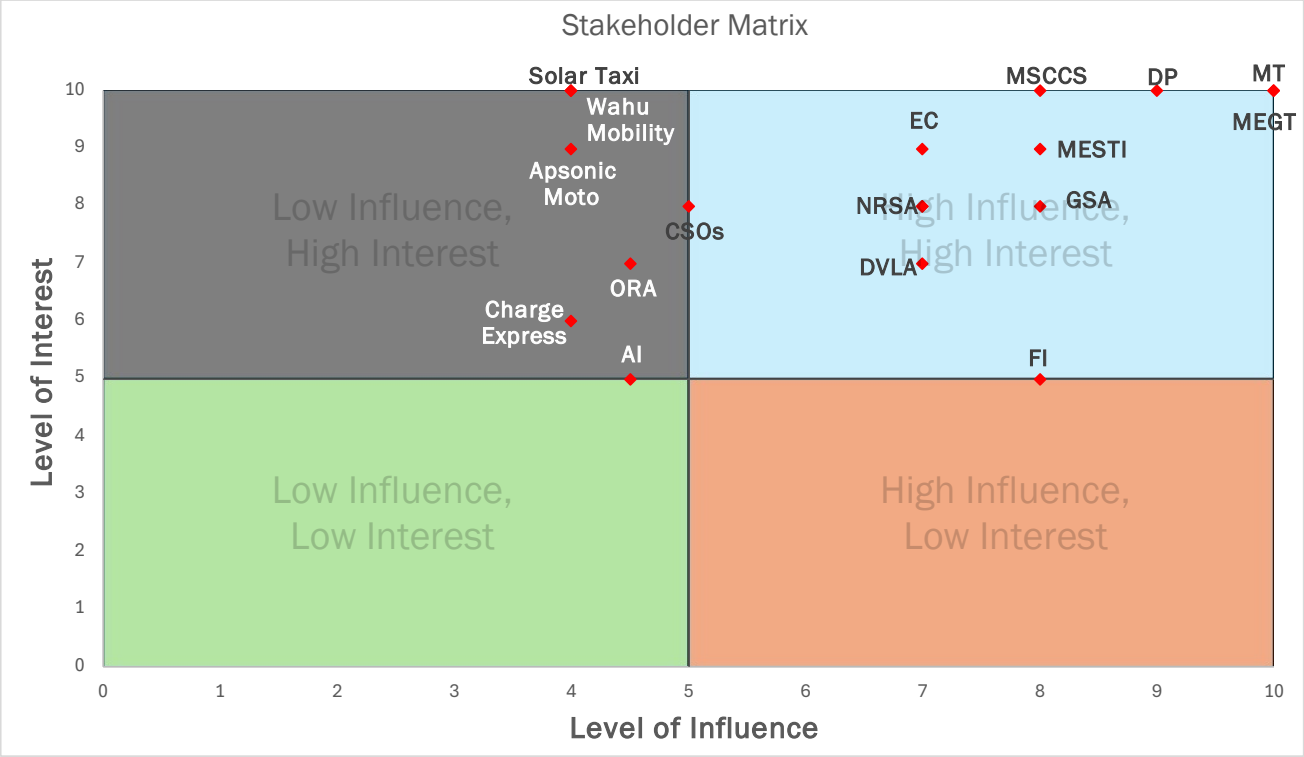


Figure 2 Stakeholder Matrix of Project Stakeholders as Listed in Section 2.2

Government ministries directly involved in transport, energy, and climate policy (MT, MEGT, MSCCS) demonstrate exceptionally high levels of both influence and interest, reflecting their critical role in policy formulation and implementation. This positioning is logical given their mandate to develop and enforce regulations governing vehicle electrification. Regulatory agencies (EC, DVLA, NRSA, GSA) show strong but slightly more moderate influence, coupled with substantial interest, indicating their important operational role in implementing and enforcing policies. Development partners, notably, maintain significant influence through their funding capabilities while demonstrating strong interest in sustainable mobility solutions. Financial institutions present an interesting case, wielding considerable influence through their financing capacity but showing comparatively moderate interest in the E2&3W sector specifically.

The private sector stakeholders (Wahu Mobility, Solar Taxi, Apsonic Moto, Charge Express) and civil society representatives (including the Okada Riders Association) exhibit a different pattern, characterized by limited direct policy influence despite their high to moderate interest in the sector's development. This asymmetry has important implications for the project's engagement strategy. Key government ministries and development partners will require regular, high-level engagement and should be invited to participate in all major project activities. Regulatory agencies and financial institutions will benefit from targeted technical discussions on of E2&3-wheeler regulation and financing. For private sector and civil society stakeholders, the project should create dedicated platforms for amplifying their voices, leveraging their practical expertise, and building coalitions to enhance their collective influence on policy development. This differentiated engagement approach will help ensure all stakeholders can meaningfully contribute to shaping recommendations, while maintaining productive relationships with high-influence stakeholders whose buy-in is essential for policy adoption.

4 Political Economy Analysis

Ghana's recent change in government marks the one of the most significant transformations in the political economy landscape since the commencement of this project. CEDA's process of integrating Political Economy Analysis into the project is critical for adapting to the new reform agenda, managing changes within the government's stakeholder institutions and developing relevant research questions. This section captures the current most important PEA developments that borders on this project.

CEDA has a collaborative and iterative approach to Political Economy Analysis (PEA). Throughout implementation of the project, the team will develop an increasingly nuanced understanding of the political economy of the E2&3 wheelers, the transport and energy and green transition sectors. Reflecting this, the process for PEA must evolve as traditional information gathering exercises become less suitable for unearthing valuable information to challenge and add value to the project assumptions. This means that for CEDA, thinking and working politically is an ongoing process of learning to inform project implementation rather than a periodic snapshot used to adjust the project direction. A dynamic approach has become even more necessary in the rapidly changing post-election period. Given the changes in administration, and the vacillating interests of the key partner institutions, a dynamic PEA is more appropriate.

4.1 Government and Political Leadership

The election period and commencement of the new government has validated well-known assumptions about the political settlement in Ghana. While relationships between elites in the stable two major parties are relatively cordial, the campaigns of the New Patriotic Party (NPP) and National Democratic Congress (NDC) were once again very competitive. Parties require significant financial support and the backing of lower level factions to get votes. When a party attains power, supporters and 'foot soldiers' expect to be the beneficiaries of government procurement and positions. The deep-roots of party patronage can been observed in the pressure placed on the President from groups dissatisfied with appointments. Lower-level party supporters are mobilised to challenge the leadership and can be a source of insecurity if patronage is not perceived as fair.

The outcomes of the recent election period and the subsequent establishment of the new government (with elections held on December 7, 2024 and swearing in ceremony on January 7 2025) serve to reinforce existing analyses of Ghana's political settlement. Notwithstanding the relatively cooperative relationships among the two main political parties, the campaigns of the New Patriotic Party (NPP) and National Democratic Congress (NDC) were characterized by their customary high level of competition. The acquisition of votes by these parties is contingent upon considerable financial investment and the engagement of lower-level party structures. When a party attains power, supporters and 'foot soldiers' expect to be the beneficiaries of government procurement and positions.

A predictable consequence is the expectation among supporters and activists for preferential access to government contracts and appointments. This entrenched pattern of party patronage is observable in the demands placed on the President by groups expressing dissatisfaction with appointments, exemplified by the government's lower-level party supporters, alongside other politically aligned factions. Critically, the

mobilization of grassroots party members who feel unfairly treated in the distribution of patronage can become a source of internal dissent and potential instability[8].

