CVF | CLIMATE VULNERABLE FORUM

CPP PROJECT #1

Green Mobility Initiative: Advancing Sustainable Electric Vehicle Manufacturing and Adoption in Ghana

PROJECT SNAPSHOT

PROJECT OVERVIEW

Provide a concise description of the project, including the following key points:

- **Project Location:** Ghana, West Africa
- **Project size/capacity:** 20,000Sqm, 10MW
- **Sector:** Transport & Energy Sector (eMobility)
- **Project stage:** Phase 1 Implementation Stage - In February 2024, Wahu Mobility launched Africa's first CKD (Completely Knocked Down) pedal-assisted eBike factory, establishing a green electric mobility design and manufacturing hub in the heart of Accra, Ghana. The factory has the capacity to manufacture 200 eBikes per month in its current capacity.

- **Certifications and Memberships:** Wahu Mobility is a certified Ghana Freezones Manufacturer, a licensed fleet operator with the Ghana Postal and Courier Service, and a member of the Ghana Chamber of Commerce and Industry.

- **Project Owner:** Wahu Mobility Limited Founded in August 2022, a limited liability company registered in the Republic of Ghana, is a pioneering hybrid business dedicated to revolutionising vehicle ownership through its innovative electric vehicle logistics platform. As a full-service e-mobility solutions provider, Wahu Mobility designs and manufactures cutting-edge electric vehicles that offer a sustainable and efficient transportation alternative. By addressing the growing demand for electric mobility options, the company aims to make electric vehicle ownership more accessible and drive the resilience of gig workers through the brokerage of needed services.

- **Project Description:** The Green Mobility Initiative aims to catalyze Ghana's transition to electric vehicles by encompassing three key strategies. First, it seeks to strengthen local availability and the supply chain of electric vehicles by establishing a Green Manufacturing Zone for Electric Vehicles (EVs) in Ghana, West Africa, with a target capacity of 212,000 eBikes and 20,000 eCars by 2030. Second, it aims to enhance the national infrastructure network for battery swap and EV charging infrastructure by developing a National Network of Battery & Charging Infrastructure, rolling out 120 charging and battery swap points nationwide, leveraging solar and renewable energy sources. Third, the initiative focuses on driving affordability of purchasing vehicles, thereby increasing demand. To achieve this, the Green Finance Facility, leveraging Wahu

Mobility's digital platform, will offer affordable payment plans to enable consumers to purchase electric vehicles, making sustainable transportation accessible to a broader population. Through these efforts, the initiative aims to contribute to environmental sustainability and economic growth in Ghana.

BANKABILITY & FINANCIAL VIABILITY

INVESTOR SUMMARY

Total Investment Ask ($USD)	100,000,000

PART A			
Base Premise and Key Assumptions			**User Instructions**
Post money Valuation (DCF)			
$USD		83,128,645	
Grant Mix	15,000,000	15%	
Debt Mix	50,000,000	50%	
Equity Mix	35,000,000	35%	
% of holding of Equity Investor		42%	
Dividend Payout Policy		20%	
Coupon Rate on Debt		10%	
Debt Tenor		10	
Repayment Commences	Beginning of Year	4	
Projected Return on Investments			
IRR Debt		**13%**	
IRR Equity		**38%**	
ROI Equity		**30%**	

- **Funding required:** USD100m
- **Financial model/structure:** Equity, Debt, Grants
- **Expected IRR (Internal Rate of Return):** Debt 13%, Equity 38%
- **Payback period:** 10 years
- **Key investors/partners (if any):** Current Investors (USD4m in Equity with USD2m outstanding to close Series A)
- **Risk mitigation strategies:** Compliance Market Project for Sale of ITMOs to 2030 eBikes, between Ghana and Switzerland, (Validation Stage), Seeking Credit Guarantee for Trade Finance.

