



## **Integration of electric mobility with renewable energy in peri-urban and rural areas around cities in C?te d'Ivoire**

### **Part I: Project Information**

#### **GEF ID**

11042

#### **Project Type**

MSP

#### **Type of Trust Fund**

GET

#### **CBIT/NGI**

**CBIT No**

**NGI No**

#### **Project Title**

Integration of electric mobility with renewable energy in peri-urban and rural areas around cities in C?te d'Ivoire

#### **Countries**

Cote d'Ivoire

#### **Agency(ies)**

UNIDO

#### **Other Executing Partner(s)**

Ministry of Environment and Sustainable Development

#### **Executing Partner Type**

Private Sector

#### **GEF Focal Area**

Climate Change

#### **Taxonomy**

Focal Areas, Climate Change, Climate Change Mitigation, Sustainable Urban Systems and Transport, Technology Transfer, Agriculture, Forestry, and Other Land Use, Renewable Energy, Sustainable Development Goals, Stakeholders, Communications, Public Campaigns, Awareness Raising, Civil Society, Community Based Organization, Type of Engagement, Partnership, Participation, Consultation, Local Communities, Beneficiaries, Private Sector, SMEs, Gender Equality, Gender results areas, Participation and

leadership, Capacity Development, Access to benefits and services, Knowledge Generation and Exchange, Gender Mainstreaming, Sex-disaggregated indicators, Women groups, Gender-sensitive indicators, Integrated Programs, Food Security in Sub-Sahara Africa, Resilience to climate and shocks, Small and Medium Enterprises, Gender Dimensions, Sustainable Production Systems, Smallholder Farming, Food Systems, Land Use and Restoration, Sustainable Food Systems, Commodity Supply Chains, Smallholder Farmers, Sustainable Cities, Urban Food Systems, Transport and Mobility, Capacity, Knowledge and Research, Learning, Innovation

**Sector**

Technology Transfer/Innovative Low-Carbon Technologies

**Rio Markers**

**Climate Change Mitigation**

Climate Change Mitigation 1

**Climate Change Adaptation**

Climate Change Adaptation 0

**Duration**

48 In Months

**Agency Fee(\$)**

152,715.00

**Submission Date**

6/15/2022

**A. Indicative Focal/Non-Focal Area Elements**

<b>Programming Directions</b>	<b>Trust Fund</b>	<b>GEF Amount(\$)</b>	<b>Co-Fin Amount(\$)</b>
CCM-1-1	GET	248,973.00	400,000.00
CCM-1-2	GET	1,358,562.00	9,000,000.00
<b>Total Project Cost (\$)</b>		<b>1,607,535.00</b>	<b>9,400,000.00</b>

**B. Indicative Project description summary**

**Project Objective**

The objective of the project is to promote an integrated, sustainable and renewable energy-based transport system to reduce greenhouse gas emissions with a focus on connecting the peri-urban and rural areas with the cities in Cote d'Ivoire.

<b>Project Component</b>	<b>Financing Type</b>	<b>Project Outcomes</b>	<b>Project Outputs</b>	<b>Trust Fund</b>	<b>GEF Amount(\$)</b>	<b>Co-Fin Amount(\$)</b>
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Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Component 1: Strengthening the institutional framework and financial mechanism to promote E-Mobility in Cote d'Ivoire	Technical Assistance	<b>Outcome 1.1.</b> Legislation and financial mechanism are reinforced to promote the adoption of Zero Emission Vehicles (ZEV) powered by renewables	<p><b>Output 1.1.1:</b> National regulatory mechanisms promoting the development of Zero Emission Vehicles (ZEV) coupled with renewables and Non-Motorized Transport (NMT) in cities are strengthened and submitted to the government</p> <p><b>Output 1.1.2:</b> A national funding mechanism to incentivize the shift to e-mobility (focusing on 2&amp;3 wheelers in peri-urban and rural areas) is developed, submitted to the government for adoption at the national level</p> <p><b>Output 1.1.3:</b> A sectoral roadmap for improved energy performance in transport sector in value chains (e.g., refrigerated electric three-wheelers charged by mini-grids) is developed</p>	GET	265,998.00	1,175,000.00

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Component 2: Demonstration in support of e-mobility technologies and infrastructure in peri-urban and rural areas	Technical Assistance	<b>Outcome 2.1:</b> Viable E-mobility pilot sites are operationalized, engaging young entrepreneurs in rural and peri-urban areas	<b>Output: 2.1.1:</b> Feasibility studies consolidated on potential uses of Zero Emission Vehicles (ZEV) in transport network and opportunities for creating green businesses (e.g., goods transportation in agri-food value chains) and decent jobs for youth in rural and peri-urban areas	GET	259,816.00	1,508,700.00
Component 2: Demonstration in support of e-mobility technologies and infrastructure in peri-urban and rural areas	Investment	<b>Outcome 2.1:</b> Viable E-mobility pilot sites are operationalized, engaging young entrepreneurs in rural and peri-urban areas	<b>Output 2.1.2:</b> Operationalization of innovative and highly replicable pilot sites following a predefined set of criteria promoting Zero Emission Vehicles (ZEV) in peri-urban and rural areas to demonstrate private sector driven business models for future upscaling	GET	646,238.00	3,520,300.00

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Component 3.Capacity building and awareness raising	Technical Assistance	<p><b>Outcome 3.1:</b></p> <p>National capacities and awareness are enhanced to accelerate the adoption of e-mobility with a focus on 2&amp;3 wheelers in peri-urban and rural areas</p>	<p>Output 3.1.1</p> <p>Capacity building through technical trainings to provide the new skills needed due to shift to e-mobility in transport value chain (with a focus on youth and women)</p> <p><b>Output 3.1.2</b></p> <p>Workshops and awareness raising for the policy-makers and change-makers on integrated e-mobility and renewable energy</p>	GET	210,783.00	1,175,000.00

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Component 4: Monitoring and evaluation	Technical Assistance	<b>Outcome 4.1:</b> Effective monitoring, evaluation and preparation for eventual scale up of the project	Output 4.1.1: The project and its activities are monitored and evaluated on a periodic basis in line with GEF, UNIDO and Government requirements  Output 4.1.2: Mid-term review and terminal evaluation conducted and recommendations provided for eventual scale up of the project	GET	80,000.00	1,175,000.00
<b>Sub Total (\$)</b>					<b>1,462,835.00</b>	<b>8,554,000.00</b>
<b>Project Management Cost (PMC)</b>						
			GET	144,700.00	846,000.00	
			<b>Sub Total(\$)</b>	<b>144,700.00</b>	<b>846,000.00</b>	
			<b>Total Project Cost(\$)</b>	<b>1,607,535.00</b>	<b>9,400,000.00</b>	

Please provide justification

**C. Indicative sources of Co-financing for the Project by name and by type**

<b>Sources of Co-financing</b>	<b>Name of Co-financier</b>	<b>Type of Co-financing</b>	<b>Investment Mobilized</b>	<b>Amount(\$)</b>
Recipient Country Government	Ministry of Environment and Sustainable Development	In-kind	Recurrent expenditures	7,000,000.00
Private Sector	COPADEN	In-kind	Recurrent expenditures	440,000.00
Private Sector	GROUP A3E	In-kind	Recurrent expenditures	400,000.00
Recipient Country Government	Municipalities (Abidjan, Yamoussoukro, San-P?dro, Bouak? et Korhogo)	In-kind	Recurrent expenditures	1,500,000.00
GEF Agency	UNIDO	In-kind	Recurrent expenditures	40,000.00
GEF Agency	UNIDO	Grant	Recurrent expenditures	20,000.00
<b>Total Project Cost(\$)</b>				<b>9,400,000.00</b>

**Describe how any "Investment Mobilized" was identified**

Not Applicable

**D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds**

<b>Agency</b>	<b>Trust Fund</b>	<b>Country</b>	<b>Focal Area</b>	<b>Programming of Funds</b>	<b>Amount(\$)</b>	<b>Fee(\$)</b>	<b>Total(\$)</b>
UNIDO	GET	Cote d'Ivoire	Climate Change	CC STAR Allocation	1,607,535	152,715	1,760,250.00
<b>Total GEF Resources(\$)</b>					<b>1,607,535.00</b>	<b>152,715.00</b>	<b>1,760,250.00</b>

**E. Project Preparation Grant (PPG)**

PPG Required **true**

**PPG Amount (\$)**

50,000

**PPG Agency Fee (\$)**

4,750

<b>Agency</b>	<b>Trust Fund</b>	<b>Country</b>	<b>Focal Area</b>	<b>Programmin g of Funds</b>	<b>Amount(\$)</b>	<b>Fee(\$)</b>	<b>Total(\$)</b>
UNIDO	GET	Cote d'Ivoire	Climate Change	CC STAR Allocation	50,000	4,750	<b>54,750.00</b>
<b>Total Project Costs(\$)</b>					<b>50,000.00</b>	<b>4,750.00</b>	<b>54,750.00</b>

## Core Indicators

### Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO <sub>2</sub> e (direct)	13857	0	0	0
Expected metric tons of CO <sub>2</sub> e (indirect)	103970	0	0	0

### Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO <sub>2</sub> e (direct)	13,857			
Expected metric tons of CO <sub>2</sub> e (indirect)	103,970			
Anticipated start year of accounting	2022			
Duration of accounting	20			

### Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO <sub>2</sub> e (direct)				
Expected metric tons of CO <sub>2</sub> e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

### Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

### Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)
Energy Storage <b>select</b>				<input type="checkbox"/>
Solar Photovoltaic <b>select</b>				<input type="checkbox"/>

**Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment**

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
<b>Female</b>	165,000			
<b>Male</b>	165,000			
<b>Total</b>	330000	0	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

These elements will be shared after the PPG phase.

## Part II. Project Justification

### 1a. Project Description

Climate change continues to be a growing and important global challenge for humanity and the biosphere in the 21st century. The 2015 update of the Global Frontiers Analysis identified climate change as one of four global frontiers that have been crossed due to human activity and a major threat to humans.

The UN Treaty Series (8 July 2016), COP 22 (Marrakech) and COP 23 (Bonn), COP 15 in Cote d'Ivoire encourage countries to implement more ambitious projects to reduce GHG emissions and to align themselves on a climate change resilient pathway.

It is therefore necessary to address the main sources of emissions from catalytic sectors such as transport, which is responsible for 23% of global energy-related greenhouse gas emissions, as proposed in this sustainable mobility project.

The UN High Level Advisory Group on Transport defines sustainable transport as "the provision of services and infrastructure for the mobility of people and goods, supporting economic and social development for the benefit of current and future generations, in a safe, affordable, accessible, efficient and resilient manner, while minimizing carbon and other emissions and environmental impacts". Transport is a driver of development, it connects people, it links local communities to the world, it creates markets and facilitates trade.

In turn, sustainable transport is the engine of sustainable development, fundamental to meeting the needs of people in their personal and economic lives, while respecting the ability of future generations to meet their needs (UN High Level Advisory Group on Transport: Mobilizing Sustainable Transport for Development, 2016).

Zero-emission electric vehicles run on electrical energy stored in batteries. These batteries are used to power light personal vehicles, mass transit buses (e-buses), trucks and even boat buses (e-boats). The same principle applies to electric two- and three-wheel motorbikes. Non-motorised transport includes soft modes such as walking, cycling (conventional or electrically assisted), scooters, wheelbarrows, animal-drawn carts, etc. This concept is known for its many advantages.

To do this, cities, peri urban areas and rural areas feeding the cities (through agri-food economic activities) are critical ecosystem with the need to address short- and long-term climate change challenges, in order to help Cities, move towards low emission and resilient urban development in an integrated manner.

African countries, no matter the Region, are faced with an array of complex (multi-faceted; multi-interest; multi-players in a rapid changing environment) and competing and dilemma challenges when it comes to sustainable transport namely Zero Emission Vehicles (ZEVs). The continent faces numerous challenges in the provision of basic transport services and ensuring connectivity both within the continent and from the continent to the rest of the world. Achieving sustainable and inclusive transport systems in Africa is essential as a catalytic sector for the Region's low carbon economic and social development, as well as ensuring a transition to climate-resilient pathways with clean fuels and

zero emission technologies (EVs), and thus healthier environments and better resilience of communities to climate change impacts.

Rapid population growth, rapid and unplanned urbanization, increasing motorization, lack of investment in sustainable transport infrastructure and modes of transport, lack of stringent sustainable transport policies, institutional and governance framework challenges and political buy-in, inefficient vehicles with high fossil fuel consumption rate are some of the factors which are contributing to a state of poor transport accessibility. Combined to this, the rising road deaths; increasing traffic congestion and pollution exacerbating significantly the decrease in air quality correlated to health issues. Despite global acceptance that transport and mobility can be regarded as a pre-condition for sustainable development, a lack of sustainable transport infrastructure and affordable services remains a major obstacle to all African countries (Africa Sustainable Transport Forum, Nairobi, Kenya, 2014).

At the same time, we should keep in mind that Transport and mobility is not just about developing transport infrastructure and services, but about overcoming the social, economic, political and physical barriers to movement, such as class, gender relations, poverty, physical disabilities and affordability. Unfortunately, despite its low levels of motorization, most urban areas in Africa are systematically encountering a multitude of transport issues beyond connectivity, including poor safety and environmental performance, an exclusion of vulnerable populations and inefficient public transport systems. As such, the proposed project offers a pragmatic and realistic solution for the country, reflecting the principle of common but differentiated responsibilities and respective capacities. The implementation of the project will provide lessons and best practices for extending e-mobility to other African countries and other regions of the world.

The share of Africa's urban areas in relation to the average population growth is expected to more than double between 2000 and 2030 (UN High Level Advisory Group on Transport: Mobilizing Sustainable Transport for Development, 2016). Some African cities experience a doubling of their vehicle fleets every seven years. It is vital that African cities plan to meet the demands of rapidly growing cities in sustainable ways, and avoid becoming 'locked-in' to an unsustainable pattern such as increasing reliance on private cars powered by fossil fuel and informal public transit in a lacking and obsolete road infrastructures, the trajectory which unfortunately many African cities are currently experiencing.

The role of environmental, social, and economic sustainability, and the need for low-carbon and resilient solutions as part of creating and maintaining connectivity, needs to be better understood at all levels of the policy making and implementation process in Africa. Intervention now is critical, while opportunities still exist to effectively introduce infrastructural, technological (e-mobility), Non-Motorized Transport solutions to steer African cities in a more sustainable direction, while aiding a reduction in inequalities, poverty and the wider social and economic consequences of business as usual in a context of Climate Changes.

As such, the proposed project offers a pragmatic and realistic solution for the country, reflecting the principle of common but differentiated responsibilities and respective capacities. The implementation of the project will provide lessons and best practices for extending e-mobility to other African countries and other regions of the world.

### **The Climate Change Imperative**

Take note that adverse impacts from climate change can undo the progress made in development until now and exacerbate threats such as food and water scarcity, disproportionately burdening the poorest and most vulnerable people. Beyond SDG 13: Climate Action, a transformation to low-emission, climate-resilient pathways can contribute to achieving and preserving the other SDGs such as SDG 2: Zero Hunger, SDG 7: Affordable and Clean Energy, SDG 9: Industry, Innovation and Infrastructure, SDG 11: Sustainable Cities and Communities, SDG 12: Responsible Consumption and Production, SDG 14: Life Below Water and SDG 15: Life on Land (GEF-7 Replenishment Programming Direction: Third Meeting for the Seventh Replenishment of the GEF Trust Fund, 2018).

At present, Transport is responsible for 23% of global energy related greenhouse gas emissions as a result of global dependency on motorization (International Energy Agency, 2015: CO2 Emissions from Fuel Combustion). According to the International Energy Agency (IEA), transport CO2 emissions are projected to increase 50% by 2030 and 80% by 2050, unless dramatic actions are taken. It will be impossible to address climate change without addressing challenges in the transport sector. Thus, further efforts are needed to shift the current practice to more sustainable transport approaches by improving accessibility, safety and efficiency of movement of goods, people and services and reduction of externalities such as CO2, NOx, SOx, PM10, PM2.5, Black Carbon, VOC impacting human health and ecosystem productivity.

Recognizing this, Members of the transport community led by the UN High Level Advisory Group on Transport came together, as part of the Secretary-General's Climate Summit, and announced four transport initiatives to help combat climate change through 1) expanding use of electric vehicles (such as the proposed Project); 2) increasing the efficiency of rail transport; 3) increasing the efficiency of air travel, and 4) enhancing public transport in cities around the world (United Nations, 2014: Commitment to sustainable transport mobilized at UN Climate Summit).

Critical infrastructure deficiencies in most African countries, long distances to ports and poor trade facilitation result in high transport and overall trade costs that reduce trade competitiveness, equitable access to global markets and the overall welfare of the people (UN High Level Advisory Group on Transport: Mobilizing Sustainable Transport for Development, 2016). About 10 to 15 per cent of food is lost during processing, transport and storage given a lack of modern facilities, trucks, access to refrigeration, and poor roads. Nearly one billion people worldwide still lack adequate access to road networks, which increase isolation and marginalization and deepen social inequities. The importance of sustainable infrastructure for development is also captured under sustainable development goals (SDG) 9 and 17 with regards to partnerships for implementation. The proposed Project contributes inter alia to following Sustainable Development Goals: Goal 3: Good Health and Well-Being; Goal 7: Affordable and Clean Energy; Goal 9: Industry, Innovation and Infrastructure; Goal 11: Sustainable Cities and Communities; Goal 13: Climate Action; Goal 17: Partnerships for the Goals.

### **Transport and health**

The Transport sector is responsible for approximately 23 percent of energy-related greenhouse gas emissions, a major contributor to local air pollution and smog. The World Health Organization estimated that 7 million people die prematurely every year due to air pollution, with half of them due to outdoor pollution (World Health Organization (WHO), 25 March 2014 News Release: 7 Million

Premature Deaths Annually Linked to Air Pollution ([www.who.int/mediacentre/news/releases/2014/air-pollution/en/](http://www.who.int/mediacentre/news/releases/2014/air-pollution/en/)).

Low and middle-income countries in Africa, South-East Asia and Western Pacific Regions are the ones carrying the bulk of this burden (Summary Report, Secretariat-General's Global Sustainable Transport Conference, 2016).

Particularly hazardous for health are emissions of black carbon a component of particulate matter, which is a known cause of respiratory and carcinogenic diseases (World Health Organization (WHO), 25 March 2014 News Release: 7 Million Premature Deaths Annually Linked to Air Pollution).

Air pollution by transportation (GHG emissions and air pollutants such as NO<sub>x</sub>, SO<sub>2</sub>, CO, PM 10, PM 2.5, VOC) has been shown to have a significant adverse impact on human health, responsible for several respiratory disease including asthma, premature deaths, hospital admissions and emergency room visits. Studies indicate that air pollution is associated with an increased risk of lung cancer and heart disease. Human-made smog (derived from coal emissions, vehicular emissions, industrial emissions) a visible air pollution is composed of nitrogen oxides, sulphur oxides, ozone, smoke or particulates among others (less visible pollutants include carbon monoxide, CFCs and radioactive sources). Smog has been identified as contributing factors in thousands of premature deaths each year, as well as increased hospital visits, doctor visits and hundreds of thousands of lost days at work and school. Over 1.2 million people are killed annually in road traffic accidents, causing in addition to human loss and suffering, billions of dollars of associated costs which amount, in some countries, to 1-3 per cent of GDP.

Air pollution in particular has a steep economic cost, in addition to the staggering human cost. In China, India, and the 35 Organization for Economic Co-operation and Development (OECD) countries, the cost is estimated to be US\$3.5 trillion annually in terms of ill health and lives lost. Data from OECD countries shows that approximately half of that economic burden results from road transport pollution.

While air pollution in OECD countries has fallen recently, in part due to emission controls, there has been an increase in China and India and mostly in Africa as the growth in road traffic outpaces tighter emission regulations.

### **Transport and Economy**

Congestion is currently a tremendous burden on the economy (0.7% of the GDP in the United States, 2% of GDP in Europe, 2-5% of GDP in Asia, and as high as 10% of GDP in Africa and in some cities of emerging economies, including Beijing, Sao Paulo and Lima) (Zhao, X., Mahendra, A., Godfrey, N., Dalkmann, H., Rode, P., and Floater, G., 2015: The New Climate Economy ? Technical Note: Unlocking the Power of Urban Transport Systems for Better Growth and a Better Climate).

Reducing air pollution from transport and other sources would clearly represent a boon to some of the largest economies in the world (Organisation for Economic Co-operation and Development (OECD), 2014: The Cost of Air Pollution: Health Impacts of Road Transport).

There is an urgent need for action to address the staggering social, environmental, and economic costs associated with 'business as usual'. It is imperative that all partners including Private sector work together to promote effective urban planning and institutional structures, targeted policy and legal

frameworks, sustainable economic growth, appropriate funding streams, robust collaboration mechanism and cutting-edge knowledge and data, the soft (policy, legal, capacity building etc) and hard (enabling infrastructures) strategies. In addition, reduction in road congestion and the other transport externalities would translate into a powerful economic benefit for many countries namely African countries.

There are also enormous opportunities presented by sustainable transport: saving hundreds of thousands of lives every year through improved road safety and reduced air pollution, and reducing carbon emissions by 7 gigatons.

The investment needs for infrastructure development to support the connectivity of developing countries to the global markets are high. The need for higher levels of Infrastructure financing is critical in terms of both quality and quantity. The Addis Ababa Action Agenda notes that the annual infrastructure gap in developing countries is about \$1 trillion to \$1.5 trillion. The international community agreed to bridge this gap through enhanced financial and technical support.

However, the transformation to sustainable transport requires a redirection, rather than any substantial increase, in infrastructure expenditure and can be realized through an annual investment of around US\$2 trillion, similar to the current 'business as usual' spending of US\$1.4 to US\$2.1 trillion. When considering full transport costs, including fuel, operational expenses, losses due to congestion, and vehicle costs, sustainable transport can deliver savings of US\$70 trillion by 2050. In addition, improvements in border administration, transport and communication infrastructure could increase global GDP by US\$2.6 trillion, or 4.7%.

The project is also important for accelerating the implementation of the 2030 Development Agenda, the Addis Ababa Action Agenda and the Vienna Programme of Action for Landlocked Developing Countries and linked to Cote d'Ivoire priority (8) Stabilizing GHG Emissions from Road Transport Through Doubling of Global Vehicle Fuel Economy: Regional Implementation of the Global Fuel Efficiency Initiative (GFEI) with UNEP.

Take note that the project Stabilizing GHG Emissions from Road Transport Through Doubling of Global Vehicle Fuel Economy and to other African countries was also implemented for seven African Countries.

Moreover, the urban food markets play a significant role in vegetable, fruits and small livestock supply to the cities from rural areas and peri-urban around the cities in Ivory Coast. Transportation costs have undermined the profitability of agricultural production (e.g., rice, cassava) in Cote d'Ivoire.<sup>[1]</sup>

[1] <https://openknowledge.worldbank.org/bitstream/handle/10986/32745/Climate-Smart-Agriculture-Investment-Plan-for-Cote-d-Ivoire.pdf>

### **Barriers - Removing the Key Barriers addressed by the Project**

The project is a Rule breaker, a Game changer and a Problem solver as it will contribute to unlock through paradigm shift the potential of E-Mobility, promoting Zero Emission Vehicles (EVs) and NMT in ECOWAS.

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However, in order to achieve the proposed solutions in the project, there are a number of barriers identified during the participative Consultation together with all stakeholders, summarized below, that need to be overcome.