Since the change in government in January, there have been a large number of appointments across government institutions. Party supporters have received positions not just as Ministers, CEOs and board members but also as senior management and even middle-management levels. The transport sector and energy sector offer some of the most prestigious and lucrative roles. As a result, key sector agencies are still seeing significant changes. Given that institutions in the climate change and energy and green transition sectors require a concerted effort to build and maintain expertise, these changes can come at a potential win or loss to the sector, depending on the level of efficiency that these changes will bring to the agencies.

4.2 Economy

The election year (December 2024) created spending pressures and a significant increase in the fiscal deficit beyond plans agreed under the programme guiding the IMF Extended Credit Facility. As has been the pattern, the election year triggered heightened expenditure, resulting in a deviation of the fiscal deficit from the targets established within the framework of the IMF Extended Credit Facility programme. Fiscal slippages in the run-up to the elections led to a large accumulation of payables; inflation exceeded program targets; and several reforms were delayed[9].

The government's first budget offered an important window to hold back spending growth (given that spending pressures increase as we move closer to elections), including enacting a strong budget and public financial management reforms; tightening monetary policy; and adjusting electricity prices. What this means is that the new government is opened to the critical economic reforms that is aimed at fiscal consolidation to achieve a primary fiscal surplus by increasing domestic revenue collection and streamlining non-essential spending, while simultaneously expanding social safety nets to mitigate the effects of policy adjustments on vulnerable populations. Sustained fiscal consolidation is hinged on strict adherence to discipline, stemmed from the ongoing modernization of Ghana's fiscal responsibility framework, the strengthening of revenue administration, the improvement of public financial management, and better management of State-Owned Enterprises (SOEs), including addressing challenges within the energy and cocoa sectors.

4.3 Role of Sub-National Level Stakeholders

While national-level political changes create the overarching framework for e-mobility policy, **local and regional stakeholders play equally critical roles in determining implementation success**. District assemblies and municipal authorities possess significant influence over transport regulations, infrastructure development permissions, and local revenue generation.

[8] https://theheraldghana.com/ho-ndc-office-burnt-over-mahamas-appointments/
https://www.happyghana.com/ndc-youth-destroy-party-office-in-mampong-over-mce-appointment/
[9] https://www.imf.org/en/News/Articles/2025/04/14/pr-25107-ghana-imf-reaches-agreement-on-the-4th-review-of-ecf

Furthermore, **the political economy of e-mobility varies considerably across Ghana's regions, reflecting different economic bases, cultural norms, and infrastructure realities**. Northern regions, where 2&3-wheelers enjoy widespread cultural acceptance and constitute up to 98% of registered vehicles in some areas, present different political dynamics compared to southern regions where regulatory resistance and cultural barriers persist[12]. Regional coordinators, traditional authorities, and local businesses wield substantial influence over community acceptance and adoption patterns, often serving as gatekeepers for new initiatives.

The **success of Ghana's inclusive e-mobility transition depends on effective coordination between national policy frameworks and local-level implementation capacity**. Regional electricity distribution companies (ECG and NEDCo), district-level planning departments, and local financial institutions represent key intermediaries who translate national policies into practical solutions. Understanding how these local stakeholders navigate competing priorities, from immediate revenue needs to long-term sustainability goals, will be essential for designing implementation strategies that work across Ghana's diverse political and economic landscape.

4.4 Reform Agenda and Key Institutional Changes

The key policy areas of interest and institutional changes made under the government are set out in Table 3. The government has worked hard to quickly articulate these changes and priorities, and over coming months will be looking to work towards integrating these aspirations either into existing policies or new policies. Many of these goals and changes are new and as such the GOGIG team will need to remain mobilised to input into areas of mutual interest.

The most notable change to the institutions is the inclusion of Green Transition to the Ministry of Energy to create the Ministry of Energy and Green Transition. From a practical implementation perspective, the renaming of the Ministry is unlikely to yield significant administrative changes, as the Ministry of Energy previously served as the central coordinating body for energy transition initiatives. However, the revised nomenclature does enhance the visibility of the energy transition agenda. Officials will continue to remain in the same buildings and the teams will continue to be structured as before. The primary articulated benefit of incorporating "Green Transition" into the Ministry's title is to ensure the comprehensive integration of energy transition considerations within its policy framework. As a result, this presents a natural opportunity for CEDA to engage in specific energy transition issues that relate to the transport sector (mainly charging stations and the feasibility of power).

While CEDA's institutional relationships remain appropriate to deliver the Project, there may be some opportunities to enhance CEDA's work on the project in areas of Climate Change with the Ministry of State in charge of Climate Change and Sustainability. The Ministry of State, under the Presidency, in charge of Climate Change and Sustainability is a new creation that is gaining prominence. The creation of the Office offers a potential entry point for CEDA to have strategic engagements on Ghana's implementation and commitments on Climate Change. CEDA already has strong relationships with the new Ministry of State who is looking to build legitimacy for his team. CEDA will leverage this new relationship and provide appropriate recommendations to shape climate change programmes that would be championed by the new Ministry.

Under the new administration, the Ministry of Transport remains unchanged. However, a key initial priority for the new Minister has been engagement in the development of pertinent legislation to formalize the commercial operation of two- and three-wheeled vehicles. Recognizing the timeliness of this initiative, the

Centre for Extractives and Development Africa (CEDA) will closely monitor its progress to strategically introduce relevant recommendations derived from our research findings.

Table 4: Changes in Energy and Transport Ministries Under Current Government

Areas	Previous Status Quo	Current Government
Energy	Ministry of Energy	Government announcement to convert existing fuel stations into electric charging centres[10]
		Ministry of Energy and Green Transition focusing on integrating sustainability into energy policies, promoting renewable energy, and ensuring that Ghana's energy sector aligns with global climate goal.
		The **Ministry of State for Climate Change and Sustainability** aims to integrate climate resilience and sustainability into national governance.
Transport	Ministry of Transport	The **Ministry of Transport** is revising regulations for commercial motorcycles and tricycles, known as "okada", to improve safety and accountability

[10] https://www.myjoyonline.com/government-to-transform-fuel-stations-into-ev-charging-hubs/

5 GESI Analysis

5.1 Introduction

This Gender Equality and Social Inclusion (GESI) Analysis has been undertaken to inform the design and delivery of the research project "Exploring the Transition Pathways to E2&3-Wheelers in Ghana." The analysis serves as an applied tool to guide implementation decisions throughout the project lifecycle, ensuring research methodologies, stakeholder engagements, data collection, validation activities, and dissemination outputs are inclusive, equitable, and reflective of diverse lived realities.

The analysis employs the World Bank's Social Inclusion Assessment Tool (SIAT) as its guiding framework, assessing who is excluded, why, what can be done, and how to measure progress; and structures findings around key domains highlighted in DFID's Gender and Social Exclusion Analysis (GSEA) framework: **social norms, economic constraints,** and **policy/institutional gaps**.

Ghana's National Electric Vehicle Policy (2023) emphasizes a "just, equitable, and inclusive transition, ensuring that the adoption of EVs benefits all segments of society". This policy recognizes that transitioning to electric two- and three-wheelers is not merely an environmental imperative but also a socioeconomic opportunity. However, without careful planning, vulnerable groups including women, low-income populations, persons with disabilities, and rural communities risk being left behind.

5.2 GESI Context for E-Mobility in Ghana

Gender Equality and Social Inclusion (GESI) refers to “the process of addressing the causes of exclusion and inequality that prevent people from participating fully in society and benefiting equally from development outcomes—particularly on the basis of gender, age, disability, ethnicity, location, income level, or other identity markers.”[11]

The table below outlines how factors such as vehicle prevalence, affordability, and gender dynamics intersect with Gender Equality and Social Inclusion (GESI) in the context of e-mobility in Ghana, highlighting both opportunities and disparities across different regions and groups.