OTHER KEY FINANCIALS:

KEY FINANCIALS (USD)	2024	2025	2026	2027	2028	2029	2030	2031	TOTALS
Net Revenue	750,017	5,126,500	22,995,832	63,016,788	139,470,794	237,230,349	318,753,249	400,276,149	**1,187,619,678**
Cost of Production	465,720	2,656,500	12,759,200	40,013,600	98,343,880	134,726,000	177,868,000	213,030,000	**679,862,900**
OpEx	1,710,682	4,611,932	10,126,975	14,516,381	15,776,827	18,121,873	19,926,082	20,823,209	**105,613,961**
Net Profit	(1,435,542)	(2,404,132)	(509,642)	5,493,707	20,427,487	74,585,814	111,926,256	158,787,029	**366,870,976**
Net Profit Margin	-191%	-47%	-2%	9%	15%	31%	35%	40%	31%
CapEx	161,665	2,892,000	7,250,000	16,740,000	19,200,000	-	-	-	**46,243,665**
End of Year Cash Balance	**566,451**	**9,729,519**	**49,691,801**	**37,419,858**	**3,459,944**	**16,798,929**	**61,415,855**	**146,880,304**	**146,880,304**

CLIMATE RESILIENCE & MITIGATION

- **Climate resilience measures:** The project enhances climate resilience by incorporating sustainable practices and technologies in the manufacturing process of electric vehicles (EVs). This includes the use of renewable energy sources such as solar power for the manufacturing zone and the national network of battery and charging infrastructure. Additionally, the project aims to establish a robust supply chain for EV components, reducing dependency on external ***sources and ensuring a stable supply of essential materials.***

- **GHG emissions reduction:** The project is expected to significantly reduce greenhouse gas (GHG) emissions by promoting the adoption of electric vehicles, which produce zero tailpipe emissions. By 2030, the project aims to avoid close to 1.1 million tons of CO₂ equivalent emissions through the widespread use of EVs and the implementation of energy-efficient technologies in the manufacturing process.

- **Adaptation strategies:** The project includes several adaptation strategies to address the impacts of climate change. These strategies involve the development of resilient infrastructure for the manufacturing zone and the battery swapping stations, ensuring they can withstand extreme weather events. Additionally, the project promotes the use of renewable energy sources, reducing the reliance on fossil fuels and enhancing energy security. The rollout of solar energy as a service for battery swap stations for transport increases energy security while reducing dependency on fossil fuels. This makes EVs accessible in areas previously reliant on petrol vehicles, exemplifying a just transition. It increases access to energy, drives economic growth and development, and enhances the resilience of low-income communities to climate change.

- **Alignment with climate policies and regulations:** The project aligns with national and international climate policies and regulations by promoting the use of clean energy and reducing GHG emissions. It supports Ghana's commitments under the Paris Agreement and contributes to the country's Nationally Determined Contributions (NDCs) by fostering sustainable transportation and reducing the carbon footprint of the automotive sector. The project also adheres to local environmental regulations and standards, ensuring compliance with all relevant laws and guidelines.

RESOURCE EFFICIENCY

- **Energy efficiency measures:** The project promotes energy efficiency by incorporating advanced technologies and sustainable practices in the manufacturing process of electric vehicles (EVs). The Green Manufacturing Zone will utilize energy-efficient machinery and equipment, reducing overall energy consumption. Additionally, the project will implement energy management systems to monitor and optimize energy use, ensuring minimal wastage.
- **Water/resource conservation strategies:** Water conservation is a key focus of the project. The manufacturing zone will employ water-efficient processes and technologies, such as recycling and reusing water in the production cycle. Rainwater harvesting systems will be installed to collect and store rainwater for various uses within the facility. These measures will significantly reduce the project's water footprint and promote sustainable water management.
- **Use of renewable energy or circular economy principles:** The project will leverage renewable energy sources, particularly solar power, to meet its energy needs. The Green Manufacturing Zone will be powered by a 10MW solar system, reducing reliance on fossil fuels and minimizing greenhouse gas emissions. Additionally, Wahu is exploring green renewable sustainable technologies in the development of components. Particularly, the use of water-soluble binding composites will allow for the economic recovery and reuse of lithium, cobalt, and nickel at the end of the battery's life. This approach supports circular economy partnerships, driving the reuse of key elements of vehicles and ensuring that the manufacturing process is both environmentally friendly and economically sustainable.

ALIGNMENT WITH 1.5°C TEMPERATURE THRESHOLD

- **GHG reduction targets in line with the 1.5°C goal:** The project aims to significantly reduce greenhouse gas (GHG) emissions by promoting the adoption of electric vehicles (EVs), which produce zero tailpipe emissions. By 2030, the project targets to avoid close to 1.1 million tons of CO_2 equivalent emissions, aligning with the global goal of limiting temperature rise to 1.5°C. This substantial reduction in emissions will contribute to mitigating climate change and achieving the 1.5°C target.
- **Technological innovations contributing to low-carbon development:** The project incorporates several technological innovations that contribute to low-carbon development. These include the use of water-soluble binding composites in battery components, allowing for the economic recovery and reuse of lithium, cobalt, and nickel at the end of the battery's life. Additionally, the project leverages solar energy to power the Green Manufacturing Zone and the national network of battery and charging infrastructure, further reducing reliance on fossil fuels and minimizing carbon emissions.
- **Potential for scaling impact on emissions reduction:** The project has significant potential for scaling its impact on emissions reduction. By establishing a robust supply chain for EV components and enhancing the national infrastructure network for battery swap and EV charging, the project