Note that these listed issues and the following more systemic ones have to be strengthened following the outcomes of the planned feasibility studies in the Project Preparation Grant (PPG).

**i) Policy, Governance and Enabling Business Ecosystem Barriers:**

? Lack of enabling Policies, Governance frameworks and Incentive programmes to encourage instalment of ZEV automakers, OEM, Clusters and early market take off and first-movers;

? Limited coordination among relevant institutions nationally in the field of ZEVs

? Lack of Awareness ? One of the challenges in the adoption of electric mobility lies in the general lack of awareness and understanding of the technologies and their implications. The transition to a different form of mobility will necessarily require awareness building for policymakers and stakeholders. There is a lack of overall knowledge regarding the use and maintenance of both electric motors and their charging appliances.

**Proposed Mitigation Actions**

**Initial Baseline Overview: To be confirm by the feasibility studies in PPG**

While a number of actions are going-on on the National level namely, the Global Fuel Efficiency Initiative (GFEI) with UNEP; the Africa Sustainable Transport Forum initiatives; the Fuel economy workshop held in July 2017 in Abidjan (Cote d'Ivoire) to promote vehicle efficiency policy in the West African sub-region, attended by Nine ECOWAS countries, the ECOWAS Commission and UN Environment and other relevant stakeholders and Institutions; Cote d'Ivoire's Government (GoIC) New Bill on the 5-year-Old Imported Personal Cars which came in force in July 2018, limited coordination and integration within and across the ECOWAS countries persist and therefore, there is very slow implementation, hindering the stimulation of the 2&3 wheelers ZEV take-off in Cote d'Ivoire.

Zero Emission Vehicles (ZEVs): In the case of ZEVs, particularly Electric Vehicles (EVs) in general, there is no current initiatives in implementation. Fortunately, the New GEF-7 Global Electric Mobility Programme, Supporting the Shift to Electric Mobility will promote electrification of mobility in developing countries. This programme aims to support countries with the introduction and switch over to electric mobility and will have a global component to develop policy packages, tools and methodologies and a country projects component to provide capacity building and policy development support to countries for the introduction of electric mobility.

For now, literature review, draft policy framework and governance framework and current national initiatives on ZEV do not fully allow the participation of all key stakeholders, especially Automakers, Original Equipment Manufacturers (OEM), Players in the field of Power generation and distribution, Renewable energy consortium, Infrastructure roll-out, Standards development, Good and services providers, low-carbon technologies and practices needed in the urban sector including energy efficiency (buildings, lighting, air conditioning, transport, district heating systems), renewable energy

development (solar, wind, co-generation, waste-to-energy), and solid waste and wastewater management etc.

As a result, the existing policies and standards do not completely meet the needs of all market players in term of resilient Business ecosystem to guarantee market predictability and Business certainty. Also there is a limited harmonization of existing standards across ECOWAS and across applications, such as Electric equipment, Renewable energies, Software/IT platforms, Goods and services etc. These limitations in terms of a supporting policy environment and governance, enabling business ecosystem along with key opportunities for improvement or development of new innovative ones reflecting the current challenges and trends have to be considered in the planned feasibility studies in the PPG of the proposed project.

**Alternative:** The project will work closely with the relevant institutions such as GEF, IEA, UN Environment and the ICCT to draw on the activities of their electric mobility programs. The IEA Electric Vehicles Initiative and the ICCT International ZEV Alliance will provide a knowledge-base to develop policy tools, business models and ideas for the policy matrix, through project activities and the Project Steering Committee (PSC) and the Technical Advisory Committee (TAC) in Cote d'Ivoire to strengthen the existing policy framework or develop new ones, including policies, standards, regulations, etc for the development of an enabling Business ecosystem that supports and fosters coordination, predictability and certainty while reflecting the principle of common (ECOWAS) but differentiated responsibilities and respective capabilities. The project will also support the development of relevant incentive schemes for the promotion of 2&3 wheelers EVs in Cote d'Ivoire with focus on integration with renewables and mini-grids.

**ii) Informational Barriers: Low stakeholder (Government, Industry/Private, Academia, NGO, CSO, Media, etc) awareness of the opportunities associated with EVs and NMT in particular with regard to the environmental benefits of EVs for example for Cote d'Ivoire as the electricity generation is very much based on Hydroelectricity.**

#### **Proposed Mitigation Actions**

##### **Baseline to be strengthened in the feasibility studies (PPG)**

From the literature review and from the participatory Consultation held in Abidjan in July 06, 2018, concerns regarding information gap on high upfront investment costs, social status, weather, limited reliability and range electricity/energy use persist in potential consumers and stakeholders perceptions, and are often inflated and not based on hard facts. In addition, consumers generally have limited awareness of the benefits associated with the use of EVs. In an attempt to mitigate these barriers, the MoT, MoI, the Chamber of Commerce and Industry of Cote d'Ivoire (CCI-CI), the National Polytechnic Institute Houphouet Boigny (INP-HB) and Participating Municipalities (Union des Villes et Communes de Cote d'Ivoire (UVICOCI) intend to roll out a consumer education and awareness campaign. For example, Cote d'Ivoire with its six (6) Dams producing clean Hydroelectricity at very low price for communities is a good example on capitalizing on a renewable energy source. Note that, despite South Africa's effort to promote e-mobility, still the fossil source use for energy generation impeded the net benefice of these technologies.

**Alternative:** The project will develop and implement a targeted behavioral change programme to raise public awareness of the opportunities and benefits, such as environmental, health, and economic factors, associated with Public transport, EVs and will count on the expertise of recognized organizations such as Ville de Montréal for Public transport efficiencies and the Canadian Executive Service Organization (CESO) specialised in Empowerment and Capacity building in awareness raising and communication. This increased awareness, empowerment and technical capacity building of the stakeholders and better understanding of the low-carbon transportation options available on the market will serve to create demand in the Ivorian market, thus increasing the likelihood of widespread adoption of ZEVs.

**iii) Infrastructure Barriers: Lack of the necessary supporting infrastructure to develop inclusive and sustainable alternative forms of transportation.**

The growth of EV use and NMT could be very low, similarly as in almost all developing countries and mostly in Africa due to a large extent to lacking infrastructures and investment.

**Proposed Mitigation Actions**

**Baseline to be strengthened in the feasibility studies (PPG)**

To the best of our knowledge, currently there is no infrastructure for EV use in Côte d'Ivoire. The development of infrastructure for EV (Electric Vehicle Supporting Equipment (EVSE) use for now is primarily hindered by lack of enabling policy, political buy-in, regulation, guidelines and standards, and by lack of knowledge of the use of renewable energy in combination with EVs, as well as limited institutional capacity at national level.

Alternative: The project will support the development of EV and NMT infrastructures through policy and standards development and harmonization and the design, installation and testing of Photovoltaic (PV)-based charging stations in collaboration with the GEF7, The IEA Electric Vehicles Initiative and the ICCT International ZEV Alliance.

National projects can include activities for the introduction of electric 2 and 3 wheelers, electric light duty vehicles and electric heavy-duty vehicles, such as buses, different types of charging stations etc., acting as demonstration stations to raise awareness of EVs in the Ivorian and ECOWAS markets and support the increased adoption of EVs. INP-HB together with COPADEN and IRESEN (Research Institute for Solar Energy and New Energies) are working collaboratively on the planning of demonstration project with supporting infrastructures such as charging stations powered by renewable energies and considered as Mobility as a Service (MaaS).

**iv) Energy/electricity Barriers: Lack of the necessary supporting energy/electricity infrastructure to develop the EV niche sector.**

**Proposed Mitigation Actions**

**Baseline to be strengthened in the feasibility studies:**

In Africa today, more than 500 million people live without electricity. The majority of those approximately 80% live in rural areas where there is no grid-electricity, and expansion is largely financially and logistically infeasible. In fact, fewer than one in five Africans was connected to the power grid in 2012, and despite a modest increase from 32 % to 35% between 2010 and 2012, the rate of electrification continues to be too slow to keep pace with the rapid population growth on the continent (World Bank, 2017).

Access to energy is essential for the reduction of poverty and promotion of economic growth. It is a key limited factor to development as it encompasses all the catalytic sectors: Education, Transportation, Agriculture, Industrialisation, Communication technologies etc., all require abundant, reliable, and cost-effective energy access. The growth of EV use and NMT could be very low, similarly as in almost all African countries due to a large extent to lacking and obsolete energy infrastructures. To maximise the general benefit of ZEVs namely EVs, the energy must be supplied from a renewable energy source to capitalize on the emission reduction. As soon as the energy source is from fossil source (like South Africa EV program), the benefit are reduced in term of CO2 emission reduction.

**Alternative:** The proposed project will promote and drive ?smart grid? and ?renewable energy? development with EVs in mind (energy demand, storage, balancing, etc.) and Seamless integration of EVs into a charging infrastructure and develop the Electro Mobility as a Service (MaaS).

The project will also increase deployment of renewable energies (solar, wind, etc.) and development of cost-effective technologies for load management and bi-directional transfer of energy. With the support of partners such as the GEF7, IEA, ICCT, the project will promote the transformation of the existing grids towards smart grids, and introduction of incentives for using renewable energies by the industrial and private actors as well as launching new initiatives that address smart cities? development by considering buildings, transport, renewable energy sources as a common ecosystem.

### **Other systemic barriers**

#### **Limited financial capacity of communities, government and government agencies to sustainably meet the incremental costs of adaptation**

It is not common for the governments to be involved in transportation sector namely in the EVs even though several programmes and policies have been developed and are being contemplated in the context of this project. Years of neglect of the catalytic sectors such as energy, transport, agriculture, sustainable management of lands, deforestation, and the cumulative deterioration resulting from increasing climate-related shocks and for example a decade of politico military crisis in C?te d'Ivoire, have reduced productivity and impoverished communities at the same time accelerating pressure on ecosystem goods and services.

Government of C?te d'Ivoire has no longer the capacity to invest adequately in restoring the catalytic sectors? infrastructures to working conditions, protect the environment degradation, upgrading them to withstand climate change impacts and mostly this cost is beyond the financial capacity of the communities.

Where government investments are leveraged (mostly from international grant and contribution), the investment is not sustained due to lack of financial capacity to bear the incremental costs of addressing the severity of climate shocks on these communities while established as decentralized service units for

extension and technical support, cannot meet the demands for increased service delivery especially for financing climate smart transport-technology among municipalities in a sustainable manner.

Governments also have limited capacity to mobilize sustainable, local-level public financing for sustainable transportation and mobility. The current transportation crisis also warrants investment in long term solutions such as capacity building and short-term capital-intensive schemes such as advanced smart and sustainable transportation sector management namely in the ZEVs sector and development options. The upfront capital costs of these investments are outside the financial capability of municipalities, and due to extensive demand, extends the capacity of government. In addition, municipalities and communities lack the ability to effectively mobilize financing for adopting climate smart technologies such as sustainable transportation, E-Mobility and methods for their resilience.

### **Weak institutional coordination to implement a climate-risk informed transportation**

Côte d'Ivoire' agro-ecological characteristics, rural development plans do not take a comprehensive transportation development approach and are less sustainable and more exposed to climate change impacts. A lack of awareness and understanding of climate change risks when managing land, rapid urbanization and transportation sustainability systems reduces the ability of government personnel to appreciate the problem. The sectoral nature of development planning and implementation is further complicated by a multitude of actors at local level making it increasingly difficult for institutions to coordinate and work together. There are weaknesses and overlaps in the role of government institutions and this is evident in the efficient management of transportation namely EVs sector.

### **Limited technical capacity on climate resilient practices, including transport and infrastructure development**

With regard to climate smart transportation, the Ministry of Transport, the Ministry of Infrastructures (MoIn) and the Road Management Agency (AGEROUTE) in Côte d'Ivoire have developed a set of instructions and tools relevant to smart transportation; however, inadequate technical documentation and capacity to tailor these tools and opportunities is a constraint to adopt such solutions at the municipality level namely with respect to the EVs sector.

### **Limited knowledge and awareness of climate-change risks, impacts, and adaptation solutions related to transportation**

Besides limited infrastructure and technology to develop and disseminate climate-sensitive technologies and information, there is no institutional knowledge management framework that facilitates knowledge generation and sharing on innovative and adaptive measures which can be used to improve sustainable transportation, urbanization, land use and land management, seasonal weather forecasting and early warnings. Furthermore, as stated earlier there is just draft idea on the policy reform on the transportation system to integrate EVs and NMT in Côte d'Ivoire.

There is no local or governmental knowledge management mechanism that extracts lessons learned from recent interventions (even in other region like South Africa which has an extensive knowledge of EVs business) to integrate into a complete package of technology for the improvement, modernization, operation and maintenance for the transportation system. Also, there is a limited community capacities

to design integrated solutions, sustainably manage rural infrastructure and sustainable transportation with the integration of EVs.

Côte d'Ivoire and most African countries lack of infrastructure and technical knowledge on sustainable transportation sector hampered access to the competitive services where other players have advancing technologies and capacities to fulfil stringent mandatory requirements in the transportation niche namely in the EVs sector. Until now the only leading country in Africa is South Africa EVs sector. Uganda and Ghana as well Côte d'Ivoire are struggling to develop this sector.

### **The baseline scenario and any associated baseline projects**

Small-format electric vehicles such as two-wheelers (E2Ws) and three-wheelers (E3Ws) are becoming increasingly cost competitive with internal combustion engine (ICE) vehicles, and global sales are growing by about 14% per year.[1]

#### Abidjan-Lagos Corridor Development Programme

In line with the Directives of the Presidents of the five countries along the Abidjan-Lagos Corridor, to construct a 6-Lane dual-carriage Highway from Abidjan in Côte d'Ivoire through Accra, Lomé, Cotonou to Lagos in Nigeria.

#### Railways sub sector

In the Railways sub sector, detailed engineering studies of the Kaya-Dory-Niamey link connecting the Abidjan-Ouagadougou railway line to the Republic of Niger was initiated.

#### Air Transport sub sector

The objective of the Air Transport sub-sector is to implement the Yamoussoukro Decision for air transport liberalization, strengthen aviation safety and security, enhance capacity building for the Civil Aviation Authorities within the region, and facilitate operation and cooperation of West African airlines and other relevant stakeholders (airports, air navigation services providers, ground handling companies). ECOWAS Commission has been assisting member States to provide a safe reliable and coordinated air transport system that can provide regular air links among the member States as well as exploring means of ensuring equitable access of eligible airlines to the West African air transport market.

None of these sub-regional projects take e-mobility into account. The proposed project for the promotion of ZEV and NMT could easily be integrated into these initiatives. The integration of the proposed project into these initiatives is an attractive opportunity for a planned regional approach and will focus on personal e-car, e-bus, e-boat, e-truck, NMT, pedestrian and bicycle lanes, recharging infrastructure along the corridors.

#### Cote d'Ivoire transport system

As the other African countries, and those in the ECOWAS, Côte d'Ivoire faces transport infrastructures challenges in big cities such as Abidjan due to rapid population growth following the politico- military

crisis, rapid and unplanned urbanization, increasing motorization, lack of investment in sustainable transport infrastructure, lack of stringent sustainable transport policies, inefficient vehicles and fuels etc contributing to traffic congestion, pollution and a significant decrease in air quality. However, the transformation to sustainable transport by sponsoring ZEV and NMT requires a redirection, moreover a paradigm shift rather than continuous substantial increase in infrastructures expenditures and investments in ICEV.

[1] Patrick Hertzke et al., "Global Emergence of Electrified Small-Format Mobility," McKinsey & Company (blog), October 6, 2020, [www.mckinsey.com/industries/automotive-and-assembly/our-insights/global-emergence-of-electrified-small-format-mobility](http://www.mckinsey.com/industries/automotive-and-assembly/our-insights/global-emergence-of-electrified-small-format-mobility).

## **Baseline projects**

### Green Mobility, Alternative Fuels, and E-mobility in Cote d'Ivoire

The Global Fuel Economy Initiative (GFEI) is a partnership of the International Energy Agency (IEA), United Nations Environment Programme (UNEP), International Transport Forum (ITF) of the OECD, International Council on Clean Transportation (ICCT), Institute for Transportation Studies at UC Davis, and the FIA Foundation. The GFEI team assists governments and transport stakeholders to promote greater fuel economy. It establishes a baseline in participating countries; presents policy options and case studies; and enables all stakeholders to engage in the policy process. The GFEI works to secure real improvements in fuel economy, and the maximum deployment of vehicle efficiency technologies across the world. This includes light and heavy-duty vehicles, and the full range of technologies, including hybrid and fully electric vehicles. The Initiative promotes these objectives through shared analysis, advocacy, and through in country policy support, and tools. Currently, 24 African countries are involved in the GFEI initiative and eight (8) from the ECOWAS (Cote d'Ivoire, Benin, Ghana, Liberia, Mali, Nigeria, Senegal, Togo). GFEI Fuel economy targets are 30% in L/100 km by 2020 in all new cars in OECD countries; 50% in L/100 km by 2030 in all new cars globally, 50% in L/100 km by 2030 in all cars globally.

The GFEI aims to improve the global automotive fuel economy from its current global average of 8L/100km to 4L/100km. This will be achieved through having countries that have not yet done so adopt clean and efficient vehicles policies (which in some cases includes the introduction of cleaner fuels that are necessary to allow introduction of modern, more efficient vehicles). The remaining 7 ECOWAS countries could join the GFEI coupling to this ZEV proposed Project.

While in OECD countries policies have been put in place to improve efficiency (average fuel economy improved 2.3%/yr), in non-OECD countries there are only a handful of countries that have policies to promote fuel economy actually fuel economy got worse in non-OECD countries on average 0.3%/yr. The trend is that the fuel economy in non-OECD countries is increasingly deteriorating while at the same time almost 2 billion vehicles will be added to these countries in the coming decades. Doubling fuel economy together with measures promoting public transport, ZEVs, Non-Motorized Transport, better urban planning etc. can actually reduce the overall CO2 emissions of the transport sector.

### Côte d'Ivoire sustainable transport initiative

Côte d'Ivoire is actively participating in the GFEI initiative and recently hosted a fuel economy workshop in Abidjan to promote vehicle efficiency policy in the West African sub-region. Nine ECOWAS countries, the ECOWAS Commission and UN Environment participated in the workshop. The workshop drew on the findings of a national fuel economy meeting that Côte d'Ivoire held in May 2017, agreed policy recommendations for the country to promote imports of fuel-efficient vehicles. Thus, the proposed Project promoting ZEV perfectly aligns with the GFEI objectives. Among these, policy recommendation was favourable to a vehicle labelling and a fee/rebate taxation system to encourage import of more fuel economy vehicles that could consist in ZEVs use. Côte d'Ivoire has been implementing the Global Fuel Economy Initiative since 2015. During this time, Cote d'Ivoire has undertaken an analysis on the country's average vehicle fuel economy inventory trends between 2005 and 2015. This analysis found that the country's average fuel economy is higher than the global average, but it is improving over time. In 2010 for example, the average fuel economy was 10.6 litres/100 kilometres. By 2015, it was 7.98 litres/100 kilometres, which is near the global average of 7.6 litres/100 kilometres.

The workshop recommended the introduction of a harmonized vehicle labelling scheme for the sub-region, enhanced sensitization of consumers on benefits of cleaner, more fuel-efficient vehicles and introduction of fiscal incentives to promote import of more fuel-efficient vehicles. The GFEI could be coupled to the ZEV project and create synergy in GHG emissions reduction while avoiding duplication. The workshop also recommended the need for mandatory vehicle maintenance programs including training of mechanics, introduction of cleaner fuels, and introduction of sustainable public transport including non-motorized transport. Countries that have not undertaken baseline studies were encouraged to carry them out. The ECOWAS Commission and UN Environment were asked to support countries to undertake fuel economy studies and implement the workshop recommendations. The ZEV project will contribute to accelerating the widespread use of EVs.

This electric mobility demonstration project in Côte d'Ivoire is complementary to the UNEP Regional Project. In fact, it was during national consultations on the allocation of resources to Côte d'Ivoire that the decision was taken for Côte d'Ivoire to participate in the UNEP Regional Project. An envelope of USD 500,000 was retained for this project. Another USD 1,000,000 had been set aside for another complementary investment project on electric mobility issues, particularly in relation to the industrial sector. Thus, considering their respective comparative advantages, the participants agreed that UNEP's support would focus on the development of the governance framework (policy, strategy and regulatory framework) and UNIDO's support of USD 1,000,000 on the development of the industrial development and investment component. This amount has been increased to USD 1,600,000.

### Côte d'Ivoire's New Regulations on the 5-year-old imported Personal cars came into force in July 2018

Countries such as Kenya, Chile, Costa Rica, Côte d'Ivoire and Indonesia are already taking part in this policy development process of the GFEI. Kenya, for example, adopted an age-based taxation scheme for imported second-hand vehicles in September 2015 that raise the tax for imported second-hand vehicles older than 3 years by 150% and reduce tax to 30% for vehicles younger than 3 years.

### Bollor? 3-year e-Bus pilot project on the Campus of Abidjan-Cocody

Bollor? has a pilot project of 3 e-Buses on the Campus of Cocody used as shuttle service for the transportation of students between Departments. Each circuit has 5 km and each e-Bus can load 30 students.

The e-Bus are powered by a plug-in solar energy source build on the campus. Data on the distance, energy consumption, mileage and number of students are available and a very good source of information for further analysis, duplication or scale up.

#### The Big Abidjan Transport Project

The Millennium Challenge Corporation (MCC) and the Government of C?te d'Ivoire are developing a compact to diversify the country?s economy to boost economic growth. The Abidjan Transport Project within the compact is designed to increase the competitiveness of Abidjan, the country?s economic hub, by improving the mobility of goods and people. The project is expected to include infrastructure investments to improve traffic flow and reduce traffic congestion in central corridors of the city that connect the Port of Abidjan to the north, west, and east. These investments are complemented by policy and institutional reform, including road maintenance and oversight and transport management and planning activities. The project is expected to benefit approximately 8.8 million people over 20 years. The Abidjan Transport Project will reduce transport costs and improve efficiencies for businesses by rehabilitating roads in and around the port area and improving road network management and maintenance. The Director General of the MCC has been contacted to discuss linkages with the proposed project.

#### The Metro of Abidjan

To link into global networks and maximize GHG reductions, the project will consider and incorporate the concept of integrated urban planning and sustainable city initiatives such as the Future Subway (Metro d'Abidjan) and the leadership initiative of the Municipality of Cocody, Cocody Cit? verte Sustainable Transport and Mobility.

The Metro of Abidjan is a 37.5-kilometre rapid transit network serving the Ivorian economic capital of Abidjan whose construction started in November 2017, with the beginning of passenger service expected in 2022-2023. Initially planned to comprise a single line with 13 stations, undertaken by Bouyges-Dongsan, a French-Korean consortium, the project has since been expanded to a single north-south line with 20 stations, financed 100% by France and built solely by three French groups (Bouygues, via its subsidiaries Bouygues Travaux Publics and Colas Rail, Alstom, and Keolis) after the withdrawal of the South Korean partners from the consortium in October 2017.

Built mostly as an overground and elevated railway in order to avoid more costly tunnels, its automated trains with a driver present in cabin will be able to run at a top speed of 80 km/h (50 miles/hour) and a maximum frequency of 100 seconds. Line 1 of the Abidjan metro is expected to transport 500,000 passengers per day (180 million per year). Construction of line 1 will cost 920 billion CFA francs (1.4 billion euros; 1.7 billion US dollars), entirely financed by France via the French Treasury and the French Development Agency.