Table 5: Key GESI Considerations for E-Mobility Adoption in Ghana

Factor	GESI Relevance
Prevalence	Two- and three-wheel vehicles are widely used in Ghana, especially for "last mile" transport and in areas underserved by formal transit. In northern Ghana, motorcycles represent up to 98% of registered vehicles in some cities[12].
Affordability	These vehicles provide affordable mobility for low-income users and livelihood opportunities for youth as commercial drivers. The cost of

[11] Department for International Development. (2009). Gender and social exclusion analysis: How to note. DFID Practice Paper. https://gsdrc.org/document-library/gender-and-social-exclusion-analysis-how-to-note/

[12] Moses Aikins et al., "Economic Burden of Motorcycle Accidents in Northern Ghana," Ghana Medical Journal, 46(2): 46-53, June 2012.7

Factor	GESI Relevance
	operating electric versions can be 40-70% lower than conventional models, with potential for significant economic benefits[13].
Gender Dynamics	Regional variations exist in gender norms related to motorcycle use: while widely adopted by both sexes in northern regions, southern regions show predominantly male ridership, reflecting deeper societal structures that affect mobility access[12].
Socioeconomic Role	Tens of thousands of youths (mostly young men) make a living as motorcycle taxi riders or delivery couriers, highlighting the potential for job creation through electrification[14].
Air Quality and Health	Research with vulnerable road users in Ghana, including roadside shop attendants, hawkers, pedestrians, and residents, found that 78% of these groups estimated that 2 out of every 10 cars in congested areas emit visible smoke[15]. These emissions disproportionately affect groups who spend more time in roadside environments.
Safety Concerns	Motorcycle accidents are common and often deadly. Electrification combined with better training and regulation presents an opportunity to improve safety standards[12].

Given these factors, Ghana's e-mobility efforts around two- and three-wheelers have direct implications for poverty reduction, gender equality, and social inclusion. If implemented inclusively, introducing electric motorbikes and tricycles could improve mobility for low-income communities, create green jobs for youth and women, reduce urban air pollution in poor neighborhoods, and enhance access to services for those currently underserved[28]. This analysis examines who might be excluded in the e-2&3-wheeler transition, why exclusion occurs, and what can be done to create an inclusive transition.

5.3 Who Is Left Behind? Identification of Excluded Groups

5.3.1 Gender-Based Exclusion

The analysis reveals several gender-based patterns of exclusion in Ghana's current and potential future electric 2&3-wheeler ecosystem:

- **Women riders**: Women are significantly underrepresented as motorcycle owners and riders, particularly in southern regions. Cultural norms cast riding as a "male activity," limiting women's

[13] J. K. Nabary, "Ensuring inclusivity of disabled: Researchers call for elimination of barriers," Ghana News Agency, June 25, 2024
[14] FSD Africa, "Greening transport in Ghana: Transforming mobility with electric vehicles -- SolarTaxi Impact Story," FSD Africa, 2023.
[15] Amegah et al., "A review of the environmental health impacts of traditional biomass fuel use in Sub-Saharan Africa," Journal of Environmental Chemical Engineering, vol. 7, no. 6, 2019.

participation as drivers, mechanics, or entrepreneurs[12]. Culturally, women are expected to avoid perceived risks, and norms and stigma about women on motorcycles (either as riders or passengers), seen as a sign of being "reckless" or "masculine" can exclude them from the convenience and time-savings that motorbike transport can offer.

- **Mobility constraints**: Women's mobility needs are shaped by caregiving responsibilities (and safety concerns. A recent study in Accra found women are responsible for about 75% of trips involving children (school drop-offs, etc.). However, many women report feeling unsafe riding as passengers with unknown male drivers or face additional charges when traveling with children and goods[16].
- **Technical roles**: Women are underrepresented in mechanical, engineering, and technical trades related to vehicle maintenance and manufacturing, limiting their participation in the emerging e-mobility industry[14]. Introducing electric vehicle technology could inadvertently reinforce this male dominance if proactive steps aren't taken.

5.3.2 Economic and Geographic Exclusion

- **Low-income populations**: The upfront cost of an electric motorbike or tricycle is currently higher than that of a used petrol equivalent on the local market, creating a significant barrier to adoption for low-income groups. With national poverty rates at 23-24% but reaching 50% in northern regions[17], affordability barriers threaten to exclude the poorest segments from adopting electric vehicles despite their potential cost benefits[28].
- **Rural-urban divide**: The geographic distribution of infrastructure, services, and economic opportunities shows stark disparities, with rural and northern communities at risk of lagging in e-mobility access[17]. A survey commissioned by the UNDP found that all seven public (EV) charging stations in the country are located exclusively in Accra, leaving other regions without public charging infrastructure[18]. This concentration of infrastructure in the capital underscores the potential for ethno-regional prejudices, presenting a risk that investments and pilot projects will continue to concentrate in Greater Accra and other urban areas. Social norms that associate modern technology with urban or southern populations could further hinder buy-in and slow adoption in traditional communities.
- **Informal sector workers**: Conventional motorcycle mechanics, fuel vendors, and spare parts dealers face potential livelihood disruption without transition support. There are thousands of informal jobs tied to the current petrol motorcycle ecosystem that could be threatened as EVs spread. Informal roadside mechanics, many of whom learned on-the-job without formal training, could find their livelihood threatened if they cannot service the new electric models[19].

[16] Jennifer Sheahan, "Integrating a gender perspective into Ghana's transport planning," OECD Development Matters Blog, March 11, 2025
[17] Adjasi, C. (2020). Comparative cost-benefit analysis of four poverty reduction approaches in Ghana. Ghana Priorities. Copenhagen Consensus Center. https://copenhagenconsensus.com/sites/default/files/gp_poverty_-_final.pdf
[18] United Nations Development Programme (UNDP). (2025, March 27). Market Opportunity Study on Electric Vehicle Charging Stations in Ghana. UNDP Ghana. https://www.undp.org/ghana/publications/market-opportunity-study-electric-vehicle-charging-stations-ghanaUNDP+1UNDP+1
[19] Ministry of Transport -- Ghana, "Stakeholders Consulted on New Motorcycle and Tricycle Rules," Press Release, April 7, 2025.

5.3.3 Social Norms Affecting Persons with Disabilities (PWDs) and Youth

- **Persons with disabilities**: PWDs face physical accessibility barriers and social stigma in transport systems, rarely being seen as active users. For instance, it's uncommon to see a person in a wheelchair using public transit or driving, partly due to infrastructure barriers and partly social attitudes. Without inclusive design, e-mobility solutions may perpetuate their exclusion despite the potential for adaptive e-vehicles to enhance mobility.
- **Youth**: While young people form the backbone of the motorcycle taxi industry, they often operate in precarious conditions without formal recognition or protections[19]. Many young riders face social stigma, being stereotyped as prone to crime. There is also an urban-rural divide: urban authorities in Accra and Kumasi have often frowned on Okada operations with bans and curfews imposed, which feeds a narrative that these riders are "nuisances" despite the service they provide to many commuters.

