

**GLOBAL PROGRAMME TO SUPPORT COUNTRIES WITH THE SHIFT TO
ELECTRIC MOBILITY CHILD PROJECTS ANNEX – 2ND PHASE**

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Global Project

Child project title: Global project to support countries with the shift to electric mobility – Phase 2

GEF lead Agency: UNEP

Other GEF Agencies: ADB, EBRD

Total Project Cost: USD 897,600 (without IA fee); co-financing: USD 2,750,000

PROJECT DESCRIPTION

1. Country Context

Phase one of the Global Electric Mobility Programme included the submission of 17 country child projects for e-mobility in low and middle-income countries around the world. The GEF Global E-Mobility programme will be jointly implemented on the basis of task and budget sharing with the European Commission funded SOLUTIONSplus project, which is adding another 13 e-mobility projects in low and middle-income cities worldwide.

Since the approval of the first phase of the Programme, two additional GEF projects focusing on e-mobility were submitted to the GEF Secretariat, one in Mauritius and one in Belarus. These projects will be closely linked to the Global Programme. These two projects also will be invited to join the regional support and investment platforms, to engage with the communities of practices and to take part in regional platforms meetings such as e-mobility trainings and market-place events. The two standalone projects will be provided support through the tools, policy materials, generic business models and finance schemes etc. developed by the Global Thematic Workings Groups.

The second round will add an additional 10 country projects to the Global Electric Mobility Programme, resulting in a total of 27 child country projects (plus the additional two linked standalone projects). Together, the first and second phase of the GEF Global Electric Mobility Programme and the EC SOLUTIONSplus project will support 40 country and city projects in all regions, and will be the most comprehensive initiative to target the introduction of e-mobility to mitigate greenhouse gas and air pollutant emissions, reduce energy use and increase socio-economic co-benefits such as lower expenditures on energy import and improved public health in low and middle-income countries world-wide.

2. Project Overview and Approach

Phase I of the GEF7 Global Electric Mobility Programme included 17 country projects in all regions - Africa, Asia and Pacific, Latin America and the Caribbean, and Central Eastern Europe.¹

Phase 2 of the programme will add 10 country projects to the Global Electric Mobility Programme. Similar to the previous round, these new e-mobility projects will focus on the introduction of e-mobility in fleets – public buses, taxis fleets, government fleets and fleets for freight transport – and the introduction and/or expansion of charging infrastructure. Since the second round will add a number of countries from Central

¹ GEF country projects of the first phase of the project include: Antigua and Barbuda, Armenia, Burundi, Chile, Costa Rica, India, Ivory Coast, Jamaica, Madagascar, Maldives, Peru, Seychelles, Sierra Leone, St. Lucia, Togo, Ukraine and Uzbekistan

and Eastern Europe and West Asia, the topic of second-generation trolley² buses will also be added to the Heavy-Duty Vehicles Working Group.

The previous round of submission revealed a strong interest of countries and cities in electric 2&3 wheelers. Conventional 2&3 wheelers used in low-income countries are very often cheap and very polluting. They are based on technology dating back to the 50ies with carburettor engines with no emission control at all. Low quality engines with low life-times and quick deterioration of engine compression are burning large amounts of fuel and engine oil thus leading to very high levels of air pollution and climate emissions. In combination with high daily driving distances of up to 100km and more, mitigation potential of electric 2&3 wheelers used for passenger and goods travel is very significant in many low-income countries.

Geographical Target:

The countries added in Phase 2 of the Global Electric Mobility Programme are: Indonesia, Grenada, Albania, Jordan, Tunisia, Philippines, South Africa, Sri Lanka, Bangladesh and Ecuador.

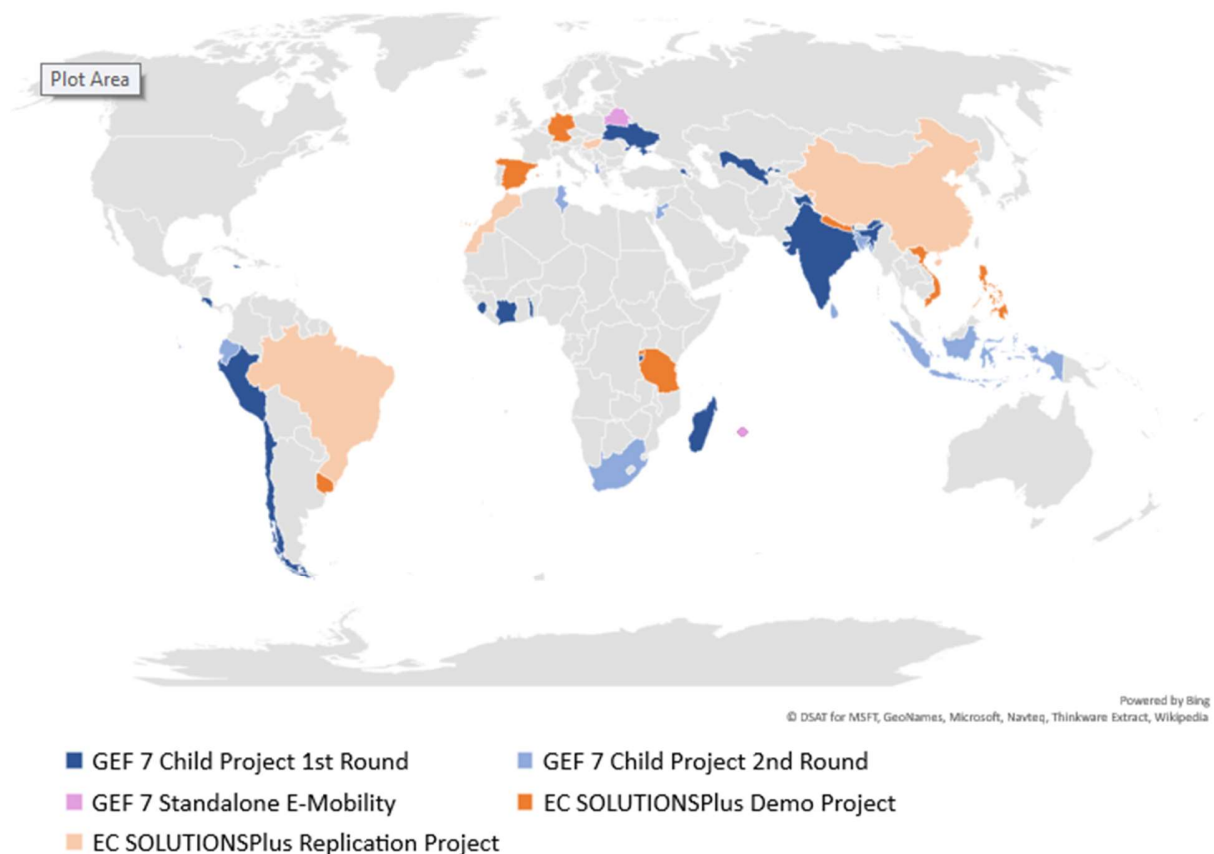


Figure 1. Country coverage of the GEF Global electric mobility programme and the EC Solutions Plus Programme

² This region has a high density of trolley bus networks, and new forms of trolley bus systems are currently being tested deploying second-generation trolley buses, which can link to catenary lines, but which also have a relatively small battery to cover a distance of up to 30km without connection to the grid. This know-how will feed into the work of the Global Thematic Working Groups and linkages between new forms of electric mobility and currently available systems will be made where relevant.

Systemic Challenges and Environmental Threats:

Coordination of efforts to mitigate GHG emissions from the transport sector at the national and international level is a serious concern. This often leads to the inefficient use of resources, since the absence of coordination prevents the adequate spill-over of lessons learnt from various projects. The second phase of the Global Electric Mobility Programme will enlarge the group of countries, which will jointly work on the introduction and upscaling of e-mobility to 40 countries worldwide. In addition, the project now includes 6 implementing agencies for GEF projects – UNEP, UNDP, UNIDO, the ADB, the EBRD, and the DBSA – which will also greatly improve capacity and know-how on e-mobility and the implementation of e-mobility projects within these agencies.

Associated Drivers:

2019 was the second hottest year on record, and the past decade has been the hottest ever documented. In many low and middle-income countries, the transport sector is the fastest growing GHG emitter and contribution to total national GHG emission is often far above the global average of 25% to 30%. The expansion of the original first phase GEF 7 Global Electric Mobility Programme is a clear indication of an interest in low-and-middle income countries to be part of a global transition to no emission electric vehicles. Such a switch is essential for meeting the Paris Climate Agreement targets. The decision to focus on electric mobility is also very often driven by the desire to become more independent of the highly volatile global oil market and to use instead nationally available renewable resources for power generation, which can be used to charge electric vehicles.

Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration.

Baseline Investments:

| Agency/initiative | Description |
|---|--|
| United Nations Environment Programme (UNEP) | UNEP, with regional and local partners, is already supporting a programme in East Africa and South East Asia to promote the introduction of electric 2&3 wheelers, with country projects in Kenya, Rwanda, Uganda, Ethiopia, Thailand, Philippines and Malaysia. In addition, UNEP is constantly expanding its e-mobility project portfolio based on donor funding. Additional project proposals with various donors such as BMU-IKI, GCF, bilateral development agencies, private sector partners, etc. are in the pipeline or currently under development. After the adoption of the Phase I GEF project several funding partners have expressed interest to provide financing for electric mobility and UNEP is discussing how these financing institutions can support the programme, and the child projects in specific, with financing support. The GEF7 child projects and particularly those that have been identifying electric 2&3 wheelers, can build on UNEP's wide portfolio of existing electric 2&3 wheelers city and country projects, as can the new Global Working Group on Electric 2&3 Wheelers. |
| EBRD | The EBRD currently invests around EUR 4 billion a year in green projects through Green Economy Transition programme. Expanding electric mobility is a key priority of EBRD's Transport Sector Strategy and it has an investment pipeline in the order of EUR 650 million on road-based e-mobility projects. |
| UNDP | UNDP is supporting several GEF-supported electric vehicles projects in Bhutan, Malaysia, Philippines, Nepal, Mongolia, Lao PDR, China, Peru Uruguay, Belarus and Mauritius. |

| | |
|-------|---|
| UNIDO | UNIDO contributes to establishing sustainable transport strategies, designing market guidelines and raising awareness in order to drive the move to carbon-free transport necessary to meet the sustainable development goals. UNIDO e-mobility programme, which is currently being implemented in China, Malaysia and South Africa with the support of the Global Environment Facility (GEF) integrates the power sector with transport, and incorporates electric mobility into the urban planning concept of transit-oriented development. |
|-------|---|

Institutional Framework:

At a global level there is no organised framework of institutions working on electric mobility, instead there are a collection of institutions working in different and sometimes overlapping areas of electric mobility. The GEF Global Electric Mobility Programme will harness the combined expertise of these institutions and channel them through the programme. UNEP will be the implementing agency and IEA and UNEP will jointly execute it. ADB and EBRD will co-implement their regional support and investment platforms. Project partners (including other GEF Implementing Agencies) will join a global programme steering committee and participate in thematic working groups. Child projects will be implemented by GEF Implementing Agencies, who will also be invited to participate in the steering committee. The steering committee will advise the executing agencies on global programme activities. The programme will be closely linked to the European Commission Solutions Plus Programme, which will support cities around the world with the introduction of electric vehicle demonstration projects. The two programmes will work together to increase impact, country coverage, reduce overlap and duplication, and mutually reinforce each other.

Organization and management

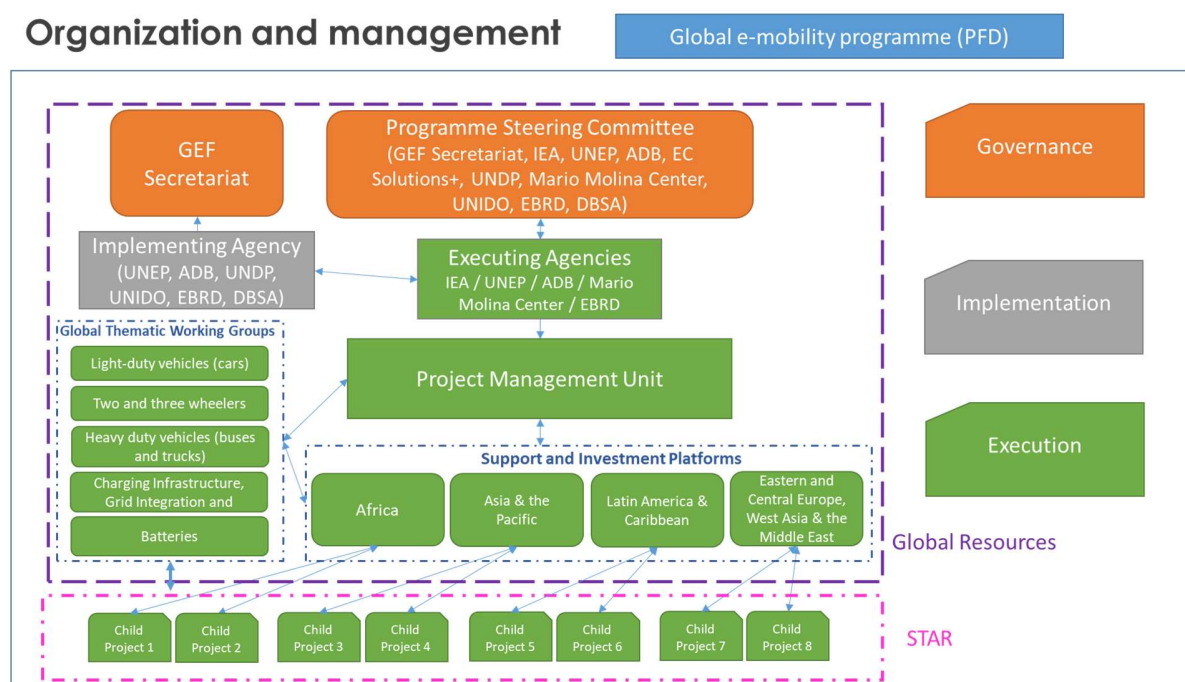


Figure 2: Organigramme of the Global Electric Mobility Programme

Stakeholder Engagement:

A wide range of stakeholders will be consulted in the project design and involved in project implementation. These include IEA EVI members and partners, GEF implementing agencies, and other leaders, partners and coordinators of initiatives on fuel efficiency improvements and electric mobility from the private sector, academia and civil society. The global programme will also engage fleet manufacturers and financiers in

the development and design of business models that reduce the high upfront costs of EV fleets. In addition, development banks and other financiers will be engaged to support governments in scaling up the procurement of EV fleets. In addition to the stakeholders identified in the first phase project document, this second phase project will also engage with the following partners.

The new Global Working Group of 2&3 wheelers:

- Leading global manufacturers of electric 2&3 wheelers.
- Local companies/ assemblers/ start-ups – introducing electric 2&3 wheelers in developing country markets can be led by local companies. In contrast to heavy duty and light duty vehicles, electric 2&3 wheelers can easily be locally built and /or assembled. This will have added value of being able to develop electric 2&3 wheelers that are suited to local operating environments. And it will create green jobs. Some country projects have prioritised the introduction of electric 2&3 wheelers because they are keen to set up a local electric 2&3 wheeler industry. UNEP is working with a group of those electric 2&3 wheeler companies such as Ampersand (Rwanda), Opibus and Kibo (Kenya) in Africa and Asia.
- In many countries, especially in Africa, the majority of 2&3 wheelers are operated as taxis. The country project will therefore work closely with the taxi fleet operators. Often, these 2&3 wheelers taxis use ride hailing apps, and thus the project will also work with ride hailing app providers.
- Finally, countries that have high numbers of 2&3 wheelers, either privately owned or through taxi companies, have specific financing schemes in place for operators to access loans to buy 2&3 wheelers. For example, local banks may have specific loans for 2-wheeler taxis. We will be working with finance providers to ensure they will provide financing to electric 2&3 wheelers.

The new Support and Investment Platform for Central and Eastern Europe, Middle and West Asia will bring together key partners in the region, similar to the other three regional Support and Investment Platforms for Africa, Asia and Latin America and Caribbean that were approved in the first phase of the programme. This will include:

- Governments – national and local (city) governments,
- Regional institutions – for example CEDARE, working in Arab and Middle East Countries on clean vehicle fleets, and CENN, working in Central and Eastern European countries with introducing cleaner vehicles fleets
- Private sector, including European companies (also through the EC Solutions + project)
- The Platform will also engage services from local consultants

Gender:

Gender-sensitive policy design and implementation is essential for the successful transition to a low-emission transport sector. The programme will explore options to integrate gender considerations into mobility and work with policy-makers in designing gender-responsive policies and solutions for electric mobility. Gender Action Plans will be developed as part of the child projects to ensure that the development of EV policies considers the mobility needs and characteristics of women and men, as well as boys and girls. The plans will also evaluate the role of electric mobility in supporting women's empowerment and girl's education by providing access to safe, affordable and reliable transport. The global project will seek to collaborate with the IEA Clean Energy Education and Empowerment Technology Collaboration Programme.

Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits.

The program's theory of change is to address the root causes of fossil-fuel dependency in the transport sector in participating low- and medium-income economies (child projects) and through this support and accelerate their processes to achieve low-emission transport sectors. The proposed approach includes the build-up of capacity, coordination structure and strategies, generating best practice, demonstrating technical, operation and economic viability of e-mobility and creating conditions for investment and scale up of electric vehicles. This approach directly addresses the root causes of the environmental challenge (key barriers noted in the response to 2(a)), namely the high costs of electric vehicles, the lack of information and awareness, the policy and planning challenges, limited institutional capacity, and charging infrastructure and range anxiety. By addressing these head-on, the programme supports countries and the global community to implement short-term (e.g. demonstrations) and long-term (policy frameworks, national strategies) measures for achieving the desired transformation. The outcomes of these efforts will be the multiple environmental benefits of reduced GHG and air pollutant emissions in the countries, regions and globally.

The programme's overall objective is to contribute to reaching the levels of electric mobility necessary to significantly reduce emissions in the transport sector in low- and middle-income countries, while minimizing adverse effects for the sustainability of transport and energy systems.

This will be achieved by providing an integrated approach which supports these countries in developing electric mobility policy frameworks and projects. Deployment barriers such as high vehicle price and low range, and the lack of relevant infrastructure will be targeted. The programmatic approach will assure reduced overall costs since it will avoid duplication and maximise economies-of-scale. This will also allow for more comprehensive learning experiences and generation of good practices.

Four complementary components are proposed to achieve the programme's overall objective:

1. Global thematic working groups will gather information from stakeholders to develop knowledge products and policy materials which support countries, cities and other stakeholders;
2. Regional Support and Investment Platforms in four global regions will support market expansion and investment in electric mobility;
3. Country project implementation (Child Projects) will create conditions at the country and city level for the introduction of electric mobility pilot projects, demonstration projects, and the wider up take of electric mobility;
4. Tracking progress and facilitating replication. Projects and electric mobility markets will be tracked, and key developments, best practices and other lessons learned shared, to promote wider uptake of electric mobility.

Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.

This phase 2 will add the following activities to the approved phase 1 Global Electric Mobility Programme.

- In Component 1 – Global Working Groups – an additional working group will be added on electric 2 & 3 wheelers; and second-generation trolley buses will be included in the scope of the HDV (Heavy Duty Vehicles) Working Group
- In Component 2 – Regional Support and Investment Platforms – an additional Support and Investment Platform will be added for Central and Eastern Europe, West Asia and the Middle East, and additional support will be added to existing platforms;
- In Component 3 – country projects – additional 10 national Child Projects will be added to the programme;

- In Component 4 – tracking progress, monitoring and dissemination – extra activities will be included to support a larger global programme, collect and report data and improve visibility.

Component 1

Initially, the electric 2&3 wheeler work was folded in the LDV working group due to cost restraints. Some few tools for the introduction of 2&3 wheelers were planned to be prepared. However, with the increasing interest for the topic of electric 2&3 wheelers and the prioritisation of the introduction of electric 2&3 wheelers in the Child Projects, the programme will now set up a separate working group on electric 2&3 wheelers, which will enable the project to develop a complete set of tools and provide better support to the country projects in the programme prioritising the introduction of electric 2&3 wheelers.

The project will therefore set up a Global Working Group for 2&3 Wheelers that will develop a set of tools to be used by developing countries to support them in switching their 2&3 wheeler fleets to electric 2&3 wheelers. The full set of tools will include: analytical models, technical specifications, policy best practices, generic business models and finance schemes and a training curriculum. This working group will complement the other working groups on electric heavy-duty vehicles, electric light duty vehicles (cars), grid integration & charging infrastructure, and batteries.