In 2018 the Ivorian government was planning for a second line of the Abidjan Metro, an east-west line which should run from Yopougon to Bingerville. The project on NMT will contemplate linkages with the Metro and the Rapid Bus Transit and the Boat-bus on the Ebri? Lagoon.

#### **GHG emissions considerations**

The world's light duty vehicle stock is expected to approximately triple from 2012 to 2050 under BAU (0.9 to 2.5 billion vehicles) with 90% this growth taking place in non-OECD countries. A rippling of the global vehicle stock is expected to more than double the global vehicles related CO<sub>2</sub> emissions.

? Transportation accounts for a quarter of the world's energy usage and for a quarter of the global CO<sub>2</sub> emissions which is set to increase to a third by 2050 (IEA, 2011). The transport sector CO<sub>2</sub> emissions are increasing more rapidly than any other sector.

? Transport is a major contributor to Black Carbon (BC) emissions that is now believed to be the second most important climate change emission with direct impact on human health.

? To date, global climate change mitigation programmes and initiatives have not given a level of attention to the role of transport that is in proportion to its impact. Given the significant contribution of road transport to emissions, addressing road transport and automotive fuel efficiency forms an integral part of the G8 and IPCC recommendations to limit global warming to 2°C from pre-industrial levels.

? Developing countries are predicted to invest approximately USD 200 trillion over the next forty years in fuels and motor vehicles (IEA, 2010). With fuel economy policies in place these investments will be made in more efficient vehicles for example EVs and NMT resulting in reduced CO<sub>2</sub> emissions as opposed to a BAU scenario of doubling of CO<sub>2</sub> emissions from their fleets.

? A study conducted in 2008 predicts that the global stock of EVs will increase to 2 billion by 2030, 77% of which will stem from developing countries (Dane, Anthony; 2013). This holds significant potential benefits for African countries, considering that EVs have been shown to use 4-5 times less energy than petrol vehicles and have operating costs estimated at 75-99% lower than ICEVs (depending on peak or off-peak charging) (Dane, Anthony; 2013)

? ECOWAS countries in this project alone currently produce approximately 25 Mt/yr of CO<sub>2</sub> emissions from road transport. This figure is projected to more than triple by 2050 without intervention (UNFCCC/IEA, 2009).

? The overall CO<sub>2</sub> emissions from the vehicle fleets of all the countries targeted for the regional GFEI project are estimated at 1,100 megatonnes per year, Mt/yr. The estimated benefits of doubling fuel economy of these country fleets are reductions of over 900 Mt/yr by 2025 and 2,200 Mt/yr by 2050 of CO<sub>2</sub> emission. The proposed EVs and NMT could boost this reduction as the cleanest option.

? Introducing policies aimed at a 50% improvement in vehicle fuel efficiency can result in CO<sub>2</sub> emission reductions of approximately 20 Mt/year by 2025 and more with the promotion of ZEV.

? Actualization of 4L/100km (25km/L) global fuel economy will reduce global road transport CO<sub>2</sub> emissions by over 1 gigatons (Gt) a year by 2025 and over 2 Gt/yr by 2050 and could be more substantial with ZEV.

### **Local air quality**

? Road transport is responsible for an estimated 70-90% of local air pollution in urban areas, causing health problems, premature deaths and reductions in GDP of up to 5%.

? More efficient vehicles are cleaner, smaller, use modern engine design and emission control technologies, and use cleaner fuels all helping to reduce emissions of pollutants up to 90% especially nitrogen oxides, hydrocarbons and particulate matter (PM), including BC. Promoting ZEVs in this project will have a direct and immediate impact on air quality because of Zero emission.

### **Black Carbon (BC)**

? Road transport (specifically diesel engines) is a significant source of BC emissions globally (estimated at 18-24% of total BC emissions) which has negative impacts on human health and is an important contributor to climate change. IPCC now believes that BC is the second largest contributor to global warming. Cleaner, modern, more efficient vehicles with matching fuels and ZEVs will contribute to immediate and substantial reductions in BC emissions.

### **Oil consumption and Energy dependence**

? Improving fuel efficiency and promoting ZEV will also reduce the dependency of many countries on oil imports and decrease the burden on government budgets for these imports, which can result in savings in annual oil import bills worth over US\$ 300 billion in 2025 and US\$ 600 billion in 2050 (based on an oil price of US\$ 100/barrel).

? Cote d'Ivoire is faced with wildly fluctuating oil prices and energy dependence, energy efficient vehicles and ZEV will conserve a valuable and finite resource.

### **Introduction/ dissemination of cleaner vehicles technologies**

? The coming decade will see massive penetration of low and zero emissions vehicles in some markets (mainly OECD), especially hybrid, plug-in-hybrid and electric vehicles. This project will support C?te d'Ivoire in developing policies and standards ensuring optimal introduction of these clean vehicle technologies moreover promotion of ZEV.

### **Key Non-Motorized Transport (NMT) Challenges in C?te d'Ivoire**

Non-Motorized Transport (NMT) is a means of transport that include walking, the use of wheelbarrows and carts, animal transport (horses, camels, donkeys, mules and oxen), animal-drawn carriages (such as sledges), bicycles and tricycles for passenger and freight transport ((GOK, 2012); Nairobi City County Government: Non-Motorized Transport Policy. Towards NMT as the mode of choice - 2015). NMT modes also include the use of wheelchairs, skate-boards, and strollers. The common NMT modes in Cote d'Ivoire are walking, cycling for personal and as public transport, and human. Wheelbarrows, trolleys, animal drawn carts for goods and garbage transport are also used but to a very limited extent in C?te d'Ivoire.

### **Lack of NMT policy implementation in C?te d'Ivoire**

There is not provision of a balanced transport system that includes NMT provisions, despite the existence of an Integrated National Transport Policy (INTP) in C?te d'Ivoire. The INTP recognizes that over the years, transport development has focused attention mainly on roads for motorized transport basically because NMT was not fully recognized by transport professionals, and hence by national road

design standards, to qualify for the Government's financial support (Nairobi City County Government: Non-Motorized Transport Policy. Towards NMT as the mode of choice - 2015).

However, in Cote d'Ivoire, the Politico-Military crisis has contributed to the development and the widespread use of Two, Three-wheel transport as a need in Cities such as Korhogo, Bouaké, and Yamoussoukro despite the safety issues of sharing the road with Personal cars and trucks.

In terms of policy direction, the INTP states that the development and maintenance of infrastructure for NMT will be supported by all local authorities such as Union des Villes et Communes de Cote d'Ivoire (UVICOCI) and Road agencies such as Ageroute (Agence des routes). Cote d'Ivoire NMT policy guideline had been in place for 10 years, but there are no champions at both national and municipal levels for universal implementation. Only the Municipality of Cocody in its Project 'Cocody Cit verte' and the Office Ivoirien des Parcs et Reserves (OIPR) has developed a comprehensive NMT programme for the Banco Park in Abidjan with 500 e-bikes and 35 km pedestrian and cycling lanes. Without clear NMT national and county policies, it will be unlikely that appropriate laws and regulations will be in place to guide planning, resource allocation and implementation of NMT facilities.

NMT provisions on major highways (Yopougon to Adjame; Abobo-Adjame) Cocody Plateau; Plateau-Port-Bouet etc) passing through urban areas is still a problem as guidelines still do not exist.

The institutional setting and leadership are key to success as it includes people, policy, laws and regulations that might foster (or hinder) the use and purpose of NMT. It also includes funding and active promotion campaigns, and comprises politicians, planners and transport engineers (supply side) as well as advocacy groups, and NMT representatives. The attitude and perspective of these groups, as well as their own capacity and that of their institution is a decisive factor as well that influences use and purpose of NMT. The MoT and Its Agency Ageroute are working with Municipalities (UVICOCI) led by the Municipality of Cocody and OIPR to develop a clear Policy and Programme promoting NMT in Cote d'Ivoire.

The Abidjan transport system like multitude of African big Cities is basically road-based, and more oriented to private car use. The transport system does not fully consider the contribution of all modes and offer users affordable practical choices. It does not offer practical and convenient alternatives to the private car. To discourage Abidjan residents from using private cars, the public transport needs to be efficient and attractive, and integrated with NMT. It should be noted that the problem in the city of Abidjan is not the reluctance of residents to use public transport or walk but rather, the inefficient public transport and lack of safe and convenient NMT infrastructures. In the context of this project, it will be contemplated in the PPG considerations for linking NMT to the Metro (Subway in construction in Abidjan) and also the 'bri's Lagune Bay initiative (joint project between Morocco and Cote d'Ivoire) and the Transportation by Boat on the Ebri' Lagoon to improve residents' mobility.

The infrastructure required by the many NMT users is lacking, or in very poor state and incomplete when provided. Owing to motor vehicle orientated engineering and planning, NMT facilities do not always receive the attention that they deserve. NMT networks should ideally be planned together with the Motorized Transport modes but considering their main requirements of directness; safety; coherency; and comfort. One of the main problems is that NMT facilities are often provided alongside motorized transport roads which sometimes do not offer good permeability and the most direct route

(Nairobi City County Government: Non-Motorized Transport Policy. Towards NMT as the mode of choice - 2015).

Part of the problem is that NMT-only (stand-alone) facilities are uncommon because of the wrong belief by supplier of transport infrastructure that NMT facilities cannot be justified without provisions for MT (Nairobi City County Government: Non-Motorized Transport Policy. Towards NMT as the mode of choice - 2015). Manoeuvring narrow road shoulders with high volumes of pedestrian and MT traffic, crossing busy highways, foot bridges with steep ramps are other problems faced by NMT users.

Encroachment into NMT spaces and lack of enforcement is another major challenge to efficient movement of pedestrians and cyclists. Parked vehicles, hawkers, motorcycles, Gbakas and Woro-Woro often take over footways (road shoulders) and become obstacles to NMT movement. Pedestrians have no right of way at signalized crossings, marked zebra crossings, and even on shop verandas. Even when there is such a sign, the level of indiscipline from Gbakas and Woro-Woro not respecting these signalizations become a huge safety issue. All these violations of NMT areas are not penalised as the law is silent.

Safety of pedestrians is a major concern in Abidjan. There are several dimensions related to safety, such as risk of injury, which is related to road and traffic conditions, behavior of other road users namely Gbakas and Woro-Woro in Abidjan, as well as lack of enforcement of traffic laws. Cyclists and pedestrians are the vulnerable primarily due to large Motorized Transport (MT) speed differences and absence of protection from MT users.

From a survey in Nairobi' NMT project along the Jogoo and Juja road corridors, pedestrians proposed several facilities to be given priority to promote walking along various routes such as; installation of speed bumps (29%); provision of good pedestrian crossings (21.7%); overpasses (18.3%); dedicated walkways (12.4%) and street lights (12.1%). The reasons for prioritizing the facilities were given as: need to reduce MT speeds (57.9%); protection of facilities from encroachment (12.5%); reduction of accidents (9.9%) and enhancement of visibility and security (7.9%) (Nairobi City County Government: Non-Motorized Transport Policy. Towards NMT as the mode of choice - 2015). We conjecture that these results could be the similar in C?te d'Ivoire. This will be assessed in the PPG.

Priority interventions above indicate that issues related to safety are given prominence by users. It is worth noting that most of these safety issues can be improved by better enforcement, investment in improved NMT infrastructure, education and advertisement that also involves MT drivers. Fear of being robbed and harassed is a security concern for many pedestrians and cyclists, especially women and girls during the early and late hours of the day. The elderly, children and PWDs are other vulnerable users to criminal attack and anti-social behaviour.

Participants consulted during Nairobi NMT Project attributed underutilization of pedestrian facilities such as foot bridges and underpasses to lack of security especially after hours of darkness as such facilities have poor lighting (Nairobi City County Government: Non-Motorized Transport Policy. Towards NMT as the mode of choice - 2015). Theft and lack of proper storage facilities for bicycles in the city to secure against theft and vandalism was one of the reasons that inhibit cycling in the city of Abidjan. Accessibility problems include: lack of parking facilities for bicycles at many destinations; transfer to motorized transport for cyclists is difficult because there are no provisions for storage in urban public transport; the gradients of the footbridges are often too steep and do not allow continuity

of movement. In addition, people with disabilities require larger dimensions to accommodate wheelchairs and crutches, continuous sidewalks and way finding options for the blind or visually impaired.

Comfort in usage of pedestrian and cyclist facilities is an important factor. Some NMT users consulted observed that walkways are not properly maintained; those with tarmac had potholes and ponding water during the rainy season. They also observed that maintenance-works contractors leave debris and mounds of earth piled on the walkways and cycle lanes after road works. The NMT routes should be supplemented with amenities such as ablution facilities, shelters, bicycle repair and spare parts shops, and street lighting. Municipality of Cocody is playing a leadership role in implementing such initiative for its 800 000 Inhabitants together with OIPR's NMT programme in Park Banco in Abidjan.

### **Gender Dimension in NMT use**

Possible reasons why women are not using bicycles in many developing countries in Africa may include, but not all of, the following:

- i) Safety and social security along the roads and streets. Women generally rank these two issues higher than men, who rank speed and cost of travel higher.
- ii) Affordability/ availability can also be an impediment especially in poor households where the main bread winner is a man. The default user of the bicycle is the man in such cases, while the woman will have the option of being a passenger on NMT or MT public transport. In many urban areas in Central and Northern C?te d'Ivoire, like Korhogo, Bouak?, there are many women passengers on bicycles.
- iii) Cultural and community attitudes to cycling.
- iv) Low comfort and great effort in using the bicycle on poorly designed roads can be other factors.
- v) Lack of cycling skills among women is also a factor, although this could be minor.

Source: Nairobi City County Government: Non-Motorized Transport Policy. Towards NMT as the mode of choice - 2015.

These issues that may be of concern to women should be researched so that data-led strategies to overcome the gender bias can be formulated. It is plan in the PPG to clarify these concerns including a consultation on the NMT Policy like what Nairobi did for its NMT Policy (Nairobi City County Government: Non-Motorized Transport Policy. Towards NMT as the mode of choice - 2015)

### **Business-As-Usual (BAU) Scenario**

To the best of our knowledge, Cote d'Ivoire has not put in place comprehensive policies that promote a shift to cleaner and more efficient vehicles, which would be needed to avoid the scenario of major increases of CO2 emissions in the Business-as-Usual scenarios.

There is no Governmental action nor private sector, NGO or CSO focusing on ZEV and NMT at national level to form the baseline situation and to pave the way for the introduction and adoption of EVs.

That is why the Project Preparation Grant (PPG) will consider studies to assess the potential of e-mobility in C?te d'Ivoire, focusing on barriers, opportunities, prerequisites for success and potential solutions. Many stakeholders who participated in the public consultation in Abidjan in the previous years are waiting for the outcomes of the PPG as committed.

Non-Motorized Transport (Walking and cycling road infrastructure) in C?te d'Ivoire  
Investing in infrastructure for walking and cycling leads to massive benefits for:

- ? The environment through less pollution and greenhouse gases
- ? Safety through the protection of vulnerable road users from high-speed traffic
- ? Accessibility by providing the majority of global citizens with a safe and affordable means of travel to reach basic services and connect with other transport options such as buses and trains.
- ? Develop a communication and incentive scheme to build customer awareness and demand;
- ? Increased collaboration/transparency throughout the ecosystem;
- ? Definition of a policy framework allowing greater participation of key stakeholders, especially from power generation and distribution;
- ? Harmonization of standards across applications: electric equipment, software/IT platforms;- Actively support and fund commercial initiatives and strategic R&D projects (South African niche with global reach, e.g.: beneficiation, smart grid);
- ? Drive ?smart grid? and ?renewable energy? development with EVs in mind (energy demand, storage, balancing, etc.);
- ? Establishment of pilot cities to stress test various concepts.

Lessons learned from South Africa allow the proposed project to target many of these identified issues, close partnerships with local municipalities, government organizations and private sector, the use of renewable energy for charging infrastructure, and the introduction of incentives.

### **The impact of ignoring Non-Motorized Transport, Pedestrians and cyclists in C?te d'Ivoire**

Around the world, investment patterns in road infrastructure continue to favor the ICEV. Despite the high societal costs, and the obvious benefits of prioritization of space for the majority (people who walk and cycle), increasing the road space for cars continues to be a priority for investors and governments. The consequences are scary:

? Every 30 seconds someone dies in a road crash, that?s over 1.2 million people every year dying on the world?s roads. The World Health Organization?s Global Road Safety Report of 2015 shows that, worst still, half of these deaths are vulnerable road users, pedestrians, cyclists and motorcyclists. Tragically, 500 children die every day in road crashes.

? Millions more people die from the outdoor air pollution (3.7 million premature deaths worldwide in 2012) that road traffic contributes to.

? If that wasn?t enough, vehicle emissions are also fueling climate change (the transport sector is responsible for 27% of energy-related CO2 emissions globally).

### **The proposed alternative scenario with a brief description of expected outcomes and components of the project**

The Project promotes low-carbon electric transportation with a focus on dimensions on renewable energy integration, mini-grid based business models and 2&3 wheelers in peri-urban and rural areas. The project's interventions in cities will focus on non-motorized transportation.

Mini-grids-powered EVs can support access to clean transportation and electricity. Several studies indicate that renewable mini-grids can power two- and three-wheeled electric vehicles at cost parity with fossil-fuelled alternatives.

Based on technology advances, climate action and increasing fossil fuel prices, the electric vehicle market is already growing rapidly and is poised to radically change the need for fossil-fuels in the transport sector. Coupled with new, low-carbon sources of renewable energy, electric vehicles are both efficient, low-carbon, and can improve power grid reliability. Many countries also see the burgeoning market for electric drive technologies as a job creator through new opportunities in manufacturing, infrastructure, and services.

People living in rural areas throughout the world are held back by limited access to both affordable transportation and electricity. For those living in communities where renewably powered mini-grids are a better option than extending the grid, integrating electric vehicles may stack the benefits of clean, affordable transport on top of those from reliable electricity access.[1]

[1] <https://sun-connect.org/wp-content/uploads/powering-small-format-electric-vehicles-with-minigrids-report.pdf>

The proposed project is also designed to foster an innovative, vibrant and resilient business ecosystem; support technology transfer and ability to attract private sector financing and has the unique capacity to integrate multiple priorities such as Sustainable cities, Transport, Urbanization, Energy, rural entrepreneurship and Land issues in Cote d'Ivoire and the potential to deliver greater global environment benefits through technology transfer, pilot and demonstrate innovative business models and technologies, and to catalyze private sector involvement. The project also proposes ways to foster appropriate regulatory frameworks, plans for disruptive market changes, and foster integration of electric vehicles into the power grid.

Paradigm shift: Currently, the transport sector is almost completely dependent on fossil fuels. It contributes approximately one quarter of all energy related carbon dioxide emissions to the atmosphere, which is set to go to one-third, growing faster than any other sector. Leading by example, some countries have put in place policies to support the use of electric vehicles. For example, through a comprehensive set of fiscal and non-fiscal measures, one (1) out of four (4) cars sold in Norway today is electric, while in China a national 2&3 wheelers strategy that started ten years ago has now resulted in electric two and three wheelers having all but replaced petrol motorbikes in its major cities with 230 million electric bikes in use to date. Such practices need to be scaled up and replicated around the world and in Africa to achieve the desired outcomes.

This GEF project will contribute to the global efforts to protect human health and the environment by reducing greenhouse gas (GHG) emissions. The overall objective of the project is to promote an integrated, sustainable and low-emission transport system and to reduce fossil fuel consumption, greenhouse gas emissions and air pollution in the transport sector in Cote d'Ivoire.

**The project is built on two pillars:** i) The first pillar is dedicated to the organization of the SOFT infrastructure. It describes the key policies that can encourage the transition to widespread adoption of electric vehicles including 2&3 wheelers in peri-urban and rural areas. The policy instruments will provide market certainty and clear and strong signals to all stakeholders (consumers, vehicle manufacturers, original equipment manufacturers (OEMs), researchers and battery manufacturers, electric vehicle supply equipment (EVSE) infrastructure providers, utilities and grid service operators, mining companies, etc.). The policies will be coupled with renewable energy integration (e.g., using mini-grids for charging). The policy interventions will be strengthened with the capacity building programs. ii) A second pillar related to HARD infrastructure which integrates physical infrastructure (factories, roads, smart grid, manufacturers, development of OEM clusters, EVSE, recharging infrastructure, seizing mobility opportunities (rural and peri-urban entrepreneurship - e.g., low-carbon transportation), ensuring that EVs are effectively integrated into the electricity grid and promoting the exploitation of renewable energy sources and also focusing on demonstration projects in peri-urban and rural areas in Cote d'Ivoire.

In both rural and urban areas, 2&3 wheeler vehicles are the most common means of transportation, contributing to local air pollution and greenhouse gas emissions (GHG). Transitioning to electric 2&3 wheeler vehicles can help reduce GHG emissions while also increasing the socioeconomic status of people in peri-urban and rural areas in Cote d'Ivoire. Renewable energy systems can play a significant role in charging electric 2&3 wheeler vehicles, resulting in lower carbon emissions and increased renewable energy penetration in peri-urban and rural areas in Cote d'Ivoire. The project demonstration activities will focus on integrating electric 2&3 wheeler vehicles into off-grid photovoltaic systems. The proposed project will provide solutions for clean electricity for charging batteries for electric 2&3-wheelers.

Moreover, the proposed project will create synergies with other relevant initiatives such as the UNEP national child project "Integrated, Sustainable and Low Emissions Transport in Cote d'Ivoire", under the GEF Global Programme to Support Countries with the Shift to Electric Mobility. The proposed project will be complementary and closely linked to the aforementioned UNEP project.

Additionally, the proposed project will create synergies with other UNIDO's initiatives such as the project "Promoting Renewable Energy-Based Grids in Rural Communities for Productive Uses in Cote d'Ivoire". The government and the wider renewable energy and development sectors can benefit from strengthened dialogue, experience-sharing and communication with regard to leveraging renewable energy to secure improved energy access and spur socio-economic development.

Seeking to create synergies with the above GEF funded projects among others, the demonstration of 2&3 wheelers in peri-urban and rural areas and know-how development for a wider introduction of electric mobility in Cote d'Ivoire will be executed by the Ministry of Environment and Sustainable Development. The Ministry will coordinate and collaborate with other stakeholders in order to avoid potential areas of overlaps between the projects.

While the UNEP project is focusing on the broader e-mobility framework at the national level, the proposed project will focus more on the introduction of 2&3 electric wheelers in peri-urban and rural areas. The project will conduct a feasibility study on technical/economic opportunities for the electrification of 2&3 wheelers in peri-urban and rural areas around 5 cities in Cote d'Ivoire and will

provide the financing mechanism to introduce and scale-up e-mobility. The proposed project would benefit from Component 3 of the UNEP-GEF project i.e. "the Government of Cote d'Ivoire adopts financial incentives and technical standards to promote investments in low-carbon electric mobility in public transport?".

The implementation will be ensured through the project focal points and the identification of synergies and potential areas between the projects will also be further analysed at CEO Endorsement.

During the CEO Endorsement, it will also be further elaborated and assessed the private sector driven business models for future upscaling, financing sector opportunities and the technology adoption of mini-grid powered 3-wheeled electric vehicles in rural areas by taking advantage of increasing solar energy. This will be integrated in the national plans.

To implement these pillars, the project proposal comprises the following 4 components, related outcomes and outputs.

### **Component 1: Strengthening the institutional framework and financial mechanism to promote E-Mobility in Cote d'Ivoire**

This component aims at addressing the legal, institutional and financial barriers present in the country regarding e-mobility. The component will support the adoption of EVs and NMT through the development of pivot Policies, Governance and Regulatory frameworks to enable a transformative environment and a resilient business ecosystem in Cote d'Ivoire.