5.4 Why Are They Left Behind? Analysis of Exclusion Drivers

5.4.1 Social Norms and Cultural Barriers

Gender Norms in Mobility and Vehicle Use

Traditional gender roles have cast men as the primary operators of vehicles and women as passengers or users of transport services. These norms manifest in the 2&3-wheeler space in several ways:

- **Male-Dominated Ridership and Employment**: Riding motorbikes (especially commercially) is widely viewed as a male activity. Virtually all commercial motorcycle taxi riders ("Okada" operators) are men, typically young men[12]. Traffic injury data from northern Ghana shows many motorcycle accident victims are males in their productive age[12], reflecting men's predominance in riding.
- **Regional Variations**: Northern Ghana shows more acceptance of women riding motorcycles compared to southern regions, where women on motorcycles may face social stigma[12]. This North-South divide reflects broader cultural differences in gender norms that any e-mobility intervention must consider.
- **Technical Field Perceptions**: The electric transition is opening new roles in EV engineering, manufacturing, and servicing but gender norms remain a barrier. In Ghana, technical fields like mechanics and engineering are still male-dominated due to long-standing educational and hiring biases[20]. Without intentional inclusion, e-mobility could reinforce this imbalance. However, initiatives like SolarTaxi's Female Engineers Training Program are pushing change. By training and hiring women, they're breaking stereotypes and showing that visible role models and targeted support can shift perceptions and open doors for more women in the sector [14,21].

[20] Owusu-Mensah, J., & Gyimah, E. K. (2023). Gender and education in Ghana: A case study of science, technology, engineering and mathematics (STEM) programs in the University of Education, Winneba. International Journal of Research and Innovation in Social Science (IJRISS), VII(VI), 35–42. https://rsisinternational.org/journals/ijriss/articles/gender-and-education-in-ghana-a-case-study-of-science-technology-engineering-and-mathematics-stem-programs-in-the-university-of-education-winneba/

[21] UEMI, "BOOST Project -- Empowering Women in Electric Mobility (Rwanda example)," Urban Electric Mobility Initiative, 2024

Community Attitudes and Perceptions

- **Gendered Mobility Norms:** Prevailing community attitudes often stigmatize female riders as inappropriate or unconventional[22]. Therefore, enabling women's adoption of E2&3-wheelers will require parallel efforts to shift entrenched social norms that discourage female ridership. This includes targeted awareness campaigns portraying women riders in aspirational and economically empowered roles, alongside active engagement with community influencers—such as traditional and religious leaders—to challenge mobility-related stigma.
- **Youth and Informal Transport**: Commercial motorcycle riders often face social stigma, being stereotyped as dropouts or prone to crime, affecting policy approaches to this sector[19]. The Ministry of Transport's recent stakeholder dialogues have stressed improving riders' welfare and job security[19], representing a positive normative shift toward treating riders as stakeholders to consult.
- **Technology Acceptance**: Scepticism about new electric technology may slow adoption, particularly in communities with less exposure to innovation[28]. In communities used to petrol motorbikes, there may be myths like "electric bikes are not powerful enough" or concerns that they cannot handle long distances or rough roads. If early models underperform or if charging is inconvenient, negative word-of-mouth could spread, reinforcing a norm that EVs are impractical.

5.4.2 Economic and Financial Constraints

Affordability and Income Gaps

- **High Upfront Costs**: While E2&3-wheelers offer long-term savings, their initial purchase price exceeds conventional vehicles, creating an entry barrier for low-income users[28]. Most conventional motorbikes used by riders are second-hand imports or cheap new models, which can be relatively inexpensive. In contrast, electric models – being new technology often cost more initially.
- **Geographic Income Disparities**: With poverty rates exceeding 50% in northern regions (compared to 8% in urban areas)[17], Ghana's poorest regions, where motorcycles are most prevalent, have the least capacity to invest in new electric models. There is a real risk that the EV transition will deepen regional inequalities: urban users might adopt new e-transport models, while rural communities continue using old, high-emission motorbikes.
- **Gender Income Gap**: Ghana has high rates of female labour force participation, but women are concentrated in lower-paying informal sectors like trading and subsistence farming and often have less financial autonomy. Many women rely on family members for large purchases or business capital. Women's concentration in lower-paying informal sectors and limited financial autonomy compounds affordability challenges, restricting their ability to invest in the sector[16].

Access to Finance and Credit

[22] The Urban Catalysts (2024). WE2: Understanding gaps and opportunities for uptake of electric two-wheelers by women in India. Project Report. https://transport-links.com/wp-content/uploads/2025/01/HVT059-Project-Completion-Report_19122024.pdf

- **Limited Formal Financial Services**: Many low-income individuals and informal workers lack access to credit facilities that could finance electric vehicle purchases[17]. Commercial banks historically have been reluctant to lend for informal sector assets like motorcycles, especially if the borrower has no collateral. Where microfinance schemes are theoretically accessible, eligibility conditions and repayment structures often fail to account for women's unique socio-economic constraints, such as income volatility or caregiving responsibilities. As a result, women are less able to participate in asset ownership schemes for electric two-wheelers, reinforcing existing gender gaps in mobility and economic participation[23].
- **Collateral Requirements**: Traditional banking models often require collateral that marginalized groups don't possess, excluding them from financing options[24]. This barrier is particularly acute for women, who own fewer assets that can serve as security.[25]
- **Gender-Blind Financial Products**: Financial services rarely account for women's specific economic situations, cash flow patterns, or constraints[16]. Understanding these household-level economics is key to designing inclusive solutions.

5.4.3 Employment and Livelihood Impacts

The transition to electric mobility will disrupt existing jobs and create new ones, with implications for who might be excluded or included:

- **Livelihoods of Conventional Riders and Mechanics:** There are thousands of informal jobs tied to the current petrol motorcycle ecosystem – riders, mechanics, fuel station attendants, spare parts dealers, etc[26]. As EVs spread, demand for petrol mechanics and engine parts may decline over time. Informal roadside mechanics, many of whom learned on-the-job without formal training, could see their livelihood threatened if they cannot service the new electric models. Ghana's EV policy acknowledges this, emphasizing retraining of artisans and garage mechanics on EV maintenance and conversions. Without such training, older mechanics (often with little formal education) may be excluded from the new economy.
- **Opportunities for Green Jobs:** On the positive side, e-mobility can create a range of new jobs – from assembling vehicles and batteries, to installing and operating charging infrastructure, to providing services like battery swapping or EV rentals[14]. These jobs can be a boon for Ghana's youth unemployment challenge and can also be entry points for underrepresented groups if intentionally opened. Already, the local EV industry is creating jobs: SolarTaxi has generated over 100 full-time jobs directly (in assembly, sales, admin) and many more indirectly through delivery services using its bikes[14].

[23] The Urban Catalysts (2024). WE2: Understanding gaps and opportunities for uptake of electric two-wheelers by women in India. Project Report. https://transport-links.com/wp-content/uploads/2025/01/HVT059-Project-Completion-Report_19122024.pdf
[24] World Bank. (2019). Fourth Ghana Economic Update: Enhancing financial inclusion (Report No. 139633). World Bank Group. https://documents.worldbank.org/curated/en/395721560318628665
[25] Ghana Statistical Service, "Ghana Living Standards Survey Round 7 (GLSS7) Main Report," June 2018.
[26] Stanley Senya, "Ministry of Transport Launches National Electric Vehicle Policy," Ghana News Agency (GNA), December 15, 2023.

- **Equity in Value Chains:** Who controls the value chains in e-mobility will determine whether economic benefits are widely shared or concentrated. If the sector is dominated by large companies or importers who may not prioritize inclusion, the economic benefits might not trickle down. But if the model is more inclusive, e.g. cooperatives of riders owning charging stations, local youth entrepreneurs running battery leasing schemes, then broad-based benefits can be realized[26].