Component 2

The programme now includes five country projects in the Central and Eastern Europe, West Asia and Middle East region (Ukraine, Armenia, Albania, Jordan and Uzbekistan). In addition, one stand-alone project has been approved (Belarus) that will also participate in the programme, and especially the regional network. As such the project will now set up a regional Support and Investment Platform for Central and Eastern Europe, West Asia and the Middle East. The platform will be led by the European Bank for Reconstruction and Development (EBRD) that has the ability to provide credit lines for investment in the projects in the region.

The activities of the platform will be similar to those of the other three platforms, as included in the first phase of the programme:

- Provide networking and co-ordination support to child projects
- Develop communities of practice, sharing best practices
- Establish market-places to promote and support investment in the region
- Host training courses
- Promote and support replication in the region

The core function of the platform will be to create and maintain networks between the child projects in the region. It will develop an overview of the projects' progress, the key achievements and any emerging lessons from each project. The platform will seek to inform the projects of developments at the global level and feedback any points emerging from the national projects to the global programme.

The platform would have a web page under the global programme website to post information and help encourage the development of virtual networks and communities for the exchange of good practice. It would also be a point of contact for the regional projects if they wanted to engage expertise of the global programme in relation to any issues that they are facing. The platform staff would have the ability to visit occasionally each child project throughout the life of the programme to build effective networks, for example attending key child project events.

The platform would organise a number of regional events to facilitate networking, share expertise between projects, engage broader e-mobility industry and encourage new project development and replication. The intention is to hold one regional event a year, involving all projects and other EBRD countries in the region.

The platform would fund the costs of the events related to venues, catering, security etc. It would also cover the travel and expenses of key experts such as speakers and trainers who are not in a position to finance themselves. It would cover the delivery of training by the training providers. Private sector participants in market-place activities would be expected to pay their own costs except in exceptional circumstances. Each child project will finance the expenses of their participants to attend regional events.

With each annual event, the platform would seek to cover a range of activities:

- It would bring together some of the key thematic communities of practice in the region to share knowledge and expertise. The aim would be to focus on the themes of one or two communities of practice at each event, depending on the progress of the projects in the region and the nature of the communities of practice that develop.
- The regional events would bring together the child projects with e-mobility technology and service providers, so enabling the creation of a broader marketplace for e-mobility.
- The events would be open to a broader network of stakeholders with an interest in e-mobility, (such as cities considering electric buses, or companies operating charging networks). This broader participation would help promote and support replication of the programme and encourage the development of new e-mobility projects in the region.
- At the margins of the event, the platform would be able to host the delivery of key training courses to the child projects. This would be efficient as key people from the various projects would be in the same place at the same time. The platform would not however design the content of the training programmes.

This second phase budget will also provide some additional resources to the Platforms already approved in phase I, Africa (led by UNEP), Latin America & Caribbean (Molina Center Chile), and Asia & Pacific (Asian Development Bank), to allow for supporting the additional country projects that have been added to the programme through this second phase and also to allow for additional training and technical support (e.g. help desk) to the child country projects. This will also allow the project to integrate possible future stand-alone projects, such as Belarus and Mauritius. Several countries have expressed interest to join the programme, and some of these countries were not able to join in Phase II, including Senegal, Thailand, and Malaysia. It is expected that these countries will develop a stand-alone project and these projects will be fully integrated into the global programme.

Component 3

This phase 2 of the Global Electric Mobility Programme will add an additional 10 country projects to the programme: Indonesia; Grenada; Albania; Jordan; Tunisia; Philippines, South Africa, Sri Lanka, Ecuador and Bangladesh. Together the GEF7 and EC Solutions+ programme will be supporting 40 electric mobility country projects.

Component 4

With the increase of country projects, the involvement of three additional agencies supporting country projects (UNDP, DBSA and UNIDO) and with the new regional platform coordinated by the EBRD, there will be a need for additional activities to support the overall coordination, to collect additional data and monitor additional activities, and to increase outreach activities. These activities will be implemented by the two programme leads – UNEP and IEA. This will also include additional activities on communications, profiling, and branding the global electric mobility programme. The increased budget allocated to communication will enable the project to develop a comprehensive communications strategy for the entire programme. With the involvement of UNEP, UNIDO, DBSA, ADB, EBRD, UNDP, IEA and Mario Molina Center, interagency coordination will also need to be increased.

3. Engagement with the Global / Regional Framework

The knowledge and policy materials generated by the global thematic working groups will be disseminated to the child projects and beyond through dedicated training events and direct technical support by the Support and Investment Platforms. These trainings will take place at least twice over the course of the programme in each region. Further workshops and trainings may also be organized upon request of the child projects. Two global conferences will be organized to bring together all stakeholders of the programme, including the country child projects, in collaboration with the EC Solutions Plus project.

Furthermore, the four regional Support and Investment Platforms will collect best practices and tools and disseminate these among the countries in the regions. Building communities of practice at regional and sub-regional levels will encourage cities and countries to share their experiences, practices and approaches. These platforms will also facilitate the transfer of knowledge generated in the thematic working groups to the country level.

The knowledge products leveraged through the global thematic working groups will also be made accessible through a digital platform. This platform will be continuously fed with content created from the various activities and knowledge products and from the experiences gathered through the Support and Investment Platforms. Finally, child-project countries will have continuous remote access to experts – through helpdesks to be set up in each regional Platform –, and peers, so that they can access informal and targeted support to progress their electric mobility projects.

The transfer of knowledge and best practices from South to South, North to South and peer to peer is a core component of the programme and will ensure the effective use of funds, both at the country as well as at the global level.

Albania

Child project title: Electric mobility for sustainable tourism in Albania

GEF Agency: UNIDO

Total Project Cost: USD 763,242 (without IA fee); co-financing: USD 7,000,000; PPG: USD 50,000 (without IA fee)

PROJECT DESCRIPTION

1. Country Context

Albania is an upper middle-income country located in south-eastern Europe, bordering the Adriatic Sea and Ionian Sea, between Greece to the south and Montenegro and Kosovo (UNSCR 1244) to the north. The country has a population of 2,866,376 inhabitants³ with a surface area of 28,748 km² and a coastline of 362 km.

In 2019, the share of urban population in Albania was 61.2 %⁴. Over the last 50 years, the urban population of Albania grew substantially from 31.7 % to 61.2 % rising at an increasing annual rate that reached a maximum of 2.51% in 2002. To support the rapid urbanization and avoid undue environmental impacts, Albania is faced with the challenge to adapt and develop the existing infrastructure. As the urban areas continue to grow, prioritizing the delivery of services and infrastructure is key for long-term urban sustainability and productivity.

Since Albania generates over 98% of its electricity from hydroelectric power⁵, electric mobility is a promising measure for GHG emission mitigation⁶. Due to the low grid emission factor, the level of emissions due to driving an electric car is equivalent to obtaining a fuel efficiency of 0.05 L/100km⁷. However, despite the environmental benefits, the number of electric vehicles (EVs) in use is still limited. In 2013, there were 123,188 EVs registered, which represents 1.1% of the total number of vehicles registered that year in EU28⁸.

Albanian cities are facing increased GHG emissions and air pollution from a surge in tourism related road transportation which is almost exclusively based on fossil fuels.

The tourism industry in Albania occupies a key role in the economy and is an important driver for the development of the country⁹. The tourism industry has emerged as a significant contributor to growth with 4.7 million inbound tourists (in 2016) and has therefore become a strategic sector for economic health and employment. According to the World Travel and Tourism Council, the total contribution of travel and tourism was 26% of total GDP in 2016 and directly supported 85,500 jobs (7.7% of total employment).¹⁰ Tourism's contribution to GDP is expected to rise by around 6% and create 368,000 jobs by 2027.

Although tourism has been recognised as a pillar of the economy in various policies (Law No. 93/2015), there remains a lack of interministerial coordination to achieve long-term growth of the sector while

³ <https://data.worldbank.org/country/albania>

⁴ <https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=AL>

⁵ European Commission, 2019: <https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/20190529-albania-report.pdf>

⁶ Ministry of Infrastructure and Energy, Renewable Energy Progress Report 2016-2017: http://www.akbn.gov.al/wp-content/uploads/2019/03/CP_RES-Progress-Report_template_Albania-2016-2017.pdf

⁷ University of Michigan: <http://umich.edu/~umtriswt/PDF/SWT-2017-18.pdf>

⁸ Eurostat. New Registrations of Passenger Cars, Motor Coaches, Buses and Trolley Buses, by Type of Vehicle and Alternative Motor Energy. 2016. Available online: <http://ec.europa.eu/eurostat/web/transport/data/database>

⁹ INSTAT, 2019: Tourism in figures, p. 20

¹⁰ <https://www.wttc.org/-/media/files/reports/economic-impact-research/archived/countries-2018/albania2018.pdf>

safeguarding the environment. Additionally, the benefits of tourism are unevenly distributed and adverse environmental impacts such as decreased air quality, increased noise pollution and congestion could take a toll on touristic centres in the long-term.

2. Project Overview and Approach

Geographical Target:

The project will apply e-mobility solutions in the municipalities of Berat and Belsh, given their eco-tourism potential. In the period of 2014-2018, incoming foreign citizens reached 23.6 million nationally¹¹. From 2017-18 the number grew by 15.8%. Berat is a top destination, while Belsh is becoming a new attractive destination, with 131,000 tourists in 2019 alone¹².

Systemic challenges and specific environmental threats:

The municipalities do not have clear development strategies. The villages in both municipalities have been included in the program "Integrated Rural Development Program - 100 Villages" (Seferan, Roshniku and Qafë Dardha). Therefore, the popularity of the two municipalities is expected to continue growing.

While these developments are expected to increase the number of tourists in the target areas, there also exists an important risk that municipalities develop in an unsustainable way to accommodate the demand. Specifically, systemic barriers preventing the market uptake of EVs and their integration in the tourism sector are:

- Absence of holistic, integrated approach to tourism
- Lack of capacity for sustainable urban and transport planning and management among national and local stakeholders
- Inadequate/insufficient policy, regulations and incentive mechanisms to encourage investment in e-vehicles
- Low awareness of stakeholders of the opportunities associated with the application of EVs;
- Lack of infrastructure: testing facilities, charging station networks and support applications such as maintenance.

Associated drivers:

The regional connecting infrastructure has undergone radical change lately, increasing the region's attractiveness and accessibility. Road infrastructure is rehabilitated on the Belsh-Fierza-Lushnje and Belsh-Sheza-Peqin axes, and recently the construction of the regional road Elbasan-Belsh-Kuçovë-Berat has enhanced access to the area, reducing the travel time from Tirana to 45 minutes.

Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration¹³

Baseline Investments:

¹¹ INSTAT, 2019: Tourism in figures. Accessed at: <http://www.instat.gov.al/media/5551/tourism-in-figures-eng.pdf>

¹² <https://ata.gov.al/2019>

¹³ As per UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), the Environmental and Social screening template has been completed and this project has been categorized as 'B'. Hence, an Environmental and Social Management Plan (ESMP) will be developed during the PPG phase.

The project design will build upon existing and planned baseline investments in the region. (see Annex A for a list of baseline projects for potential collaboration and knowledge exchange, see Annex B for baseline policies).

Institutional framework:

UNIDO will be responsible for the implementation and coordination of the project ensuring adherence to GEF standards and requirements.

The National Centre for Environment, Tourism and Sustainable Development (NCETSD) has been identified jointly with the GEF OFP as the preferred executing entity. NCETSD is a non-governmental organization (NGO) focusing on sustainable development in line with the SDGs. During the PPG phase, further information will be analyzed and detailed institutional capacity assessment will be undertaken.

Stakeholder Engagement:

The project will be carried out in close cooperation with relevant ministries, government agencies and municipalities. The list of potential stakeholders are given in the Annex A. Indicated partners have been identified through early consultations and will be confirmed during PPG.

Gender:

UNIDO recognises that women have a significant positive impact on the development of sustainable transport and tourism. Gender mainstreaming will be based on GEF's Policy on Gender Mainstreaming and UNIDO's Policy on Gender Equality and the Empowerment of Women (2009) as well as the Guide on Gender Mainstreaming Environmental Management Projects. Special attention will be given to be sure that the data collected from project activities is gender-sensitive.

Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits.

The project draws directly from the suite of activities presented under the Global Programme and closely aligned with its theory of change. The project will accelerate the deployment of smart charging and electric buses, mitigating the road transport sector's impact on climate change by reducing GHG and particle matter (PM2.5) emissions associated with fossil-fuel based vehicles. The project will focus in particular on transportation related to fast-growing tourism in the target cities.

It will demonstrate the technical and commercial viability of e-mobility infrastructure, strengthen institutional capacities to design, plan and implement e-mobility plans, and create incentives for investment in low-carbon transportation infrastructure. The solutions will increase accessibility of touristic sites and reduce the pressures of urbanization while generating important spillover effects such as employment opportunities and enhanced access to services (See Annex C – Theory of Change diagram).

The project outputs are designed in a way to tackle the identified root causes of the barriers on the mainstreamed e-mobility in Albania. The outcomes of the project activities will address the following systemic challenges:

- Transport related GHG and PM2.5 emissions of the tourism sector
- Improvement in air quality and noise pollution
- Supporting low-carbon growth of the tourism sector
- Resilience to climate change of a rapidly urbanizing society
- Increased private sector investments

Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components

| Baseline | Summary of GEF incremental intervention | Benefits |
|--|---|---|
| <i>Component 1 Institutionalisation of low-carbon mobility</i> | | |
| <ul style="list-style-type: none"> - Lack of the necessary policy, regulations and incentive mechanisms to encourage uptake - Low awareness within the public of the opportunities associated with EVs; - Lack of infrastructure: testing facilities, charging station networks and support applications, maintenance, etc. - Unfit / inexistent standards for charging stations (operation, maintenance etc.) | <p>1.1 Integrated Smart City Guidance Package prioritizing public transportation, active and low emission transportation modes for tourism</p> <p>1.2 Recommendations on EV policies and regulations and Albanian roadmap on Standardization of Electric Mobility</p> <p>1.3 Formation of EV Steering Committee bringing together key stakeholders including the tourism sector to trigger behavioural change in tackling mobility challenges</p> | <p>National institutions, policy and regulatory frameworks to catalyze widespread use of EVs in both private and commercial applications and in particular in the tourism sector.</p> |
| <i>Component 2 Short-term barrier removal through e-mobility infrastructure demonstration in the municipalities of Berat and Belsh</i> | | |
| <ul style="list-style-type: none"> - Increase in tourism in recent years could take an unsustainable turn if left unaddressed - Surge in urban population and vehicle registrations has led to increased GHG emissions, congestion, air (PM2.5) and noise pollution - Lack of awareness of technical and financial viability of e-mobility solutions, in particular their application to sustainable tourism | <p>The project will demonstrate the technical, financial and environmental viability of e-mobility solutions as well as their high relevance to the tourist sector in the two target municipalities of Berat and Belsh.</p> <p>2.1 Climate-smart capital investment plan for Berat and Belsh with a focus on e-mobility infrastructure investments</p> <p>2.2 E-mobility infrastructure implemented to demonstrate sustainable transportation technology applications</p> | <ul style="list-style-type: none"> - E-mobility solutions demonstrated as financially feasible. - Enhanced connectivity and accessibility will benefit tourism and employment opportunities <p>The final decision on investments will be made during the PPG phase. Indicatively, the conversion of at least 35 buses will be supported and 50 e-chargers could be installed.</p> |
| <i>Component 3 Preparing for scale-up and replication of low carbon electric mobility interventions</i> | | |
| <ul style="list-style-type: none"> - Insufficient technical capacity and knowledge | <p>Generating and exchanging knowledge and lessons learned</p> | <ul style="list-style-type: none"> - Strengthened stakeholder |

| Baseline | Summary of GEF incremental intervention | Benefits |
|---|--|--|
| <ul style="list-style-type: none"> on e-mobility design, operation and maintenance - Lack of holistic approach to transport and tourism at the local levels - Limited data on technical and commercial indicators of e-mobility | <p>through national and international Global Programme events to raise awareness on e-mobility challenges and solutions.</p> <p>3.1 Strengthened institutional capacity and awareness raising through workshops for policymakers and relevant stakeholders</p> <p>3.2 Incentives to de-risk the e-mobility sector for private sector investments identified</p> <p>3.3 Participation in Global Electric Mobility Programme through global events, annual meetings, and targeted training programmes to promote the replicability of project's intervention</p> | <p>capacity to design, plan and implement innovative transport solutions</p> <ul style="list-style-type: none"> - Increased awareness and willingness of public actors to study and work in e-mobility - De-risked e-mobility investment thanks to the availability of reliable data and lessons learned |
| Component 4 Monitoring and Evaluation | | |
| <p>This component aims at establishing and implementing effective project monitoring and evaluation mechanisms alongside capturing progress and lessons learned.</p> <p>4.1.1 Monitoring and independent mid-term review</p> <p>4.1.2 Independent terminal evaluation</p> | | |

3. Engagement with the Global / Regional Framework

The project will establish a national platform to facilitate cross-sectoral application of EVs, which will trigger behavioural change in tackling mobility challenges. Authorities involved in transportation and tourism planning (such as Albanian Institute of Transport and National Tourism Agency) will be consulted in order to ensure that an integrated approach to transport and tourism is provided. It is envisaged that the platform will be connected to the Global Platform for Sustainable Cities¹⁴ for efficient knowledge sharing of best practices on urban development, planning and financing. The platform will engage with other programs such as EnerNETMob¹⁵, which promotes shared electric mobility by implementing interregional pilot networks in Mediterranean region and EU funded IPA Italy-Albania-Montenegro Programme¹⁶ which focuses on sustainable tourism including sustainable transport service and facilities.

The platform will share national experiences to tackle challenges beyond national borders by promoting low carbon economy and fostering innovative practices through an integrated cooperation approach to sustainable tourism. The project will thus contribute to Albania's Intended Nationally Determined Contribution (INDC), which targets to reduce CO2 emissions by 11.5 % compared to the baseline scenario

¹⁴ <https://www.thegpsc.org/>

¹⁵ <https://enernetmob.interreg-med.eu/>

¹⁶ <https://interreg.eu/programme/interreg-ipa-cbc-italy-albania-montenegro/>

in the period of 2016-2030. This reduction means 708 kT CO₂ emission reduction by 2030 and includes the transport and energy sectors.¹⁷

The project will build upon ongoing initiatives in Tirana (electric buses and taxis, following the development of a mobility plan) and will focus on increasing their durability by reinforcing and expanding national policies and the national action plan for electric vehicles under Component 1.

With the development of capital investment plans for Berat and Belsh, Component 2 aims to utilise GEF funding to provide investors with e-mobility opportunities that can be replicated in a variety of settings to establish links between different pillars of the economy. The knowledge generated from the pilot demonstrations will complement that of other ongoing projects in Tirana, to establish a reliable database to be used by potential investors.

Half of activities under Component 3 are dedicated to the generation and exchange of knowledge. In cooperation with University of Tirana, the project will organize seminars dedicated to raising awareness on electric mobility as an effective approach towards sustainable city planning. The event will identify priorities and needs in light of the lack of technical capacity to incentivise vocational training and higher education courses. The outputs of the seminars will be disseminated to further raise awareness of the environmental challenges embedded in a sporadic approach to sustainable transport in general, and tourism in particular. Particular attention will be given to the collection, re-use and recycling with regards to batteries.

Jointly, the Global Programme will develop a range of knowledge materials for e-mobility policy making, development of business models and finance schemes, methodologies for e-mobility demonstrations which will be provided to the countries through the Regional Support and Investment Platforms. Four events will be held for policy makers and decision makers to accelerate EV deployment in the target municipalities and beyond. The Programme will act as a knowledge hub to develop linkages and provide best practices to support the conceptualization and implementation of e-mobility policies.

As such, the project design is therefore tailored to the specific barriers to electric mobility within the Albanian context (Components 1, 2) and then it is designed to share lessons on its experience within the wider programme to leverage its lessons learned at a regional and global level (Component 3).