#### **Outcome 1.1. Legislation and financial mechanism are reinforced to promote the adoption of Zero Emission Vehicles (ZEV) powered by renewables**

To achieve this outcome the project envisages the following outputs:

##### **Output 1.1.1: National regulatory mechanisms promoting the development of Zero Emission Vehicles (ZEV) coupled with renewables and Non-Motorized Transport (NMT) in cities are strengthened and submitted to the government**

This output will support the state of the knowledge regarding policies and regulations prevailing in Cote d'Ivoire for a gap analysis and remedies. Previous studies carried by UNEP/GEF or other Partners in initiatives such as the Partnership for Clean Fuels and Vehicles (promoting cleaner fuels and vehicles in developing and transitional countries); Electric Mobility (Promoting global shift to zero-emissions transport by introducing electric cars, buses and motorbikes); Global Fuel Economy Initiative (to double the efficiency of the global vehicle fleet by 2050); Share the Road (investing in sidewalks, bike lanes and other infrastructure for walking and cycling); Africa sustainable transport forum (supporting the development of sustainable transport programmes in countries across Africa) will be collected and analyzed through the PPG in order to propose robust and harmonized policies.

This output is also essential in developing a set of fiscal and non-fiscal, regulatory and non-regulatory incentives to ensure attraction of communities to EVs. The uptake of EVs will be ensure if the incentives are interesting enough to abandon the Fossil fuelled vehicles.

Specifically targeting the stimulation of market demand, the proposed project will assist in reviewing those incentive schemes which have been working well in other countries and recommending or drafting the most suitable ones for Cote d'Ivoire. These incentive schemes could include:

? Non-financial incentives could include the provision of exclusive parking or lanes, including using bus lanes, free city access (e.g. not having to pay the e-toll in Pont Henry Konan Bedi? and in Pont ? Payage de Singrobo), or the linking of EV purchases to the provision of a slow charging station in the home or free charging at public stations and partnering groups or participating Malls, Hotels, Government ministries and Agencies etc.

? Regulatory interventions could include the introduction of minimum emission standards for vehicle fleets.

? Financial incentives could include soft loan schemes, rebate on purchased EVs, various tax incentives, for example, reduced or no import tax and subsidies for Electric vehicles, NMT, EVSE and infrastructures.

**Output 1.1.2: A national funding mechanism to incentivize the shift to e-mobility (focusing on 2&3 wheelers in peri-urban and rural areas) is developed, submitted to the government for adoption at the national level.**

Based on national diagnosis of existing funding mechanisms, opportunities for funding actions for promotion of EV and NMT gender consideration, pilot testing by other actors, a national funding mechanism to support e-mobility with due gender consideration will be developed, adopted at the national level, and operational. The e-mobility business model in Cote d'Ivoire will seek strong private sector participation through:

? implementation of an innovative mechanism of access to financing;

? interconnection to the market;

? attracting private investment in the electric mobility sector (integration of investment platforms etc);

? establishment of a partnership framework around electric mobility.

Public-private partnerships (PPPs), provide flexible models that can facilitate the transition in the country. PPPs are also viable in the longer term as a means of ensuring that the availability of publicly accessible chargers is sustained not only on the basis of business-driven considerations, but also as a public service. Only genuine "grey zones" where business cases do not exist, but where infrastructure nevertheless is critical to promote a transition to electric mobility, would benefit from public support. Ensuring that public funds do go to building charging infrastructure in such grey zones is important because, although they are not a major contributor to the EV value chain, absence of an adequately developed charging network could jeopardise EV deployment

**Output 1.1.3: A sectoral roadmap for improved energy performance in transport sector in value chains (e.g., refrigerated electric three-wheelers charged by mini-grids) is developed**

This output supports the planning of the deployment of different type of vehicles and inter-modal electrification in a comprehensive way. The need of the country would be clearly evaluated through the PPG in order to have a clear estimate of the EV and NMT market potential and penetration rate for the different types of EVs.

This output will directly support the implementation of objectives of the Draft Roadmap for Sustainable Transport in Cote d'Ivoire and will provide specific recommendations with regards to improved energy performance in transport sector in value chains (e.g., refrigerated electric three-wheelers charged by mini-grids) in peri-urban and rural areas. The proposed roadmap will build upon existing institutional networks which have been established during the preparation of the Draft Roadmap for Sustainable Mobility to electrify the urban public transport. This output will present a strategy and concrete actions needed to electrify the peri-urban and rural areas in Cote d'Ivoire and will integrate itself in existing networks and ongoing activities to modernize the transport systems. It will ensure that deliverables developed under the project will be considered by relevant stakeholders.

## **Component 2: Demonstration in support of e-mobility technologies and infrastructure in peri-urban and rural areas**

The demonstration component of the project will be based on a series of feasibility studies to i) test on a small scale a solution for the operation of the vehicles and other associated electric mobility equipment in peri-urban and rural areas in Abidjan, Yamoussoukro, Bouak?, Korhogo and San Pedro ii) collect and analyse technical, logistical and operational data and iii) develop and make functional the final sites selected for the pilot phase.

This component will include:

- ? The optimal network of charging stations is established
- ? Traffic management and site operation system in place, including a sales directive
- ? Public information strategy in place;
- ? Connection to the CIE electricity grid;
- ? Bicycle lanes with signage, self-service rental, GPS tracking, repair and maintenance workshops are in place and functional;

Moreover, the demonstration component will focus on **strengthening the case for more widespread adoption of electric two-three wheelers in Cote d'Ivoire**. A number of start-ups are already investing in the region's electric two-wheeler space to design vehicles at a cost and durability suitable for the local market. For example, Opibus in Kenya is investing in local R&D and assembly to build an electric motorcycle tailored to the needs of boda boda drivers who demand a high-durability vehicle that can go up to 130 km per day at a comparable cost to an ICE two-wheeler. Companies such as Ampersand in Rwanda are also developing a network of battery-swapping stations to enable two-wheeler drivers to exchange depleted batteries for fully charged batteries on the go.

Even with this emerging use case, there are still challenges to overcome. Issues include the higher up-front price point for electric two-wheelers versus ICE two-wheelers (estimated at \$1,700 to \$1,800 in mid-2021 versus \$1,300 in Kenya), unknown battery lifetime data given that motorcycles in sub-

Saharan Africa go much longer daily distances than those in Asia, and the high cost of battery swapping.[1] And because electric two-wheelers have a small battery, they can be charged via a mini-grid, making them suitable for use in locations with low access to reliable electricity-grid infrastructure. They can also benefit from a battery-swap model, in which a depleted battery is replaced with a fully charged battery from a designated 'swap station' in just a few minutes.

These factors strengthen the case for more widespread adoption of electric two-wheelers in Cote d'Ivoire.

[1] Power to move: Accelerating the electric transport transition in sub-Saharan Africa | McKinsey

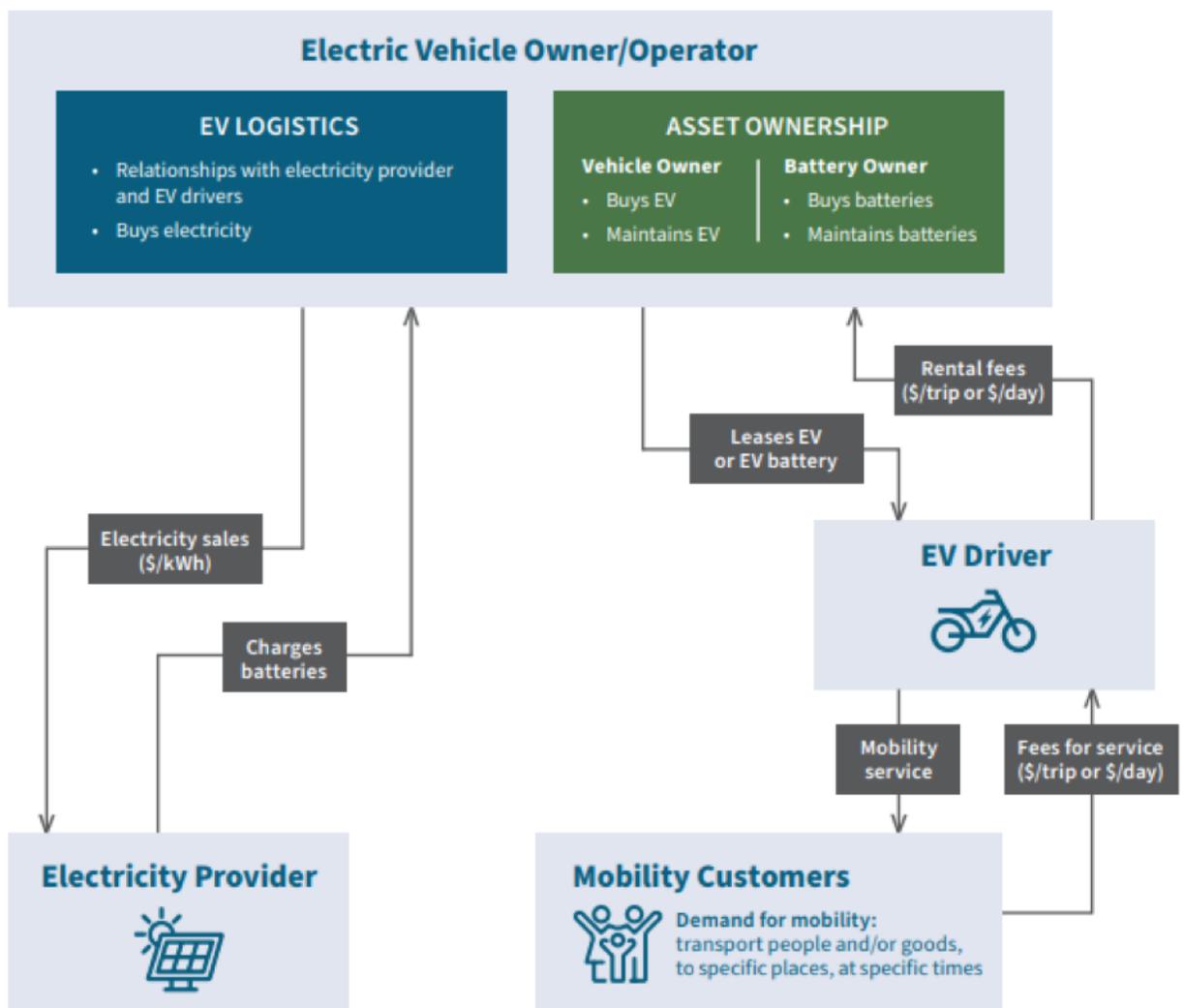


Figure 1: Electric Vehicle Owner/Operator

**Outcome 2.1. Viable E-mobility pilot sites are operationalized, engaging young entrepreneurs in rural and peri-urban areas**

To achieve this outcome the project envisages the following outputs:

**Output: 2.1.1: Feasibility studies consolidated on potential uses of Zero Emission Vehicles (ZEV) in transport network and opportunities for creating green businesses (e.g., goods transportation in agri-food value chains) and decent jobs for youth in rural and peri-urban areas**

The project will provide technical assistance to e-mobility projects based on the results of the pre-feasibility studies that will be developed by the project execution entity and stakeholder consultations. Initial pre-feasibility studies to compare location, optimization and appropriate business models for the development of e-mobility infrastructure are discussed but the project execution entity together with other stakeholders will develop detailed feasibility studies during the PPG. The research will draw upon the initial feasibility study on various business models and build upon lessons learned from ongoing initiatives in Cote d'Ivoire (such as UNEP's project on e-mobility) to disseminate e-charging infrastructure. The Lead Executing Entity will work with researchers to replicate the best practices to peri-urban and rural areas.

The PPG will serve among others to:

- ? Thorough studies/Business plan on EVs and enabling infrastructures;
- ? Studies and data gathering;
- ? Environmental, Social Impact Assessment (ESIA) including Gender considerations;
- ? Financial, Technical and Operational Risks Analysis;
- ? Baseline study comparing BAU versus Project implementation;
- ? Key performance indicators;
- ? Answers to the relevant questions that arise in relation to the introduction of this technology, both technically and operationally. For example.

**Output 2.1.2: Operationalization of innovative and highly replicable pilot sites following a pre-defined set of criteria promoting Zero Emission Vehicles (ZEV) in peri-urban and rural areas to demonstrate private sector driven business models for future upscaling**

Activities under this output will continue with feasibility studies to prepare demonstration sites for EVs and NMTs at the sites of the 5 selected cities. The objective will then be to demonstrate the low carbon technology and test a possible private sector led business model for future scaling up through the involvement of local youth entrepreneurs especially in rural areas around the selected national parks. The PPG phase will select the final sites and priority income-generating activities around the demonstration sites.

The results of the feasibility studies will be used to implement these demonstration projects and to draw lessons on how to:

- ? Provide financial resources and support technical capacity building to advance the development and scaling up of ZEVs, sustainable transport services, EVSE, Maas and renewable energy;
- ? Adopt and enforce performance standards that drive industry to develop cleaner and more efficient systems and technologies;
- ? Maintain policy neutrality to allow consumers and market forces to steer development towards the most efficient sustainable technologies;
- ? Lead by example through public procurement of sustainable technologies and products, and policies that encourage employees to travel and act sustainably;
- ? Advance knowledge sharing, open data sources and technical assistance to C?te d'Ivoire, including through capacity building and knowledge platforms, testing and demonstration, including by rural and urban entrepreneurs.
- ? Reveal some green jobs that could be of interest to these young entrepreneurs, notably delivery vehicle drivers, taxis, charging station managers, battery recyclers, etc.

The project will be implemented in peri-urban and rural areas around five cities in C?te d'Ivoire.

Conceived as a demonstration project, the sites were chosen to have a good sampling and above all to reflect the diversity of the type of mobility in Ivorian peri-urban and rural areas connected with major cities. Peri-urban areas are zones of transition from rural to urban land located between the outer limits of urban and regional centres and the rural environment. Therefore, three groups of sites were selected, including the urban and peri-urban areas used by rural communities in:

- Abidjan, the economic capital and the most populated. The city of Abidjan is the main economic centre of the country, contributing about 60% of its GDP (implying an average GDP per capita 40% higher than the rest of the country) (World Bank, 2019). The very dense fleet consists overwhelmingly of motor vehicles with four or more wheels. The use of other means of travel, notably motorbikes, is fairly limited.

- Yamoussoukro, the political capital, has much less traffic than Abidjan and there are major arteries and cycle tracks. The project will obtain from the government the provision of 50 km of paved road for the project (pedestrian and bicycle path). The demonstration will be carried out with two- and three-wheeled electric vehicles (mopeds, scooters, motorbikes) equipped with automatic payment applications and integrated GPS for geo-location and recording of journeys in order to collect data in self-service mode;

- Bouak? in the centre of the country and Korhogo much further north, and San Pedro, all of which are characterized by a massive presence of motorbikes. Traffic is generally fluid. In Bouak?, the demonstration phase will be carried out with a fleet of a combination of two-wheeled and three-wheeled (mopeds, two- and three-wheeled motorbikes) electric vehicles. Only two- and three-wheel vehicles will be used in Korhogo.

It should be noted that the cities of Abidjan, Yamoussoukro, Bouak?, San P?dro and Korhogo will host the matches during the Africa Cup of Nations tournament that C?te d'Ivoire will organise from June to July 2023. Over 1,000,000 participants are expected. The project could substantially contribute to the

mobility of people and goods through zero-emission vehicles and non-motorised transport and thus reduce the ecological footprint of the event.

In peri-urban and rural areas of the cities of Abidjan, Yamoussoukro, Bouaké, San Pédro and Korhogo, 2&3 wheeler vehicles are the most common means of transportation, contributing to local air pollution and greenhouse gas emissions (GHG). Transitioning to electric 2&3 wheeler vehicles can help reduce GHG emissions while also increasing the socio-economic status of people in peri-urban and rural areas in Cote d'Ivoire.

Renewable energy systems can play a significant role in charging electric 2&3 wheeler vehicles, resulting in lower carbon emissions and increased renewable energy penetration in peri-urban and rural areas in Cote d'Ivoire. The project demonstration activities will focus on integrating electric 2&3 wheeler vehicles into off-grid photovoltaic systems. The project will provide solutions for clean electricity for charging batteries for electric 2&3-wheelers.

### **Component 3: Capacity building and awareness raising**

To ensure medium and long-term sustainability and lasting impact of the project's activities, this component will focus on capacity building and awareness raising of the relevant institutions in Cote d'Ivoire. The component aims at building the institutional capacity through workshops for policymakers and relevant stakeholders both in public and private sector.

#### **Outcome 3.1: National capacities and awareness are enhanced to accelerate the adoption of e-mobility with a focus on 2&3 wheelers in peri-urban and rural areas**

The lack of staff capacity is one of the current major challenges in Cote d'Ivoire. It refers to mobility infrastructure, energy efficiency, sustainable energy and green procurement. Technical capacity refers to the competencies of staff and management involved in the project implementation, which may require expertise in specific fields or areas not currently covered in the administration.

To achieve this outcome the project envisages the following outputs:

##### **Output 3.1.1: Capacity building through technical trainings to provide the new skills needed due to shift to e-mobility in transport value chain (with a focus on youth and women)**

This output will address the capacity gap in the country. The output will include training activities, technical capacity building and transfer of skills relating to the operation and deployment of electric vehicles. The various actors in the transport sector in Cote d'Ivoire are the targets.

The objective of this training and skills transfer is to prepare the various players in the transport sector for the development of the electric vehicle industry and to give them the means to face up to it and make the most of it.

##### **Output 3.1.2 Workshops and awareness raising for the policy-makers and change-makers on integrated e-mobility and renewable energy**

### **Component 4: Monitoring and Evaluation**

**Outcome 4.1: Effective monitoring, evaluation and preparation for eventual scale up of the project**

An efficient monitoring and evaluation plan based on UNIDO and GEF requirements will be implemented so to guarantee that all the procedures and all the stakeholders are playing their role in the senses of achieving all the projects objectives. Due to the duration of the project, a mid-term review and terminal evaluation will be conducted to assure best monitoring and evaluation activities.

To achieve this outcome the project envisages the following outputs:

? **Output 4.1.1: The project and its activities are monitored and evaluated on a periodic basis in line with GEF, UNIDO and Government requirements**

? **Output 4.1.2: Mid-term review and terminal project evaluations conducted and recommendations provided for eventual scale up of the project**

**Alignment with GEF focal area and/or Impact Program strategies**

The proposed project perfectly aligns with the GEF-7 Climate Change Focal Area Strategy aims to make transformational shifts towards low emission and climate resilient development pathways.

**Objective 1. Promote innovation and technology transfer for sustainable energy breakthroughs**

The proposed project will contribute to the transfer of environmentally sound technologies in the Energy sector and Electric Vehicles sectors in Cote d'Ivoire that will contribute to reduce, or slow the growth in GHG emissions, and to stabilize their concentrations.

As stated in the GEF-7 Programming direction and Policy Agenda (2017), Technology and innovation help create or expand markets for products and services, generating jobs and supporting economic growth. Supportive policies and strategies are fundamental to catalyze innovation and technology transfer for mitigation. The project conciliates the four (4) entry points to promote innovation and technology transfer for sustainable energy breakthroughs namely:

**Decentralized renewable power with energy storage;**

Grid modernization and integration of energy storage are critically needed to facilitate the rapid growth of renewable energy in a cost-effective manner. The proposed project will contribute to improve the Energy Policy framework and regulations in Cote d'Ivoire and promote construction of supportive infrastructures and the built environment (HARD) for the project. For example Power sector transformation through mini-grids, energy storage, and new business models are required and Component 2 (Hard infrastructure) of the Project address this issue in an integrated strategy of harmonization in the Country.

Sustainable energy is vital, as energy related carbon emissions are the major driver of climate change; therefore, transformation of energy systems is key to achieving the Paris Agreement and the SDGs (GEF-7 Programming direction and Policy Agenda (2017)). Emissions from the transport sector in particular are growing rapidly and countries need solutions. The rapid decline in costs of low-carbon energy technologies has provided an opportunity for rapid growth in sustainable energy supply.

Cote d'Ivoire has an advantage to promote renewable energy in the project since it is well placed in producing clean energy from its 6 dams in service namely Ayam? 1 (20 MW), Ayam? 2 (30 MW), Kossou (147 MW), Taabo (210 MW), Buyo (165 MW) and recently Soubr? (275 MW) and will benefit from the ZEV project implementation in terms of GHG emissions reduction. This will help the country transition towards a cleaner grid and therefore a cleaner electric mobility transport. At CEO Endorsement will be elaborated and assessed the current electricity grid mix in the country, their adoption to the project activities and their integration with electric 2&3 wheelers.

### **Electric drive technologies and electric mobility**

The proposed project focuses on sustainable transport as a paramount and includes low-carbon transport options covering a large spectrum from alternative fuel vehicles and fuel efficient vehicles, Zero emission vehicles (ZEV), Electric, Hybrid, Hydrogen Vehicles, to bus-rapid-transit and Non-Motorized Transport (NMT) (bicycle sharing programs, pedestrian, etc.). Furthermore, the Project addresses pragmatic inputs to develop the Sustainable mobility cluster in Cote d'Ivoire and focus on creating a vibrant and resilience business ecosystem that guarantees market predictability and business certainty and incorporates opportunities related to EVSE and MaaS.

Based on technology advances and market trends, the electric vehicle market is already growing rapidly with a high penetration potential in Africa and is poised to radically change the need for fossil-fuels in the transport sector. Coupled with new, low-carbon sources of renewable energy, electric vehicles are both efficient, low-carbon, and can improve grid reliability. The proposed project for Cote d'Ivoire sees the burgeoning market for electric drive technologies as a job creator through new opportunities in manufacturing, infrastructure, and services. Component 2 focuses on the installment of Makers, Manufacturers and OEM including EVSE and MaaS. Electric drive technologies significantly reduce local air pollution, noise etc. Still, barriers to adoption of electric mobility are significant and true commercial scaling has not yet been achieved in Cote d'Ivoire.

### **Accelerating energy efficiency adoption**

Despite the availability of energy efficiency technology and proven approaches, non-market barriers to energy efficiency still impede its full potential (GEF-7 Programming direction and Policy Agenda (2017)) namely in Africa.

The proposed project includes elements (Capacity building and empowerment) for energy efficiency awareness and adoption and building on local initiatives on energy efficiency already in place (Cocody Cit? Verte - Municipal Building, Street lighting, Energy efficiency program), capitalize on lessons learned from Compagnie Ivoirienne d'Electricite? (CIE)' reform on Energy efficiency and promotion of renewable energy to 16% in the energy mix in the context of this EVs project

### **Objective 2. Demonstrate mitigation options with systemic impacts**

Climate change affects virtually all natural and economic systems. This interaction between climate change and biodiversity, land degradation, forests, chemicals and waste, and international waters points to the importance of recognizing climate change implications in all GEF-7 focal areas and impact

programs by harnessing mitigation options to address them and integrating climate resilience measures to address climate change risks (GEF-7 Programming direction and Policy Agenda (2017)).

The proposed EVs project will contribute to achieving many of the cited Focal areas by reducing substantially GHG emissions from the Transport sector accounting for more than 25% GHG emissions that also has impact on the over areas. The proposed project generates multiple global environmental benefits across GEF focal areas, conducted in holistic and integrated fashion and scale-up to ECOWAS if needed. Sustainable transport positively impacts the Sustainable Cities, Food Systems, Land and Restoration, and Sustainable Forest Management Impact Programs.