can facilitate the widespread adoption of electric vehicles across Ghana and potentially other regions in Africa. The rollout of 100 charging and battery swap points nationwide will make EVs accessible in areas previously reliant on petrol vehicles, promoting a just transition to sustainable transportation. This scalable approach ensures that the project's emissions reduction impact can be amplified, contributing to global efforts to limit temperature rise to 1.5°C.

SOCIAL IMPACT & SDG CONTRIBUTION

- **Job creation:** The project is expected to create over 100,000 jobs by 2030, both direct and indirect. These jobs will span various sectors, including manufacturing, maintenance, sales, customer service, and localization of automotive components. This significant job creation will contribute to reducing unemployment and fostering economic growth in Ghana.
- **Support for vulnerable communities:** The project aims to support vulnerable communities, including gig economy workers, by providing access to electric vehicles (EVs). This will enable them to participate in the growing EV market and improve their livelihoods. Additionally, the project will create job opportunities for Africa's educated unemployed, reducing economic migration and retaining talent within the continent.
- **Social inclusion measures:** The project promotes gender equality by creating job opportunities for both men and women. The design of vehicles will consider use cases that reduce the carrying burden for African women, enhancing their productivity and quality of life. Community engagement initiatives will ensure that local communities are involved in the project's development and benefit from its outcomes.
- **SDG alignment:** The project aligns with several United Nations Sustainable Development Goals (SDGs), including:
  - **SDG 1 (No Poverty):** By creating job opportunities and providing affordable financing for EVs, the project will help reduce poverty levels.
  - **SDG 5 (Gender Equality):** The project promotes gender equality by creating jobs for both men and women and designing vehicles that reduce the burden on women.
  - **SDG 7 (Affordable and Clean Energy):** The project leverages renewable energy sources, such as solar power, to power the manufacturing zone and charging infrastructure.
  - **SDG 8 (Decent Work and Economic Growth):** By creating over 100,000 jobs and supporting local businesses, the project will contribute to economic growth and development.
  - **SDG 9 (Industry, Innovation, and Infrastructure):** The project will develop a robust infrastructure for EV manufacturing and charging, fostering innovation and industrial growth.
  - **SDG 11 (Sustainable Cities and Communities):** The project will promote sustainable transportation and reduce the carbon footprint of urban areas.
  - **SDG 13 (Climate Action):** By avoiding more than 1.1 million tons of CO_2 emissions by 2030, the project will contribute to global efforts to combat climate change.

CONTRIBUTION TO GHANA'S CLIMATE PROSPERITY PLAN & NDC COMMITMENTS

- **Specific contributions to the CPP goals:** Wahu's Green Mobility Initiative directly supports Ghana's Climate Prosperity Plan (CPP) by promoting the adoption of electric vehicles (EVs) and reducing greenhouse gas (GHG) emissions. The initiative aims to establish a Green Manufacturing Zone for EVs, which will contribute to cleaner air and a reduction in fossil fuel dependency. By leveraging renewable energy sources such as solar power, the project aligns with the CPP's goals of enhancing energy security and promoting sustainable development.

- **Alignment with NDC targets (mitigation and adaptation):** The initiative aligns with Ghana's Nationally Determined Contributions (NDCs) under the Paris Agreement by setting ambitious GHG reduction targets. By 2030, the project aims to avoid more than 1.1 million tons of CO_2 equivalent emissions through the widespread adoption of EVs and the implementation of energy-efficient technologies. Additionally, the project includes adaptation strategies such as the development of resilient infrastructure for the manufacturing zone and battery swapping stations, ensuring they can withstand extreme weather events. This alignment with both mitigation and adaptation targets supports Ghana's commitment to combating climate change.