¹⁷ <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Albania%20First/Albania%20First.pdf>

Annex A: Baseline Projects

| Baseline Projects | |
|--|--|
| Authority | Summary |
| The city of Tirana | <ul style="list-style-type: none"> The city authorities in the Albanian capital Tirana have started testing electric buses as part of efforts to lower the level of pollution in the city. The first bus that has been tested is a Polish Solaris Urbino electric. Electric buses are being tested in Kombinat-Kinostudio urban line. Tirana city authorities licensed the first electric taxi company in September 2017 and the police force is driving an all-electric fleet. |
| Supporting Economic Agency ¹⁸ | <ul style="list-style-type: none"> Establishment of technological center to convert diesel cars to electric. Construction of a 0.2 MW photovoltaic power station to supply clean energy to lighting and ecological electric vehicles in the public park of Belsh. Providing transport services by ecological vehicles in tourist cities through public-public partnership model. Building ecological dock for transport vehicles (boats, ships, bicycles, cars etc) in the lake of Pogradec and Belsh. |
| EBRD ¹⁹ | <ul style="list-style-type: none"> Tirana is part of the EBRD's Green Cities Framework, planning and investing in its future green development. The focus is on increasing energy sustainability and energy efficiency Diversifying energy sources, reduce losses, increase transmission and distribution capacity Promotion of the shift towards more energy efficient production |

| Other Baseline Projects | | | | |
|--|---------------|---|------|---|
| Project/Programme title | Budget | Source of funding | Year | Agency(ies) |
| Reconstruction of the promenade and bicycle lanes in Belsh | EUR 2,000,000 | Albanian Development Fund | 2020 | - Government of Albania - Albanian Development Fund - Supporting Economic Agency - Municipality of Belsh |
| Green City Action Plan of Tirana | EUR 289,970 | Austrian Federal Ministry of Finance under the Western Balkans DRIVE Fund | 2017 | EBRD |
| Enhancing Capacity for Low Emission Development Strategies (EC-LEDS) | n.a | USAID | 2016 | USAID |
| South East Europe Urban Resilience Building Action Network | USD 612,516 | UNDP | 2017 | - European Commission Humanitarian Office - UNDP |

¹⁸ ADF/SEA, 2019: Introductory document on the mission and objectives of the SEA at ADF. p. 4

¹⁹ <https://www.ebrd.com/cs/Satellite?c=Content&cid=1395251989333&d=Mobile&pagename=EBRD%2FContent%2FContentLayout>

| Other Baseline Projects | | | | |
|--|----------------|--------------------------------|------|--|
| Project/Programme title | Budget | Source of funding | Year | Agency(ies) |
| The regeneration of the Lana River area in Tirana. | EUR 11 million | European Investment Bank | 2019 | - European Investment Bank - Municipality of Tirana |
| Tirana Smart City | n.a | Municipality of Tirana UNDP | | Municipality of Tirana |

| List of stakeholders |
|--|
| Ministry of Tourism and Environment |
| Ministry of Infrastructure and Energy |
| The National Tourism Agency (AKT) |
| National Centre for Environment, Tourism and Sustainable Development (NCETSD) (national execution partner) |
| Institute of Transport |
| Albanian Development Fund |
| Supporting Economic Agency |
| Municipality of Berat |
| Municipality of Belsh |
| University of Tirana |

Annex B: Baseline Policies

The project is fully aligned with the national development priorities reflected in the National Strategy for Development and Integration (NSDI II) 2015 – 2020²⁰, which is the major guiding document for economic and social development in Albania. One of the three main pillars for growth outlined in the strategy is “Sustainable Growth through the Effective Use of Resources.” To support the continued growth and economic development in Albania, the strategy outlines the need to develop the infrastructure, to facilitate accessible and integrated transportation and reliable energy supply while “ensuring an effective environmental policy, minimizing environmental degradation and preservation of renewable resources.”

Albania is pursuing integration into the European Union. In 2014, the Council of the European Union (EU) agreed to grant Albania candidate status and recommended further development of reforms to open negotiations for membership to the EU. The country is undertaking many structural reforms to boost economic growth and increase competitiveness. Several interventions aim to support the Government of Albania to align national laws, policies, and regulations with the requirements of the EU Acquis.²¹ Specific efforts will:

- Promote integration of health and environmental considerations into transport policies;
- Support ministries and departments to incorporate sustainability and low emission measures into sector policies, strategies, and regulations; including accelerating electric mobility in urban areas through innovation and technology transfer.

The Council of Ministers approved on 20 January 2016 the National Action Plan for Renewable Energy Sources (NAPRES) for the period 2015-2020, which sets out the plan for achieving the 2020 target, namely that 38% of the final energy consumption shall come from renewable energy sources. Moreover, the Albanian’s Vision in line with the “2016-2020 Sectorial Strategy of Transport and Action Plan” highlights the need for development of a safe, reliable and comfortable system of public transport.

Through the DCM Nr. 633, dated 26.10.2018 with the aim of reduction of air pollution, the Ministry of Tourism and Environment set up new standard in the motor vehicles emissions and discharges. New cars that have not previously been registered for circulation in any other country, which meet the European Union's EURO 5 rate, are automatically registered in Albania. While used cars should meet the EURO 4 standard, should have been produced no more than 10 years before the date of their first registration in Albania. An Environmental-Carbo-Tax is levied based on the age and engine size of the vehicle. The tax incrementally increases from 4 years upwards. The import tax favours newer and smaller petrol vehicles. Significant developments are done in order to improve the performance of the energy sector in Albania.

Other relevant policies include the National Plan for European Integration (NPEI) 2016-2020, the National Economic Reform Program for Albania (NERP) 2018-2020, the Economic Reform Programme 2019-2021, the Business and Investment Development Strategy 2014-2020 (BIDS), the Albanian Business Innovation and Technology Strategy 2017-2022, the National Strategy on Tourism 2014-2020.

Please see the table below for relevant regulatory framework:

²⁰ <http://planifikimi.gov.al/index.php?id=l614s&L=2>

²¹ EU Acquis Chapter 27 on Environment contains over 200 major legal acts covering horizontal legislation, water and air quality, waste management, nature protection, industrial pollution control and risk management, chemicals, and forestry.

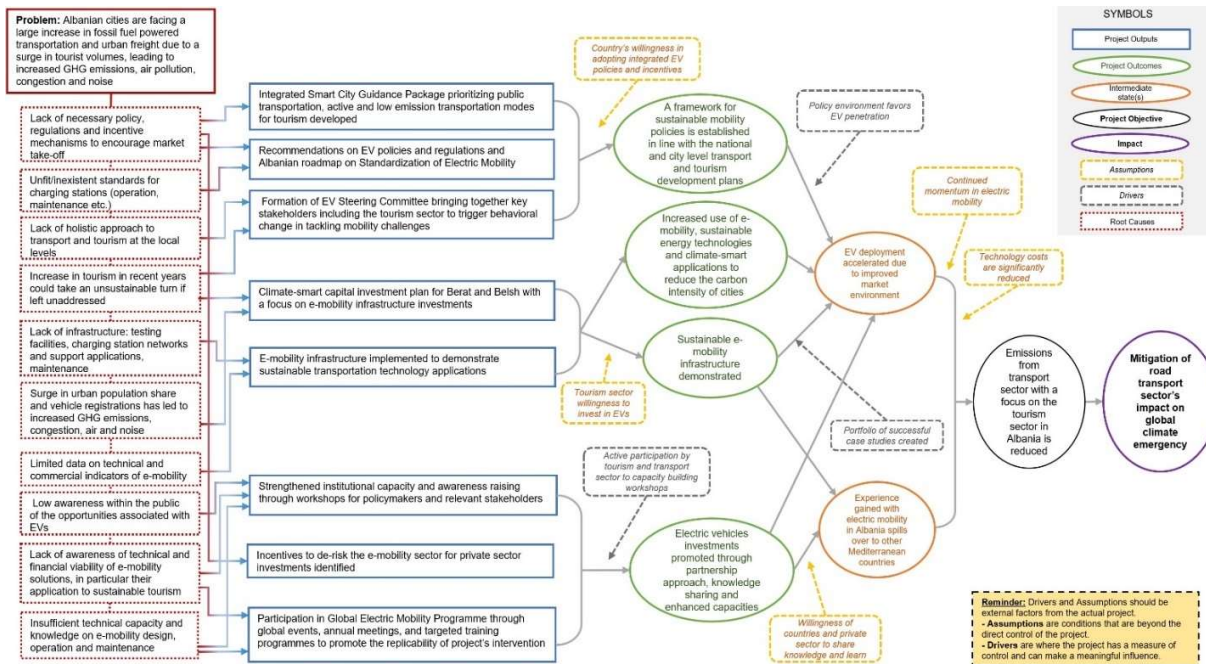
| Relevant regulatory framework | | | |
|-------------------------------|--|--|---|
| Year | Name | Main Focus | Relevant targets |
| 2002 | Law no. 8906, date 6.06.2002 “On protected areas” | Creates framework for establishment and administration of the protected areas | Increase carbon sequestration process and tourism development. |
| 2011 | Law No 10 440/2011 “On Environmental Impact Assessment” | It is approximated to the Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment. It governs the impact assessment procedure for projects that can have significant impact on the environment, the contents of the environmental impact assessment, the participation of stakeholder bodies and organizations and the public, supervision and other issues relevant for the environmental impact assessment | Reduction of impacts to natural resources, reduction of emissions, etc. |
| 2013 | Law no. 91/2013, date 28.02.2013 “On environmental strategic assessment” | Stipulates that for any spatial plan or sectorial plans developed under the law no. 107, date 31.07.2014 “On territorial planning and development” an environmental strategic assessment has to be carried out by the authority proposing the plan. | Reduction of impacts to natural resources, reduction of emissions, etc. |
| 2013 | Multi-sectorial National Environmental Quality Strategy 2013-2020 | The main objective of the Multi-sectorial National Environmental Quality Strategy 2013-2020 is to improve air quality in Albania over the long term, which has a direct impact on the quality of life and environmental protection. It also provides steps for coordinating the current legal framework with European legislation, as well as its implementation. | The strategy’s concrete measures include, among others, reduction of pollution from industrial use through the promotion of energy efficiency in new technologies in the industry; presentation of on-line emission monitoring of chimney stacks of industrial entities to ensure compatibility with limit values of pollutants; promotion of the use of renewable energy sources; and presentation of grant schemes or reimbursement schemes for energy efficiency improvements. |
| 2014 | Business and Investment Development Strategy 2014-2020 | The Business and Investment Development Strategy 2014-2020, is the main document for the identification and implementation of | Increase the range of ecological products that are based on the effective use of |

| Relevant regulatory framework | | | |
|-------------------------------|--|---|--|
| Year | Name | Main Focus | Relevant targets |
| | | the national policies for the promotion of business investments for the period 2014-2020. | resources in the tourism and agro-industry sectors. |
| 2016 | National Renewable Energy Action Plan | It describes the development of the Albanian energy sector under a Renewable Energy scenario based on the Draft Energy Strategy, which is based upon Albania's obligations as a Contracting Party to the Energy Community Treaty to transpose and comply with the EU Directives on the promotion of the use of energy from renewable sources. | Reduction of CO ₂ emissions. National target of 38% of renewable in the final total energy consumption of the country in the year 2020 compared together with support measures for achieving these targets. |
| 2016 | National Strategy for Development and Integration 2015–2020 (NSDI-II), | The NSDI II, provides the framework for national strategic priorities and targets of 27 sector and cross-sector strategies. The strategy serves as an important reference document for Albania's development partners. One of the priorities of the NSDI-II is the greater connectivity in country infrastructure and the sustainable use of resources. The NSDI II adopts a broad definition of 'infrastructure' comprising energy, transport, tourism, natural resources and environment. Investments are centred on meeting the standards of the EU Acquis and are expected to expand the opportunities for business and the economy, and to increase public well-being. | The strategy actively encourages the development of sustainable tourism in Albania through focusing public infrastructure provision in areas of current and potentially high tourist demand. |
| 2017 | Law No. 7/2017 "On the promotion of the use of energy from renewable sources". | The objective of this law is to facilitate the harnessing of Albania's significant renewable energy resources, in particular in the area of hydroelectric plants, solar energy as well as biomass resources. | Albania has set a binding target of 38% of its gross final energy consumption to be fulfilled from renewable energy by 2020, which is an ambitious target compared to 33% in 2014. |
| 2018 | Sectorial strategy of transport & action plan 2016 –2020 | Development of sustainable transport | Improve the air quality, reduce the CO ₂ emissions. |
| 2018 | Strategy for Agriculture and Rural Development in Albania 2014-2020 | In 2018, the Integrated Rural Development Program, "100 Villages Program ", was incorporated as part of the strategy. It aims to coordinate development interventions in 100 rural villages, with high potential for | Improvement of public infrastructure (support for road infrastructure, revitalization of public / urban spaces, community infrastructure, public |

| Relevant regulatory framework | | | |
|-------------------------------|---|---|---|
| Year | Name | Main Focus | Relevant targets |
| | | economic and social development, agro-tourism and rural tourism, nature and environment, as well as cultural heritage. | services, environmental infrastructure and tourism. Economic development through diversification of economic activities (improvement of tourism potential in rural areas, agro tourism and rural tourism, investment). |
| 2018 | National Energy Strategy 2018-2030 | In particular, implementation of the strategy is intended to increase energy security, integration into regional and EU energy markets, energy efficiency, decarbonization of the economy, as well as research, innovation and competitiveness. | The strategy is intended to achieve increased utilization of RES technologies and environmental protection principles. |
| 2019 | Economic Reform Programme 2019-2021 ²² | The Government of Albania, in line with important strategic documents and other sectoral strategies, has prioritized 20 reform measures. These reform measures encapsulate some of the priorities of the government ranging from energy market liberalization, diversification of energy sources, transport, broadband connectivity, land consolidation and defragmentation, businesses environment, trade, VET, water and wastewater sector, employment, and social inclusion. | Transport and energy infrastructure, owing to the fact that they have not been fully modernized or constructed. Among the reform priorities are the diversification of the energy sources, reducing energy dependence from imports and modernize the land transport infrastructure. |

²² https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/albania_erp_2019-2021.pdf

Annex C: Theory of Change



Bangladesh

Child project title: Enabling Electric Vehicles (EVs) Adoption in the framework of Sustainable energy based Transportation in Bangladesh

GEF Agency: UNDP

Total Project Cost: USD 1,788,991 (without IA fee); co-financing: USD 10,750,000; PPG: USD 45,872 (without IA fee)

PROJECT DESCRIPTION

1. Country Context

Bangladesh's rapid growth in infrastructure and industrial development led to vehicular growth especially based on fossil fuels, reliance on private modes of transport due to limited public transportation and on informal transport modes. Transportation sector accounts for 11.5% of total GHG emissions amounting 8,442 Giga gram²³ (in 2012) and it is expected to increase by 118% between 2011 and 2030²⁴. The Second National Communication for Bangladesh shows that 88% of transport sector GHG emissions in Bangladesh from road transport, 7.5% from water transport, and 2% each from rail and aviation.

As per the 2019 State of Global Air study, at least 123,000²⁵ people died in Bangladesh in 2017 due to indoor and outdoor air pollution. It is observed that that ambient air pollution shortens an average Bangladeshi's life by 1.87 years. Various air quality real-time measurements show that the air quality in cities "extremely unhealthy" and, deteriorating at alarming rates, particularly during winter.

Due to fossil fuel based transportation, the country's air quality has been deteriorating through the use of obsolete and more polluting options. The Government has thus taken several initiatives such as phasing-out of two-stroke three-wheel vehicles from major cities and converting them to compressed natural gas (CNG) vehicles; setting up CNG refuelling stations; phasing-out leaded gasoline and the import of unleaded gasoline; expanding railway and waterway networks and relocating some industries to export processing zones. The significance of Electric Vehicles (comprising cars, battery operated two or three-wheelers / easy bikes, buses and others – i.e. ambulances) as a future transportation mode is also increasingly realised.

A huge leap has already been seen in the use of electric tri-wheelers (easy bikes and motorised rickshaws) over the past years in sub-urban and rural areas of Bangladesh. This is corresponding to higher and growing demand for electricity. However, as the country continue to rely on coal or fossil fuels-based energy generation, this is leading to increased GHG emissions. There are also environmental risks associated with the use of batteries in the EVs that remain to be addressed. It is further noted that use of lead acid batteries that are commonly deployed for EV tri-wheelers in Bangladesh raise specific concerns at different stages of manufacturing, re-cycling and disposal.

The Nationally Determined Contributions (NDC) is committed to reduce GHG emissions in the power, transport, and industry sectors by 12 MtCO₂ by 2030 or 5% below BAU emissions (unconditional) and by 36 MtCO₂ by 2030 or 15% below BAU emissions for those sectors (with support). The draft Clean Air Act

²³ Third National Communication of Bangladesh to the UNFCCC (data used from 2012)

https://unfccc.int/sites/default/files/resource/TNC%20Report%20%28Low%20Resolution%29%2003_01_2019.pdf

²⁴ https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Bangladesh%20First/INDC_2015_of_Bangladesh.pdf

²⁵ https://www.stateofglobalair.org/sites/default/files/soga_2019_report.pdf

is being promulgated alongside of promoting electric vehicles in Dhaka. The Roadmap and Action Plan for implementing NDC in transport, power and industrial sectors²⁶ considers a broad framework of low carbon transport approaches with emphasis on innovation, enhanced energy efficiency, fuel switch and potential for integrating EV charging based on renewables.

Although Bangladesh has a relatively high grid emission factor of about 610 gCO₂/kWh, the much higher overall efficiency of the electric drivetrain compared to conventional vehicles would still result in emission savings. A grid emission factor of about 850 gCO₂/kWh mark the breakeven point for EVs to generate GHG emission reductions compared to conventional vehicles. Since the carbon footprint of the Bangladesh power mix is almost 30% lower than 850 gCO₂/kWh, the use of EVs would directly lead to emission reductions, even in case no additional renewable power is blended in the electricity mix to charge the vehicles.

Currently, the EV ecosystem is yet to be planned and developed systematically in Bangladesh to address the present challenges:

- a) Absence of regulatory and policy frameworks (there are no permits for easy bikes/electric three wheelers or battery operated rickshaws), reliance on imports of EVs or cheaper options and use of fossil fuel based source of energy for their charging (as part of the regular residential connection);
- b) Lack of linkages to renewable energy based charging infrastructure that could potentially reduce the carbon footprint in the transport sector;
- c) Lack of awareness and low capacity.

The proposed GEF project thus aligns its interventions towards integrated planning of energy and EV based transportation framework with the introduction of renewable energy based electric vehicle charging stations (ECS) in selected sites through support of appropriate institutional mechanisms, fiscal measures or financial incentives and capacity building. GEF funding further aligns the overall adoption of EVs in Bangladesh transport sector towards enhanced use of renewable energy for charging EVs.

The overall development goal of the project is to reduce GHG emissions with EV ecosystems that promote environment friendly, energy efficient, low-carbon transport and urban systems in Bangladesh.

2. Project Overview and Approach

Provide a brief description of the geographical target(s), including details of systemic challenges, and the specific environmental threats and associated drivers that must be addressed.

Geographic Target:

Dhaka, Chittagong, Khulna and Rajshahi and other important cities in Bangladesh (to be defined more clearly during PPG)

Challenges and environmental threats:

Transport sector in Bangladesh is associated with challenges of environmental - local and global greenhouse gases (GHGs) and social (health, employment, traffic congestion) issues. Transport and power plants are the main contributors to air pollution as well as greenhouse gas emissions in Bangladesh. Air pollution manifests into severe negative consequences of health²⁷ and wellbeing. At present per capita electricity

²⁶

https://moef.portal.gov.bd/sites/default/files/files/moef.portal.gov.bd/page/ac0ce881_4b1d_4844_a426_1b6ee36d2453/NDC%20Roadmap%20and%20Sectoral%20Action%20%20Plan.pdf

²⁷ Long-term health effects from air pollution include heart disease, lung cancer, and respiratory diseases and can also cause long-term damage to people's nerves, brain, kidneys, liver, and other organs.

generation is 510kWh and 95 % of the total population have access to electricity. As per Third National Communication (2018), transport sector emission is 11,367.76 Gg-CO₂e. The fossil fuel-based energy consumption in transport is accompanied by the GHGs emissions which induce climate change and vulnerability to likely impacts.

As per Bangladesh Power Development Board (BPDB) more than 500,000 of three-wheeler EVs (locally called Easy Bike), are plying across Bangladesh for shorter distances which are consuming 1.5 to 2 million kWh electricity per day²⁸. These EVs are assembled locally at low costs at about USD 2,000 and not required to register with the transport department of the government. Hence, the services of these vehicles are increasing rapidly and haphazardly and yet, their adoption is impeded by frequent power crises, especially in rural areas and lack of enabling framework for large scale sustainable adoption of EVs. The key barriers include:

- a) An unregulated EV market with lack of institutional and policy frameworks that necessitate a coordinated framework for energy and transport subsectors, specific regulations, incentives, and standards (quality, safety), testing and environment management protocols for EVs and ECS;
- b) Market and investment related (integrated proof of concept) barriers; while EV markets are emerging, the impacts are sub optimal and there is limited proofs of concepts for integrated energy - transport ecosystems with proven business models/streamlined contractual modalities; and this is accentuated by fragmented EV ecosystem/infrastructure and financing options;
- c) Limited evidence-based capacity and awareness on EVs at all levels – policy makers, local industry and users.

Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration.

Baseline Investments:

Electric vehicles (EV), in particular, three-wheelers and rickshaws, commonly known as Easy Bikes (EB) have proliferated informally to more than 500,000 in 2017 (estimates currently range up to 1 million in Bangladesh). As noted above, these vehicles are either assembled locally or bought from China and emerged as a major intra-city transport mode in many cities over these years. These vehicles rely on captive charging as only 5,000 grid connections²⁹ for charging stations are allotted by Power Board in Bangladesh and that too fossil fuel based and a few solar charging stations (7 Nos) are set up by Bangladesh Rural Electrification Board (BREB)³⁰. Hence, this establishes that charging is most likely done with residential connections and relies on fossil fuel-based electricity generation.

As these vehicles are commonly charged at night in the garage, the proposed child project will support and enable baseline investments for public and commercial charging system infrastructure based on low carbon or renewable energy and support conducive framework for EV markets. The proposed integrated transport - energy framework will enable reliance on renewable energy based transportation, improve power factor and reduce harmonics in the utility grid due to electricity demand surge from EVs (that in turn impacts positively on access to reliable power besides increasing the use of renewable energy) and enhance other benefits such as improved battery life. It is in this context that the Sustainable Renewable Energy Development Authority (SREDA) has drafted the Electric Vehicle Charging Station Guideline-2020, which is being finalized within the frameworks of different policies related to energy.

²⁸ <https://www.dhakatribune.com/bangladesh/power-energy/2017/09/27/pdb-bringing-battery-run-vehicles-tariff-regulations>

²⁹ <https://thefinancialexpress.com.bd/trade/retail-power-price-hike-likely-1572927922>

³⁰

http://reb.portal.gov.bd/sites/default/files/files/reb.portal.gov.bd/page/fb2837ea_bee9_4775_98c1_d3c9b549a082/BREB%20RE%20Program.pdf

There are also closely linked policies and strategies on energy and transport that are addressing different sets of issues, for e.g. the Bangladesh Climate Change strategy and Action Plan (2009 and updated draft 2019), Energy Efficiency and Conservation Master Plan (2015) and the Renewable Energy Policy 2009. Similarly, EV or transport linked policies/initiatives include the following:

- i) Legalizing electric vehicles: Bangladesh Road Transport Authority (BRTA) has issued draft guidelines on the electric vehicles, making registration, fitness certificate and tax token mandatory. The draft policy also specifies the lifespan of various modes of electric mobility — two wheelers, three-wheelers, and light and heavy-duty vehicles;
- ii) Tax incentives: Recently, government has been promoting hybrid vehicles by providing substantial tax incentives, apart from having various tax exemptions for electric two wheelers and three wheelers;
- iii) Promoting sustainable charging infrastructure: Bangladesh Energy Regulatory Commission (BERC) has introduced a new tariff category for charging stations – setting energy charge of 7.70 Tk./kWh along with an additional demand charge of 40 Tk./kW/month;
- iv) Bangladesh Rural Electrification Board (BREB) is installing solar powered charging stations, hence promoting renewable energy for EV charging stations (ECS).

The proposed child project will complement the baseline situation to address the key challenges arising out of a) unregulated and fragmented development of EV markets leading to further use of unsustainable sources of energy for charging EVs and b) lack of coordinated ecosystems (standards, policies, regulations, financing) to support sustainable charging infrastructure and c) information and capacity barriers at different levels.

Institutional framework:

| Stakeholder | Roles and Responsibilities |
|---|---|
| Ministry of Power, Energy, and Mineral Resources (MoPEMR) | It is responsible for communication, and coordination with Department of Environment (DoE) as far as identifying the activities for the implementation and enforcement of EV regulations are concerned. (Component 1); will closely coordinate with SREDA, Urban Development Directorate (UDD), Department of Environment (DoE), Local Government Division, City Corporations and other key stakeholders. |
| Urban Development Directorate (UDD) | It is a key agency responsible for identification of low carbon demonstrations. (Components 1, 2, 3) and would aim for integration of cost-effective low carbon interventions as part of City and Urban Planning Process. |
| Local Government Division, Ministry of Local Government, Rural Development & Cooperatives | This is the key agency responsible for identification of capacity building needs of city corporations in planning processes to integrate building code, energy efficiency and green city development principles incorporated as part of Municipality/City rules and allocate required public budget. (Component 3) |
| Municipality Association / Mayors / Urban Forum and City Corporations | They will be closely consulted for their inputs to the project design and roles in implementation. (Component 1) |
| Department of Environment (DOE)'s Climate Cell, Ministry of Environment, Forests and Climate Change | It is responsible for Regulation, Compliance, Monitoring and Enforcement in environment management and air quality control. During the project preparation phase, DOE's climate cell inputs will be sought to design activities related to sensitizing city dwellers on |

| | |
|---|---|
| | greening and cleaning efforts involving a series of events on low carbon greening efforts in urban areas. (Components 1,2,3) |
| Ministry of Finance | National Board of Revenue under board of finance is responsible for providing any fiscal and financial incentive. Moreover, it enables Bangladesh Bank and some other non-bank financial institutions like IDCOL and BIFFL to provide attractive financial scheme |
| Bangladesh Road Transport Authority (BRTA) | Bangladesh Road Transport Authority (BRTA) is a regulatory body to control manage and ensure discipline in the road transport sector and road safety related areas in Bangladesh. They also provide vehicle registration, road permit and license to any vehicle |
| Road and Highway (RHD) | RHD is responsible for the construction and the maintenance of the major road and bridge network of Bangladesh. |
| Bangladesh Standard & Testing Institutes (BSTI) | BSTI will be responsible for certification for the EV in order to maintain the standards. |
| Private sector | Tata Motors Bangladesh, Ifad Autos Limited will be marketing EVs and would be part of consultations for charging infrastructure development and investments. |

Gender:

The Seventh Five-Year Plan (2016-2020) of Bangladesh emphasizes the enabling of equal opportunities and rights for men and women and considers recognition of women as equal contributors in economic, social, and political development. It is observed that the social and demographic determinants of a woman's decision-making authority within the home and mobility outside of the home is firmly patriarchal in urban and rural Bangladesh. The daily mobility (transport provisions) means physical access to different facilities which is closely related with the issue of women empowerment. Easy Bikes/Battery operated three wheelers are playing a significant role as a means of transport for short distances particularly for women as well as it is an income generating source for unemployed people since the introduction of this in the country around 2007. These vehicles charge reasonable fare per ride, that are advantageous for women. The easy bikes have also received wide acceptability to women because of its ability to cope with the rough rural roads and noise and smoke free operation. With many girls opting for easy bike to commute to remote colleges, this is further catalysing women education and employment opportunities in rural Bangladesh.

Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits.

The project is aligned to address the dominant environmental challenges and reduce the barriers and constraints to adoption of low carbon pathways at national and local levels. The project aims to catalyze transformation of transportation sector with sustainable energy sources to electric mobility; and address air quality issues which have deleterious impacts on public health and safety, the economy (in particular import of fossil fuels), and climate change. The Theory of Change (TOC) is encapsulated in three components relating to 1) policy interventions and actions to strengthen coordination of national and sub-national agencies for integrating sustainable energy in transportation, 2) facilitating the development of business models and financing schemes, and advancing pilot /demonstration investments as proof of concept and 3) close knowledge gaps and sharing best practices for enhanced skills and promote awareness and capacity at all levels. These Components create conducive conditions for market expansion, and foster enabling conditions at city level for the introduction of EVs and charging infrastructure to accelerate the transformative process. The project will support the improvement of the institutional framework for e-mobility in Bangladesh. It will work on enhancing policies to incentivize the uptake of e-mobility.

Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.

The GEF support is aimed to streamline the energy and transport interventions with a coordinated effort for transformative impacts on EV sector through a set of project components briefly described below. The project primarily focuses on setting up of ECS that source energy sustainably within an overall conducive framework for EV deployment in Bangladesh. Given the above baseline, the project would be targeting 2-3 wheelers (easybikes and battery operated rickshaws) and potentially also electric cars. During the PPG phase, the scope of EV types and the activities proposed within the identified Components will be further assessed for different electric vehicle types.

Component 1 - Streamlining energy, transport policies - ECS policy and regulations for low carbon transformation of transportation sector:

Under this component, the project will address some of the policy, regulatory and other institutional gaps identified in evolving low carbon energy- integrated-mobility frameworks with a particular emphasis on a) setting-up charging infrastructure based on sustainable energy; b) exploring policy and regulatory options such as tariffs, incentive structures, taxes, safety regulations, and preferential parking, Time-of-Day tariff structure for promoting charging at off-peak hours, etc., c) environmental consideration such as collection, re-use and recycling of batteries. It will develop an Environmental and Social management framework and gender action plan during the PPG phase. This would be further mainstreamed by preparing an EV roadmap that would serve as a guidance for EV market players.

Component 2 - Markets and investments enabled for ECS (“proof of sustainable energy -transport integrated concept”):

This component will propose de-risking private sector investment approaches with two sets of interventions linking to technical assistance and financial leveraging. A range of possible interventions in grid-connected charging station, solar charging station, renewable energy and energy-efficiency will be identified based on EV types for selected cities such as Dhaka, Chittagong, Khulna and Rajshahi and in sub-urban/rural areas. A preliminary assessment/ technical feasibility will be conducted to find out the requirement of charging station for the EV. Tentatively, 35 EV Charge Stations are being proposed for different EV types (for 2-3 wheelers – easybikes, but also likely for cars). Without the GEF project, it is unlikely that the transport interventions will be fully integrated to low carbon renewable energy sources and that integrated approaches are adopted. The project will also address the barriers faced in linking low carbon and sustainable energy to transport systems in cities and rural areas.

In addition, under this component the project will showcase EV deployment through a set of implementation actions on sustainable EV value chain and financing instruments (e.g. e-Mobility Trust Fund, fiscal or regulatory reform, duty reduction in EV & accessories, plug/play, charging) and thereby, further leveraging investments from existing financial institutions and private market players. It will ensure a proof of sustainable energy and transport integrated ECS concepts in selected cities with public and private partnerships, innovative business models and financing schemes. Finally, the GEF project will identify delivery/business models for scale up.

Component 3 - Awareness and capacity building:

This component will promote EV know-how on different aspects at all levels – bring about increased awareness and systemic capacity to national and municipalities’ authorities, private EV operators, training of trainers and technicians working with automobile industries, utilities, financial institutions and service maintenance organizations on EV technology, technical and economical assessments, vehicle test results, and efficient use of transport, examples of international regulations and standards. Furthermore, it will undertake targeted activities to raise awareness and will disseminate necessary information to promote EV

in Bangladesh. Finally, key stakeholders will participate in the events and workshops under the Global Electric Mobility Programme

3. Engagement with the Global / Regional Framework

Establishing substantive linkages to the UNEP global programme on “Supporting the Shift to Global Electric Mobility” would be central to the Child EV project design. The activities of the project will be synergized to draw knowledge from the programmatic efforts. It would complement sharing of experience on all key project components and in particular, Component 3 for international best practices and capacity building and on Component 1 on policy and regulatory interventions. Experience and learning through Component 2 for establishing “proof of concept” will be shared with the regional platforms for further feedback and creation of new knowledge.

Identified stakeholders from government, academia as well as the private sector in Bangladesh will join the regional meetings and thematic working groups organized by the Global Programme. The transfer of knowledge and best practices from South to South, North to South and peer to peer is a core component of the GEF Global Program and will ensure the effective use of funds, both at the country as well as at the global level. The stakeholders of the project will also benefit from interactions with the knowledge hubs/networks created through the proposed national and international events of the global programme. They would be a key resource of information, materials and capacity development/training. The PPG phase will develop a detailed knowledge management plan in close association with UNEP and other stakeholders.

The project will be further aligned with many of the ongoing UNDP - GEF projects from GEF-5 and 6 project cycles in the areas of low carbon cities’ development, sustainable transportation and EV initiatives. The project will benefit from the outcomes of the GEF project on Sustainable Renewable Power Generation (SREPGEN) project on policies and guidelines for rooftop solar, tariff setting, etc. It would consider linkages with the proposed Low Carbon Urban Development for integrated interventions of energy efficiency and sustainable transportation.

Ecuador

Child project title: Support the shift towards low-carbon electric mobility in Ecuador

GEF Agency: UNEP

Total Project Cost: USD 1,280,275 (without IA fee); co-financing: USD 5,925,000; PPG: USD 50,000 (without IA fee)

PROJECT DESCRIPTION

1. Country Context (maximum 500 words)

Ecuador faces a key environmental challenge related to transport. While the country has a clean electricity grid, with almost 70% of electricity generated by hydropower, its transport sector is responsible for 47% (2012) of energy consumption, and 45% of greenhouse gas (GHG) emissions, mostly from road transport, (INGEI, 2012) with an increasing trend of 127% between 1994 and 2012.

The environmental challenge is not limited to climate change. Although Ecuador has air quality regulations, cities such as Quito face decreasing air quality due to emissions from the transport sector, leading Quito to implement circulation restrictions. This issue has an environmental and health impact; where 98% of the population suffers particle matter 2.5 exposure levels exceeding World Health Organization guidelines (World Bank Data, 2017).

This environmental challenge is due to the state of Ecuador's national fleet. As of 2017, the fleet contains more than 2.2 million vehicles, with numbers growing each year. 50% of vehicles are over 10 years old, with only 0.34% hybrids and just 0.01% electric vehicles. Furthermore, despite being an oil-producing country Ecuador is a net fuel importer exposing the economy to changes in global oil prices, with related impacts for consumers. With a clean electricity grid, by transforming to electric mobility the country can drastically reduce GHG emissions and its dependence on global fuel prices.

Distribution of GHG emissions in Ecuador

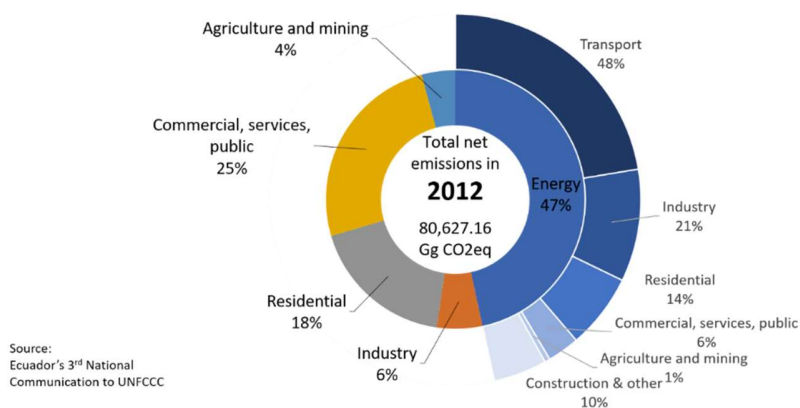


Figure 1. Distribution of GHG emission in Ecuador in 2012 (Ministry of Environment, 2017)

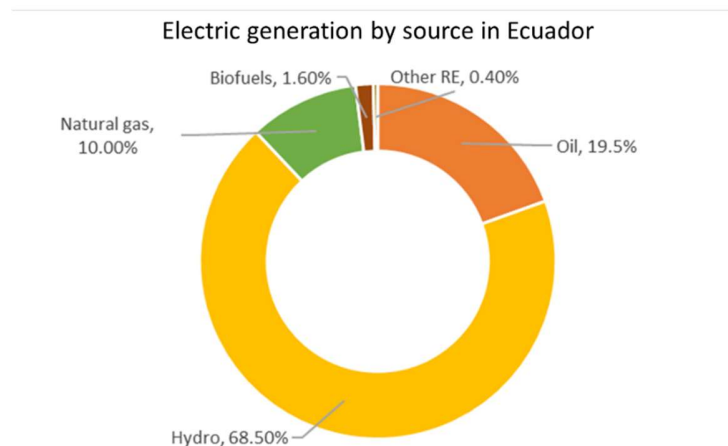


Figure 2. Electricity generation by source in 2017
(International Energy Agency, 2020)

Ecuador's strategic positioning on transforming to electric mobility starts with its nationally determined contribution (NDC). The NDC states the need to develop and implement safe and sustainable transport, including through a nationally appropriate mitigation action (NAMA) to reduce GHG emissions in transport in Quito, Guayaquil and Cuenca. Beyond the NDC, in 2018 pilot projects were launched in Loja, with 50 electric taxis (Jaramillo, 2019), and Quito, with one articulated electric bus and two 12m electric buses (El telegrafo, 2019). In 2019, Guayaquil introduced 20 electric buses (El Comercio , 2019).

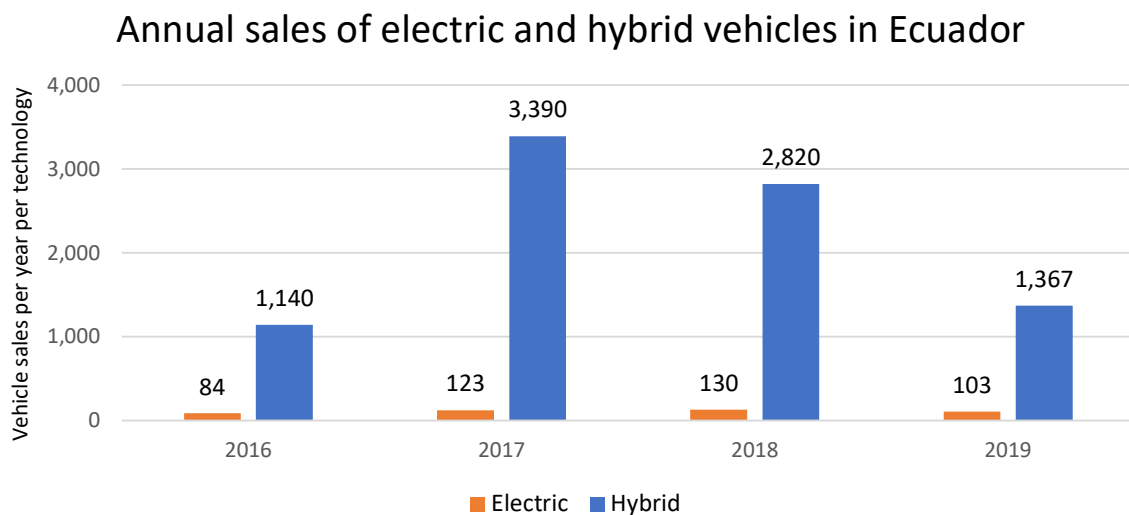


Figure 3. Annual sales of hybrid and electric vehicles in Ecuador, 2016-2019
(AEADE, 2020)

The country is also creating an enabling framework for electric mobility, with:

- Tax exemptions for electric vehicles (up to USD 40.000), batteries and charging stations;
- Preferential electricity tariffs for electric vehicle charging;
- 0% value added tax for imported electric vehicles, batteries and charging infrastructure;

- 0% special consumption tax for electric vehicles (it is 5-35% for internal combustion engine (ICE) vehicles);
- Technical body working to create tighter fuel standards (National Assembly of Ecuador, 2019);
- Legal mandate that by 2025 all new vehicles incorporated into public transport shall be electric.

Together, these actions are aligned with the project and the programme's proposed approach to foster impactful outcomes with global environmental benefits, specifically by reducing GHGs to support the achieving of the Paris Agreement.

2. Project Overview and Approach

Provide a brief description of the geographical target(s), including details of systemic challenges, and the specific environmental threats and associated drivers that must be addressed.

Geographical target

The project will be developed nationwide in Ecuador, a country of over 14 million people. 63% live in urban areas (Ministry of Urban Development and Dwelling).



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Systemic challenges

Although Ecuador has made advancements towards the introduction of electric mobility (as noted in the answer to section 1), the country continues to face systemic challenges to achieve this aim:

- From a market perspective, ICE vehicles are significantly cheaper and widely available. Despite growing sales of electric vehicles, numbers are still minute compared to ICEs. Consumers and car dealers have limited national experience and awareness on electric drive technologies.
- From a social perspective, there is a lack of understanding amongst civil society and the private sector on low-carbon electric vehicles as a viable alternative to traditional ICEs.
- From a policy and legal perspective, the country has been unable to phase out fossil fuel subsidies, which distort market prices and create invested interests. While it has introduced policy measures

(see section 1), it lacks a strategic long-term plan which can shape a comprehensive set of laws and regulations to encourage electric vehicle deployment.