The project encompass the transport issue and embrace also low-carbon technologies and practices needed in the urban sector including energy efficiency (buildings, lighting, air conditioning, transport, district heating systems), renewable energy development (solar, wind, co-generation, waste-to-energy), solid waste and wastewater management, stronger land-use, and transport planning leading to long-term emissions reduction in the urban sector namely in the Big cities of the country and ?lock-in? resilient development.

### **Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing**

#### **GHG Emissions Reduction Calculation**

The overall methodology in estimating greenhouse gas emission reduction as an impact of the project's intervention is given in the GEF Manual for Calculating GHG benefits of GEF projects (GEF/C.33/Inf.18). In addition, the STAP of the GEF has recently provided a guide to estimate emission reduction benefits for transport subsectors, Calculating Greenhouse Gas Benefits of Global Environment Facility Transportation Projects, which comes with a number of modules in Excel spreadsheets (TEEMP models), namely a) Ecodriving, b) MRT and BRT (mass rapid transit, bus rapid transit) systems, c) NMT (non-motorized) projects, and d) travel management. However, these models do not specifically deal with electric vehicles and different modelling in a spreadsheet was used. Nonetheless, calculations of GHG benefits are carried out as much as possible in line with the models and/or using model default factors (where data on local factors is not available). The calculation assumes 100% electric vehicles and non-motorized transport as the focus of the project; not plug-in hybrid vehicles. It is further assumed that the fuel used in buses is diesel and gasoline in cars.

These estimates need to be reviewed with more Data. The PPG will allow to collect more granular Data on the calculation of CO<sub>2</sub> emissions reduction from the EVs section and NMT section.

In the scenario, we supposed that starting in 2020, 1% EVs market penetration in C?te d'Ivoire corresponding to 500 Electric vehicles per year per country based on current ICEV purchased annually.

#### **Calculation**

Passenger vehicles are defined as 2-axle 4-tire vehicles, including passenger cars, vans, pickup trucks, and sport/utility vehicles. In 2015, the ratio of carbon dioxide emissions to total greenhouse gas emissions (including carbon dioxide, methane, and nitrous oxide, all expressed as carbon dioxide equivalents) for passenger vehicles was 0.989 (EPA 2017).

? Environmental Protection Agency (EPA) and Federal Highway Administration (FHWA) estimated to 4.67 metric tons CO<sub>2</sub> eq/vehicle /year

? Natural Resources Canada estimated to 4.6 metric tons CO<sub>2</sub> eq/vehicle /year for a Canadian vehicle, which burns 2 000 L of gasoline every year.

In the case of no support from the GEF to assist C?te d'Ivoire in removing the barriers, it is very likely that the transport sector will continue to grow without taking into consideration its environmental impact and without exploiting its energy efficient growth potential. Consequently, many opportunities to reduce GHG emissions and strengthen partnerships with the private sector to invest in e-mobility and provide support to the government in developing policies to ensure an enabling environment, would go unrealized in C?te d'Ivoire.

**Note:** As cars produced before the 1995 were 15 to 19 times polluting than those after 2005, we used a conservative approach and consider a mean value of 10 times the mean emission of 4.6; that give 46 metric tons CO<sub>2</sub> eq /vehicle /year for the C?te d'Ivoire Vehicle Scrappage Program.

### **Assumptions**

The direct emission reduction of the proposed project to be determined in the PPG are estimated based on the number of electric vehicles (focus on 2&3 wheelers) charged by renewable energy that can be attributed to the project?s activities.

EVs penetration: Starting in 2023, we consider 500 EVs penetration per year, 2500 for C?te d'Ivoire during the 5 years span.

We conjecture that these EVs replace ICEV vehicles that otherwise could have been bought.

$500 \times 5 \times 1 \times 4.6 = 11,500$  metric tons CO<sub>2</sub> eq for the 5 years span of the Project.

The indirect emission reduction is the results of the replication of the technology demonstration of the project, financial support mechanism, improved policy and regulatory framework (e.g., Non-motorized transport (NMT) policy interventions (in Cocody, Yamoussoukro, Bouak?), enhancing institutional capacity building, and awareness raising. These activities are expected to increase the GHG emission 8 folds resulting 92,000 tCO<sub>2</sub>eq.

Total GHG emission reduction: 103,500 metric tons CO<sub>2</sub> eq.

### **Incremental cost reasoning**

The proposed project on sustainable transport takes stock of the willingness of C?te d'Ivoire to improve the transportation system and shift to low-carbon transport options focusing on 2&3 wheeler Electric Vehicles in peri-urban and rural areas and Non-Motorized Transport (NMT) (bicycle sharing programs, pedestrian, etc) in cities.

It aims to build on the lessons learned namely from South Africa EVs market, and extend the scope of the intervention to tackle not only non-motorized public transportation, but also the larger theme of low-carbon transport pathways namely ZEVs, including activities and interventions dedicated to Accelerating energy efficient mobility; De-centralized renewable power with energy storage; Electric drive technologies and electric mobility; Sustainable Cities etc.

The project promotes an enabling and resilient business ecosystem, the creation of a market for energy efficient and low-carbon transportation, accelerating the transition to a greener economy in Cote d'Ivoire. In addition, the project will facilitate and contribute to the implementation of the various baseline projects such as "Stabilizing GHG Emissions from Road Transport through Doubling of Global Vehicle Fuel Economy: Regional Implementation of the Global Fuel Efficiency Initiative (GFEI)". The project will strengthen capacities of concerned local partners and stakeholders, such as government, Institutions, CSO, Private, young entrepreneurs in rural areas and promote settlement of Automakers, manufacturers and related Cluster (OEM, Goods and Services etc).

It will also be a missed opportunity for these countries as the electric vehicle market is already growing rapidly with a high penetration potential in Africa and is poised to radically change the need for fossil-fuels in the transport sector.

In the absence of the proposed GEF project, the widespread adoption of EVs and NMT in Cote d'Ivoire would remain slow or inexistent hindered by the existing barriers. The GEF project will provide assistance in the development of the relevant governance frameworks, policies, regulations, incentives and standards (Component 1) needed to promote and build awareness of energy efficient transport in Cote d'Ivoire, and international best practices will be disseminated to ensure knowledge management. Furthermore, the capacity of the relevant institutions and stakeholders will be built and the required infrastructure (Component 2 & 3) for mini-grid powered EVs will be demonstrated in peri-urban and rural areas in Cote d'Ivoire, in peri-urban and rural. Through this approach, the GEF project will play a catalytic role in transforming the market for EVs in Cote d'Ivoire in a sustainable manner.

### **Co-financing**

Consultations have been carried out and strong support and commitment has been secured from the private sector as well from GoIC. Co-financing will be leveraged from a number of national and municipal partners such as CCI-CI; Millenium Corporation; Municipality of Cocody, Bouak?, Korhogo, Yamoussoukro, San-Pedro, Office Ivoirien du Tourisme etc ensuring their buy-in and commitment to the project activities. The committed co-financing by concerned authorities and institutions such as Syndicat des transporteurs, UVICOCI, and participating hotels are mainly in-kind and are in the form of staff time, office space and some local expenditures related to space provided for workshops, seminars, training courses, awareness campaigns and publications.

The Government of Cote d'Ivoire and the transport sector's key players including Municipalities (UVICOCI) consider this project an opportunity to accelerate the implementation of the other interconnected national initiatives such as the Cocody Cit? Verte Initiative; The Millennium Corporation Project on Transport, Ministry of Transport project on the renewal of the fleet, the Metro d'Abidjan project etc that would otherwise be delayed or neglected.

In addition, the project is seen as a suitable platform for coordination, dialogue and policy engagement with regard to e-mobility and more generally in support of the promotion of low-carbon transportation in Cote d'Ivoire.

The involvement of the business sector in the project, for example the 45 multinational including Automakers and OEMs that sent Letter of interest to be part of the project and willing to settle in the Technopole Oikos Veritas Houphouet-Boigny of Yamoussoukro will be carefully considered in the

PPG phase, in order to avoid jeopardizing the free market mechanism while also strengthening public-private partnerships for the sake of sustainable development in a low carbon economy context.

At this stage, in-kind co-financing is foreseen to entail the following contributions to the project; staff-time, workshop/event support services, engagement with policy-makers and stakeholders, use of outreach programmes for awareness raising, incentives for consumers and for Automakers and OEM etc.

### **Cost-effectiveness**

The project focuses GEF funds on policy assistance, capacity building and demonstration interventions to be delivered through the project to create sustainable impacts over the long term. The approach to be employed by the project, developing close partnerships with local stakeholders, will ensure the sustainability and cost effectiveness of the project intervention.

The cost effectiveness of the project in terms of CO<sub>2</sub> savings, from the direct impact only, per USD of GEF contribution, is estimated at around USD 0,07 /tCO<sub>2</sub>, which is very low and quite reasonable considering that this is a new market in Cote d'Ivoire. In addition, considering that a key focus of the project is stimulating and catalysing a market shift towards EVs and NMT, the Unit Abatement Cost of the indirect emissions of the project are a better reflection of the project's overall cost effectiveness; this can be estimated at USD 3 - 1.2/ tCO<sub>2</sub>.

Note that this numbers need to be validate with more Data and with the support of the TAC and COPADEN.

### **Local Ownership through Enhanced Direct Access to Financing**

In line with Component 2, Municipalities and rural communities will be enabled through this project to directly create value with their SME. Also, CBOs role in the management of this ecosystem with the partners (Private, Banks, Impact investors, Customers etc) and the communities with their NMT contracts would contribute to a dynamic cluster.

In contrast to a pre-determined top-down funding approach, the proposed approach of self-determined local adaptation through the Sustainable transportation platform is expected to:

- ? Respond directly to local needs, vulnerabilities and opportunities,
- ? Create more local awareness towards climate change and ownership of the climate change response, and thus
- ? Be sustainable beyond the period of direct financial support and autonomation.

### **Possibility for Self-Sustainability of Project Elements**

Project elements such as the climate monitoring system for the smart transportation and sustainable transportation, ESVE, MaaS to be developed and introduced by the project are expected to be self-sustained and bear benefits beyond the project lifetime. For the NMT, communities could create a global enterprise and have shares and participate to the co-management and decision-making.

### **Financing**

The global investment needs for transport infrastructure are estimated at between US\$1.4 and US\$2.1 trillion per year, and recent studies have estimated that a low carbon pathway is attainable given these

current flows, if this transport investment is directed to sustainable transport. Policy makers, multilateral development banks and other financial institutions are in the position to push development toward sustainable transport by setting criteria and standards and creating a favourable investment climate.

### **Effective funding, charging and fiscal frameworks**

The development of appropriate funding frameworks will be a key step in aligning different sources of transport funding and financing and encouraging a significant scaling up of financing for sustainable transport. National governments will need to empower cities, addressing outdated laws that prevent many cities from utilizing local tax revenues or borrowing money on their own or accessing funding from international organizations. Currently, only 4% of the 500 largest cities in developing countries are rated creditworthy by international financial markets. However, this is slowly changing. For example, recently, the Peruvian capital Lima worked with international banks to get a better credit rating, which enabled it to issue bonds to invest in low-carbon mass transit. Cote d'Ivoire with AfDB and WB had secured funds to build the 4th bridge between Yopougon and Plateau and have received funds from the Millennium Corporation Compact initiative to improve transport sector in Abidjan.

### **Government funding**

The bulk of infrastructure and other transport investments comes from traditional government sources. As noted above, government decisions, including those on funding, should be made with both long and short-term perspectives and, whenever possible, linked to the existence of sustainable transport plans and the application of the 'Avoid-Shift-Improve' approach. This may mean that planning authorities, especially on the municipal level, need to receive technical and financial assistance to develop high-quality sustainable transport plans.

### **Engagement with the private sector**

The 2030 Agenda for Sustainable Development points to partnerships, including with the private sector, as one important means of implementing the SDGs.

Public-private partnerships (PPPs) present the opportunity to leverage expertise, innovation, financial resources and policy mechanisms. In addition, national governments can establish frameworks to encourage PPPs at the local level, by providing support to the local governments and enhanced confidence for the private companies.

**Public-private partnerships** is contemplated in Component 2 (Infrastructures) and include project financing schemes where private partners are entrusted with the infrastructure financing, construction, operation and maintenance in exchange for revenues for a number of years (and thereby bear most of the risk). They also include mechanisms that modulate the fraction of the risk component falling on both parties, giving more importance to the infrastructure availability and provision of a public service than to the frequency of its use. They may include the participation of the public sector at the financing stage, renegotiation of contract terms to address risks and can accommodate the payment of fees by public authorities to private investors/operators in exchange for contractual guarantees on service quality and efficiency. Risk-sharing solutions may also include projects where the public sector confers existing assets to the private party in exchange for the development of new infrastructure (Global EV Outlook 2018 - Towards cross-modal electrification).

PPPs can pose challenges, because, by definition, the financial interests of the different parties are not completely aligned. While individual businesses often make decisions based on the impetus for corporate social responsibility, or on the owner's personal ethical commitments, the overall driving force is profit. Safeguards must be enacted to ensure that the principles of sustainable development are respected, that contracts are balanced, and that governments select and design projects appropriate for PPPs with care.

When defined broadly, any private investment in a public infrastructure project or initiative constitutes a public-private partnership. From this perspective, governments have a range of incentive-based tools at their disposal to encourage investment, including tax breaks and other positive incentives. In this project, preliminary discussions with MoEF and MoT point to among others Tax breaks or Tax waiver for 5 to 10 years as incentives to catalyse settlement of Automakers and OEM clusters in the Technopole Oikos Veritas of Yamoussoukro.

Local business communities may be motivated by these incentives as well as, more generally, an understanding of the long-term benefits that can come from public-private collaboration in the transport sector. In order to encourage investment in the transport sector, risk must be held to an acceptable level, governance structures must be in place to create an enabling environment, and national governments should support and empower local level authorities to engage with private sector partners in a constructive manner. ?Crossrail? in the Greater London area, for instance, mobilized private sector funding to help defray the costs of a major rail infrastructure project by making the argument that the local business community would ultimately profit from enhanced public transport services. Special care and due diligence will be taken to ensure transparency for Private sector involvement in the project.

#### **Fiscal and market-based measures**

Innovative user charges and other fiscal instruments in the MaaS and EVSE can both raise revenue and manage transport demand, shifting demand from the private motorized vehicle options to walking, cycling, and public transport; and freight from exclusively road to multimodal solutions combining road, rail and waterways.

Market-based measures can be used to create or enhance a ?market signal? and provide economic incentives for preferred behaviour and use of low emission transport options. It is important to deploy these measures in a manner that keeps the goal of access in mind, and to set up national instruments from C?te d'Ivoire affecting the movement of people and goods in a way that guarantees a level playing field and avoids market distortions.

Opportunities contemplated in the project include inter alia:

- ? Infrastructure use charges reflecting the marginal social costs of travel (e.g. associated with congestion and level of emissions);
- ? Vehicle registration and ownership charges properly structured to reflect the emissions, road damage and congestion they cause;
- ? Fuel taxes, and generally moving from fixed charges to charges that vary with use;
- ? Carbon pricing;

- ? Parking regulations and fees;
- ? Land value capture and other ?indirect beneficiary pays? measures to reflect the beneficial impacts of transport and other sectoral investments beyond those who are directly involved in the transport;
- ? Public-private partnerships that give businesses the opportunity to voluntarily contribute to the funding of transport systems, because the businesses ultimately benefit from the systems;
- ? High Occupancy Tolling (HOT lanes) on high-traffic roads;
- ? Social impact investment: capturing the long term financial benefits of improved road safety to fund the up-front capital improvement of road infrastructure;

Across all modes, adjustable combinations of pricing, regulatory and market-based measures that steer transport systems to commonly agreed targets of emissions and other negative externalities while preserving multiple choices for clients is contemplated by MoT, MoEF and CCI-CI. Improving the internalization of the social and environmental costs and benefits of transport will revolutionize the sector.

One measure that receives considerable policy attention is the subsidization of fossil fuels. SDG 12, reflecting the complexity of the fuel subsidy questions, calls on the international community to ?rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of the country and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities.

### **Finance from international financial institutions**

The scale of investment required for sustainable transport in C?te d'Ivoire is enormous, and represents a great challenge for the years ahead. Most of these resources will have to be provided by developing country governments and the private sector. However, the international financial institutions also have a vital role to play.

Multilateral and bilateral financing institutions respond to the demands from governments, as well as the private sector, for financing sustainable transport infrastructure. Beyond the provision of finance, they often help countries to implement key recommendations. These include recommendations from GEF-7, for example, on the development of sound policies for sustainable transport and funding, support for demonstration projects through innovative finance mechanisms, and dissemination of best practices and capacity development.

### **Global environmental benefits (GEFTF) and/or adaptation benefits (LDCE/SCCF)**

The transportation sector in C?te d'Ivoire is a significant contributor to the country?s GHG emissions. Exhaust gases, and the dust and noise created by this sector not only impact climate change, but also pollute the environment, and therefore negatively affect health and socioeconomic sectors, in particular in big cities of the country as well as in peri-urban and rural areas.

The project will contribute to the mitigation of greenhouse gases in Cote d'Ivoire transport sector.

### **Introduction/ dissemination of cleaner vehicles technologies**

The coming decade will see massive penetration of low and zero emissions vehicles in some markets (mainly in China and OECD), especially hybrid, plug-in-hybrid and electric vehicles. This project will support Cote d'Ivoire in developing policies and standards ensuring optimal introduction of these clean vehicle technologies the country.

This project, once implemented, will provide significant opportunities for reductions in GHG emissions, other exhaust gas emissions and noise from the transport sector.

### **GHG Emissions Reduction**

The world's light duty vehicle stock is expected to approximately triple from 2012 to 2050 under BAU (0.9 to 2.5 billion vehicles) with 90% this growth taking place in non-OECD countries. A rippling of the global vehicle stock is expected to more than double the global vehicles related CO<sub>2</sub> emissions.

? Transportation accounts for a quarter of the world's energy usage and for a quarter of the global CO<sub>2</sub> emissions which is set to increase to a third by 2050 (IEA, 2011). The transport sector CO<sub>2</sub> emissions are increasing more rapidly than any other sector.

? Transport is a major contributor to Black Carbon (BC) emissions that is now believed to be the second most important climate change emission.

? To date, global climate change mitigation programmes and initiatives have not given a level of attention to the role of transport that is in proportion to its impact. Given the significant contribution of road transport to emissions, addressing road transport and automotive fuel efficiency forms an integral part of the G8 and IPCC recommendations to limit global warming to 2°C from pre-industrial levels.

? Developing countries are predicted to invest approximately USD 200 trillion over the next forty years in fuels and motor vehicles (IEA, 2010). With fuel economy policies in place these investments will be made in more efficient vehicles for example EVs and NMT resulting in reduced CO<sub>2</sub> emissions as opposed to a BAU scenario of doubling of CO<sub>2</sub> emissions from their fleets.

? A study conducted in 2010 predicts that the global stock of EVs will increase to 2 billion by 2030, 77% of which will stem from developing countries (Dane, Anthony; 2013). This holds significant potential benefits for African countries, considering that EVs have been shown to use 4-5 times less energy than petrol vehicles and have operating costs estimated at 75-99% lower than ICEVs (depending on peak or off-peak charging - Dane, Anthony; 2013).

? Cote d'Ivoire currently produce approximately 2 Mt/yr of CO<sub>2</sub> emissions from road transport. This figure is projected to more than triple by 2050 without intervention (UNFCCC/IEA, 2009).

? The overall CO<sub>2</sub> emissions from the vehicle fleets of all the countries targeted for the regional GFEI project are an estimated at 1,100 megatonnes per year, Mt/yr. The estimated benefits of doubling fuel economy of these country fleets are reductions of over 900 Mt/yr by 2025 and 2,200 Mt/yr by 2050 of CO<sub>2</sub> emission. The proposed EVs and NMT could boost this reduction as a cleanest option.

? Introducing policies aimed at a 50% improvement in vehicle fuel efficiency can result in CO<sub>2</sub> emission reductions of approximately 20 Mt/year by 2025.

? Actualization of 4L/100km (25km/L) global fuel economy will reduce global road transport CO<sub>2</sub> emissions by over 1 gigatonne (Gt) a year by 2025 and over 2 Gt/yr by 2050.

## **GHG Global benefits**

### **Improved air quality**

Road transport is responsible for an estimated 70-90% of local air pollution in urban areas, causing health problems, premature deaths and reductions in GDP of up to 5%.

Air pollution by transportation has been shown to have a significant adverse impact on human health, including premature deaths, hospital admissions and emergency room visits. Studies indicate that air pollution is associated with an increased risk of lung cancer and heart disease. Human-made smog (derived from coal emissions, vehicular emissions, industrial emissions) a visible air pollution is composed of nitrogen oxides, sulphur oxides, ozone, smoke or particulates among others (less visible pollutants include carbon monoxide, CFCs and radioactive sources). Smog has been identified as contributing factors in thousands of premature deaths each year, as well as increased hospital visits, doctor visits and hundreds of thousands of lost days at work and school (Environment and Climate Changes Canada: <http://www.ec.gc.ca/Air/default.asp?lang=En&n=AA1521C2-1>).

Growth in urbanization, industrialization, motorization and the emission of mineral dust from deserts have increased outdoor pollution in Africa. The transboundary transport, dispersion and eventual deposition of pollutants also contribute to raise outdoor pollution levels in the region. Especially for urban areas, the observed trend in levels of outdoor pollution requires the implementation of transport solutions that include setting standards for the condition of road vehicles and investing in sustainable mass transport systems. The EVs adoption as proposed in this project is a paramount for attaining these objectives.

Indoor air pollution is a major problem in Cote d'Ivoire, responsible for an estimated 600 000 deaths per annum (World Health Organization (WHO), 25 March 2014 News Release: 7 Million Premature Deaths Annually Linked to Air Pollution ([www.who.int/mediacentre/news/releases/2014/air-pollution/en/](http://www.who.int/mediacentre/news/releases/2014/air-pollution/en/))). Due to their reliance on the use of biomass sources of energy for cooking, lighting and heating, and fuel based transportation, 90 per cent of the region's population is exposed to this harm. Moving forward with ZEVs could alleviate this pressure and externalities of atmospheric pollution. More efficient vehicles are cleaner, smaller, use modern engine design and emission control technologies, and use cleaner fuels all helping to reduce emissions of pollutants up to 90% especially nitrogen oxides, hydrocarbons and particulate matter (PM), including Black Carbon.

### **Black Carbon (BC)**

Road transport (specifically diesel engines) is a significant source of BC emissions globally (estimated at 18-24% of total BC emissions) which has negative impacts on human health and is an important contributor to climate change. IPCC now believes that BC is the second largest contributor to global warming. Cleaner, modern, more efficient vehicles with matching fuels and Zero Emission Vehicle (ZEV) will contribute to immediate and substantial reductions in BC emissions.

### **Oil consumption and Energy dependence**

? Sifting to ZEV and at the same time Improving fuel efficiency will also reduce the dependency of C?te d'Ivoire on oil imports and decrease the burden on government budgets for these imports, which can result in savings in annual oil import bills worth over US\$ 300 billion in 2025 and US\$ 600 billion in 2050 (based on an oil price of US\$ 100/barrel).

? As many countries are faced with wildly fluctuating oil prices and energy dependence, energy efficient vehicles and ideally ZEV will conserve a valuable and finite resource.