5.4.4 Policy and Institutional Gaps

Regulatory Environment

- **Legal Ambiguity:** As mentioned, Okada(s) operate in a legal grey area under Road Traffic Regulations 2012 (L.I. 2180), creating insecurity for riders and limiting formal recognition[19]. This legal ambiguity has several GESI implications: riders operate without labour protections or formal recognition, and passengers (often those in areas underserved by taxis or buses) rely on a service that isn't officially regulated for safety.
- **Standards and Safety Frameworks:** Ghana lacks comprehensive standards specifically for electric two-/three-wheelers, creating quality and safety uncertainties[26]. Without this, there's a risk of dumping low-quality e-vehicles that fail early, which would hurt consumers (especially poor ones who can't easily replace them).
- **Battery Disposal Regulations:** Weak regulations around battery disposal and recycling pose environmental justice concerns for communities[28]. This gap could lead to hazardous waste in vulnerable communities as EV batteries reach end-of-life.

Institutional Coordination and Capacity

- **Sectoral Alignment:** Limited coordination between transport, energy, and social sectors affects infrastructure planning and service delivery[28]. The transition to e-mobility cuts across multiple sectors – transport, energy, environment, finance, and local government. Effective coordination is needed to ensure infrastructure reaches all communities equitably.
- **Data and Monitoring Gaps:** Lack of disaggregated data (by gender, region, income, disability) in transport planning and monitoring limits visibility of exclusion patterns[16]. Without such data, inclusion risks remain invisible.
- **Implementation Capacity:** Agencies responsible for regulation, standards, and support services lack resources for inclusive implementation and monitoring[27]. Introducing new regulations is only as good as the ability to enforce and monitor them.

Policy Inclusiveness

[27]] J. K. Nabary, "Ensuring inclusivity of disabled: Researchers call for elimination of barriers," Ghana News Agency, June 25, 2024

- **Gender-Blind Transport Planning:** While high-level policies mention inclusivity, specific strategies for women, persons with disabilities, and other marginalized groups remain limited[28]. The updated NDC lists "expansion of inter- and intra-city transportation modes" and "sustainable mobility" as part of mitigation, but earlier assessments gave gender-responsiveness of transport measures a low score[28].
- **Geographic Focus:** Policy implementation often favours urban centres over rural areas where need is greatest[17]. From an inclusion standpoint, it's important that charging stations or battery swap networks reach poorer neighbourhoods and rural towns, not just high-end urban malls or fuel stations.
- **Incentive Structures:** Current EV incentives are not targeted to benefit marginalized groups, potentially reinforcing existing advantages[29]. If Ghana plans an EV incentive scheme, ensuring a portion is reserved or tailored for lower-income applicants will be important.

5.5 How To Respond? Mitigation Strategies for Project Design and Delivery

This section outlines actionable recommendations to shape the design and delivery of the project in a way that reflects the GESI findings.

5.5.1 Research Design and Methodology Adaptations

Recommendation	Implementation Approach
Gender-Responsive Data Collection	Design all field instruments (surveys, FGDs, KIIs) to allow sex- and age-disaggregated data collection with tailored questions for different groups.
Participatory Research Methods	Employ storytelling, community mapping, and other participatory tools during FGDs to enable meaningful participation from marginalized voices.
Inclusive Sampling	Where feasible, ensure sampling frames include specific quotas for women, PWDs, youth, rural residents, and low-income participants.
Team Capacity Building	Train all project staff and enumerators on GESI-sensitive research methods and bias mitigation.
Ethical Safeguards	Enforce CEDA protocols to protect confidentiality, dignity, and emotional wellbeing of vulnerable participants.

[28] God'sable S. K. Aidam et al., "Ghana's electric vehicle policy: a path to aviation industry decarbonisation," Journal of the Ghana Institution of Engineering, vol. 24, no. 3, 2024.
[29] Stanley Senya, "Ministry of Transport Launches National Electric Vehicle Policy," Ghana News Agency (GNA), December 15, 2023.

5.5.2 Stakeholder Engagement Strategy

Recommendation	Implementation Approach
GESI Advisory Committee (GAC)	Form a committee comprising women's organizations, disability groups, youth representatives, and informal sector advocates to provide ongoing guidance.
Geographic Balance	Conduct stakeholder events across different regions, ensuring northern and rural representation.
Diverse Representation	Facilitate mechanisms to include women riders, female engineers, PWDs, and other underrepresented voices in all engagements and policy dialogues.

5.5.3 Policy Analysis and Recommendations Framework

Recommendation	Implementation Approach
GESI Analysis Matrix	Develop a tool, with the GAC to evaluate policy options based on inclusiveness criteria and potential impacts on different groups.
Differentiated Impact Analysis	Structure analysis to distinguish between general impacts and specific effects on marginalized groups.
GESI-Tagged Recommendations	Clearly identify policy recommendations that specifically address needs of women, youth, PWDs, and low-income groups.

5.5.4 Knowledge Product and Dissemination Strategy

Recommendation	Implementation Approach
Inclusive Visual Representation	Ensure all reports, graphics, and communications reflect diversity in imagery (gender, region, disability, class).
Accessible Formats	Develop plain language summaries, infographics, and potentially local language materials/presentations for non-expert audiences.
Authentic Voices	Integrate anonymized quotes and stories from marginalized participants to humanize findings.
Targeted Knowledge Exchange	Organize dedicated sessions with youth, women, and disability groups to share insights and gather feedback.
Diverse Media Channels	Utilize community radio, social media, and existing networks to ensure broad dissemination beyond formal institutions.

5.6 Monitoring and Evaluation

5.6.1 Key GESI Indicators

To track inclusion throughout the project lifecycle, the following indicators will be monitored:

Project Phase	GESI Indicators
Research Implementation	• Percentage of women, PWDs, and youth among research participants • Number of communities from northern/rural areas included in field research
Stakeholder Engagement	• Number of dedicated sessions with marginalized groups • Qualitative feedback from GESI Advisory Committee
Policy Analysis and Knowledge Products	• Number of policies/recommendations with specific GESI provisions • Percentage GESI score of proposed policy options • Number of research outputs and knowledge products with accessibility features that are inclusive and usable by individuals with special needs

5.6.2 Learning and Adaptation Process

A quarterly review process will be established to assess GESI integration progress, with findings used to adjust project implementation. This process will involve:

- Regular consultation with the GESI Advisory Committee
- Documentation of inclusion challenges and solutions
- Adaptive management responses to emerging GESI concerns

5.7 Conclusion

Ghana's transition to electric two- and three-wheelers represents both an environmental necessity and a social opportunity. This GESI analysis has identified specific groups at risk of exclusion—women riders and entrepreneurs, low-income communities, rural residents, informal sector workers, and persons with disabilities—and the barriers they face across social, economic, and institutional dimensions.

By implementing the recommended strategies, the project can ensure its research processes and outputs reflect Ghana's diverse population and address their varied mobility needs. More importantly, by embedding inclusion throughout the project lifecycle, the research can contribute to an e-mobility transition that serves as a catalyst for greater equity—delivering not just environmental benefits but also advancing gender equality, poverty reduction, and social inclusion.

The path to inclusive e-mobility requires coordinated effort from government, financial institutions, private sector, communities, and development partners. Through deliberate attention to who might otherwise be left behind, Ghana can demonstrate that green growth and inclusive growth are not separate objectives but complementary aspects of sustainable development

6 Conclusion

The inception phase of the Project has successfully laid a robust foundation for informed, inclusive, and contextually relevant research. It has provided insights into Ghana's current transport dynamics, identified policy gaps, clarified stakeholder roles, and established a framework for mainstreaming GESI throughout the project lifecycle.