Environmental threat

As noted in the response to the earlier question, one of the key environmental threats that Ecuador experiences on climate change mitigation is the growing GHG emissions due to its transport sector, in particular road transport. This threat will grow unless the country takes action to reduce this sector's emissions.

Associated drivers

Drivers of the systemic challenge and associated environmental threat:

- Firstly, there weak institutions related to transport and e-mobility are not able to facilitate the transformation to a low-carbon transport sector. Coordination between existing initiatives is fragmented and the country does not yet have a long-term strategic plan which can provide guidance and direction to policy design. There is also a lack of capacity on low-carbon transport, both with policy-makers and technicians that support such interventions.
- Secondly, while initial demonstrations have taken place, there continues to be a lack of awareness about the social, economical and technological viability of electric mobility as a ready alternative to ICEs.
- Thirdly, a significant cost differential continues to exist between ICEs and electric vehicles, affecting technology adoption and scale-up. While Ecuador has introduced some policies and incentives, a more coherent policy framework is required to support technology adoption.
- Finally, the country does not yet have measures in place to manage the complete life-cycle of the new technology, leading to reluctance by key stakeholders to promote and import electric vehicles..

Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration.

Current institutional framework

Under the Vice President's leadership, an inter-ministerial working group was created to promote public policy on electromobility. This group is integrated by the Ministries of Energy, Transport, Finance and Production, as well as the National Transit Agency and the National Finance Corporation (CFN). There is also a Climate Change Interinstitutional Committee (CICC) which approves all legislation and creates public policy on climate change mitigation and adaptation, including electric mobility, as well as NDC development.

Baseline Investments

| Agency / Initiative | Description | Investment (USD) |
|---|--|-------------------------|
| C40- GIZ – Cities Finance Facility | Project supporting Quito to deploy electric vehicles in public transport. | 450,000 |
| European Commission | Development of National Urban Transport Plan for sustainable transport in Ecuadorian cities through Euroclima+. | 550,000 |
| National Financial Corporation (CFN) | Special credit line for electric vehicle purchasing. | 2,000,000 |
| Banco Pichincha and Banco Procredit | Special credit products to incentivize the purchase of electric vehicles. | - |
| Quito Electricity Company | Working on public charging infrastructure in Quito. | 290,000 |
| Electricity Regulation and Control Agency (ARCONEL) | Developed a proposal for standards for electric vehicle charging. | N/A |
| Inter-American Development Bank | Developed: an urban transport NAMA; an assessment for electric mobility in Galapagos; and a feasibility study for vehicle scrapping. | - |

Stakeholder engagement

| Stakeholder | Role |
|---|--|
| Vice President's Office | Leads and coordinates the electric mobility working group and sets the direction for public policy. |
| Transport and public works ministry | Responsible for the development of national transportation policies , including electric infrastructure public works |
| National Transport agency | Electric mobility data gathering, information creation and analysis for the public policy development. |
| Environment industry | Estimation of environmental impact of electric mobility and guide for its public policy. |
| Energy and Non Renewable Resources Ministry | As it is in charge of electric vehicle charging infrastructure and grid integration, it will support the implementation of the project demonstrations. |
| Local /municipal governments | Supervise introduction of the project's electric mobility interventions at the city level. |
| Industry Ministry | Leverage public policy to foster the national automotive industry and others in the value chain. |
| Multilateral organizations | Support interventions on electric mobility and a clean energy matrix in the country. |
| Financial sector | Support technology scale-up by providing financial instruments to cover incremental cost differential. |
| Electricity company and regulators | Support incorporation of charging infrastructure into the grid and price regulation. |
| Automobile industry | Support the demonstration project by providing vehicle and infrastructure and participate in policy and regulation design. |
| Academia and civil society organizations | Participate in capacity-building, consultation processes and awareness-raising activities. |

Gender

The project will assess the impact of developed policies and regulations on the livelihoods of women, children, and the elderly. It will also disaggregate data collection to capture gender-based differences in mobility and adapt public policy to enhance universal accessibility. Furthermore, it will seek to reduce the disparity of women's employment in the transport sector by proposing opportunities for women in new ventures and business models. During project implementation, the executing agency will seek for gender-balanced participation in project activities and will ensure women are included in awareness-raising activities, decision making and capacity-building. This will be undertaken to ensure that the project's outputs and activities incorporate gender considerations, supporting women to reap the project's benefits in a way equally to men.

Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits.

This project responds to and reflects the global programme's theory of change as its structure and components mirror the programme's in a way which is adjusted to the national context. As per the programme, it will focus on supporting the strengthening of institutions for promoting electric mobility and facilitating its broad diffusion. Secondly, it will aim to remove short-term barriers, such as lack of awareness and confidence around electric mobility technologies, through strategic demonstrations complementary to other existing initiatives. Thirdly, it will support the country to build upon and accelerate its efforts to create an enabling environment for the scale-up and replication of low-carbon electric mobility. Finally, it will mirror the global programme by ensuring that efforts to ensure the long-term environmental sustainability of low-carbon electric mobility is considered and facilitated. Through this structure, it is an appropriate and suitable option for tackling Ecuador's systemic challenge of dependency on ICEs for road transport.

Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.

The project aims to accelerate the introduction and broad deployment of electric vehicles in Ecuador through capacity building, demonstrations, policies, business models and financial schemes. Through this project, GEF funds will play a crucial role in supporting the country to overcome incremental costs and capacity barriers to achieving this transformation. The project is structured on four components:

Component 1 - Institutionalization of low-carbon electric mobility: This component focuses on building institutional and human capacity for promoting the broad scale-up of electric mobility in Ecuador. On institutions, national coordination and knowledge management will be enhanced, and a long-term strategy for scaling-up electric mobility, drawing on a technical, legal and institutional baseline assessment, will be developed for government adoption. On human capacity, capacity will be built on policy development, public administration and technical, financial and regulatory aspects of low-carbon electric mobility, including its integration with renewable energy. This will be built including through the support of the GEF global programme on electric mobility. By strengthening institutional and human capacity, the component aims, inter alia, to build the enabling conditions for the development of an effective policy framework (policies, regulations, guidelines and standards) on low-carbon electric mobility through component 3 (see below).

Component 2 - Short-term barrier removal through low-carbon e-mobility demonstrations: The technical, financial and environmental sustainability of electric mobility demonstrated in sectors not yet tested,

resulting in reduced perceived risk and increased awareness of the benefits of scaling-up low-carbon electric mobility. The demonstration will occur in a high-use urban vehicle fleet (buses, taxis, urban logistics, government) that is untested and as such will be complementary to other initiatives. The demonstration will take place in consultation with the local automobile industry.

Component 3 - Preparation of scale-up and replication of low-carbon electric mobility: Implementing framework (policies, regulations, guidelines and standards) on low-carbon electric mobility is developed for adoption by the relevant ministry. In addition, business models are developed for facilitating the sustainable and long-term uptake of high-use urban electric vehicle fleets.

Component 4 - Promotion of long-term sustainability of low-carbon electric mobility: Measures introduced to manage the long-term environmental sustainability of low-carbon electric vehicles.

3. Engagement with the Global / Regional Framework

The project will draw upon the resources and activities developed and provided by the GEF Global Electric Mobility Programme, in particular through the regional support and investment platform for Latin America and the Caribbean and the thematic working groups. In return, it will provide feedback to the programme on experiences gained, good practices identified, lessons learned, and policies developed at the national level.

National stakeholders from government, academia and the private sector will participate in regional meetings and thematic working groups organized by the global programme to share their knowledge with other countries in the region and benefit from the know-how generated through the thematic platforms. The transfer of knowledge and best practices from South to South, North to South and peer to peer is a core component of the global programme and the child project and will ensure the effective use of resources at the country, regional and global levels.

As many of the regional and global cities may encounter similar electrification problems, the Ecuadorian experience (in particular the demonstrations) will be showcased both through the GEF regional platform and MOVE (UNEP Platform for electric mobility in Latin America). The policies, regulations, guidelines and standards to be developed will draw upon the regional and global experiences and, once finalized, will be scaled up throughout the country.

Grenada

Child project title: Accelerating the introduction of low-emission and climate-resilient electric mobility in Grenada

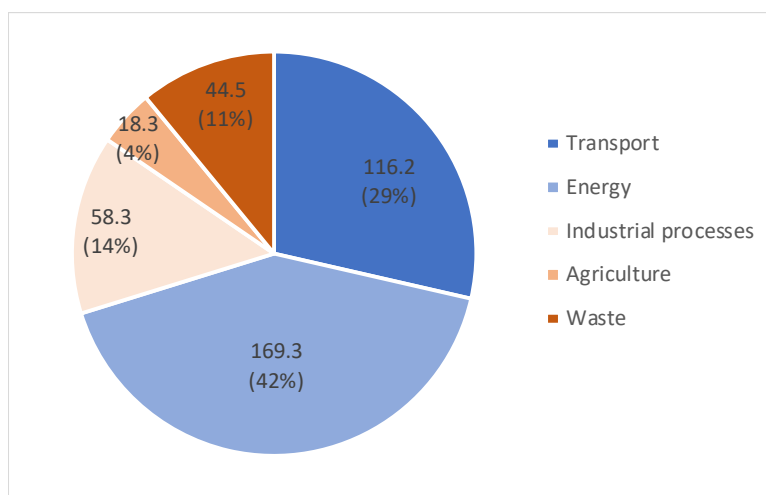
GEF Agency: UNEP

Total Project Cost: USD 1,050,917 (without IA fee); co-financing: USD 4,200,000; PPG: USD 50,000 (without IA fee)

PROJECT DESCRIPTION

1. Country Context

One of Grenada's key environmental challenges is due to its transport sector, which is the second largest consumer of imported fuel after electricity generation. It is also the second largest source of greenhouse gases (GHG) emissions, accounting for over 29% of the overall GHG emissions (Government of Grenada, 2017, p. 58). Furthermore, its fleet, dominated by old gasoline vehicles, is responsible for high particle matter (PM) contamination and noise pollution, which both impact negatively on Grenada's primary economic activity: tourism (Government of Grenada, 2017, p. 22).



*Grenada. GHG emissions per sector in 2014 (in GGCO_{2e}).
Adapted from Government of Grenada (2017, pp. 58, 74–75)*

Furthermore, Grenada relies on imported fossil fuels (diesel, gasoline, and liquefied petroleum gas) to meet its energy needs. In 2017, 99% of total electricity was generated by imported petroleum products (GRENLEC, 2018), and this generation produces the majority of Grenada's GHG emissions. This overdependence on imported fossil fuels exposes the country to vulnerabilities associated with global oil price fluctuations. (Government of Grenada, 2017, p. 27) The electricity price incorporates a fuel charge – 50% of the electricity tariff – which passes on the fuel costs to consumers, in turn hindering economic growth potential and national balance accounts (IDB, 2015, p. 29). Studies indicate the need to double energy consumption in the period comprised between 2015 and 2027 to catch up with development needs (IDB, 2015, p. 16; WB, 2010, pp. 1–7, 1–8). Unless aggressive efficiency measures are put in place, a substantial expansion of generation capacity will be required to meet future demand.

Grenada's strategic positioning to facilitate a transformation to a low-emission and climate resilient transport sector is clear. In 2011 it adopted the National Energy Policy (NEP), with specific goals for the energy and transportation sectors, namely, that 20% of all electricity and transportation energy shall come from renewable sources by 2020 and a 100% by 2030; these goals are also reflected in its Nationally Determined Contribution (Government of Grenada, 2015). Moreover, Grenada has prepared a National Climate Change Policy and Action Plan (plan 2017-2021) through which it commits to promote and incentivize renewable energy and energy efficiency in the transport sector. In this context, in 2015 its licensed electricity provider (Grenada Electricity Services Limited, GRENLEC) launched the country's first electric vehicle (EV) pilot programme. The pilot aimed to test the energy efficiency, range, cost savings, road performance and environmental benefits of electric vehicles in Grenada, compared to conventional internal combustion (ICE) cars (GRENLEC, 2015). In parallel, several renewal energy projects involving geothermal and solar power are in the pipeline (see section 2(b)).

Together, these actions are aligned with the project and the programme's proposed approach to foster impactful outcomes with global environmental benefits, specifically through reducing GHGs to support the global community in achieving the Paris Agreement. By facilitating this transformation in Grenada, the country will provide good practices and lessons learned for other small island developing countries on ways to achieve the transformation to a low-emission and climate resilient transport sector.

2. Project Overview and Approach

Geographical Target

Grenada is comprised of three islands: Grenada, Carriacou and Petite Martinique. The project will take place in the first of these (with approximately 95% of the population), where the capital St. George's is located.



Adapted from WorldAtlas.Com

Systemic challenges, specific environmental threats and associated drivers

The systemic challenge that Grenada faces is on how transform to a low-emission transport sector while at the same time avoiding increasing emissions that may occur due to increased demand for electricity by the

introducing electric vehicles. In the transport sector, the number of internal combustion engine cars, trucks and buses that added annually into the fleet increased almost ten-fold between 2012 and 2017. Thus, GHG, NOx and PM emissions are growing in the transport sector, leading to environmental threats related to climate change and air quality. Despite the country's efforts to advance the National Energy Policy, drivers inhibit the deployment of electric mobility and clean energy in the country:

- Lack of institutional capacity and regulatory framework to facilitate the introduction of energy efficiency and renewable technologies;
- Lack of infrastructure around electric mobility, as well as a lack of experience, technical know-how and skills required to operate and maintain an electric fleet;
- Lack of involvement of the private sector, which perceives electric mobility as high risk and lacks knowledge on new technologies.
- Limited borrowing capacity as a result of the country's high debt-to-GDP ratio. This imposes a severe limitation to Grenada, preventing it from stimulating investment in clean technologies.

Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration.

Baseline Investments

Grenada has an electricity generation capacity of 53.3 MW, with 1 MW from renewables (IDB, 2015). Baseline investments indicate that this is changing, as renewable energy projects are under way. In line with the National Energy Policy, Grenada aims to introduce 10 MW from solar, 15 MW from geothermal and 2 MW from wind in the following ten years (Government of Grenada, 2015 p.8).

| Name | Agency | Description | Status | Estimated Budget, US\$ |
|---|---|--|----------------------|--|
| Solar PV / battery hybrid project | United Arab Emirates - Caribbean Renewable Energy Fund (UAE-CREF) | Solar PV and battery hybrid project in Carriacou, Grenada | Under implementation | 3,185,000 |
| FP020 Sustainable Energy Facility for the Eastern Caribbean | GCF Clean Technology Fund (CTF), Japan International Cooperation Agency (JICA), United Kingdom Department for International Development (DFID), Inter-American Development Bank (IDB), GEF, Caribbean | Facility to support geothermal energies and renewable energy frameworks in the Eastern Caribbean | Proposal approved | 32,140,000 (amount corresponding to Grenada) |

| | | | | |
|-----------------------|------------------------|--|-------------------|--------------|
| | Development Bank (CDB) | | | |
| FP 038 GEEREF NeXt | GCF | GEEREF NeXt is structured as a fund of funds, with the aim of being a first investor in renewable energy/ energy efficiency investment funds in developing countries | Proposal approved | 765,000,000* |

* total project budget. Amount for Grenada not yet determined

Institutional framework

The proposed executing agency is the Ministry of Finance, Planning, Economic Development and Physical Development, which will work with two government actors central to the current institutional framework on transport and energy: the Ministry of Climate Resilience, the Environment, Forestry, Fisheries and Information, and the Ministry of Infrastructure Development, Public Utilities, Energy, Transport and Implementation. The other key national actor is the utility Grenada Electricity Services Limited (GRENLEC). Although Grenada has a national energy policy and a national climate change policy and action plan it lacks policies, regulations and standards on electric mobility.

Stakeholder Engagement

| <i>Institutions</i> | | <i>Engagement</i> |
|-----------------------|--|---|
| <i>Government</i> | Ministry of Finance, Planning, Economic Development and Physical Development | Executing Agency, coordinating all project activities. It provides technical inputs and information on national planning, design, integrated inventory data collection. |
| | Ministry of Infrastructure Development, Public Utilities, Energy, Transport and Implementation | Authority on the implementation of infrastructure. Will support project design and implementation. |
| | Ministry of Climate Resilience, the Environment, Forestry, Fisheries and Information | Centralizes information sharing. Advisory role on policy formulation. |
| <i>Private Sector</i> | Grenada Electricity Services Limited (GRENLEC) ³¹ | Holds the license for electric generation, transmission, and distribution. To be consulted on developing regulations. |
| | Grenada Solar Power Limited (GREN SOL) | Leading solar energy company responsible for the installation of 303kW of rooftop solar systems feeding into the national grid. |
| | Car distributors and importers | Support in the implementation of the project pilots. |
| | Grenada Hotel and Tourism Association (GHTA) | Main consumer of electricity. Interested in renewable energy and sustainable transport. |
| | Transport unions | Participate in pilot design and implementation. |

³¹ The state retains 10% of the company's shares.

| | | |
|--------------------------------|---|---|
| <i>Academia, civil society</i> | St. George's University, civil associations | Participate in all project activities. |
| <i>Multilateral agencies</i> | Green Climate Fund, United Arab Emirates, Inter-American Development Bank | Providing support on various renewable energy and energy efficiency projects. |

Gender

Facilitating the transformation to a low-emission transport sector presents opportunities for generating socio-economic benefits or services for women. Women (39.6%) experience higher unemployment than men (28.1%) and the transport sector is dominated by males (Government of Grenada, 2014). Women are also the largest users of public transport. This has an impact on their safety, as stations are often poorly lit and waiting times significant due to the informal nature of the public transport system. The project will integrate gender considerations in both the project implementation process and design to ensure that the specific needs of women are incorporated. It will seek to address the disparity of women's employment in the transport sector by supporting them to build capacity. It will also disaggregate data collection to capture gender-based differences in trip patterns and develop a gender mainstreaming and action plan for project design, implementation, and monitoring. Furthermore, it will ensure women are included in awareness-raising activities, decision-making and capacity building.

Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits.

The project responds to and reflects the global programme's theory of change as its components mirror those of the programme adjusted to national context. It will develop institutions and build capacity for promoting coordinated development of electric mobility. It will demonstrate electric vehicles for transport usage in combination with the generation of renewable power for recharging. It will also prepare for the large-scale introduction of electric mobility and low-emission power charging through the development of supportive policies, incentives and strategies and context-specific finance schemes and business models. Finally, it will facilitate the long-term environmental sustainability of electric mobility. Through a project design which draws on the architecture of the global programme and adjusts it to the national circumstances, this is an appropriate and suitable option for tackling the systemic challenges experienced in Grenada and facilitating the generation of global environmental benefits.

Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components

The proposed project aims to promote an integrated, sustainable and low-emission transport system in Grenada and reduce fossil fuel consumption, greenhouse gas emissions and air pollution in the transport sector. Through GEF funding, Grenada will:

- Component 1: Institutionalization of low-carbon electric mobility. Addresses the lack of institutionalization, capacity and awareness on electric mobility by creating a coordination body, undertaking baseline and feasibility studies, and undertaking communication campaigns.
- Component 2: Short term barrier removal through low-carbon e-mobility demonstrations. The project demonstration aims to provide first-hand evidence to fleet managers, government officials, key transport stakeholders and the general public on the economic, social and environmental viability of EVs in the national circumstances of Grenada. Under the project, electric vehicles will be demonstrated in government fleets. The demonstrations will build the

capacity of government officials by generating experiences on managing electric vehicle fleets and provide information for designing policies for scaling-up electric vehicle adoption. Vehicles will be slow-charged at stations at government offices during the night when not in use and used through-out the day for government duties.³²

- Component 3: Preparing for scale-up and replication of low-carbon electric mobility. This is undertaken by introducing electric mobility plans, legislation, incentives and standards – including those needed for the project’s integration with renewable energies.
- Component 4: Long-term environmental sustainability of low-carbon electric mobility. Shifts the focus to long-run sustainability by integrating monitoring schemes that allow for an overall assessment of the system’s socio-economic effectiveness and environmental impact.

The proposed project will build upon the experience derived from GRENLEC’s pilot in order to review and enhance supportive policies, implement demonstration projects and prepare for upscaling and replication to accelerate the introduction of electric mobility in the country. As emissions savings associated with these electric vehicles depend on the energy used to generate the electricity, this project will work in parallel with the introduction of renewable energies through baseline investments.