### **Total tonnes of CO2 eq to be avoided or reduced per annum**

Detailed estimates of GHG emission reductions, as well as other environmental and socioeconomic benefits, will be carried out during the PPG phase of this project based on the GEF Manual for GHG Benefits of GEF Transportation Project. At this stage, it is estimated that the direct impact of the project would be at least 11 500 tons of GHG reduced, with 520,000 reduced indirectly (NMT, not considered in this estimate), thus giving an abatement cost of around US\$ 3/ton to US\$ 1/ton, based on the current Grid Emission Factor in C?te d'Ivoire of 500 kg CO2/MWh (To be reviewed in the PPG).

? 724 500 tons CO2 eq /year

? 2 555 000 tons of VOCs

? 2 336 000 tons of NOx/year

### **Economic co-benefits**

The increased adoption of EVs in C?te d'Ivoire will result in economic benefits in terms of improved energy security through a smoothing-out of electricity consumption (increased efficiency, potential night charging of EVs, and electricity storage facilities) resulting in reduced electricity surge. This energy security will also reduce reliance on volatile oil prices.

The EVs market will also favour cluster development with multiple goods and services such as OEM instalment, Parts manufacturers, Paint and coating services, Repair centers, Charging services, Intelligent transportation systems; Logistics and other transportation related services, Clean Technologies sector (renewable energy), MaaS, EVSE, R&D etc.

In addition, the increased adoption of EVs that is targeted by the project and improved strategy for the promotion of local manufacturing capacity will stimulate demand in the Ivorian market and support the development of a local market or regional market for EVs and the required components and infrastructure.

This will help develop locally relevant innovation/technologies within Ivorian and ECOWAS industry, as well as supporting job creation and reduced cost of products due to improved localisation.

As unemployment, standing at 19.3% in 2016 (high youth unemployment at 13.9%, is a key issue for C?te d'Ivoire, this project will contribute to national priorities in the fields of both energy and social development. In addition, the creation of jobs will positively impact both men and women, and the project will actively seek to encourage women to partake in project activities.

### **Total number of jobs created**

At least 200 000 direct and indirect jobs creation through the EVs cluster in five cities during the 5 years lifespan of the project.

### **Social co-benefits**

Sustainable transport plays a fundamental role in overcoming the social exclusion of vulnerable groups. SDG target 11.2 explicitly calls on the international community to work toward sustainable transport for all people: By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.

The project is expected to contribute to the creation of additional jobs for Cote d'Ivoire and the improvement of technical skills, and thus income growth and improved living standards. The widespread adoption of EVs will also have social and environmental benefits through reduced pollution, and higher quality infrastructure services such as improved public transport and access to charging stations, etc.

### **Improved access to education**

The importance of this proposed project is that with a substantial income, communities could invest in quick win solutions such as better education for their kids and family, better ventilated housing and clean cook stoves, while also adopting medium to long-term measures to provide clean forms of energy such as electricity. They could afford better curricula and schools for their kids.

### **Improved regulation**

This project will create supportive institutional, legal and regulatory government frameworks to promote effective EVs transport (Component 1). Until now, there is no EVs transportation policy frameworks and the project will contribute to devolve authority to the appropriate levels of government, ensuring that national, subnational and local authorities have adequate funding, resources and capacity to carry out their responsibilities with respect to the EVs business cluster (Component 2).

### **Improved health and safety**

Transport is responsible for GHG emissions and air pollutants such as NO<sub>x</sub>, SO<sub>2</sub>, CO, PM<sub>10</sub>, PM<sub>2.5</sub>, VOC responsible for several respiratory disease including Asthma.

The project will contribute to reduce substantially GHG and Pollutants in Cote d'Ivoire (At least reductions of 3 622 500 tons CO<sub>2</sub>; Reductions of 2 555 000 tons of VOCs/yea; Reductions of 2 336 000 tons of NO<sub>x</sub>/year for the transportation improving air quality to prevent millions of premature deaths, hospital admissions and emergency room visits. Studies indicate that air pollution is associated with an increased risk of lung cancer and heart disease etc (Environment and Climate Changes Canada: <http://www.ec.gc.ca/Air/default.asp?lang=En&n=AA1521C2-1>).

### **Environmental co-benefits**

The combustion of fossil fuels to power vehicles and engines (on and off road) cars and trucks; large trucks and buses; recreational vehicles; lawn and gardening equipment; farming and construction; forklifts; rail and marine has major adverse impacts on the environment and health. Initiatives to reduce emissions from vehicles, engines and fuels such as increasing the EVs ration in the transportation mix can have significant positive effects on air quality, acid rain, smog and climate change.

### **Improved soil quality**

Scientific evidence that pollution for transportation can have a detrimental impact on the environment. This impact can lead to reductions in agricultural crop and commercial forest yields, soil quality and fertility, reduced growth and survivability of tree seedlings, and increased plant susceptibility to disease, pests, and other environmental stresses (e.g. harsh weather). Environmental problems attributed to smog include effects on vegetation, structures, and visibility and haze (mainly due to fine PM) (Environment and Climate Changes Canada: <http://www.ec.gc.ca/Air/default.asp?lang=En&n=AA1521C2-1>).

Emissions from transport could contribute to Acid deposition that result of emissions of sulphur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) that can be transformed into dry or moist secondary pollutants such as sulphuric acid (H<sub>2</sub>SO<sub>4</sub>), ammonium nitrate (NH<sub>4</sub>NO<sub>3</sub>) and nitric acid (HNO<sub>3</sub>) as they are transported in the atmosphere over distances of hundreds to thousands of kilometres. Acidic particles and vapours are deposited in two processes wet and dry deposition. Wet deposition is acid rain, the process by which acids with a pH normally below 5.6 are removed from the atmosphere in rain, snow, sleet or hail. Dry deposition takes place when particles such as fly ash, sulphates, nitrates, and gases (such SO<sub>2</sub> and NO<sub>x</sub>), are deposited on, or absorbed onto, surfaces. The gases can then be converted into acids when they contact water. Damage caused by acid deposition affects lakes, rivers, forest, soils, fish and wildlife populations and buildings.

(Environment and Climate Changes Canada: <http://www.ec.gc.ca/Air/default.asp?lang=En&n=AA1521C2-1>).

### **Benefits for Non-Motorized Transport**

Reduced fatalities and injuries among pedestrians due to generally uniform and lower motorised vehicle speeds is a major motivation to addressing NMT needs. Lower journey times through provision of smooth and comfortable walkways (or through shift to cycling), and reducing trip distances by removing detours can substantially reduce household and city transport costs. Such interventions can also contribute to poverty alleviation among the poor.

When integrated with public transit, NMT can contribute to reduction in congestion by encouraging shift from the private car to public transit, and lower transport investment and maintenance costs. Other benefits include employment opportunities in construction and maintenance of NMT facilities which are largely labour-intensive construction; business opportunities in bicycle spare parts, repair shops; and creation of opportunities for hawkers to sell their wares alongside dedicated NMT facilities.

Investing in infrastructure for walking and cycling leads to massive benefits for:

- ? The environment through less pollution and greenhouse gases
- ? Safety through the protection of vulnerable road users from high-speed traffic
- ? Accessibility by providing the majority of global citizens with a safe and affordable means of travel to reach basic services and connect with other transport options such as buses and trains.

## **The impact of ignoring Non-Motorized Transport, Pedestrians and cyclists in Cote d'Ivoire**

Around the world, investment patterns in road infrastructure continue to favor the car. Despite the high societal costs, and the obvious benefits of prioritization of space for the majority (people who walk and cycle), increasing the road space for cars continues to be a priority for investors and governments. The consequences are scary:

? Every 30 seconds someone dies in a road crash, that's over 1.2 million people every year dying on the world's roads. The World Health Organization's Global Road Safety Report of 2015 shows that, worst still, half of these deaths are vulnerable road users, pedestrians, cyclists and motorcyclists. Tragically, 500 children die every day in road crashes;

? Millions more people die from the outdoor air pollution (3.7 million premature deaths worldwide in 2012) that road traffic contributes to;

? If that wasn't enough, vehicle emissions are also fuelling climate change (the transport sector is responsible for 25% of energy-related CO2 emissions globally) (<https://www.unenvironment.org/explore-topics/transport/what-we-do/share-road/why-does-sharing-road-matter>).

## **Innovation, sustainability and potential for scaling up**

### **Innovation**

This is the first time that a comprehensive and innovative approach to a sensible sector such as Electric vehicle (EVs) is promoted in Cote d'Ivoire. The project with multiple partners such as GEF, ICCT, UNEP, IEA, Multilateral and Bilateral funds, Cooperation organism and private sector enterprises is built together to promote the widespread adoption of EVs and NMT alternatives not only in Cote d'Ivoire leveraging on sound and proven technologies (lessons learned from South Africa and Quebec EVs and NMT market) that are hindered by multiple barriers.

While few initiatives in this field have taken initial steps in ECOWAS with the GFEI and the African Sustainable Transport Forum, a number of barriers including market barriers, lack of a business ecosystem, low awareness and limited policy frameworks have continued to limit progress in this sector. The proposed project, through policy/regulatory/incentive framework support and awareness raising efforts will attempt to overcome these barriers, thus allowing these EV and NMT initiatives (creation of a successful bike sharing business model and the promotion of the required supporting infrastructures) and strategies to gain traction in Cote d'Ivoire market and the global African market.

As the proposed project will partner closely with both government and private sector partners, the use of pilot projects for demonstration of technology and awareness creation will aim to facilitate this scaling up. This innovative approach holds significant potential for replication, synergies and scaling up in future projects, not only in Cote d'Ivoire, but also in other African countries. The proposed project will support the development and expansion of innovative non-motorized alternatives in Cote d'Ivoire.

In order for these comparatively new technologies to gain a foothold in the market and achieve consumer adoption, they must also be shown to be sustainable. The proposed project will support this sustainability through the development of an enabling policy environment (Component 1), capacity

building within the relevant institutions and partners through incorporation of the training content into the existing learning and knowledge management structure, support of a number of NMT initiatives in its partner cities (Cocody, Abidjan, Yamoussoukro, San Pedro, Bouaké, Korhogo) and the promotion of the required supporting infrastructures (Component 2).

These interventions will continue on beyond the scope of the proposed project, and will serve to institutionalize these new transportation modalities into the existing Ivorian transport infrastructure building on ongoing policy efforts and strategies. As a result, the capacity built will continue to achieve the project's objectives well beyond the 4 year scope of project implementation.

There is large potential for expansion into additional Ivorian Municipalities using the enhanced policy and regulatory framework, built institutional and manufacturing capacity, and infrastructure to encourage large implementation programmes by the private and public sectors.

The theory of change underlying the project is that Côte d'Ivoire is currently experiencing suppressed demand for e-mobility transport options (i.e. deployment of 2&3 wheelers electric vehicles in peri-urban and rural areas for goods transportation; refrigerated 3 wheeler electric vehicles charged by mini-grids etc.). As such, the project design seeks to address the barriers that can catalyze sectoral change in an innovative and sustainable way, with high potential for scaling up.

The GEF grant and this project, cannot fund the entire activities needed for the transport sector. Instead, the project uses innovation to identify gaps where investing a limited amount of donor funds can help unlock long-term and scalable solutions.

One of the innovative features of the project is that EV companies could consider investing in homegrown-product innovation to design or tailor EVs (e.g., refrigerated electric two & three-wheelers charged by mini-grids) for local needs and conditions in peri-urban and rural areas. Developing an electric 2&3 wheeler that is both durable and capable of carrying a spare battery may be required to meet the needs of the drivers. Local vehicle assemblers may also invest in national and regional supply chains by manufacturing some parts locally. McKinsey's Green Africa report, states that sub-Saharan Africa has many of the raw materials needed to develop a supply chain for at least the attractive cathode segment of batteries used in EVs.

Replacing inefficient, polluting and expensive engines of 2&3 wheelers with electric ones that are powered by renewable energy through the deployment of the pilots can bring innovation in the country.

In addition, new innovative financing mechanisms (such as green bonds) will be piloted and up-scaled for a clean transport sector and existing mechanism must be revised in order to set the scene for a nationwide transition. Addressing attitude change among communities, it is advisable to set up demonstration pilots where fleets are being tested either by private or public sector and the advantages of electric mobility can be experienced firsthand by the end user.

### **Sustainability**

The project aims to make sustainable and catalytic change in Côte d'Ivoire by coordinating policy change, using donor funds to synthesize existing research and to bring together existing knowledge on transportation solutions. It seeks to expand economic growth through e-mobility and by directly

addressing awareness barriers and technical concerns across the full range of decision makers that can influence the sector.

### **Potential for scale-up**

The project is designed to leverage a medium-sized investment towards sectorial change at scale. First, it addresses the need for durable and consistent transport policies such that the private sector is able to plan and to invest. The project's emphasis on coordination and collaboration is expected to create an enabling environment for progress towards e-mobility that continues beyond the project's funding lifetime.

The proposed project is designed to utilize donor funds to facilitate private sector engagement and to bring it to scale. The components have been strategically selected to provide the private sector with policy consistency and clarity, access to finance, and the provision of reliable e-charging infrastructure. During the PPG phase, the project design will be validated to ensure that a viable investment pipeline exists.

High NMT use can contribute to reduction of negative effects of motorised transport pollution (and noise) and help in achieving 'clean air' initiatives and reduction of GHG emissions. Public health benefits due to regular physical activity reduce risks of coronary heart disease, stroke, diabetes, and other chronic diseases, and lower public health care costs (Nairobi City County Government: Non-Motorized Transport Policy. Towards NMT as the mode of choice - 2015).

### **1b. Project Map and Coordinates**

**Please provide geo-referenced information and map where the project interventions will take place.**



Project Map - Côte d'Ivoire Geographical Division, 2004

Source: RCI Ministère des Affaires Étrangères

The project will be implemented in Côte d'Ivoire, in the below cities with the following geo-references and coordinates:

Abidjan: 5.3600° N, 4.0083° W

Yamoussoukro: 6.8276° N, 5.2893° W

Bouaké: 7.6905° N, 5.0391° W

San Pédro: 4.7579° N, 6.6424° W

? Korhogo: 9.4669? N, 5.6143? W

## 2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

**Indigenous Peoples and Local Communities**

**Civil Society Organizations** Yes

**Private Sector Entities** Yes

If none of the above, please explain why:

**In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement**

A series of consultations were held with a number of government and civil society organizations, as well as with the private sector through the course of the PIF's development. A list of key stakeholders is provided below. The project will also rely on a structured network of new and existing stakeholders. It will involve key stakeholders from the outset of the project. The project will also engage with various other actors in the private industrial sector, associations and intermediary private sector umbrella structures (CGECI, Chamber of Commerce etc). The Ministry of Environment and Sustainable Development will work in collaboration with the Ministry of Transport which will collaborate with several local and external partners including the Ministry of Petroleum, Energy and Renewable Energies (CI-Energies), the Ministry of Equipment and Road Maintenance (Ageroute), the Institut National Polytechnique Félix Houphouët-Boigny (INP-HB), the Agence Nationale de l'Environnement (ANDE), and the Centre Ivoirien Anti-Pollution (CIAPOL). These partners have been actively involved in the development of the different concepts developed under this initiative. The organisation of these partners into steering and technical committees will be further detailed in the PPG preparatory assistance phase.

The following stakeholders have been and will continue to be consulted on to inform the project formulation:

Stakeholder
Ministry of Environment and Sustainable Development (MoESD)
Ministry of Transport (MoT)
Groupe A3E

Ministry of Industry (MoI)
Ministry of Economy and Finance (MoEF)
Ministry of Sciences and Technology (MoST)
Ministry of Energy (MoE)
Union des Villes et Communes de C?te d'Ivoire (UVICOCI)
Chamber of Commerce and Industry of C?te d'Ivoire (CCI-CI)
National Polytechnic Institute Houphouet Boigny (INP-HB)
Council of Panafrican Doctors in Environment (COPADEN)
Private Sector/Financial institutions/EV drivers, electric taxi companies, EV businesses including importers and dealers, local companies, charging infrastructure operators, electricity suppliers, service providers

Further consultations and assessment will take place during the PPG phase to inform and assign specific roles and means of engagement for each and every stakeholder.

Project stakeholders will form a comprehensive integrated structure of the project as means to enhance synergies among the project partners and serve as knowledge source of new clean technologies, emerging entrepreneurs, knowledge network, applied research collaboration and additional team members. Furthermore, to promote gender quality and the empowerment of women the guiding principle will be to ensure equal opportunity for women and men to lead, participate in and benefit from the project. This will be in line with the GEF Policy on Stakeholder Engagement that sets out the core principles and mandatory requirements for stakeholder involvement.

UNIDO is the GEF implementing agency of the project and is accountable for the GEF Grant. The Lead Executing Agency of the project will be the Ministry of Environment and Sustainable Development. The Ministry will coordinate the project inputs from all the project stakeholders, ensure ongoing ownership of the project and that project execution is operationally implemented in line with Government priorities, rules and regulations. It will nominate as well the National Project Director (NPD) to act as the government representative and daily the focal point for the Project Management Unit (PMU). The NPD shall have adequate authority and knowledge within the Government to get the necessary support from all local project partners to perform his/her duties under the project. The proposed executing agency(ies) will undergo a HACT assessment during the PPG phase to ensure that it has the related technical and administrative capacity to undertake the project.

### **National Project Steering Committee (NPSC)**

To ensure ongoing coordination of the project and cohesive leadership, the PSC will consist of high-level representatives from the, INP-HB, UNIDO, MoT, MoESD, MoI, MoEF, OIPR, CESO, UVICOCI, COPADEN, GroupA3E and the GEF Focal Point; the PSC will be chaired by the **Ministry of Environment and Sustainable Development**. The purpose of the PSC is to provide strategic guidance of the project while ensuring no overlap with other development projects, and to maximize the input and participation of project counterparts, as well as coordinating these inputs. The PSC will also review and approve or reject amendments to the project based on the approved project document in accordance with UNIDO and GEF procedures, and in line with the GEF Council document and will meet on a six-month basis, but can also be organized on an ad hoc basis as required. The PMU will act as the Secretariat of the PSC, **preparing and distributing the minutes of meetings to be signed by UNIDO and the the Ministry of Environment and Sustainable Development.**

As discussed during the Consultation with stakeholders, two (2) Members from the private sector, two (2) Members from NGOs, two (2) Members from CSO, two (2) Members from UVICOCI and three (3) Members from Women and Youth organization including Women and Environment (WE-FE), the Canadian Executive Service Organization (CESO) will be on the Technical Advisory Committee (TAC) and Observers at the NPSC.

### **3. Gender Equality and Women's Empowerment**

**Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).**

Due to the fact that gender, mobility and the economy are closely connected and because of their essential linkages with development, such as education and employment, and even health, sustainable policies relating to mobility and transport must incorporate gender issues. Improving access of both women and men to safer, cleaner and more efficient transport can increase economic development by reducing the time of trips, making available more frequent and safer transport, and making available markets and products to more buyers, as well as sellers.

By enabling women to access markets and jobs, as well as a range of social and health services, sustainable transport promotes women's economic empowerment and social inclusion.

Transport services themselves must also be physically accessible to older and disabled people. Article 9 of the UN Convention on the Rights of Persons with Disabilities sets out the imperative that "in order to enable persons with disabilities to live independently and participate fully in all aspects of life, appropriate measures should be taken to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas."

Women and vulnerable groups, namely children and elderly, are adversely affected by poor air quality as they relatively spend more time outside and along roads. As the project will have major air quality benefits, it will especially benefit women and vulnerable groups.

## **Gender and Electric Mobility Nexus**

Climate change is one of the greatest environmental and development challenges facing the world today and has critical impacts on human rights and inequalities, including gender inequality. Renewable energy and energy efficiency technologies and approaches, such as electric vehicles, are climate solutions that can boost sustainable and inclusive economic growth and industrialization. Strategic gender-responsive interventions, public policies and measures can help ensure that women can equally lead, participate in and benefit from the growing opportunities and employment in these dynamic sectors. Taking the needs of women and men into consideration during consultations and project planning can reduce conflicts and make energy infrastructure projects more inclusive and efficient.

Recently it has been criticized that electric carmakers are all making a mistake because they only marketing to men. According to the article "Women appear to be the primary influence for some 85% of all new U.S. vehicle purchases", which shows the influence of women on buying decisions and the need to consider gender dimensions in interventions that promote electric mobility. This could be explained with the findings of a University of Sussex study on who will buy electric vehicles and why stating that, "Men generally want speed, acceleration, style. Women want there to be a planet when their children grow up".

Energy infrastructure is an umbrella term that often relates to the generation, transmission and distribution of large-scale power, but that also encompasses charging stations for electric vehicles. Transmission and distribution projects focus on connecting generated energy (electricity or heat) to energy consumers. Sustainable energy infrastructure has the potential to be transformative by providing much needed energy access and reducing greenhouse gas emissions, whilst also increasing opportunities for women's empowerment, employment and gender equality. For instance, charging stations for EVs could help to increase safety through lighting, which improves the mobility of women and girls to safely access transport at night (e.g. roads, bus stations, public transport).

Discriminatory gender norms and practices, occupational segregation and lack of labour force experience and technical and professional skills can also impede women from engaging in employment opportunities associated with energy infrastructure and access projects. To address these issues projects can offer gender-sensitive training and skills development and encourage hiring women in non-traditional occupations where possible, while ensuring women's safe working conditions.

Both workers and the communities in and around which energy projects take place can be affected by sexual harassment and violence, HIV transmission and other occupational health

and safety issues, with women and girls particularly at risk. Embedding codes of conduct on sexual exploitation within projects can help mitigate these impacts

Women can play a key role in promoting and implementing new clean technologies. Energy interventions that meet the needs of and involve both women and men increase the likelihood of technologies being adopted and used. Entrepreneurship programmes and innovation accelerator programs have also proven effective in tapping into women's potential to identify affordable and scalable solutions for cleaner, more resilient economies. For instance, in South Africa, the woman-led business ZingCO won in 2015 with its innovative battery swapping solution for electric vehicles that aims to promote sustainable and affordable transportation.

### **Gender mainstreaming of this project**

UNIDO acknowledges that the empowerment of women and gender equality have significant positive impacts on key drivers of poverty alleviation and social progress, such as sustained economic growth and inclusive industrial development. UNIDO's mandate to promote inclusive and sustainable industrial development (ISID) relies on the advancement of gender equality and the empowerment of women. UNIDO addresses gender inequalities in industry and harnesses women's full potential as economic agents of change and leaders thereby transforming economies and generating inclusive growth. One of the guiding principles of the project will be to ensure that both women and men are provided equal opportunities to lead, participate in, and benefit from the project (UNIDO Gender Policy 2019). The project has been developed considering the UNIDO guide on gender mainstreaming in energy and climate change projects. The project interventions will consider gender mainstreaming activities during all stages of the project from formulation to evaluation following UNIDO Gender Policy.

As a guiding principle, the project is designed to ensure both women and men are provided equal opportunities to participate and benefit from the project without compromising the technical quality of the project results. In practical terms, this will be demonstrated in a multitude of ways:

- ? Based on the General-Neutral ToRs, gender sensitive recruitment will be practiced at all levels where possible, especially in the selection of project staff, researchers and experts, as well as technical staff. Gender sensitive recruitment will be encouraged in instances where the project does not have direct influence.
- ? Existing staff will be trained and their awareness raised on gender issues when possible.
- ? Gender dimensions will be considered when data collections or assessments are conducted as part of project implementation. Examples include sex-disaggregated data collection and performing gender analysis as part of Environmental and Social Impact Assessments.

- ? Gender dimensions will be considered in all decision-making processes. During project activity implementation, effort will be given during stakeholder consultations towards focusing on gender equality and women's empowerment issues, in particular during policy review and formulation.
- ? Research, data and assessments will consider gender and age differentiated needs of women and men from different social groups.