Key outcomes from this phase include the successful mapping of stakeholders, an in-depth preliminary review of existing literature and policies, the identification of critical data sources and information gaps, and the establishment of effective stakeholder engagement channels, notably the Gender Advisory Committee (GAC).

6.1 Project Next Steps

Building upon the inception phase, the project will proceed with the following next steps:

- **Comprehensive Literature Review and Policy Analysis**: The initial literature review will be expanded to include a more detailed analysis of international best practices in E2&3-wheeler electrification, with particular attention to successful models from other regional and international contexts. This review will inform the development of the Comprehensive Review and Gap Analysis Report (D1), scheduled for completion by Month 6 of the project.
- **Field Research and Primary Data Collectio**n: Primary data collection activities will focus on the identified case study areas and employ mixed methods, combining quantitative surveys with qualitative approaches such as focus group discussions and key informant interviews. This primary research will inform the following deliverables: Cost and Economic Viability Working Paper (D2) and Local Manufacturing & Assembling Potential Assessment (D3), Electrification Constraints Working Paper (D4) and contribute to the development of evidence-based policy recommendations.
- **Technical and Economic Analyses**: Building on the data collection efforts, the project team will conduct technical and economic analyses on cost-benefit scenarios, infrastructure readiness, local production capacity, and socioeconomic impacts to inform the Cost and Economic Viability Working Paper (D2) and Local Manufacturing & Assembling Potential Assessment (D3), Electrification Constraints Working Paper (D4) and contribute to the development of evidence-based policy recommendations.
- **Stakeholder Engagement and Validation Activities**: Ongoing stakeholder engagement will remain a central feature of the project approach. The project team will organize thematic workshops with key stakeholder groups, focusing on specific aspects of E2&3-wheeler electrification such as regulatory frameworks, infrastructure development, financing mechanisms, and inclusion strategies. Planned activities include:
  - Thematic workshops with government institutions, private sector actors, and CSOs
  - Regular consultations with the Gender Advisory Committee to ensure GESI integration
  - Validation sessions for preliminary findings and draft recommendations
  - One-on-one meetings with key decision-makers and informants
- **Policy Recommendations and Advocacy Tools**: In its final months, the project will culminate in the synthesis of research findings into actionable policy recommendations and advocacy tools. Key deliverables will include Pathways for Low-Carbon Transition Policy Brief (D5), National Advocacy Framework (D6) and E-Mobility Awareness Feature (D9).

Appendix A

The following resources were consulted during the inception phase of the "Exploring the Transition Pathways to Electric 2/3 Wheelers in Ghana" project.

Table A 1: Policy and Regulatory Documents

Document Title	Publisher/Authority	Year
Ghana Energy Policy	Ministry of Energy	2023
Ghana Energy Transition Framework	Ministry of Energy	2022
Ghana Energy Transition Investment Plan	Ministry of Energy	2022
Ghana's Nationally Determined Contributions (NDC)	Environmental Protection Agency	2020
National Electric Mobility Policy Framework	Ministry of Transport	2023
National Electric Mobility Roadmap	Ministry of Transport	2023
National Electric Vehicle Policy	Ministry of Transport	2023
National Transport Policy	Ministry of Transport	2020
EV Charging Standards	Energy Commission	2023
Motor Vehicle Policy	Ministry of Environment, Science, Technology and Innovation	2023

Table A 2: Technical and Market Analyses

Document Title	Author/Institution	Year
National Greenhouse Gas Emission Inventory Document to UNFCCC (1990-2022)	Environmental Protection Agency	2024
Air Quality Assessment Report	Environmental Protection Agency	2022
Economic Impact Assessment of E-Mobility	Ghana Statistical Service	2022
Electric Vehicle Baseline Survey Report	Energy Commission Drive Electric Initiative	2022
Fifth National Greenhouse Gas Inventory Report (1990-2019)	Environmental Protection Agency	2022
Ghana Climate Vulnerability Assessment	World Bank	2021
Global Electric Two- and Three-Wheeler Conference: Final Report	United Nations Environment Programme	2023
Market Opportunity Study on Electric Vehicle Charging Stations in Ghana	UNDP Ghana	2025

Table A 3: Academic and Research Publications

Title	Author(s)	Journal/Publication	Year
Comparative Cost-Benefit Analysis of Four Poverty Reduction Approaches in Ghana	Adjasi, C.	Ghana Priorities, Copenhagen Consensus Center	2020

Economic Burden of Motorcycle Accidents in Northern Ghana	Aikins, M. et al.	Ghana Medical Journal	2012
Ghana's Electric Vehicle Policy: A Path to Aviation Industry Decarbonisation	Aidam, G.S.K. et al.	Journal of the Ghana Institution of Engineering	2024
Ghana Electric Vehicles Baseline Survey Report	Ahenkorah, A. et al.	Energy Commission	2023
Gender and Education in Ghana: A Case Study of STEM Programs	Owusu-Mensah, J. & Gyimah, E.K.	International Journal of Research and Innovation in Social Science	2023
Integrating a Gender Perspective into Ghana's Transport Planning	Sheahan, J.	OECD Development Matters Blog	2025
Review of Environmental Health Impacts of Traditional Biomass Fuel Use in Sub-Saharan Africa	Amegah et al.	Journal of Environmental Chemical Engineering	2019
Sustainable Transport Solutions for West African Cities	Obeng-Odoom, F.	Transport Policy	2022