3. Engagement with the Global / Regional Framework

The project design and implementation will draw upon the materials and trainings provided by the GEF global electric mobility programme on *Supporting the Shift to Global Electric Mobility*, in particular through the regional support and investment platform for Latin America and the Caribbean led by the Mario Molina Centre and the four thematic working groups. It will also bring inputs from the national to the regional and international levels, by providing feedback on experiences gained, best practices identified, lessons learned, and policies developed at the national level through the project (and beyond). Grenada’s experience (in particular the demonstrations) will be showcased through the GEF regional platform. The policies, regulations, guidelines and standards developed will draw upon the regional and global experiences and, once finalized, will be scaled up through-out the country.

Identified stakeholders from government, academia and the private sector will join the regional meetings organized by the Global Programme. Through this participation they will share knowledge with other countries (especially other small island developing states), supporting them to benefit from the know-how generated nationally and through the global programme. Furthermore, the project will also draw on the experiences of other countries participating in the global programme, such as Antigua and Barbuda, Jamaica and Saint Lucia, who are more advanced in project development. This transferring of experiences and lessons learned between countries of the Caribbean will ensure efficient project development and implementation. It can also be explored the possibility of creating economies of scale with these countries that are also moving forward quickly on electric mobility.

³² This is the most likely demonstration focus of the country, however we have not secured co-financing yet for this demonstration, so the final focus of the demonstration will be decided during project development.

Indonesia

Child project title: Enhancing Readiness for the Transition to Electric Vehicles in Indonesia (ENTREV)

GEF Agency: UNDP

Total Project Cost: USD 1,816,500 (without IA fee); co-financing: USD 15,050,000; PPG: USD 50,000 (without IA fee)

PROJECT DESCRIPTION

1. Country Context

Indonesia is one of the fastest growing economies in South East Asia with a rapidly growing energy demand of 6.8% per year. Indonesia's energy supply heavily relies on fossil fuels, mainly coal and oil (OECD, 2018).

Between 2000 and 2015, the transport sector consumed 27% of the total energy supply, largely petroleum. The total number of motor vehicles in Indonesia was 129 million in 2016 with an average annual growth of 11.5% (National statistics agency, 2016). With the growth of motor vehicles, the energy demand in the transport sector is expected to increase, along with an increase in Indonesia's dependency on imported fuel oil and consequently increased health risks through air pollution.

Indonesia is one of the world's ten largest contributors to GHG emissions. Approximately 34% of Indonesia's GHG emissions come from the energy sector and are projected to more than double by 2030. The transport sector contributes to 25% of total GHG emissions in the energy sector, mainly coming from land transportation (Indonesia TNC, 2016). Indonesia's Nationally Determined Contribution (NDC) outlines the commitment to reduce emissions by 29% of BAU by 2030 and 41% with international support. Particularly, 11% (about 314 Mt CO₂e) to 14% (398 Mt CO₂e) emission reduction from the total BAU in 2030 is expected to stem from energy sector including transport (Indonesia NDC, 2016).

In the National Energy Planning/RUEN (Presidential Regulation No 22/2017) Government of Indonesia (GoI) has set a target by 2025 to apply 2,200 electric vehicles, 2.1 million electric motorbikes and to build 1,000 electric vehicle charging stations. As part of achieving the targets set in RUEN, the Government of Indonesia through the Ministry of Energy and Mineral Resources has developed a draft Presidential Regulation (Perpres) on Acceleration of Battery-Based Electric Vehicles.

A Taskforce on Electric Vehicles (TEV) has been established with responsibility to examine ways of accelerating the development/adoption of electric vehicles in line with the draft Presidential Regulation (Perpres) on Acceleration of Battery-Based Electric Vehicles. The TEV is comprised of Ministry of Energy and Mineral Resources and Ministry of Industry. This proposed project is accelerating readiness of the country to meet this RUEN target and to scale up the shifting towards EV beyond 2025.

Furthermore, a set of policies has been issued by the GoI relevant for implementation of climate mitigations activities in the transport sector, however, still result in limited impact on emission and pollution reduction:

- Law No 32/2009 on Protection and Management of Environment sets basis for management of GHGs emission and pollution.

- Government Regulation No.79/2014 on National Energy Policy sets the renewable energy share target of 23% by 2025, and an energy intensity target of <1.
- Government Regulation No.41/1999 on Control of Air Pollution.
- Minister Energy and Mineral Resources Regulation No. 12/2015 regulates the provision, utilization and administration of biofuels.
- Government Regulation No. 14/2015 on National Industrial Development Master Plan Year 2015-2035 prioritizes hybrid and fuel cell technology development in the transport sector
- Ministry of Transportation Decree No. 201/2013 aims to mitigate emissions in the transportation sector through a complete "avoid, shift and improve" approach, including fuel substitution from oil to gas and encouragement of using non-motorized vehicles.
- Minister of Environment and Forestry Regulation No.12/2010 on Implementation of Air Pollution quality in the regions sets the threshold for vehicles emission level.
- Jakarta Government has issued regulations limiting use of private cars on Jakarta's road, use gas-fueled public busses and promoting use of public transport.

2. Project Overview and Approach

Geographical Target:

The project is targeting national level for readiness in shifting conventional to electric vehicles in land transportation sector. Piloting will be undertaken in Jakarta and Bali cities. The two cities have shown political will and initial efforts towards greening their provincial development, particularly Bali has a vision as Green Island.

Systemic challenges, specific environmental threats and associated drivers:

Almost all cities in Indonesia are facing rapid urbanization that results in fast growing number of land transport vehicles including hailing services (taxi and motorcycles). The average growth of motorcycles and cars in Indonesia is estimated 11.5% annually. All of these vehicles are conventional, using gasoline or diesel as fuel. In addition to greenhouse gases emission from land transport sector, air pollution in cities has been also an important issue. Jakarta has been announced as city with poorest air quality.

Considering those environmental threats, shift from conventional to electric vehicles is important. GoI has initiated development of Presidential Regulation to accelerate deployment of battery-based electric vehicles. Notable key challenges facing by Indonesia to scale up implementation of EV are lack of readiness in technical standards for charging stations and EV industries, viable business model to attract private investment, low awareness of consumers, limited knowledge exchange on EV technology as well as lack of associated implementing regulations for successful EV shifting process. Therefore, the project will support the national and sub-national governments to put in place required measures to tackle above challenges for scaling up transition to electric vehicles in Indonesia. Through piloting, the project will demonstrate environmental benefits from shifting to electric mobility.

Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration.

Baseline Investments:

Existing baseline investment in electric vehicle includes 2,781 electricity charging stations that have been constructed in Jakarta by the state-owned utility company (PLN) with electricity supplied from existing electricity grid. Ministry of Industry has targeted 20% or about 400,000 units of EV are produced and

available in domestic market by 2025 and with support from NEDO, Japan, has initiated pilot deployment in Bandung Barat district of 300 electric motorbikes and 1000 batteries, including piloting utilization of second life batteries for household electrification. Groundbreaking of lithium battery factory for electric vehicle in Morowali, West Sulawesi, has been conducted by Ministry of Energy in January 2019. Blue Bird group, a leading taxi company, has just launched trial on utilization of electric taxi fleet.

Planned investments that will be facilitated by this child project include introduction of EV charging stations in existing fuel stations, homes and offices utilizing electricity supply from existing grid as well as from solar PV system. Despite the grid emission factor of 0.877 ton CO₂/MWh, use of electricity supply from existing grid for EV charging results in less emission in comparison to conventional vehicles that burn petrol/diesel as a result of the far higher efficiency of EVs as compared to internal combustion engine (ICE) vehicles (MEMR, Jan 2019). MEMR analysis in preparation for the development and issuance of the “Presidential Regulation on Acceleration of electric vehicle implementation” in Indonesia, demonstrated that, compared to ICE vehicles, EVs consume significantly less energy per km. Consequently, the resulting annual emission levels attributed to EVs are lower even with a relatively high grid emission factor, such as the one of the Java-Bali grid. This child project also plans investment through application of EV in public transports, such as Bus Rapid Transit (BRT) systems, as well as in taxi services through engagement with major taxi companies such as Blue Bird Group, GO-JEK, GRAB. In Jakarta, Provincial Government has a BRT system with a fleet of 1,500 buses, Blue bird taxi group has 21,000 units and GO-JEK has 170,000 cars fleet. In pilot activities, the project will introduce use of battery electric vehicles with feasible business model to these potential partners, thereby attract investment and reducing emissions.

Institutional framework:

The institutional framework in Indonesia relevant to the project involves national government, local governments, utility company, universities, private sector and civil societies. The national government are line ministries, namely, Energy and Mineral Resources; Industry; Transport; Environment, Finance, and National Development Planning. The Ministry of Energy and Industry are the Ministries tasked to develop the Presidential Regulation on *Acceleration of Battery-Based Electric Vehicles* and will be the implementing agencies of the proposed project led by the Ministry of Energy. Each of stakeholder group has a mandate/role to support GHG emission reduction as targeted in Indonesia’s Nationally Determined Contributions (NDC) and has authority to issue and enforce regulations, private sector play role in scaling up EV deployment through investments, academia and civil societies play key role in awareness raising and knowledge exchange activities.

Stakeholder Engagement:

Stakeholder engagement will be initiated starting from project stage, during project implementation phase and during project evaluations. Engagement will be done through consultative meetings including Focus Group Discussions, workshops, one-on-one meetings with the relevant stakeholders and activities implementation.

Gender:

Gender integration strategy will be developed based on assessment of gender-related problems in land transport sector and potential gender problem due to shifting to electric vehicles. Gender-disaggregated data will be used in baseline surveys, participation of women (i.e. women taxi drivers) during consultative meetings and activities implementation will be affirmed to ensure inclusion of gender-balanced feedback and wide benefits from the project.

Describe how the integrated approach proposed for the child project responds to and reflects the Program’s Theory of Change, and as such is an appropriate and suitable option for tackling the

systemic challenges, and to achieve the desired transformation with multiple global environmental benefits.

The global program recognizes that a global shift to electric mobility is essential to meet the targets of the Paris Agreement and to reduce air pollution, especially in cities. The integrated approach of the child project responds to the Program's Theory of Change as it will set the stage for shifting Indonesia's mobility onto the electric path through engagement of multi-stakeholders including government, private sector, academia and civil societies; development of readiness measurers that will foster scale-up implementation of EV; pilot activities to demonstrate the shifting to EV. Implementation of the project will lead to a well-conceived electric mobility regulatory framework, capacity and incentives that will create a market for electric vehicles. The child project will contribute to global benefits through GHG emissions reduction, improved air quality as well as health co-benefits.

Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.

The GoI has initiated regulation and actions to introduce electric vehicles. However, readiness in technical, regulation, financial, awareness and knowledge development are key challenges in order to have successful scale-up of EV implementation. Therefore, the proposed child project will provide incremental support to government in widening consultative process with stakeholders, to build capacity of national/sub-national policy makers and procuring expertise for various activities to put in place readiness measurers and appropriate incentives for scaling up EV deployment beyond 2025. Project will facilitate pilot implementation and advance business models to attract private sector investment in EV industry.

Under the GEF results framework, the project will contribute to Core Indicator 6 - GHG Emissions Mitigated – through Indicators 6.2 - 6.3³³. The project is expected to demonstrate shifting of 200 conventional cars/taxi to EV and stimulate replication over 10 years period.

The project will be implemented through the following components and outputs:

Component 1: Support for Implementation of Electric Vehicle Charging Stations (EVCS)

Under this component, the expected outcome is to enhance readiness for the development and implementation of EVCS. The component will support the planning process, technical standard for establishment of recharging infrastructure, promote EVCS at home, office or fuel station areas.

Expected outputs:

- Output 1.1: Assessment for Planning and Other Requirements to establish EVCS infrastructure
- Output 1.2: Development of Technical Standards for EVCS
- Output 1.3: Development of Optimized Business Model for EVCS Investment
- Output 1.4: Development of Regulations for EVCS Implementation

Component 2: Developing an EV Industry to Ensure Quality of Produced Electric Vehicles, Batteries and Associated Sub-components

This component will assess and strengthen the capacity of manufacturers/assemblers of electric vehicles, batteries and other related sub-components to allow a smooth shift from internal combustion engines (ICEs) and enable high quality and affordable electric vehicles. Development of strategy and required regulation

³³ Indicator 6.2 – Emissions Avoided; Indicator 6.3 – Energy Saved;

for managing end-of life batteries and sub-components will be conducted to ensure environmental sustainability. The lifetime of EV battery is estimated 10 years.

Expected outputs:

- Output 2.1: Development of Technical Standards for Electric Vehicles Manufacture/Assembly
- Output 2.2: Development of Technical Standards for Electric Vehicle Batteries and Sub-components
- Output 2.3: Development of Regulations for Electric Vehicles, Batteries and Sub-components
- Output 2.4: Development of feasible strategy and regulation for managing end-of life battery and sub-components.

Component 3: Demonstration of Electric Vehicles Implementation in Jakarta and Bali

This component will raise awareness among policy makers, private sector and general public on the government's strategy in transitioning towards electric vehicles through demonstration of electric vehicles implementation in Jakarta and Bali Province. Expected outputs:

- Output 3.1: Key stakeholders Engagement to Support Implementation of Electric Vehicles
- Output 3.2: Demonstration of Electric Vehicle Implementation

Component 4: Knowledge Exchange and Strengthening Technical Capacity of Institutions

The project will foster knowledge exchange based on lessons learned during its implementation. The project will also facilitate preparation for establishment of "EV Knowledge Centers" as well as strengthen linkages and technical capacities among Indonesian universities/research institutions and service sector on EV. Furthermore, knowledge exchange and sharing lessons learned will be undertaken within the network of the Global Program. The following will be the outputs under this component:

- Output 4.1: Preparation for establishment of EV Knowledge and vocational Centers
- Output 4.2: Strengthening technical capacity of Universities/Research Institutions and EV service lines personnel.
- Output 4.3: Knowledge Exchange on Transition to Electric Vehicles

3. Engagement with the Global / Regional Framework

The proposed project is a child project under the GEF-supported program "Global Programme to Support Countries with the Shift to Electric Mobility", led by UNEP, with the objective to support countries to design and implement electric mobility programs as part of an overall shift to sustainable, low carbon transport sector. The program focuses on all road transport modes, including 2/3 wheelers, cars, and buses and is designed around four components:

- 1) Global thematic platforms and policy materials;
- 2) Regional hubs and training;
- 3) Country project implementation (child projects); and
- 4) Tracking progress and facilitating replication.

One main function of its global component is to generate knowledge and policy materials on selected EV topics to support countries on the ground with the development and implementation of national electric mobility projects. These materials consist of reports and tools to help the development of the policymaking process in the countries, including cost-benefit analyses and compilation of other countries' best practices in the transition to electric mobility. As one of the child projects, ENTREV, will benefit from the support provided by the global program in form of knowledge exchange, training and technical support.

Experiences and lessons learned from the project's pilot demonstrations will also be shared through the Global Programme.

The project will also align with other related planned and ongoing projects in Indonesia to foster knowledge sharing and scale-up of the project. UNDP is leading the UN Partnership for Action on Green Economy (UN-PAGE). Under this initiative, UN-PAGE partners will support the Government of Indonesia in developing a low carbon development plan at provincial levels. Therefore, the proposed project will work with UN-PAGE initiative to include its findings pertaining to the introduction of electric vehicles initiative in UN-PAGE targeted cities. The experience from the proposed project will also be shared through the PAGE regional and global network.

In addition, the proposed project will pursue possible collaboration with GIZ – INDOBUS project aiming to introduce use of electric bus as their BRTs, which will enable knowledge exchange through the network of GIZ.

Collaboration of this proposed project is also envisaged with Sustainable Cities impact programme led by UNEP. Demonstration of shifting to EVs in Jakarta and Bali conducted under this child project can be replicated in other cities targeted in the Sustainable Cities impact programme, particularly to strengthen interventions in transport sector.

Jordan

Child project title: Integrated adoption of electric mobility

GEF Agency: UNIDO

Total Project Cost: USD 1,137,215 (without IA fee); co-financing: USD 6,200,000; PPG: USD 50,000 (without IA fee)

PROJECT DESCRIPTION

1. Country Context

Jordan is a lower middle-income country, with a population of 9.5 million, of which 2.9 million are non-citizens, including refugees. It is a resource-poor, food-deficit country with limited agricultural land, no energy resources and scarce water supply.

Jordan imports 96% of its energy supply, and this supply has been subject to wild price fluctuations and inconsistent availability since the Arab Spring in 2010. Transportation contributes to 16% of GHG emissions, the second largest contributor after energy (28%). The nexus of rising population³⁴, energy scarcity and fiscal crisis³⁵ has resulted in a number of reactive and unpredictable features of the Jordanian policy landscape including frequent changes in ministerial leadership and over-taxation (and short-term phases of tax relief). Manufacturing and industrial costs vary widely due to fluctuating energy costs. Thus, while public funds for transportation investments are constrained, risks are high for private sector to meaningful engage as an investor in a new e-mobility sector.

Jordanians are seeking to meet their transportation needs in an ad-hoc and unregulated way. Public transportation is non-existent in Jordanian cities, except for Amman, where service is perceived as unsafe, unpredictable, and inconvenient. There are only 0.7 buses per one thousand people in Jordan (as of March 2018)³⁶. There are currently no emissions standards for private vehicles, which often use diesel fuel and emit high sulphur content.

There is generally poor coordination between and among key actors – including contradictory implementation of priorities such as a decision to invest in a 554 MW oil shale fired power plant in parallel with a priority to shift to a RE-based economy. Similarly, an effort from the Ministry of Transport to remove registration fees on private e-vehicles supported the uptake of 18,000 e-vehicles in Jordan over the course of two years has been undermined by fiscal pressure from other ministries and the (IMF) - resulting in the exemption being reversed as of January 2019. In November 2019, partial tax relief was reinstated, and the stock of unpurchased e-vehicles is expected to lessen. These inconsistencies result in a lack of long-term incentives to shift to e-mobility.

While efforts to mobilize coordination and investment in sustainable urban mobility exist, they require support through international financing in order to operationalize their visions. GEF investment in combination with institutional capacity building, planning, and demonstration investments will complement existing initiatives in Jordan, catalyzing additional progress on reducing emissions from transport.

³⁴ Over 660,000 Syrian refugees are registered with UNHCR in Jordan as of May 2019 - <https://jo.one.un.org/en/partner/united-nations-high-commissioner-for-refugees-unhcr/8>

³⁵ Jordan's debt-to-GDP ratio was 95% in 2016, up from 61% in 2010 - <http://extwprlegs1.fao.org/docs/pdf/jor170691.pdf>

³⁶ According to a study by the Crown Prince Foundation

2. Project Overview and Approach

Geographical Target:

The project will be implemented in Amman and in three other municipalities / interstate highways.

Systemic challenges and specific environmental threats:

Jordan's energy poverty, fiscal crisis, and rising refugee populations are driving unsustainable trends in urban transportation. Transport contributes to 16% of Jordan's GHG emissions.

Associated drivers:

- Lack of infrastructure. Investment needs within Jordanian cities dwarf official development assistance, as well as current revenues from government sources.
- High upfront purchase prices and range anxiety. E-vehicles require high initial investment and e-chargers are not widely available nationwide.
- Uncoordinated and insufficient transportation policy. Conflicting priorities within and among ministries undermine the effective and long-term implementation of sustainable transportation policy. Jordan lacks vehicular emissions standards for private and public vehicles and there are perverse policy incentives to avoid efficiency upgrades due to high import taxes on new vehicles and spare parts.
- Inconsistent policies on customs and taxes for the purchase of electric vehicles. A 25% tax on electric cars as of May 2019 brought the used car market to a halt, which was estimated to be worth JD 740 million in 2015³⁷³⁸. This has recently been reversed with new tax exemptions based on engine capacity.
- Lack of information/awareness. Consumers, policy makers and vehicle manufacturers are not fully aware of the environmental and economic benefits related to e-mobility.

Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration.

Baseline Investments: The baseline scenario involves a public transport sector that is under-developed and difficult to reform, with continually more highly congested cities and a rapid increase in private vehicle ownership (Annex D).

Institutional framework: The main governance institutions overseeing the sector are the Ministry of Environment, the Ministry of Transport, the Ministry of Energy and Resource Conservation. The target executing agency, GGGI will be engaged through an execution agreement with the implementing agency, subject to the results of the due diligence and capacity assessment during PPG.

Stakeholder Engagement: The table in Annex C lists policy recommendations for the transport sector; Annex C details the range of stakeholders that will be invited to participate in the project and consultations already conducted.