- **Policy coherence with Ghana's climate agenda:** Wahu's Green Mobility Initiative is coherent with Ghana's climate agenda and the newly launched Ghana Electric Vehicle (EV) Policy. The policy aims to create an enabling environment to drive electric vehicle uptake in Ghana, providing market signals to decarbonize the transport sector in line with Ghana's National Energy Transition Plan 2022-2070 and global commitments on climate change1. The initiative supports the policy's core values and principles, including health and safety in the use of electric vehicles, equity and fairness, circular economic principles, battery recycling, and inclusivity. By integrating green mobility into urban planning and promoting sustainable transportation, the project aligns with national policies aimed at reducing carbon emissions, enhancing energy security, and fostering economic growth. The localization of components and affordable financing options further drive participation and ensure that the project benefits a wide range of stakeholders, including vulnerable communities and low-income households.

INVESTMENT OPPORTUNITY & EXIT STRATEGY

Unique selling points of the project:

- **Green Manufacturing Zone:** Establishing a state-of-the-art manufacturing zone for Electric Vehicles (EVs) in Ghana, West Africa, with a target capacity of 50,000 eBikes and 20,000 eCars by 2030.

- **National Network of Battery & Charging Infrastructure:** Rolling out 100 charging and battery swap points nationwide, leveraging solar and renewable energy sources.

- **Green Finance Facility:** Offering affordable payment plans through Wahu Mobility's digital platform, making sustainable transportation accessible to a broader population.
- **Environmental Impact:** Avoiding close to 500,000 to 1.1 million tons of CO_2 emissions by 2030, contributing to environmental sustainability and economic growth.
- **Proven Track Record:** The project already has a proof point on the ground for eBikes, demonstrating its feasibility and potential for success.
- **Skilled Team:** The team is highly skilled in automotive and commercial ventures in Africa, with a diversified global team from Ghana, Kenya, and Germany.

Investor benefits:

- **High Growth Potential:** The project is positioned in a rapidly growing market with increasing demand for electric vehicles and sustainable transportation solutions.
- **Strategic Partnerships:** Collaboration with international automotive component manufacturers, local educational institutions, government agencies, financial institutions, renewable energy providers, construction firms, and media platforms.
- **Economic Incentives:** Potential tax breaks, subsidies, and other incentives from the government to promote green energy and sustainable transportation.
- **Social Impact:** Creating over 100,000 jobs and enhancing the resilience of low-income communities to climate change.
- **Energy Security:** The national network for battery-as-a-service infrastructure can also be leveraged for broader household energy security.

Exit strategy and timeline:

- **Initial Investment Phase:** Investors can expect to see significant growth within the first 3-5 years, with the establishment of the manufacturing zone and the rollout of the battery and charging infrastructure.
- **Mid-Term Growth Phase:** By 2030, the project aims to achieve full operational capacity, with substantial market penetration and revenue generation.
- **Exit Opportunities:** Investors can consider various exit strategies, including:
  - **Acquisition by Global OEMs:** As part of their Africa strategy, many Western-focused OEMs would be interested in acquisition due to the rapid growth of the population and middle class in Africa.
  - **Public Listing:** Listing on a public stock exchange, with South Africa having examples of automotive companies successfully listing.
  - **Mergers and Acquisitions (M&A):** Merging with or being acquired by larger industry players.

The timeline for exit is flexible, with potential opportunities arising as early as 5-7 years into the project, depending on market conditions and project performance.

ADDITIONAL INFORMATION

Project Certifications:

Here are the licenses mentioned:

- Ghana Freezones License
- EPA (Environmental Protection Agency) License
- Manufacturers License
- Africa Association of Automotive Manufacturers (AAAM) Membership
- Postal and Courier Service License
- Ghana Chamber of Commerce and Industry Membership
- 1 District 1 Factory Initiative
- Ghana Carbon Market

Third-party endorsements or awards:

- The Guardian
- CNN
- The Financial Times

Case studies or examples of similar successful projects:

- **UNEP Electric Mobility Projects in Africa:** The United Nations Environment Programme (UNEP) is actively involved in promoting electric mobility across several African countries. Their projects include the introduction of electric two and three-wheelers in countries such as Ethiopia, Kenya, Rwanda, and Uganda. These initiatives have shown significant potential in reducing greenhouse gas emissions and improving air quality2.
- **Bangkok eBus:** This greenhouse gas mitigation activity has introduced electric vehicles for private public transport in Thailand's capital Bangkok to reduce greenhouse gas emissions on a broader scale. Energy Absolute and privately-owned operators of scheduled bus routes in the Bangkok Metropolitan Region have the objective to replace 100% of the existing internal combustion engine bus fleets (privately-owned buses only). In parallel, a charging station service network for these e-buses is also being implemented.

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