Table A 4: International and Development Partner Reports

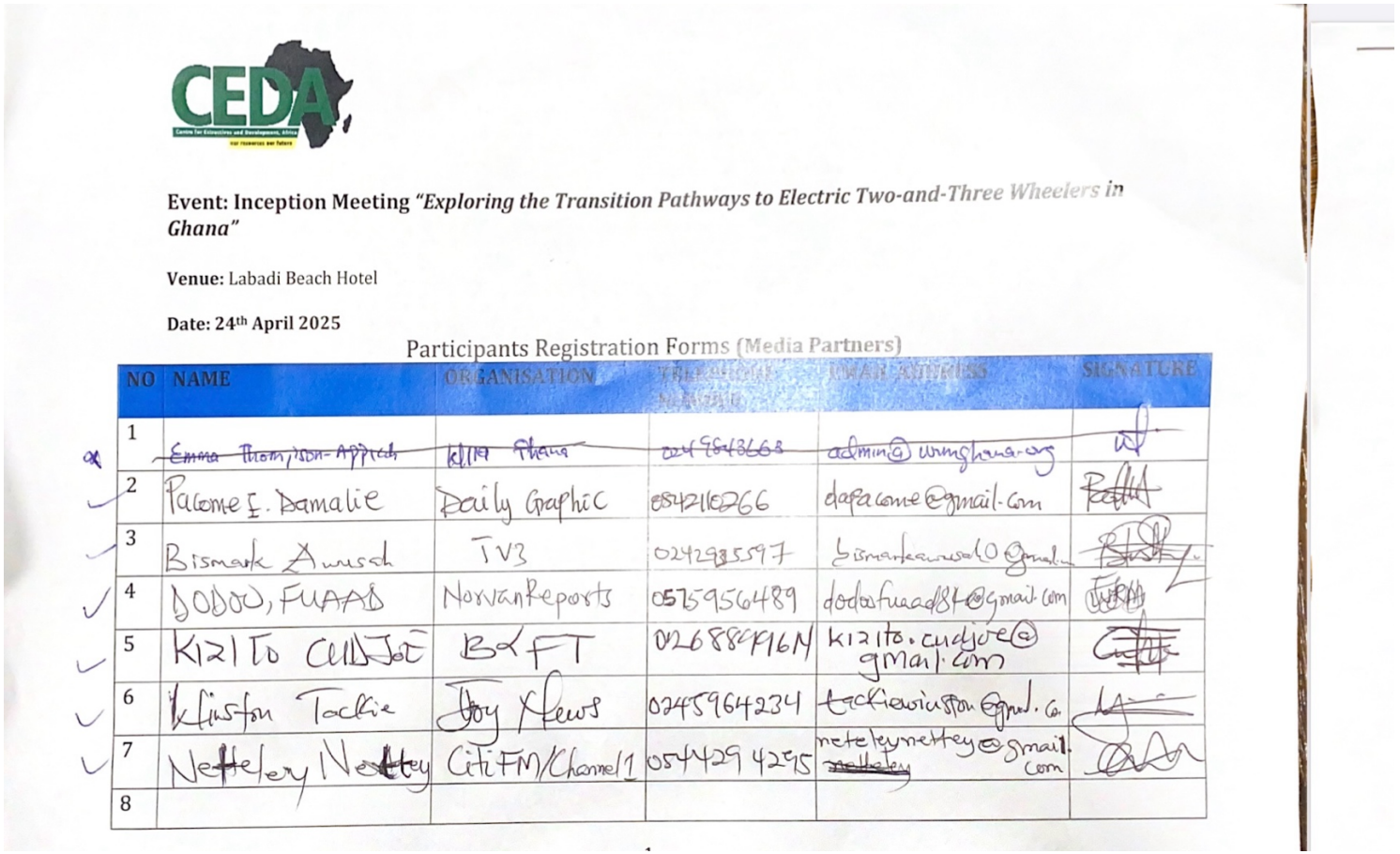
Title	Organization	Year
Electric Mobility and Power Systems: Impacts and Mitigation Strategies in Developing Countries	World Bank	2023
Macro Poverty Outlook for Ghana: April 2023	World Bank	2023
Greening Transport in Ghana: Transforming Mobility with Electric Vehicles	FSD Africa	2023
Global EV Data Explorer	International Energy Agency	2022
Global EV Outlook 2023: Catching up with Climate Ambitions	International Energy Agency	2023
Promoting Electric Mobility in Africa: SEFA Grant to Drive Electric Mobility Shift in Seven African Countries	African Development Bank	2023
Sustainable Urban Mobility in Sub-Saharan Africa: GIZ Initiatives	GIZ	2023
Electric Two- and Three-Wheelers: A Global Emerging Market Overview	UNEP	2022

Table A 5: Statistical and Data Sources

Dataset/Source	Institution	Year	Type of Data
Ghana Living Standards Survey	Ghana Statistical Service	2022	Gender disaggregated asset ownership indicators
International Trade Statistics Database	International Trade Centre (ITC)	2017-2021	Vehicle import/export data including electric two- and three-wheelers

Appendix B

List of Participants at the Inception Meeting



Event: Inception Meeting *"Exploring the Transition Pathways to Electric Two-and-Three Wheelers in Ghana"*

Venue: Labadi Beach Hotel

Date: 24th April 2025

Participants Registration Forms (Media Partners)

NO	NAME	ORGANISATION	TEL. NUMBER	EMAIL ADDRESS	SIGNATURE
1	~~Emma Thompson-Appiah~~	~~KITA Ghana~~	~~0247848668~~	admin@wmnghana.org	
2	Paloma E. Damalie	Daily Graphic	0542116266	dapacome@gmail.com	
3	Bismark Awuah	TV3	0242985597	bismarkawuah10@gmail.com	
4	DODOO, FUAAD	NorvanReports	0575956489	dodoofuaad84@gmail.com	
5	KIZITO CUDJOE	BAFT	0268866166	kizito.cudjoe@gmail.com	
6	Kingston Tackie	Joy News	0245964234	tackiekingston@gmail.com	
7	Netteley Netteley	CitiFM/Channel1	0544294295	neteleynetteley@gmail.com	
8					

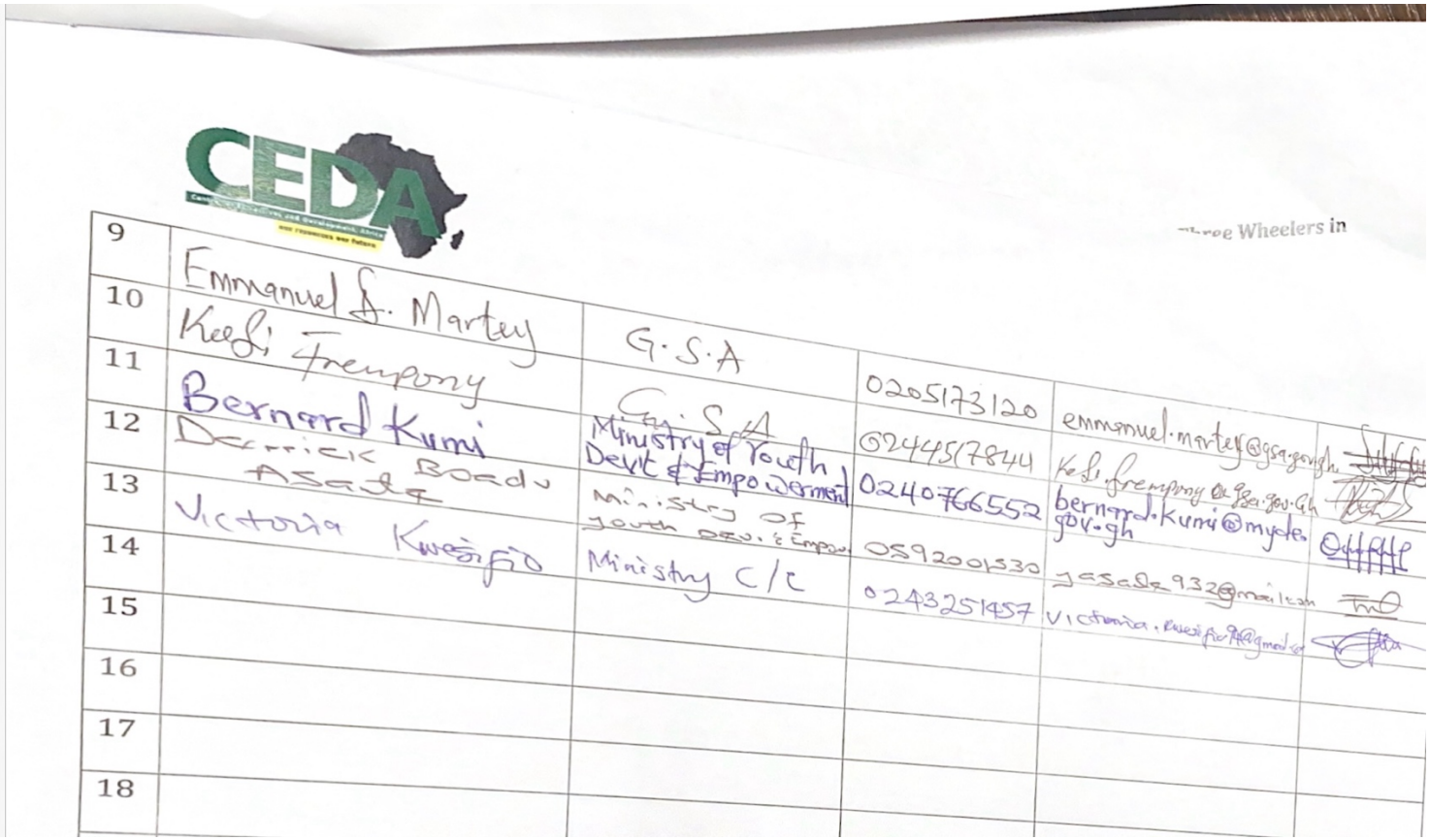
Event: Inception Meeting *"Exploring the Transition Pathways to Electric Two-and-Three Wheelers in Ghana"*