The planned project outcomes will be enhanced by considering gender equality and women's empowerment by adopting a gender lens at high-level decision-making bodies and forums, and within planning and developments relating to sustainable transport.

A social and gender analysis will be conducted during the PPG phase that will seek input from vulnerable groups. The PPG phase will further assess the gender context and relevance of the proposed project as a whole in order to ensure the final project design fully considers its implications for women and men. This will involve identification of the differentiated needs and roles of women and men as they relate to the projects interventions. To verify the final project log frame is gender mainstreamed, women's groups, associations and stakeholders with gender and mobility will be consulted as well as PPG funds also being allocated towards having a review completed by specialized expertise.

Additionally, the PPG stage will be used create relevant tools and methodologies for tracking gender issues throughout the projects implementation. To establish a baseline and develop targets, basic relevant data and qualitative information will be collected during PPG and gender markers will be assigned at the output level in the project design. Budget will also be dedicated, as needed, during project implementation to identifying and addressing gender issues, including collecting additional baseline data and monitoring progress towards the targets.

**Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes**

**closing gender gaps in access to and control over natural resources;**

**improving women's participation and decision-making; and/or Yes**

**generating socio-economic benefits or services for women. Yes**

**Will the project's results framework or logical framework include gender-sensitive indicators?**

Yes

#### **4. Private sector engagement**

**Will there be private sector engagement in the project?**

Yes

**Please briefly explain the rationale behind your answer.**

The private sector will directly benefit from all project components, and will be directly engaged in Components 2. During project design, stakeholders from the private sector interested in electric mobility will be targeted for their input on how best to implement the strategies and targets of the project. The private sector will also be represented during the implementation phase.

**Rationale**

There is an essential role of the private sector to play in the proposed project to ensure that its full potential is realized and it seeks to leverage its expertise, influence, and capital. Because electric vehicle niche implementation is not necessarily the responsibility of governments, governments and private companies have to work hand in hand to develop the required EVs infrastructure. The private sector is encouraged to provide high-level policy input as well as practical expertise and to participate directly in the technical work of the project.

The private sector (the Automakers and OEM, Investors, Industry etc.) has a critical role to play in this project and offers a promising way forward to accelerate the development of the ZEVs and NMT sector in Cote d'Ivoire and in Africa by tapping the private sector's financial resources and professional skills.

Key elements concerning the role of Private sector in the project include the Planning of settlement of the EV clusters (Automakers, OEM, Goods and services and logistics management providers in MaaS), Construction of plants with the unified standards and reducing construction cost, Risk sharing (uncertainty and business opportunities) through rigorous identification of project risks, Profit distribution in building a smart service platform to provide diversified services, Strengthening project supervision and a Coordinated and dynamic development etc. Even though the initial investment from the government and Multilateral funds and bilateral could be large, still it could be but insufficient, so a strong inflow of private capital is required (T. Yang, R. Long, W. Li, and S. Rehman, "Innovative application of the public-private partnership model to the electric vehicle charging infrastructure in China," Sustainability, vol. 8, no. 8, pp. 738-757, 2016).

In this project, we contemplated an option for Public-Private Partnership (PPP) with a role of the government to structure a PPP deal in the electric vehicle infrastructure to achieve value for money perspective. PPP is a long-term contract between a public party and a private party, for the development and management of a public asset or service, in which the private party bears significant risk and management responsibility through the life of the contract (World Bank, "Public-private partnerships: reference guide version 2.0").

In this project, Infrastructure master planning nationally and regionally is critical for identifying opportunities for coordinated and complementary investments among public sector, private sector, and civil society partners; and the rise of blended finance in emerging markets such as ECOWAS further underscores the value of comprehensive planning from project conception to closure. Through

collaboration with Private sector, the project sees an opportunity to strategically expand impact of its sector specific infrastructure planning to national-level integrated infrastructure master planning.

### **? Promoting private sector participation through enterprise development and enabling environment**

The project will promote entrepreneurship among communities to deliver a suite of new technologies for resilient sustainable transport and mobility namely in the NMT (Non-Motorized Transportation) and climate information. It will build capacity of young men and women in these urban areas to engage in managing these ventures as enterprises in the community.

Furthermore, the strengthened environment through enhanced institutional coordination (Government, Municipalities, Universities and Institutes), information and data sharing and market linkages will enable and incentivize private sector investment beyond the project life time. For instance, strengthened value-chains for transports, improved air quality, ecosystems, and enhanced climate information can spur private sector investments in transport but other such as e-mobility, tourism and ecosystem services. In addition, the project will strengthen the environment for engagement of microcredit institutions and banks as community level of transport-mobility scales-up namely in MaaS and EVSE.

The project incorporates lessons learned and best practices from several successful international efforts in order to enable a transformative impact through the improvement of transport practices namely in e-mobility sector to enhance the resilience of communities to climate-related impacts. Key lessons and success factors drawn include:

- i) capacity building and empowerment of communities ;
- ii) scaling up climate-smart transport practices;
- iii) Strengthening incomes of communities to enhance the adaptive capacity climate impacts.

The project will advance climate-resilient sustainable development of Cities by ensuring adaptation of communities to climate risks and impacts. It will contribute to the Fund Level Impacts of Increased resilience of health and wellbeing, and transport security and increased resilience and enhanced mobility of the most vulnerable people, communities and regions. The climate-impact potential derives from the fact that GEF funding will support an integrated approach to strengthening the resilience of communities through three inter-related outputs contributing to climate resilient cities, transport and mobility.

### **Private sector role in financing the project**

The project promotes diversified funding sources and coherent fiscal frameworks to advance sustainable transport systems, initiatives and projects.

- a) Employ regulatory and market-based measures appropriate to national and local needs and circumstances to diversify sources of funding towards sustainable transport, while at the same time encouraging changes in behaviour.
- b) Use beneficiary and polluter pays measures including carbon pricing, congestion pricing, and other charges as part of the diverse tool box from which funding for transport can be drawn.

- c) Keep fairness and equity as guiding principles in the application and implementation of these measures, avoiding excessive impact of these mechanisms on those with fewer resources and on the funding base needed for transport systems to be able to make sustainable infrastructure investments.
- d) Introduce innovative approaches, such as land value capture programs, green bond investments, and transit-oriented development grants as applicable and appropriate.
- e) Make strategic, equity-based decisions regarding the use of revenue, including from market-based and other sustainable transport measures.
- f) Scale down and eliminate inefficient fossil fuel subsidies by national and sub-national governments.
- g) Ensure that the principles of sustainability are respected when national and local governments and private sector organizations are planning for the participation of private capital through public-private partnerships and other approaches.
- h) Cooperate within regional, national and local governments on enhancing the creditworthiness of cities.

**Private sector and the Ivorian market for the EVs and NMT**

There is presently no existing information on the dynamic of EVs market in C?te d'Ivoire. However, several publications as revealed the potential for the African market regards to the Niche market of Electric Vehicle. The leading country in Africa that could serve as a reference is South Africa.

**5. Risks to Achieving Project Objectives**

**Indicate risks, including climate change, potential social and environmental risks that might prevent the Project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the Project design (table format acceptable)**

Risks	Risk Level	Risk description / Mitigation Actions
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Political and institutional risk	Low	<p>Management priorities in the participating public and private sector organizations change over time in Cote d'Ivoire resulting in reduced participation or even termination of collaboration.</p> <p>Cote d'Ivoire institutions and the private sector have shown ongoing and increasing interest in initiatives to promote sustainable transport, partnering with GFEI under the GEF project, Harmonized fuel and vehicle emission standards in the ECOWAS led by UNEP and Cocody Cit? Verte project led by Municipality of Cocody and UNEP.</p> <p>Thus, a major shift in priorities is not foreseen and the risk is considered low.</p> <p>Any potential risk will be mitigated by the possible signing of Terms of Reference contracts or agreements before the commencement of key activities. Where possible, participating organizations will be legally bound to participate until the activity's completion. Note that 45 Automakers and OEM around the world have sent Letter of intent to be part of this project and to settle in Yamoussoukro technopole named Technopole Oikos Veritas Houphouet Boigny.</p>
Management risk	Low	<p>While the Ministry of Environment and Sustainable Development (MoESD) has a comparatively high capacity in managing infrastructure projects, its staff is less experienced in conducting an institutional development project. Technical capacities for supervision, procurement, financial management are generally good at MoESD. There are challenges in Climate Change Adaptation and mostly Sustainable transportation and Mobility.</p> <p>Project Management will be conducted by a specific Project Management Unit that will receive technical assistance and adequate budget to elaborate and/or implement the project. The Project Management Officer will provide senior staff for financial management. Where MoESD does not have the necessary expertise, staff shall be recruited or be made temporarily available through staff secondment from other public agencies or institutes.</p>

Stakeholder engagement/coordination risk	Low	<p>Project stakeholders on national level are expected to be supportive of proposed project measures, but the risk of reduced political and social support cannot be fully discarded.</p> <p>UNIDO and the Ministry of Environment and Sustainable Development (MoESD) will maintain a continued dialogue with all relevant stakeholders, including Government agencies, Donors, Private, Relevant Non-Governmental Organizations, CSO and Local communities, both through the established project specific forums (TAC, PSC) and through the regular inter-institutional dialogue.</p>
Technology Risk	Low/Medium	<p>The general public resists change due to a lack of understanding, lack of infrastructure (EVSE) and perceived danger of the technology.</p> <p>A number of demonstration projects in the field of EVs and NMT have been initiated in Cote d'Ivoire (Bolloré e-buses and the NMT project in the Banco Park with 500 e-Bikes and in the Ebrie Bay in a joint Morocco-Cote d'Ivoire collaboration) to date, and the public and users reactions have been positive. In addition, UNIDO's close partnership with Cote d'Ivoire institutions will aim to mitigate any such risk.</p>

Governance risk	Low/Medium	<p>Governance risks exist for the project, in contract management and procurement. Proposed improvements to the institutional and regulatory framework are delayed by public institutions.</p> <p>UNIDO procurement guidelines are specifically designed for procurement in countries and/or projects with respective governance risks and already reflect special procurement oversight measures. Consultation quality will be supervised and monitored by an independent supervision consultant. Proactive monitoring by UNIDO staff, and frequent field visits or attendance to meetings and workshops, usually accompanied by an experienced UNIDO Senior staff, will contribute to supervision quality. To the extent possible, contract shall be packaged in larger lots to attract more bidders. International Competitive Bidding (ICB) shall be the rule, with National Competitive Bidding (NCB) being allowed under commonly applicable thresholds. Procedural innovations regarding governance improvements (such as the World-Bank supported e-procurement) shall be applied for the project with priority, provided that they are in compliance with UNIDO rules and procedures.</p> <p>Close cooperation of the project partners in the Project Steering Committee (PSC) and the Technical Advisory Committee (TAC) will be sought and the project document has indicated in detail the roles and responsibilities of each project partner.</p>
Financial Risk	Low	<p>Incentive and financial support system are insufficient.</p> <p>Close coordination with the private sector and financing institutions will be sought under Component 2 of the proposed project to mitigate this issue. The development of a strong policy framework is a key part of the project's sustainability strategy and financial incentives and support systems will play a key role in this.</p>

<p>Delays in the proposed improvements to institutional and regulatory framework by public institutions</p>	<p>Low</p>	<p>As in all development projects, there is a risk of delay, particularly due to delays in procurement, and cost overrides due to exchange rate fluctuations or price increases.</p> <p>Sufficient contingencies have been included in budget estimates, based on past experience. Both, UNIDO and CCI-CI/INP-HB will provide a close financial monitoring and ensure quick reaction times in project management to avoid delays</p>
<p>Uptake Risk</p>	<p>Low</p>	<p>Uptake by other Ivorian and ECOWAS Cities is limited due to lack of interest and incentives.</p> <p>Relevant public bodies' agreement will be secured in order to guarantee the project's continuation after the end of the GEF funding period. The project's sustainability strategy has been built in throughout the project design, ensuring buy-in and commitment of the various project partners. This is particularly so in Component 2, where the project will partner with five Municipalities (Cocody, Yamoussoukro, Bouaké, San Pedro and Korhogo) to support the activities in NMT and ensure that implementation is sustainable and effective. This approach will ensure the project activities are not temporary and are closely integrated with national policies and priorities for regional expansion.</p>
<p>Knowledge Risk</p>	<p>Low</p>	<p>There is a risk of information gaps regarding expected future climate change impacts.</p> <p>Collaboration with Senior Consultant on climate will empower CCI-CI/INP-HB to react flexibly to new scientific findings on climate change and impacts on e-Mobility. The close collaboration with scientific partners will ensure that CCI-CI/INP-HB builds its mainstreaming on the best available scientific data. Pilot infrastructures can be qualified largely as low regret measures regarding climate change adaptation, and we do not expect the lock-in of inappropriate infrastructure.</p>

Climate/Infrastructure Risk	Low	<p>Climate change negatively impacts the infrastructure installations put in place by the project.</p> <p>Detailed environmental assessments will be conducted before infrastructure, e.g. charging stations, are built to mitigate this risk and ensure long-term success of project interventions.</p> <p>The risks associated with climate change are negligible for this project though potential risks due to extreme weather conditions will be addressed by ensuring that any infrastructure investment is climate-proofed.</p>
Environmental and social risk	Low	<p>During construction of pilot infrastructure, unforeseen social and environmental risks may be discovered.</p> <p>Site-specific social and environmental risks will be assessed during the phase of specific site selection and preparation of detailed design.</p>
Low representation from women in positions of power and influence on the transport policy; inadequate engagement from women or missing qualified female technicians from the engineering sector.	Low	<p>This risk will be mitigated through specifically targeting women involved in the sector for participation in consultations on policy improvements. Disaggregated data on gender participation will be collected at all meetings and other events related to the project, and targeted invitations will be made for enhanced female participation as needed.</p> <p>The project will follow thorough gender responsive communication and ensure stakeholder involvement at all levels, with special regard to involving women and men, as well as civil society and non-governmental organizations promoting gender equality.</p> <p>This shall mitigate social and gender related risks, promote gender equality, create a culture of mutual acceptance, and maximize the potential contribution of the project to improving gender equality in e-mobility. As gender has been clearly mainstreamed throughout the project design, this will help mitigate any potential risks.</p>

COVID-19	Low	<p>COVID-19 pandemic has had an impact on the economy. However these impacts are expected to be short-term and will not impact the project's long term benefits. The assumptions are that the pandemic will fade with mass vaccination and a gradual normalization of economic and social activity.</p>
<p>Pollution effects from the disposal of batteries from electric vehicles as well as from photovoltaic panels</p>	Low	<p>The project will provide recommendations and guidelines on fine-tuning environmental policies and regulations that can mitigate the environmental impact from EV's batteries. The project components address the problem of sustainability considering local ecosystems, so the realization of the project should effectively decrease the risk of environmental change.</p> <p>The project will have a value chain wherever possible with a specific focus on battery life cycle. The recommendations and guidelines on environmental management, re-use (e.g., second life as stationary batteries) and recycling of batteries will be incorporated in the feasibility studies of the pilot projects.</p> <p>Moreover, the training modules will include a range of environmental, social and technical topics such as future technology scenarios and environmental impact with a focus on battery lifecycle. Particular attention will be given to the collection, re-use and recycling with regards to batteries.</p> <p>The project will also coordinate, exchange knowledge and learn from UNEP's project 'Integrated, Sustainable and Low Emissions Transport in Cote d'Ivoire'. Component 1 of the global e-mobility project includes a Global Thematic Working Group on 'Electric vehicle charging, grid integration, renewable power supply and battery re-use, recycling and safe disposal'. This Working Group's main objective will be to develop and make available knowledge materials that support governments in their ambitions for advancing a sustainable roll out of electric mobility, including policy instruments to ensure the sustainability of the battery supply chain and the end-of-life treatment of batteries. It also aims at the facilitation of discussions between regulators, recyclers and battery / vehicle manufacturers to better understand and enhance battery design to improve recyclability of batteries, especially with regards to economic viability.</p>

<p>Forced labor allegation in the solar photovoltaic supply chain</p>	<p>Low</p>	<p>Close coordination with project stakeholders, manufacturers and developers, buyers, investors, governments, and civil society to come together to address forced labor risks by acting along the value chain.</p> <p>Stakeholders will agree on plans, incentives, and timelines to move the industry towards a model that addresses the social externalities generated by solar energy production, storage, and use. These incentives could include sustainability-linked finance and market access.</p>
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### Climate risk analysis

Climate risks are recognized in several important sectors of the Cote d'Ivoire economy: coastal fisheries could see a 26 % reduction by 2050, substantial loss in surface area suitable for cocoa cultivation due to rising air temperatures, water vulnerability or stress, increased coastal erosion and loss of forest cover due to the use of woods for fire and dependence on charcoal. The future climate projections for Cote d'Ivoire by 2050 show temperature increase in the range +1.3 to 2.3°C, rainfall changes from -2 to +7 percent with increased frequency and intensity of heavy rainfall events, change in length of dry spells from -8 to +1 days and sea level rise from +18 to 45 cm.

The estimates from the World Bank suggest the agriculture sector, human capital, and infrastructure will be impacted the most from climate change. The agricultural sector is mainly rain-fed and hence particularly vulnerable, with projected reductions in vegetation and decreased ecosystem productivity due to soil degradation, reduction of water availability and droughts between 2015-2100. The need for adaptation has been stressed in Cote d'Ivoire's NDC targets.

At the local level, the heavy rains during the raining season and the increasing exacerbated drought in the semi-arid region may affect the e-mobility infrastructure to be installed and the materials to be provided. By assessing these risks and setting up a sustainability plan, the project will provide mitigation and adaptation measures. These measures will not only benefit the project, but the local direct and indirect beneficiaries of the project by raising awareness about climate impact, training key stakeholders and providing setting up, to the extent possible, early warning systems.

At the global level, as climate change worsens, the extreme weather events could disrupt supply chains. If the production is not done in Cote d'Ivoire, it will be difficult to source critical components to replace and repair the e-vehicles and charging infrastructure. It is therefore important to make the beneficiaries aware of these issues and envisage scaling up the project after its closure by manufacturing the products within the country.

Climate change is likely to cause severe damage to the infrastructure sector in Cote d'Ivoire. Especially transport infrastructure is vulnerable to extreme weather events, yet essential for trading agricultural goods. Investments will need to be made into climate-resilient infrastructure.

Vulnerability to climate change of the targeted country and regions have been desk-researched. The project targets 5 different cities throughout Cote d'Ivoire: Abidjan, San Pedro, Yamoussoukro, Bouaké and Korhogo.

Floods repeatedly hit the southern part of the country, notably Abidjan, one of the targeted city. Increased frequency of flooding and other extreme events could lead to frequent damage to infrastructure, inhibited facility access, and high repair costs, especially for low carbon transport systems. The project targets the peri-urban and rural areas and may not be hardly affected by clogged drains and sewers during the raining seasons as it is the case in Abidjan. Infrastructure equipment and technologies to be installed and purchased might be affected. Mitigations measure will be taken to have rain-proofed infrastructures and materials.

Assessment on the need to adapt to climate change will be undertaken at the PPG phase notably through consultation and cooperation with local population to find out local good practices examples and tools, and other adequate available solutions.

Awareness raising to enhance a better understanding of the weather conditions (present and future) and climate change in general will be provided to key stakeholders from the private sector. This should enable them to respond to climate challenges and set appropriate operational and management strategy.

Risks management steps will be integrated into the e-Mobility planning, providing options for physical infrastructures adaptation to climate change, and adapting planning, procedures or proposed solutions (including nature based solutions) to react in case of exposure or sensitivity of systems and materials.

The project will also envisage cross-sectoral cooperation between the transport sector and energy sector and analyze the interdependencies with other sector and institutions in charge, for example of flood or drought management to set up measures. It can include for example early warning systems, adequate pumping system for peri-urban and rural areas exposed to frequent flooding.

The project will ensure that supported activities enhance climate resiliency and avoid unwarranted increases in greenhouse gas emissions.

The incorporation of new technologies and activities demands specialized skills and knowledge. Local capacities must be created and/or improved to face the challenges posed by the modernization of transport and energy systems in view of increasing resilience to climate changes. Although the project focus area will be supported by capacity building initiatives, important knowledge gaps and barriers to institutional effectiveness remain, including lack of coordination, which often hinder effectiveness.

Therefore, it is essential to consider how current and projected climate change could impact efforts to mitigate greenhouse gas emissions (mitigation).

All project components are in line with national plans for climate risk management/adaptations. The measures and technological approaches that are proposed fit with future climate scenarios.

Mitigation measures which will be incorporated into this project include: 1) introduction of e-mobility-responsive to reduce the effect of CO<sub>2</sub> emissions; 2) Promotion of the use of smart city approaches and raising awareness on the long-term benefits of e-mobility; 3) promotion of new bylaws and amendments to sector policies and regulations, such as e-mobility, incentive mechanism, etc., to reflect climate change risks and to orient people towards nature friendly mobility.

UNIDO engages, whenever appropriate, in innovative investments and technical assistance to support low-carbon investments and climate change mitigation and adaptation opportunities. UNIDO works

with the project development team to ensure that supported projects enhance climate resiliency and avoid unwarranted increases in greenhouse gas emissions.

### COVID-19 risk analysis

### COVID-19 opportunity analysis

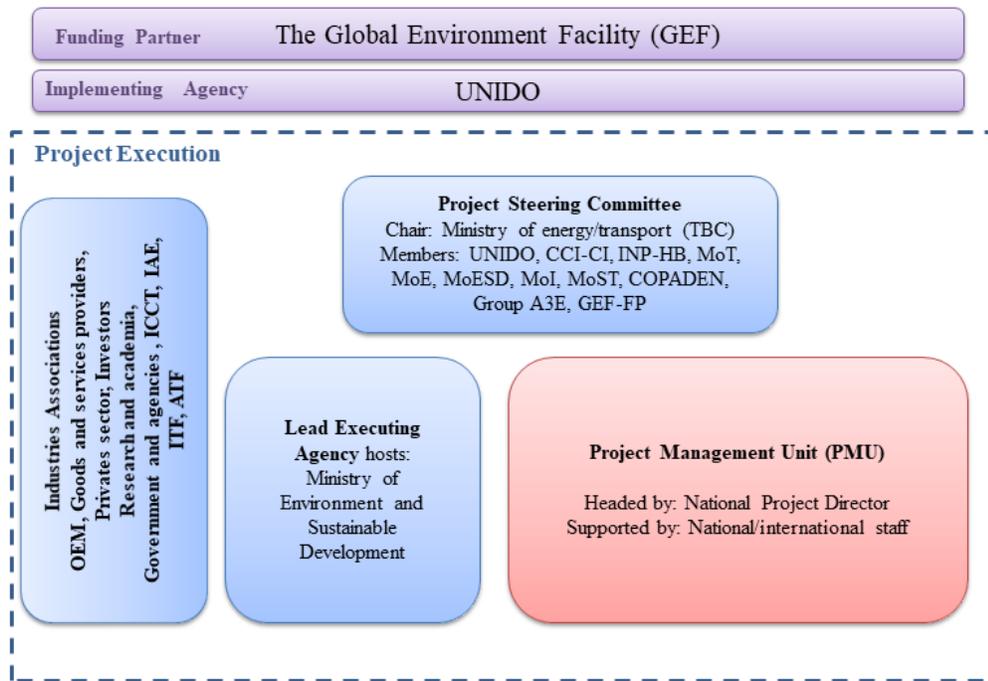
Risk	Risk level	Risk mitigation measure
Operational Risk ? On-going global restrictions due to global evolution of the pandemic remain	Medium/High	If travel or group gatherings and meetings are not possible due to restrictions for people traveling from/to Cote d'Ivoire, or commuting around the country, virtual / on-line meetings will be conducted to the extent possible.
Technical expertise is not readily available due to the pandemic	Low	Necessary efforts will be made to identify alternative technical experts in case it is required (e.g., having a list of alternative experts). Planning will be flexible enough to reschedule activities onsite that require specific expertise.
Possible re-instatement of COVID-19 containment measures limits available capacity or effectiveness of project execution/ implementation	Medium	The capacity of stakeholders, and especially the beneficiaries, for remote work and online interactions will be strengthened by securing access to commercially available conferencing systems. The current design of the curriculum for entrepreneurs is based on online interactions and deliverables, using webinars and web platforms, and therefore COVID-19 is not expected to pose a significant risk to the conduct of the acceleration cycles. The PMU will also be continuously monitoring the national restrictions and rules in order to foresee and plan ahead of potential changes in measures.