³⁷ <https://www.jordantimes.com/news/local/jordan-imported-jd740-million-worth-used-cars-2015>

³⁸ <https://www.jordantimes.com/news/local/free-zones-investors-association-laments-25-cent-tax-vehicles>, accessed 06/03/2020

Gender: Gender mainstreaming will be based on GEF's Policy on Gender Mainstreaming and UNIDO's Policy on Gender Equality and the Empowerment of Women (2009) as well as the Guide on Gender Mainstreaming Environmental Management Projects.

As per UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), the Environmental and Social screening template has been completed and the project has been categorized as "B". Hence, an Environmental and Social Management Plan (ESMP) will be developed during the PPG phase.

Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits.

The theory of change of the project is aligned with the Global Programme. It seeks to mitigate the transport sector's impact on climate change by reducing emissions associated with fossil-fuel based vehicles. As a whole, the proposed project seeks **to catalyse and accelerate e-mobility in Jordan through innovation and technology transfer.**

Without the project, it can be expected that transport initiatives (e-mobility specifically) continue to be sporadic and do not coherently push the sector towards innovation.

Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.

| <i>Baseline</i> | <i>Summary of GEF incremental intervention</i> | <i>Benefits</i> |
|--|--|---|
| <i>Component 1: Policy coordination. Establishment of an inter-ministerial agenda and high-level forum on e-mobility (HFE) to support an enabling policy environment for e-transport.</i> | | |
| <i>Outcome 1.1: A mechanism for building-consensus on transportation policy is established to support a systemic approach for sustainable transportation policy that integrates fiscal considerations, energy security and environmental goals.</i> | | |
| Poor coordination between national and local levels; Inconsistent policy signals. Weak inter-ministerial coordination / short leadership tenure undermines long-term transportation strategy. There are no vehicle emissions standards and vehicle owners lack long-term incentives to convert to e-transport. Privately-owned mass transit is unregulated and unreliable. | The HFE will be acting as a platform to coordinate actors' views, hosted by the Green Economy Unit under the Ministry of the Environment (MoE), co-chaired by the MoE and the Ministry of Transport, and supported by the Lead Executing Entity, GGGI. ³⁹ 1.1.1: The HFE is established 1.1.2: Policies that incentivise e-transport through the establishment of vehicle emissions standards and other financial/regulatory incentives are identified and drafted for HFE consideration. 1.1.3: Policy recommendations drafted on incentivising and supporting mass e-transit. | GEF resources will go towards ensuring that management and planning are coordinated, strategic and sustained. |

³⁹ GGGI's role as Lead Executing Entity will be confirmed during the PPG, following UNIDO's due diligence processes. GGGI sits next to the Ministry of the Environment and has conducted multiple transport policy studies in collaboration with government ministries. GGGI has established working relationships with multiple Jordanian ministries and has demonstrated strong technical expertise in the sector.

| Baseline | Summary of GEF incremental intervention | Benefits |
|---|---|---|
| Electricity prices are artificially high due to oversupply in the grid, leading to increased political interest in promoting electricity consumption. | | |
| <i>Component 2: Investment in low-carbon e-mobility demonstrations. Creation of an investment facility for mini vans and jitneys and e-chargers to support connectivity for Amman and beyond</i> | | |
| <i>Outcome 2.1 Strategic investment drives the proliferation of EV Charging Stations and enables mini vans and jitneys to gain market share</i> | | |
| <p>Jordan imports 96% of its energy.</p> <p>Most relevant e-High Occupancy Vehicles (e-HOV) for Amman are mini vans and jitneys (with an avg. 12-person capacity).</p> <p>High-occupancy transportation options are critical to enable the population including refugees to participate in the economy.</p> <p>Import taxes on new efficient vehicles are prohibitive.</p> <p>A lack of e-chargers beyond Amman limits e-vehicle uptake due to “range anxiety.”</p> | <p>Component 2 establishes an investment facility for e-HOVs and supports e-charging infrastructure. According to the MoT, e-buses are inappropriate for Jordan’s narrow and steep roadways, thus converting the national supplier of mini vans and jitneys to e-transport is proposed.</p> <p>2.1.1: Investment facility for funding mini vans and jitneys is established which provides commercial loans and targeted tax relief.</p> <p>2.1.2: E-chargers in Amman and on major city-to-city routes installed based on recommendations made with location-optimisation research from the University of Jordan.</p> | <p>At least 91 e-chargers are expected to be installed within the project lifetime. In addition, the conversion of at least 30 HOVs will be supported.</p> <p>The GHG emissions and the number of direct beneficiaries were calculated based on the GEF calculation methods and assumptions in the PFD, in as much as possible at this stage.</p> |
| <i>Component 3: Preparing for scale-up and replication of low carbon electric mobility interventions</i> | | |
| <i>Outcome 3.1: Data-driven policies to reduce congestion and encourage e-mobility are identified in partnership with the Global Programme and HFE</i> | | |
| <p>Ministry leadership in transport, energy, planning has all changed multiple times over the past five years.</p> <p>Current policy measures insufficiently implemented and overly dependent on consumer taxation.</p> | <p>Component 3 engages with the Global Programme to exchange best practices and support replicability. It assumes low-cost solutions for reducing congestion and scaling e-mobility are feasible, but lack of coordination and technical support are barriers.</p> <p>3.1.1: Policy analysis conducted and shared with appropriate ministries on key barriers to e-mobility.</p> | <p>Component 3 will leverage synergies with the Global programme to disseminate best practices and encourage replicability. Long-term policy initiatives such as carpool lanes, progressive taxation, and clarified bus routes</p> |

| <i>Baseline</i> | <i>Summary of GEF incremental intervention</i> | <i>Benefits</i> |
|--|---|--|
| | <p>3.1.2: Standardised methodology for e-mobility battery standardization and e-chargers</p> <p>3.1.3: Knowledge and best practice shared through regular exchange of global, regional and national experiences through the Global Programme.</p> <p>3.1.4: Tailored incorporation of global best practice into the national policy roadmap through concrete initiatives for low-cost, win-win, anti-congestion and vehicle efficiency policies.</p> | to further establish mass transit will be supported through policy learning. |
| <i>Component 4: Knowledge management and monitoring and evaluation</i> | | |
| <i>Outcome 4: Adequate monitoring of all project indicators in line with GEF, UNIDO and GoJ requirements</i> | | |
| This component aims at establishing and implementing effective project monitoring and evaluation mechanisms alongside capturing progress and lessons learnt. Gender- disaggregated data will be captured wherever possible during monitoring and evaluation efforts. | | |
| Output 4.1.1 Monitoring and independent mid-term review | | |
| Output 4.1.2 Independent terminal evaluation conducted | | |

3. Engagement with the Global / Regional Framework

The global programme will develop a suite of knowledge materials for e-mobility policy making, development of business models and finance schemes, methodologies for e-mobility demonstrations etc. which will be provided to the countries through the Regional Support and Investment Platforms. The project draws directly from the suite of activities presented under the global programme and is synchronised with its theory of change. As such, it will encourage widespread use of e-HOVs powered by a grid that utilizes a high proportion of renewable energy, which will radically reduce GHG emissions and local pollutants associated with road transport. The project will reinforce existing initiatives in Jordan and reduce the vulnerability of urban infrastructure, strengthen awareness and develop institutional and technical capacities into relevant policies, plans and associated processes at sub-national and national level. The project will complement existing policy initiatives and e-mobility baseline projects supported by both the public and private sectors, such as the installation of e-chargers by German company eCharge.

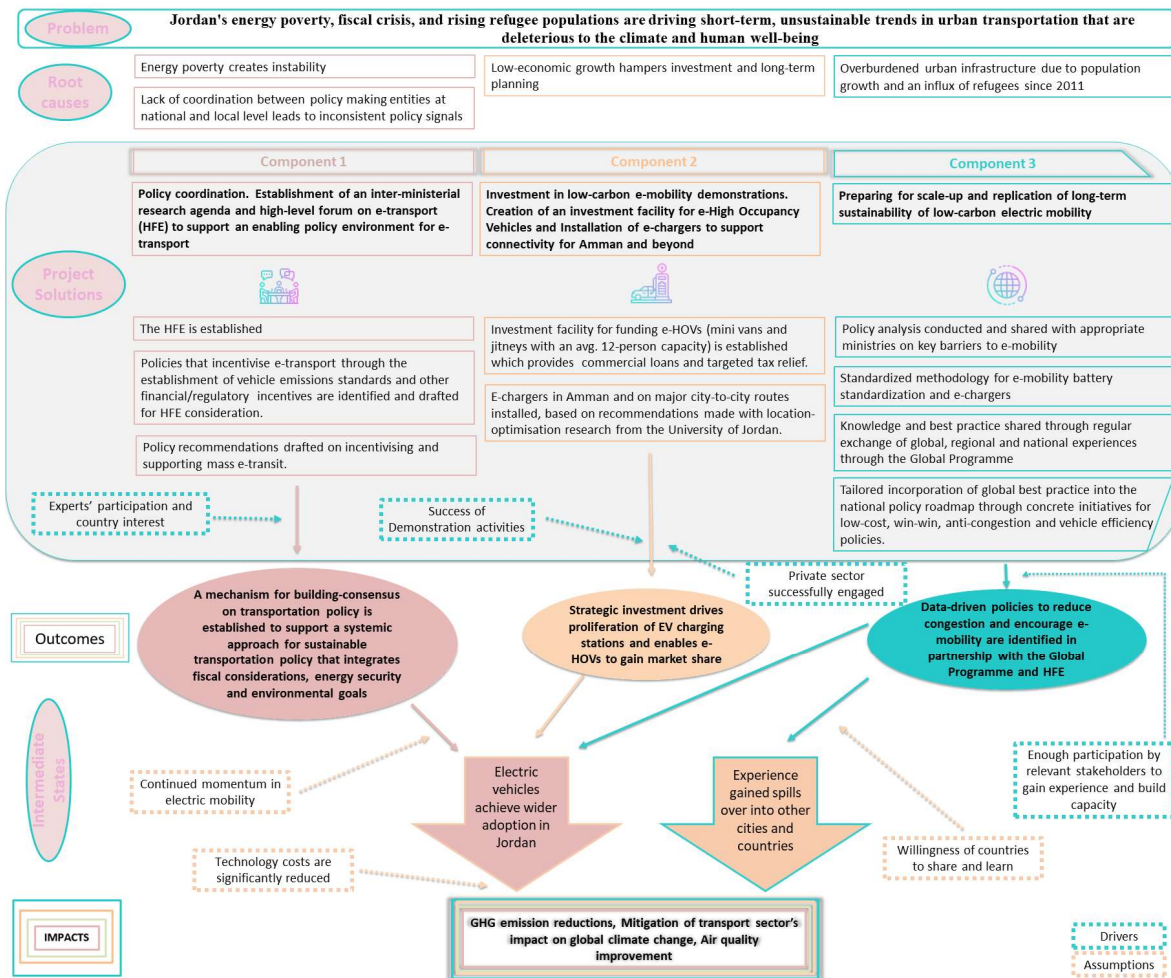
Under Component 3, the proposed project will coordinate with the Global Programme to Support Countries with the Shift to Electric Mobility to draw upon their lessons learned and to derive best practices as to how to de-risk investment in e-mobility and attract sufficient levels of co-finance. A knowledge management strategy and plan will be developed to coordinate the gathering and distribution of all data, information and lessons learnt during project implementation. The Global Mobility Programme will act as a global knowledge hub to develop linkages and provide best practices to support the conceptualization and implementation of electric mobility policies. Particular attention will be given to the collection, re-use and recycling with regards to batteries.

At its core, 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 designed 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 amongst firms that utilize HOVs and private vehicles. Drawing from the experience of the QUDRA project and the JCP, there is demonstrated evidence that the e-mobility market is under suppressed demand and

that scaling up private sector engagement in the sector is likely. The project also aligns itself with broader transport initiatives, such as the GCF-funded Green Cities Action Plan (GCAP) implemented by EBRD.

As such, the project design is tailored to the specific barriers to electric mobility within the Jordan context (Components 1 and 2) and then it is designed to share lessons on its experience within the wider programme to leverage its lessons learned at a regional and global level (Component 3).

Annex A: Theory of Change



Annex B: Stakeholders involved in the proposed project

| | Stakeholder | Description and role in the project |
|-----------------------------|---|--|
| Lead Executing Entity (TBC) | Global Greenhouse Gas Institute (GGGI) | GGGI is foreseen as the Lead Executing Entity thanks to its demonstrated collaboration with the Ministry of Environment and the Ministry of Transport to support the implementation of transport projects in Jordan, and in the provision of policy recommendations (on tax and subsidies for example). The Lead Executing Entity will be responsible for coordinating the HFE (Component 1), will facilitate the technical assistance activities (Components 2 and 3), and will source researchers and engineers (Component 3). It will also provide data and support to Monitoring and Evaluation (Component 4). |
| Partner Agency | Ministry of Environment, Climate Change Department and Green Economy Unit | The Green Economy Unit hosts the HFE and serves as the Co-Chair to the HFE. It is directly involved in the activities described under Component 1 and it helps to direct the research topics that are investigated under Component 3. |
| Partner Agency | Ministry of Transport | The Ministry of Transport serves as Co-chairs to the HFE and supports the identification and implementation of anti-congestion measures identified in Component 3. The MOT will also assist JSMO in disseminating and implementing standards on echargers and will assist in the identification of e-charger locations under Component 2 and 3. |
| Partner Agency | Ministry of Energy and Mineral Resources | The Ministry of Energy and Mineral Resources shall be a key member of the HFE, advising on excise and emissions taxes associated with vehicle and part purchase as well as the technical requirements for the e-chargers under Component 2 and 3. |
| Partner Agency | Ministry of Planning and International Cooperation | The Ministry of Planning and International Cooperation is tasked with coordinating donor initiatives in Jordan. UNIDO is closely engaged with the priorities of MoPIC and the ministry will be invited to the HFE. |
| Partner Agency | Ministry of Finance | The Ministry of Finance is a crucial decision maker in the ability of the project to establish long-term incentives for e-mobility. Components 1 and 3 will align closely with their priorities; the ministry will be invited to join the HFE. |
| Partner Agency | Ministry of Tourism | Tourism is a critical industry for Jordan, and the Ministry of Tourism will be consulted on the project design and invited to the HFE. Initial market research indicates that e-mobility would be appropriate for local travel within key sites; the Ministry of Tourism will be solicited for advice on identifying an investment pipeline under Component 2. |
| Partner Agency | EBRD | International finance institutions such as EBRD will play a key role in supporting Component 2 of the project in terms of co-finance. In addition, EBRD has particular insight on transportation issues in-country given their implementing role on the Green Cities Action Plan supported by the GCF. |
| Partner Institution | UNE | The Global Programme to Support Countries with the Shift to Electric Mobility is led by UNE in this region and seeks to introduce clean and low-carbon mobility. |

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|---------------------|--|---|
| Partner institution | GIZ | GIZ led initial work on the QUDRA project, which established a licensing track for school buses and other HOVs servicing schoolchildren, which has led to independent companies independently expanding the programme and applying for licensing. Plans to establish a second phase are underway and thus synergies will be sought to support an e-mobility fleet for school aged children. |
| Partner institution | Jordan Standards and Metrology Organisation (JSMO) | JSMO is currently working on establishing standards for e-vehicle batteries and a testing facility. UNIDO will support the next step of standardization for an e-mobility fleet – the standardization of e-chargers. JSMO has already confirmed that e-chargers will be standardized by 2021; the proposed project will provide assistance as needed in ensuring implementation of the standard under the project components. |
| Partner institution | Greater Amman Municipality (GAM) | GAM is currently focusing on the development of a Bus Rapid Transit system to reduce traffic congestion and will be a critical member of the HFE in order to help identify other common-sense measures and barriers for further efficiency gains. |
| Partner institution | Land Transportation Regulatory Commission | The Land Transportation Regulatory Commission will be invited to the HFE. The LTRC is currently working on the introduction of e-buses in the southern governates and will be asked to assist in the identification of an investment pipeline under Component 2. |
| Partner institution | University of Jordan | The University of Jordan has published a methodology on identifying the optimum location for e-charging facilities within Amman. The lab that supervised this work will be invited to engage in Component 2 and 3 of the proposed work, in order to help identify a strategy for improving e-charging infrastructure in at least three cities beyond the capital. |
| Stakeholder | Crown Prince Foundation | The Crown Prince Foundation has a special focus on the needs of Jordanian youths and has identified the expansion of mass transit as a priority response to youth unemployment. As such, they will be actively consulted on the development of a pipeline under Component 2 in addition to assisting on research, if relevant, under Component 3. |
| Stakeholder | Minerva Consulting | Minerva Consulting offers technical expertise on e-mobility throughout Jordan and may be invited to assist in the research outputs described under Component 3. |
| Stakeholder | Sustainable Energy and Economic Development (SEED) Project | SEED, based in Ajloun, has specialized in supporting e-chargers and e-mobility beyond the capital. It is envisioned that their expertise and insight into other governates beyond the capital can be utilized under Components 3. |
| Stakeholder | Engericon | Engericon Consulting provides highly specialized insight on the transport sector in Jordan and has been directly involved in the school bus programme and multiple transport policies under development in Amman and greater Jordan. It is envisioned that Engericon may provide technical assistance under Component 3. |
| Stakeholder | Jordan Renewable Energy & Energy Efficiency Fund | JREEF will be invited into the HFE to advise on the agenda and needs under Components 1 and 3. |

| | | |
|-------------|---|---|
| Stakeholder | eCharge | eCharge will be consulted on the implementation of e-chargers in Amman and lessons learned will be sought in terms of expanding the scope of dissemination to other cities. |
| Stakeholder | Manaseer | Manaseer is an e-charger installation firm that has been active in Amman. They will be consulted on the implementation of the proposed project in order to identify lessons learned for expansion beyond Amman. |
| Stakeholder | Jordan Electric Power Co. (JEPCO) | Power company engaged in the generation, transmission, transfer and distribution of electric power. |
| Stakeholder | Energy and Mineral Regulatory Commission (EMRC) | EMRC is a government agency responsible for defining the rules and technical requirements for charging points, and deliver license permits for their construction |
| Stakeholder | Jordan Electric Vehicle Association (JEV) | Consumer association which aims to convey the observations and concerns of e-vehicle owners to the government and civil society. |
| Stakeholder | EDCO | Major oil and gas companies operating in Jordan. |
| Stakeholder | Total | |
| Stakeholder | JoPetrol | |
| Stakeholder | Gulf | |