Venue: Labadi Beach Hotel

Date: 24th April 2025

Participants Registration Forms (Government Agencies)

NO	NAME	ORGANISATION	TELEPHONE NUMBER	EMAIL ADDRESS	SIGNATURE
1	Dr. Steve Manteaw	GHEITI	0244273006	manteawsteve@yahoo.co.uk	[signature]
2	Edmund Ofosu-Yeboah	NYA	0544824190	eo.yeboah@nya.gov.gh	[signature]
3	Adu-Aboh Montel Essiffie	NYA	0553319503	montelessiffie497@gmail.com	[signature]
4	Joyce Caitlyn Oansey	EC	0245409710	jcocansey@energycom.gov.gh	[signature]
5	Dennis Yeribu	NRSA	0246127802	dennis.yeribu@nrsa.gov.gh	[signature]
6	Cedric Dzelu	Office of the Minister Climate	0245888907	cedricdzelu@gmail.com	[signature]
7	Ernest Amoako	NYA	0244232063	ernest@nya.gov.gh	[signature]
8	Nana Bonyi Ahenan	GSA	0200910322	nanabonyiahenan@gra.gov.gh	[signature]



9	Emmanuel S. Martey	G.S.A	0205173120	emmanuel.martey@gsa.gov.gh	
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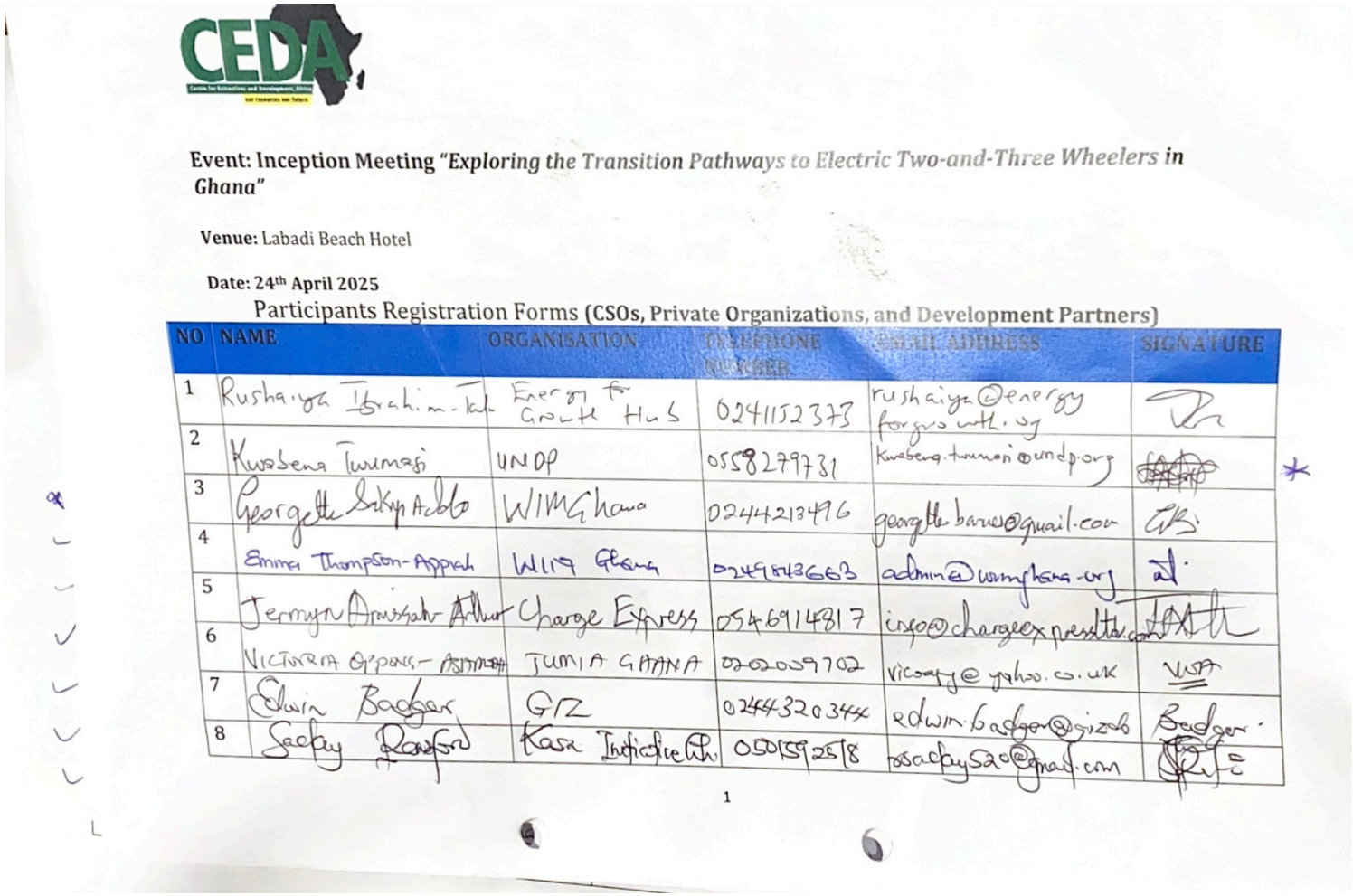
12	Derrick Boadu	Ministry of Youth Dev. & Empow.	0592001530	[illegible]	
13	Asafo				
14	Victoria Kwesifio	Ministry C/t	0243251457	victoria.kwesifio[illegible]	
15					
16					
17					
18					



Event: Inception Meeting "*Exploring the Transition Pathways to Electric Two-and-Three Wheelers in Ghana*"

Venue: Labadi Beach Hotel

Date: 24th April 2025

Participants Registration Forms **(CSOs, Private Organizations, and Development Partners)**

NO	NAME	ORGANISATION	TELEPHONE NUMBER	EMAIL ADDRESS	SIGNATURE
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3	Georgette Sakyi Addo	WIM Ghana	0244213496	georgette.baneo@gmail.com	
4	Emma Thompson-Appeah	WIM Ghana	0245843663	admin@wimghana.org	
5	Jermyn Anissah Arthur	Charge Express	0546914817	info@chargeexpressltd.com	
6	VICTORIA OPPONG-ASHMAN	JUMIA GHANA	0202009702	vicoapy@yahoo.co.uk	
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11	VAL LAB	WAHU	0243800524	valerie@wahu.me	
12	Kuorlor Dzani	Wahu	0208112331	kuorlor@wahu.me	
13	Justina Anaah	SYND	0547260763	justina@syndghana.org	
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15	Saviour Ganu	✓	0594635824	ganusaviour.gm..	
16	Emmanuel Agyapong	Solartaxi	0246458856	eagyapong@solartaxi.co	
17	Amoako Asiedua Esther	Solar taxi	0547933647	asiedua@solartaxi	
18	Angelo Puplampu	NRGI	0202948225	apuplampu@resourcegovernance.org	
19	David Sefe Adjei	NRGI	0242222846	dsefeadjei@resourcegovernance.org	
20	Franklin Appiah-Ofori	WLE	0248166010	appfrank[illegible]@gmail.com	