Some project supporters, co-financiers or beneficiaries may not be able to continue with project execution/ implementation	Low	The situation will be closely monitored by the PMU and the PEE in order to find alternate supporters or co-financiers, or to readjust the list of beneficiaries if needed.
Price increases for procurement of goods/services	Medium	The project team will undertake efforts needed to find alternative providers and make sure that competitive pricing is obtained.

Opportunity	Opportunity level	Opportunity optimization measure
New business opportunities created in response to COVID-19 related restrictions and measures	High	Response to COVID-19 restrictions, such as remote working arrangements and no-contact business modalities, will require solutions that can be turned into new business models. These opportunities will be analyzed at the national levels and shared with entrepreneurs as part of the market intelligence information. Additionally, based on spurred international trade due to COVID restrictions, this project will support the uptake of domestic markets to substitute missing products from global value chains.
New business opportunities to build back better for business continuity and economic recovery post-COVID-19	High	By design, the project engages the private sector (especially MSMEs) to promote adaptation technologies, business models with resilience to climate change, and circular business practices. New business opportunities and management suggestions will be provided to the new Adaptation Accelerator so that the entrepreneurs are fully informed of the market and environment trends.

## 6. Coordination

**Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.**



## Project Institutional Arrangement

UNIDO, as a GEF Implementing Agency, will lead project preparation and development with participation from key Government entities and private sector stakeholders. The Lead Executing Agency of the project will be the Ministry of Environment and Sustainable Development. The Ministry will coordinate the project inputs from all the project stakeholders, ensure ongoing ownership of the project and that project execution is operationally implemented in line with Government priorities, rules and regulations. It will nominate as well the National Project Director (NPD) to act as the government representative and daily the focal point for the Project Management Unit (PMU). The NPD shall have adequate authority and knowledge within the Government to get the necessary support from all local project partners to perform his/her duties under the project. The proposed executing agency(ies) will undergo a Harmonized Approach to Cash Transfers (HACT) assessment during the PPG phase to ensure that it has the related technical and administrative capacity to undertake the project.

Other co-executing agencies will be identified during the PPG phase in accordance with the HACT assessment process.

Project monitoring and evaluation (M&E) will be conducted in accordance with established UNIDO and GEF procedures. The Logical Results Framework provides performance and impact indicators for project implementation along with their corresponding means of verification. These will form the basis upon which the project's M&E Plan will be built. Implementation of the M&E Plan will be undertaken by the project team, national counterparts and UNIDO.

According to the M&E policy of the GEF and UNIDO, follow-up studies such as Country Portfolio Evaluations and Thematic Evaluations can be initiated and conducted. All project partners and contractors are obliged to; (i) make available studies, reports and other documentation related to the project and; (ii) facilitate interviews with staff involved in the project activities.

### **Project Start**

A Project Inception Workshop will be held within the first 2 months of project start involving those with assigned roles in the project organization structure. The inception workshop is crucial to build on the consultations in the PPG phase and concretize ownership of the project for the effective results and to plan the first-year work plan. In preparation for the Inception Workshop, a more detailed workplan will be developed (building on the one developed in the PPG phase and a ToR for the NPSC will be developed).

The Inception Workshop will address a number of key issues including:

- Detail the roles, support services and complementary responsibilities of local stakeholders vis-a-vis the PMU. Discuss roles, functions and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The terms of reference for project staff will be discussed again as needed;
- Based on the project results framework and workplan, verify and endorse the first annual work plan. Review and agree on the indicators, targets and their means of verification and re-check assumptions and risks;
- Provide a detailed overview of reporting, M&E requirements; M&E work plan and budget should be agreed upon and scheduled;
- Discuss financial reporting procedures and obligations, and arrangements for annual audit;
- Plan and schedule NPSC meetings and verify and endorse the ToR for the NPSC; roles and responsibilities of all project organization structures should be clarified and meetings planned;

An Inception Workshop Report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

### **Semi-annual reviews:**

Will consist of:

- ? Summary of progress made during the most recent six-month period;
- ? Based on the initial risk analysis submitted, the risk log shall be regularly updated, where needed. Risks become critical when the impact and probability are high.

### **Annual review:**

Project Implementation Reports (PIRs): These key reports are prepared to monitor progress made since project start and in particular for the previous reporting period. The PIR includes UNIDO/GEF requirements and includes, but is not limited to, reporting on the following:

- ? Progress made toward project objective and outcomes - each with indicators, baseline data and end-of-project targets (cumulative);
- ? Project outputs delivered per project outcome (annual);
- ? Lessons learned/good practices;
- ? Other expenditure reports;
- ? Risk and adaptive management;

UNIDO will conduct visits to project sites based on the agreed upon schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the PSC may also join these visits.

#### End of project

An independent Final Evaluation will take place three months prior to the final PSC meeting and will be undertaken in accordance with UNIDO and GEF guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The ToR for this evaluation will be prepared by the UNIDO

Evaluation Group: The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response. The GEF Focal Point will be involved in this Final Evaluation.

At the end of project implementation, the PMU shall develop the Terminal Report to be submitted to the NPSC at least 2 weeks before the final NPSC meeting. The Terminal Report should summarize the activities/achievements of the project implementation, lessons learned and future up scaling potential, as well as relevant gender dimensions.

#### M&E Budget

UNIDO will be responsible for overall management and tracking of project milestones as well as reporting to the GEF and concerned Government authorities. The M&E procedure will consist of: a) project inception; b) semi-annual reviews; c) tracking project progress and d) independent final evaluation.

Project monitoring and evaluation (M&E) will be conducted in accordance with established UNIDO and GEF procedures. The M&E activities are defined in Project component 3 and the concrete activities for M&E that are specified and budgeted in the M&E plan. Monitoring will be based on indicators defined in the strategic results framework (which details the means of verification) and in the annual work plans. Monitoring and Evaluation will make use of the GEF Tracking Tool, which will be submitted to the GEF Secretariat three times during the duration of the project: at CEO Endorsement, at mid-term review and at project closure.

Coordination with other relevant GEF financed initiatives: Project implementation will also be closely coordinated with other GEF projects under the climate change (CC) Focal Areas in Cote d'Ivoire.

**Transfer of assets:**

Full or partial ownership of equipment/assets purchased under the project may be transferred to national counterparts and/or project beneficiaries during the project implementation as deemed appropriate by the government counterpart in consultation with the UNIDO Project Manager.

**Legal Context:**

The present project is governed by the provisions of the Standard Basic Cooperation Agreement between the Government of the Republic of Cote d'Ivoire and UNIDO, signed and entered into force on 7 March 1996.

**7. Consistency with National Priorities**

**Is the Project consistent with the National Strategies and plans or reports and assessments under relevant conventions?**

Yes

**If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc**

- National Bio Strategy Action Plan (NBSAP)
- CBD National Report
- Cartagena Protocol National Report
- Nagoya Protocol National Report
- UNFCCC National Communications (NC)
- UNFCCC Biennial Update Report (BUR)
- UNFCCC National Determined Contribution
- UNFCCC Technology Needs Assessment
- UNCCD Reporting
- ASGM National Action Plan (ASGM NAP)
- Minamata Initial Assessment (MIA)
- Stockholm National Implementation Plan (NIP)
- Stockholm National Implementation Plan Update
- National Adaptation Programme of Action Update
- Others

Consistency with National Priorities

- National Action Plan for Adaptation (NAPA) under LDCF/UNFCC
- National Action Program (NAP) under UNCCD
- National Communications (NC) under UNFCCC

- Technology Needs Assessment (TNA) under UNFCCC
- National Capacity Self-Assessment (NCSA) under UNCBD, UNFCCC, UNCCD
- Poverty Reduction Strategy Paper (PRSP)
- National Portfolio Formulation Exercise (NPFE) under GEFSEC
- Biennial Update Report (BUR) under UNFCCC
- Others

#### Sustainable transport solutions to the climate crisis

The establishment of new sustainable transport infrastructure and networks should take into account resilience to climate change and other natural and economic shocks, in line with the Paris Agreement. De-carbonization of transport is a priority, through higher vehicle efficiency, low emission sources of transport, and low- to zero-emission vehicles. This proposed project will assist the Government of Cote d'Ivoire (GoIC) in achieving the readiness and the accelerated introduction and widespread adoption of Zero Emission Vehicles (ZEV) such as Electric Vehicles (EVs) and the development of the EVs market and the enabling infrastructures in Cote d'Ivoire in compliance with the GoIC priorities.

The project is aligned with GoIC's key sustainable development goals including enhancing transportation system, food security and ending poverty and inequality. It is anchored in the country's National Climate Change Policy, National Climate Change Adaptation Strategy and Action Plan, and the commitments in the INDC. It promotes a paradigm shift through its integrated and holistic approach to enhancing sustainable transportation and mobility.

The project will strongly contribute to the national climate strategies and objectives, mainly in terms of adaptation but also in terms of mitigation.

Also, the current President of Cote d'Ivoire made his government's ambition to make Cote d'Ivoire become an emerging economy by 2020. For the Government of Cote d'Ivoire, no climate action plan can be successful without inclusion of the transport sector, which is responsible for one quarter of energy-related greenhouse gas (GHG) emissions worldwide, with its emissions increasing at a faster rate than any other sectors.

Thus, Cote d'Ivoire embedded the transport sector in an effective policy response to improve the resilience of communities to Climate changes impacts and in order to contribute to keep the global temperature increase below the two-degree Celsius. The project is aligned with Government strategies such as the National Adaptation Programme of Action, the National Climate Change Policy and the Regional Implementation of the Global Fuel Efficiency Initiative (GFEI): Stabilizing GHG Emissions from Road Transport Through Doubling of Global Vehicle Fuel Economy with UNEP.

Furthermore, to link into global networks and maximize GHG reductions, the project will consider and incorporate the concept of integrated urban planning and sustainable city initiatives such as the Future Subway (Metro d'Abidjan).

The project is expected to also have a significant long-term impact on income and job creation in Cote d'Ivoire, as well as environmental benefits such as a reduction in air and noise pollution, particularly in large cities. It enjoys full country ownership in the sense of alignment with national policies and priorities and directly responds to priorities as outlined in:

- The Constitution of Cote d'Ivoire, which highlights the need to develop and implement policies to maintain the ecosystems, ecological processes and biological diversity for the benefit of the present and future generations;
- Cote d'Ivoire's Vision 2030;
- Cote d'Ivoire's National Climate Change Strategy and Action Plan;
- Cote d'Ivoire's National Policy on Climate Change;
- Cote d'Ivoire's National Adaptation Plan (NAP);
- Cote d'Ivoire's National Adaptation Programmes of Action (NAPA);
- Cote d'Ivoire's Low Emission Development Strategy (LEDS);
- Cote d'Ivoire's Nationally Appropriate Mitigation Actions (NAMA);
- Cote d'Ivoire's INDCs.

Cote d'Ivoire has seldom benefited from established funds under the United Nations Framework Convention on Climate Change (UNFCCC), which it signed in 1992 and ratified in 1995.

#### Related climate finance initiatives and activities

Cote d'Ivoire has been suffering from Climate change, namely in the transportation sector and agriculture sector, for several decades and has been elaborating and implementing national plans and strategies to fight against global warming in various sectors for more than a decade.

Cote d'Ivoire has continued its trajectory of continued political stability and scorecard improvement, passing 14 of 20 indicators in fiscal year 2017, compared to five in fiscal year 2013. The MCC Board of Directors approved a \$524.7 million compact for Cote d'Ivoire at its quarterly board meeting in September 2017. The Government of Cote d'Ivoire is expected to contribute an additional \$22 million to support the compact. The program will support the country's drive to diversify its economy through investments in the education and transportation sectors.

#### Abidjan Transport Project

? \$292,340,000 Project Total Amount

The Abidjan Transport Project will reduce transport costs and improve efficiencies for businesses by rehabilitating roads in and around the port area and improving road network management and maintenance.

#### Employability and Productivity Project

? \$154,950,000 Project Total Amount

The Skills for Employability and Productivity Project will increase access to secondary education and teacher training, and support the construction of up to 84 new secondary schools. Through a public-private partnership, a new technical vocational education and training (TVET) model will advance development of in-demand skills. It will also help the government mitigate gender disparities, improving outcomes for girls in the education system.

## **8. Knowledge Management**

**Outline the knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.**

As one of the first of its kind in Cote d'Ivoire, the E-Mobility project will certainly yield extremely valuable lessons on the potential of the approach of the EVs niche with means to contribute in creating a sustainable transportation businesses and local climate change adaptation actions. In the sphere of the global initiative to combat climate change, the approach piloted through the project may yield lessons on the effectiveness of the the ZEVs in transportation business. The project provides an effective strategic framework and EVs Road Map for coordinating the activities and involvement of an array of partners (public, private, CSO, CBO etc).

The integrated approach from the perspective of sustainable transportation in the EVs sector, preparedness, readiness and optimal market forecast and early adoption will be a model for partnership and collaboration between stakeholders and will engage national and international partners under the leadership of the GoIC namely MoT, CCI-CI, INP-HB and COPADEN. The approach will create a framework for government engagement with partners including private, Civil society, NGO and Women and Youth groups to deliver essential services on EVs.

The project to unlock the EVs sector is a novel and holistic approach to classical transport system and will generate knowledge and learning on new market development and the integration on multi-stakeholders interest namely Private sector, Public, CSO, NGOs, CBOs including Gender considerations etc. Technology and knowledge transfer will be the corner stone of the initiative as one of the specific objectives is the Capacity Building, Technical skills development for the stakeholders including Governments, CSO, CBO, professors and researchers from participating universities and institutions etc.

The project has a huge potential for increasing awareness and knowledge about EVs sustainable business namely in manufacturing, cluster of OEM and goods and services, MaaS; enabling infrastructures such as Charging infrastructures and maintenance (EVSE) etc. with the creation of multiple SME in the Green transportation sector and climate change adaptation and mitigation knowledge and increasing their capacity to develop and implement their own adaptive responses to it and their communities resilience.

In the sphere of the global initiative to combat climate change, the approach piloted through the project may yield lessons on the effectiveness of the the EVs in transportation sector.

The project provides an effective strategic framework and EVs Road Map for coordinating the activities and involvement of an array of partners (public, private, CSO, CBO etc).

The knowledge and technical products such as the Road Map of EV, technical guidelines, Policies and Programmes, Transportation Master Plan, smart and sustainable transport management plans and capacity building activities such as training of technical agencies, universities and local level organizations on climate-resilient technologies and practices make significant contribution to the implementation of the National Adaptation Plan, National Climate Change Adaptation strategy and Priority 8) Stabilizing GHG Emissions from Road Transport Through Doubling of Global Vehicle Fuel Economy: Regional Implementation of the Global Fuel Efficiency Initiative (GFEI) with UNEP.

The knowledge gained and experience from this project will be shared nationally, regionally and internationally; for example, with the Municipality of Cocody Project on Sustainable Transportation and Mobility. It is imperative that all partners work together to promote effective urban planning and institutional structures, targeted policy and legal frameworks, sustainable economic growth, appropriate funding streams, robust collaboration mechanism and cutting-edge knowledge and data, the soft (policy, legal, capacity building etc) and hard (enabling infrastructures) strategies.

In order for these comparatively new technologies to gain a foothold in the market and achieve consumer adoption, they must also be shown to be sustainable. The proposed project will support this sustainability through the development of an enabling policy environment, capacity building within the relevant institutions and partners through incorporation of the training content into the existing learning and knowledge management structure, support of a number of NMT initiatives in its partner cities and the promotion of the required supporting infrastructure. These interventions will continue on beyond the scope of the proposed project, and will serve to institutionalize these new transportation modalities into the existing Cote d'Ivoire transport infrastructure building on ongoing policy efforts and strategies. As a result, the capacity built will continue to achieve the project's objectives well beyond the 5-year scope of project implementation.

Project outputs and lessons learned will also contribute to enhancing organisational capacity of participating municipalities to plan for and implement climate-risk informed transportation solutions, adopt technologies and systems for climate-smart transportation system, and integrate climate information and advisories on entrepreneurship ensuring their financial and human resource viability post-project. In designing such solutions, the approach is to strongly engage communities and private sector at every level of planning and execution. By doing so, the project will not only ensure that the investments respond to beneficiary needs but also ensure that community organizations, including youth and women's groups, will have sufficient technical and financial capacity to keep improving system design and operations, even as climate variability increases and seasons become more unpredictable. In the long run, investing in the EVs transportation system will have a number of spin-off benefits that impact on this baseline vulnerability as well, by creating SMEs and allowing young men and women to engage more in the value added transportation for EVs and also Non-Motorized Transport (NMT) (Pedestrian, biking etc) in Cote d'Ivoire .

Technological innovation and Knowledge Management

The project promotes sustainable transport technologies through outcome-oriented investment and policies that encourage private sector investment and action through various incentive structures:

- a) Provide financial resources and support technical capacity building to advance research and development and scaling up of ZEVs, sustainable transport services (MaaS, EVSE) and renewable energy;
- b) Enact and enforce performance standards that drive industry toward developing clean and more efficient systems and technologies namely ZEVs;
- c) Maintain policy neutrality to allow consumers and market forces to drive development toward the most effective sustainable technology;
- d) Lead by example through government procurement of sustainable technologies and products, and policies encouraging employees to travel and act sustainably;
- e) Advance knowledge sharing, open data sources and technical assistance to developing countries, including through capacity building and knowledge, test and demonstration platforms by national governments, international organizations and the business sector.

Knowledge sharing will impact four (4) Universities (University of Cocody, University of Nangui Abrogoua, University of Korhogo, University of Daloa) and Institutes involved in this project for data gathering and analysis. Also involvement in the Consultation process of various stakeholders is a knowledge sharing and learning opportunity. They are Civil society, NGO, Women and Youth; Government (Government and other municipalities); Transport providers (aviation, marine, ferry, rail, road, and urban public transport, etc.); businesses; financial institutions; people with disabilities and other vulnerable groups engaged in the project and two (2) Members from each group will participate in the Technical Advisory Committee (TAC) and sit as observers on the NPSC.

#### Combining traditional knowledge and practices with climate-resilient technologies and innovative practices

Building on traditional knowledge of transportation, maintenance models, and community organizational structures, such as the cooperation and support in land use that have buy-in and ownership amongst the community, provides a strong basis to integrate climate-resilient design and practices thereby enabling adoption for the long-term. Capacity building and training on climate-risk informed planning, design, and implementation of climate-resilient practices will be more effective through these locally suited and community-owned enterprises. Interventions in capacity building, empowerment of communities, innovative approach for smart transportation and improved management of the land, the transportation and the mobility will increase resilience to climate change variability.

#### Limited knowledge and awareness of climate-change risks, impacts, and adaptation solutions related to transportation

Besides limited infrastructure and technology to develop and disseminate climate-sensitive technologies and information, there is no institutional knowledge management framework that facilitates knowledge generation and sharing on innovative and adaptive measures which can be used to improve sustainable transportation, land use and land management, seasonal weather forecasting and

early warnings. Furthermore, as stated earlier there is just draft idea on the policy reform on the transportation system in Cote d'Ivoire to integrate EVs.

There is no local or governmental knowledge management mechanism that extracts lessons learned from recent interventions (even in other region like South Africa which has an extensive knowledge of EVs business) to integrate into a complete package of technology for the improvement, modernization, operation and maintenance for the transportation system. Also, there is a limited community capacities to design integrated solutions, sustainably manage rural infrastructure and sustainable transportation with the integration of EVs.

#### Knowledge sharing including lessons learnt and best practices from relevant projects and initiatives

The proposed project will collaborate and regularly exchange knowledge with other (donor-funded) transport and energy sector initiatives such as UNEP's project on 'Integrated, Sustainable and Low Emissions Transport in Cote d'Ivoire'. It will share the knowledge through the establishment of the e-mobility coordination body which will align e-mobility related policy making processes.

These knowledge management activities will enhance the impact of the project because they empower stakeholders to take informed decisions, create a strong sense of ownership by active participation in the conceptual work, anchor knowledge and skills in the country and ensure that best practices are shared regionally and internationally.

The project will facilitate the flow of learnt lessons such as: data and demonstration results, working policies and regulations, working business models, operational know-how, working financial instruments etc. The project will generate a learning curve on electric mobility that can be transferred to other countries.

#### Tools and methods for knowledge exchange, learning and collaboration, including knowledge platforms and websites, as well as plans for strategic communications

The activities of the proposed project will be built on the baseline activities and support knowledge and know-how transfer among key stakeholders by inviting them to participate in events and working groups. These working groups will generate universal knowledge products that contain best practices, factsheets, interactive tools and guidance, as well as experiences from countries that have advanced their e-mobility platforms.

The project will learn from the E-Mobility Global Programme and the knowledge products developed by the working groups will be shared and disseminated by the regional platform.

## **9. Environmental and Social Safeguard (ESS) Risks**

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

**Overall Project/Program Risk Classification \***

PIF	CEO Endorsement/Approval	MTR	TE
<b>Medium/Moderate</b>			

**Measures to address identified risks and impacts**

Provide preliminary information on the types and levels of risk classifications/ratings of any identified environmental and social risks and potential impacts associated with the project (considering the GEF ESS Minimum Standards) and describe measures to address these risks during the project design.

Based on this initial screening, the project has been assessed by UNIDO to be Category B. Likely impacts will be few in number, site-specific, and few if any will be irreversible. An ESMP will need to be completed as per UNIDO and GEF requirements during the PPG.

**Supporting Documents**

Upload available ESS supporting documents.

Title	Submitted
ES_Screening_Template_SAP_ID_220103_IVC-E-Mobility	

**Part III: Approval/Endorsement By GEF Operational Focal Point(S) And GEF Agency(ies)**

**A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).**

<b>Name</b>	<b>Position</b>	<b>Ministry</b>	<b>Date</b>
Alimata Kon?	Permanent Secretary - GEF Operational Focal Point	Ministry of Economy and Finance	6/22/2022

**ANNEX A: Project Map and Geographic Coordinates**

Please provide geo-referenced information and map where the project intervention takes place

<b>COUNTRIES</b>	<b>COORDINATES</b>
Côte d'Ivoire	Latitude: 5.392125 Longitude: -4.080845

Map could not be uploaded here, but it is already included within the text.

The geo-references and coordinates of the targeted cities are:

Abidjan: 5.3600° N, 4.0083° W

Yamoussoukro: 6.8276° N, 5.2893° W

Bouaké: 7.6905° N, 5.0391° W

San Pédro: 4.7579° N, 6.6424° W

Korhogo: 9.4669° N, 5.6143° W

Specific maps and coordinates will be developed during the PPG phase.