Annex C: Key policy recommendations for the transport sector

| Organisation name | Document name | Date | Key recommendations |
|---|--|--------------|--|
| Global Green Growth Institute (GGGI) | A National Green Growth Plan for Jordan | May 2017 | <ul style="list-style-type: none"> The Amman – Zarqa (30km) BRT model could be replicated on other routes such as Amman – QAIA (35km), similarly electric vehicles could be implemented in Zarqa, Irbid or as part of the Aqaba Special Economic Zone with the expansion of the charging station network. <i>EV charging or tax concession</i>: concessions could be offered on vehicle road tax for electric or low emission vehicles. Electricity at charge stations could also be subsidised <i>Trade agreements</i>: favourable trade arrangements could be offered for key components that Jordan will not pursue manufacturing, such as EV batteries <i>BRT user subsidies</i>: BRT ticket prices should be affordable and competitive with the full costs of driving <i>Public transport standards and accountability</i>: quality and reliability of public transport should be guaranteed by standards Vehicle scrappage scheme to improve fleet efficiency |
| EBRD | Green City Policy and Action Consultation – Amman Green City Action Plan | October 2019 | <ul style="list-style-type: none"> Free bus services on one of Amman’s major streets Develop a map of existing transport and leisure walking routes. This could link to the participatory mapping of green spaces. Formalise public transport routes and times Purchase of 150-300 new buses by the Greater Amman Municipality (GAM) for public transport Develop a sustainable urban mobility strategy that will expand upon the BRT Install Intelligent Transport Systems (ITS) to improve traffic flows |
| Federich-Ebert-Stiftung (Regional Project on Climate and Energy Policy) | Recommendations on E-Mobility in Jordan | June 2019 | <p>Recommendations to MoT and MoEnv:</p> <p><i>Infrastructure policies:</i></p> <ul style="list-style-type: none"> Diversify transportation modes – including EVs. Transition from the focus on car ownership, to smaller sized electric vehicles and public transport. Electric scooters and bikes should be encouraged e.g. through procurement programs |

| Organisation name | Document name | Date | Key recommendations |
|-------------------|---------------|------|---|
| | | | <ul style="list-style-type: none"> • Enable more EV charging stations, by encouraging private sector involvement and minimizing governmental procedures. • Emphasise connectivity and electrification, by extending charging infrastructure and public transportation networks • Establish a high-level national e-mobility committee to follow up on updates in electrification of private and public transport <p><i>Financial policies:</i></p> <ul style="list-style-type: none"> • Proportionate taxes/customs based on car size; large cars such as SUVs shall pay higher taxes due to their higher emissions • Assess EVs financial impacts on national budgets as EVs can reduce income coming from fuel taxation, as well as the costs incurred by customs and/or tax exemptions • Utilise available international funds related to climate change and linking them to the leading case of EVs in Jordan <p><i>Private sector and economic policies:</i></p> <ul style="list-style-type: none"> • Raise awareness and accountability of fuel consumption and vehicle efficiency by using fuel efficiency labels on cars • Confirm the importance of collecting and sharing data related to e-mobility. <p>Recommendations to MEMR and EMRC:</p> <p><i>Infrastructure policies:</i></p> <ul style="list-style-type: none"> • Adopt a new scheme in cooperation with different parties to improve the e-mobility charging infrastructure. • Reduce complexity of installing new charging stations. This includes simplified regulations from both EMRC and the electricity distribution companies. • Develop a concept how EVs in Jordan can be used as battery storage during oversupply in electricity • Allow innovative charging solutions like investing in street lighting poles as charging points. • EMRC putting specifications and standards for these charging stations • Using renewable energy for EV charging stations to help reduce the cost per kWh. |

| Organisation name | Document name | Date | Key recommendations |
|-------------------|---------------|------|--|
| | | | <p><i>Financial policies:</i></p> <ul style="list-style-type: none"> • Change the charging tariff (increase end user charging cost, users are ready to pay more) to attract investors for charging stations. Only 12 charging station for 18.000 cars in Jordan is not appropriate and leads to high waiting periods to charge cars • EMRC can serve as a regulatory body for the charging tariff however without setting the tariff itself. • Introduce zero-tax policy on all EVs supply chain, for example chargers and maintenance parts. <p><i>Research and awareness policies:</i></p> <ul style="list-style-type: none"> • Adopt and approve a smart grid transition plan to enable better usage, simulation, operation, understanding, research and development (R&D), etc. of the electrical transmission grid. • Build a new local centre of R&D for e-mobility, and increase academic research by opening or extending programs and branches in universities. This serves to educate the concept, techniques, logistics of e-mobility in cooperation with international expertise and research. • Increase the awareness of people about the ongoing and upcoming plans in e-mobility, and correcting some common misunderstandings as well as misleading information about the government policies and initiatives. <p><i>Private sector and economic policies:</i></p> <ul style="list-style-type: none"> • Allow the market to use different charging, including portable charging stations. <p>Recommendations to the Greater Amman Municipality:</p> <p><i>Infrastructure policies:</i></p> <ul style="list-style-type: none"> • Develop the charging infrastructure in Amman and incorporate the public transport infrastructure, i.e. install charging points in the bus terminals • Evaluate the advantages and disadvantages of electrification of the BRT system • Purchase electric, hybrid or hydrogen buses |

| Organisation name | Document name | Date | Key recommendations |
|-------------------|---------------|------|---|
| | | | <p>Recommendations to the Electric Vehicles Association (EVA) and the Civil Society in Jordan:</p> <ul style="list-style-type: none"> • Broaden the lobbying towards more sustainable transport in general. This shall include the promotion of the electrification of public transport; the promotion of sharing electric vehicles (car-pooling) and the promotion of electric scooters and electric bikes. • Conduct research with measurable outcomes on the impact of electric vehicles use on social aspects in the community. • Seek funding to create an “EV Owners Guide” as a printed flyer or small magazine, this will help promote electric vehicles. |

Annex D: Existing and planned baseline investments

| No. | Project/Programme title | Budget | Source of funding | Year | Agency(ies) |
|-----|--|------------------------------|--------------------|--------------------|---|
| 1 | Bus Rapid Transit (BRT) ⁴⁰ | USD 166 million | AFD | 2020 ⁴¹ | General Municipality (GAM) Amman |
| 2 | Electric Vehicles (EVs) charging facilities to be installed in new gas stations ⁴² | N/A | N/A | 2018 | The Energy and Minerals Regulatory Commission (EMRC) |
| 3 | 44 active portfolio projects / investments including transport, municipal infrastructure, EE, RE ⁴³ | Cumulative EUR 1,080 million | EBRD | 2019 | European Bank for Reconstruction and Development (EBRD) |
| 4 | Green Cities Facility ⁴⁴ | USD 590 million | EBRD / GCF / SIDA | 2019 | Green Climate Fund (GCF) – Implementing agency: EBRD |
| 5 | Scaling Up Renewable Energy Financing Facility ⁴⁵ | EUR 380 million | EBRD/NAMA Facility | 2019 | NAMA Facility (Implementing agency: EBRD) |
| 6 | Solar Energy Bus Fleet Pilot in Southern Governorates ⁴⁶ | TBD | EBRD | TBD | Land Transport Regulatory Commission |
| 7 | QUDRA Programme ⁴⁷ | EUR 82.4 million | EU and BMZ | Since 2016 | GIZ, Expertise France, Spanish Agency for International Development (AECID) and Hungarian Interchurch Aid (HIA) |
| 8 | Jordan Competitiveness Programme ⁴⁸ | USD 50 million | USAID | 2013 - 2019 | USAID (Implementing agency: DAI Global LLC) |
| 9 | Installation of 10,000 smart electric vehicles charging stations ⁴⁹ | Undisclosed | Undisclosed | 2019 | eCharge (German-based private company) |

⁴⁰ Project Information page. Accessed 14/01/2020 at: <https://www.afd.fr/en/actualites/amman-new-bus-network-reduce-street-congestion>

⁴¹ Feasibility study on e-buses for the BRT by the GGGI (unpublished).

⁴² Jordan Times (2018) “Electric vehicle charging service mandatory for all new gas stations” published 19/06/2019. Accessed 14/01/2020 at: <http://www.jordantimes.com/news/local/electric-vehicle-charging-service-mandatory-all-new-gas-stations>

⁴³ EBRD in Jordan. Accessed 15/01/2020 at <https://www.ebrd.com/jordan-data.html>

⁴⁴ Project FP086 Information page. Accessed 15/01/2020 at: <https://www.greenclimate.fund/projects/FP086>

⁴⁵ Project Information Page. Accessed 15/01/2020 at <https://www.nama-facility.org/projects/jordan-scaling-up-renewable-energy-financing-facility/>

⁴⁶ Notes from Marshall Brown, Senior Officer, Jordan Program at Global Green Growth Institute, 19/11/2019.

⁴⁷ QUDRA General Factsheet. Accessed 14/01/2020 at: https://www.qudra-programme.org/fileadmin/Editorial/en/PDF/Qudra_General_Factsheet_EN.pdf

⁴⁸ USAID Jordan Competitiveness Program Factsheet. Accessed 14/01/2020 at:

https://www.usaid.gov/sites/default/files/documents/1883/2019_2_JCP_Fact_Sheet_Feb_2019.pdf

⁴⁹ Jordan Times (2018) “10,000 electric car charging stations to be built in Jordan”, published 14/03/2018. Accessed 14/01/2020 at: <https://www.jordantimes.com/news/local/10000-electric-car-charging-stations-be-built-jordan%E2%80%9999>

| No. | Project/Programme title | Budget | Source of funding | Year | Agency(ies) |
|-----|---|-------------------|--|------|---|
| 10 | Climate Finance Accreditation Support ⁵⁰ | EUR 0.9 million | - | 2019 | Cities and Villages Development Bank (Accreditation support provided by GGGI) |
| 11 | Global Programme to Support Countries with the Shift to Electric Mobility ⁵¹ | USD 433.8 million | GEF | 2019 | UNEP, ADB, UNDP, EBRD |
| 12 | Upgrade of the Desert Highway (220km from the QAIA to Mreigha-Ras Al Naqab) | USD 170 million | International Cooperation and the Saudi Fund for Development (SFD) | 2017 | Ministry of Planning |

⁵⁰ News article (2019) “Ministry of Environment and Global Green Growth Institute Select Cities and Villages Development Bank to be Green Climate Fund Direct Access Entity Candidate for Jordan”, published 18/07/2019. Accessed 14/01/2020 at: <https://gggi.org/ministry-of-environment-and-global-green-growth-institute-select-cities-and-villages-development-bank-to-be-green-climate-fund-direct-access-entity-candidate-for-jordan/>

⁵¹ GEF Program Framework Document. Accessed : 10/08/2019 at: <https://www.thegef.org/project/global-programme-support-countries-shift-electric-mobility>

Philippines

Child project title: Accelerating the adoption and scale-up of electric mobility for low-carbon city development in the Philippines

GEF Agency: UNIDO

Total Project Cost: USD 3,788,990 (without IA fee); co-financing: USD 46,725,000; PPG: USD 137,615 (without IA fee)

PROJECT DESCRIPTION

1. Country Context

With the Philippines economy growing steadily over the past five years, the demand for energy has also been rising rapidly. The Philippines is heavily dependent on oil imports, making it vulnerable to price volatility. From 2014 - 2018, the Philippines' total energy consumption has been growing at an average of 4.22% per year. Currently, the Department of Energy of the Philippines is developing the National Renewable Energy Program (NREP), which seeks to increase the RE-based power capacity of the country to 15,304 MW by 2030. Also, the energy security area is emphasized in the Philippine Energy Plan 2017 – 2040 and one of the priorities for the government in the development of the demand side management program for the energy sector.

The Philippines NDC is currently under development, according to a consultation meeting held with the CCC, transport is one of the key elements of the Philippines contribution. The NDC covers unconditional, as well as conditional contributions to climate change mitigation from the transport sector provided by the DOTr. The State's Transport Vision formulated in the Philippine National Transport Policy is a safe, secure, reliable, efficient, integrated, intermodal, affordable, cost-effective, environmentally sustainable, and people-oriented national transport system that ensures improved quality of life of the people. One of the government's priorities is the development of environment-friendly transport systems to promote environmental sustainability and protection. The use of clean and energy-efficient transport technology/fuels will be pursued. One of the strategic areas of intervention is low-emission vehicles including e-vehicles.

According to the ADB report "Pathways to low-carbon development for The Philippines" The Philippines has per capita greenhouse gas emissions that are far below the world average. However, emissions are growing at an increasing rate, with 4% annual growth between 2006 and 2012. More than half of 2012 emissions were from the energy and transport sectors, and the energy sector has been the main source of emissions growth. Much of this rise is driven by a fall in the renewable share of primary energy from 55% in 1990 to 38% in 2013, as well as accelerating growth in energy consumption in buildings and transport sector. The largest share of energy consumption is transportation (ca. 37%), with road transport accounting for 80% of it.

The Department of Energy's Investments Priorities Plan for 2014-2016 which stressed that establishment of charging stations for electric vehicles is among the preferred activities. Also, the Executive Order 488 modified the rates of import duty on components, parts and accessories for the assembly of hybrid, electric, flexible fuel and compressed natural gas motor vehicles to zero rates. In 2019 the Sub Committee on Electric Road Vehicles released the PNS-ISO 6,469 series of standards under the general title Electrically Propelled Road Vehicles – Safety Specification to assure the safety of EVs. Other standards covering charging

systems, lithium-ion battery packs, plugs, socket-outlets, vehicle connectors and vehicle inlets and vehicle grid communication interface also were introduced.

2. Project Overview and Approach

Geographical Target:

The geographical target for the project is the Philippines. Demonstration activities will be carried out in selected cities (to be selected in the PPG). Scaling up activities will cover cities and municipalities in the whole country.

Systemic challenges and specific environmental threats:

The growing urban population of the Philippines along with increasing car ownership is a driver for increasing energy consumption and GHG emissions from transportation in the cities. To cope with this problem the project will aim to reduce GHG emissions from transport in the Philippines through e-mobility.

Associated drivers:

One of the opportunities to decrease emissions from transport in the Philippines is the broad adoption of e-mobility. According to recent studies, concerns related to battery/charging have deepened over the last three years, such that battery/charging and driving range represent more than half of all concerns mentioned by consumers considering EVs. In detail, battery/charging issues make up 38% of all reported concerns, up from 13% in 2016.

Making charging stations available when and where EV drivers need them by making them accessible, available, and easy to find is key to the development of e-mobility in countries as currently, 43% of all charging instances of current BEV owners occur at public charging stations. For the development of adequate charging networks, there is a need to engage governments and energy infrastructure providers to install public charging stations and at the same time enable SMEs to install charging stations as well. However, due to the relatively high carbon intensity of the grid electricity in the country, e-mobility charging infrastructure interventions should be complemented with interventions focused on the reduction of the carbon intensity of the electricity provided for charging infrastructure.

Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration.

Baseline Investments:

Regarding the development of renewable energy in the Philippines Department of Energy is working on the introduction of Renewable Portfolio Standards, which would require power distribution utilities to source a minimum portion of energy from renewable sources, thus guaranteeing a market for RE producers. Another proposed policy called the Green Energy Option is targeted at consumers which could demand energy sourced from renewable resources. Also, Green Energy Rate for 2,000 MW of new RE capacity, should be established to encourage investments.

In sustainable transport sector government projects has been undertaken by DOE and DOTr. Details have been given in Annex 4.

Other initiatives include The Electric Vehicle Association of the Philippines (EVAP) national development program for electric vehicles for ten-year-period (2013 – 2023), anchored on the existing Motor Vehicle Development Program for the automotive industry. According to EVAP projections EV of all types (e-jeep,

e-quad, golf carts, e-bike, e-trike, e-bus) are estimated to be manufactured locally from 38,220 units in 2014-15 to 69,145 units in 2017 or an average growth rate annually of approximately 11-13%.

Please refer to Annex 4 on other baseline projects.

Institutional framework:

The lead agency for the global e-mobility programme is UNEP. GEF Implementing Agency for Philippines child project is UNIDO. Executing Agency would be Department of Energy (DOE) in cooperation with Department of the Interior and Local Government (DILG) and respective municipalities. Please refer to Annex 1 on institutional setup.

Stakeholder Engagement:

Main project stakeholders cover government, local urban bodies, NGOs and the private sector. Stakeholders were engaged in the project design and will also actively participate in the PPG and project execution. Please refer to Annex 1.

Gender:

Interventions related to energy and the environment are expected to have an impact on people and are, therefore, not gender-neutral. As a guiding principle, the project will ensure that both women and men are provided equal opportunities to access participate in and benefit from the project, without compromising the technical quality of the project results.

Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits.

The proposed project addresses the identified gap and focuses on the development of charging infrastructure (incl. battery swapping) integrated with renewable energy and supporting the development of viable e-mobility business models (with focus on 3-wheelers).

The project aims at delivering policy improvements and demonstration actions in selected pilot cities. It is foreseen that cities and municipalities would be of different size and different context (tourist, industrial, business districts, intra-cities, new townships). Cities selection criteria will be defined at the PPG stage but will include various factors like statistics on commuters, traffic jams, workers, previous deployment of 3-wheelers, renewable energy generation capacity and conditions for its development.

The cities will be targeted with energy planning activities for integration of new charging infrastructure with local energy grid and development of renewables, addressing energy security and energy efficiency at the local level. Demonstration actions will deploy charging infrastructure and renewable energy installations in selected pilot cities (estimated 300 chargers supplied by PV installations approx. 15 MW) mostly targeting locations with large transport flows. Deployed infrastructure would be made available for private cars and the 2&3wheelers (private and commercial light transport) for which also business models for their operations would be developed. Possible area of intervention to be explored at the PPG stage are also Transport Network Vehicle Services (e.g. Grab).

This project would be complementary to the ongoing initiatives on e-mobility led by DOE, UNEP, DOTr including GEF-funded Sustainable Public Transport Systems. The scope of this child project does not overlap but complements existing initiatives by the development of charging infrastructure which is in the DOE area of responsibility. Please refer to annex 4.

This project aligns with the global programme's goal of mitigating the transport sector's impact on global climate change, realizing multiple global environmental benefits (GHGs and air pollutants reduction) by systematically targeting the root causes of fossil fuel dependency in the Philippines's transport sector. The project's components work towards removing market barriers for broad adoption of EVs, addressing the lack of charging infrastructure and creating a viable business model for commercial e-mobility in the Philippines. The child project also incorporates the necessary engagement with the regional support and investment platforms and global platform to ensure accelerated adoption of best practices and lessons learned across the programme. Please refer to Annex 2 for Theory of Change diagram.

Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.

From the current baseline, it's obvious that an important gap in the Philippines exists, which slows down the adoption of e-mobility – the country lacks charging infrastructure development. The Philippines require further incremental technical and financial assistance from the GEF to ensure that its transportation sector decarbonises at a rate consistent with meeting the Paris Agreement. This assistance is essential to strengthen institutional capacities and policy ecosystem for electric mobility and derisk electric mobility technologies to attract stable co-financing from foreign and domestic investments in advanced technologies. With a relatively minimal GEF grant, this project will support mobilization of investment to support and accelerate the adoption of electric mobility in the Philippines, contributing to the programmes overall objective of reducing global greenhouse gas emissions from the transport sector. Please refer to Annex 3 on incremental reasoning.

The intervention would be structured in 5 components:

1. Integration of e-mobility in cities' energy planning and national e-mobility framework development, through: a) developed frameworks for local energy planning (incl. integration and optimization of e-mobility with renewables) and energy storage in cities adopted; b) GHG accounting and management for transport in cities; c) developed national EV framework and charging infrastructure masterplan.
2. Development of viable business models, through: a) Training for stakeholders (utilities, private sector and other) on business models and creditworthiness; b) Delivery of projects pipeline assessments, financing options studies, and climate-smart capital investment plans.
3. Demonstration and early deployment of innovative infrastructure and technology eco-investments, through: a) optimization of urban-industrial energy systems and e-mobility solutions for public and private sector (3 wheelers) integrated with decentralized renewable energy and energy storage; b) Demonstration of business models for battery utilization in e-mobility and grid stability. When establishing the business models, the whole value chain would be taken into consideration with a specific focus batteries life-cycle. The collection, re-use and recycling of batteries would be specifically addressed in the project.
4. Scale-up of investments through partnerships, knowledge management and capacity building, through a) knowledge exchange with key national stakeholders based on lessons learned from pilot cities; b) linking with regional and global platforms on electric mobility; c) training sessions for the public and private sector on the integration of renewables and life cycle challenges for EVs and batteries.
5. Monitoring and evaluation

The project was reviewed in line with UNIDO Environmental and Social Safeguards and the found risk category is B. Relevant Environmental and Social Management Plan will be prepared during the PPG.

3. Engagement with the Global / Regional Framework

Knowledge sharing and scale-up is a key part of the project with a dedicated component to ensure direct engagement with the Asia and Pacific Regional Support and Investment Platform run by the Asian Development Bank and the global programme. This project stands to contribute lessons learned and best practices to the programme's thematic working groups, in particular the working groups on Charging infrastructure, grid, system and power market integration and batteries as well as Light-duty vehicles (two and three-wheelers and cars). The project also aims to take advantage of the platform by ensuring national stakeholders are the beneficiaries of technical support, the networks and communities of practice, training and capacity building and information from global working groups provided under the platform. The project will share project deliverables such as analytical reports, policies, business models and lessons learnt with the Global Programme to support scale-up and replication of e-mobility in other countries and regions

A comprehensive set of activities will ensure scale-up of lessons learned from the pilot cities to the national level. A critical piece is the inclusion of key stakeholders in the design of this proposal. These stakeholders will be further included during the formulation of the project during the PPG phase and involved in the project steering committee during the project's implementation. This level of engagement is fundamental for ensuring the project meets the existing needs of stakeholders and that the project responds as necessary to needs as they evolve. This ownership also contributes to the long-term sustainability and scale-up of the outcomes of the project.

Concrete activities planned under Component 3 to facilitate dissemination of knowledge and experiences gained from Components 1, 2 and 3 include but are not limited to the following:

- Documentation of best practices and solutions;
- Peer to peer learning within relevant stakeholders;
- Communication strategy around the planning process and production of well-designed and easy to understand materials;
- Tailored training for key actors in the planning and management process;
- Awareness-raising events;
- Training, resources, and technical assistance to cities on data collection strategies, validating the information, and other analytic tools required for investment analysis; and
- Media/communications, outreach, stakeholder engagement.

Annex 1 – Institutional setup and stakeholder engagement

The lead agency for the global e-mobility programme is UN Environment. GEF Implementing Agency for Philippines child project is UNIDO.

The project execution will be undertaken through multiple partnership/contractual arrangements between UNIDO and selected national/international entities with relevant mandates and capacities. External assessments of potential executing entities will be conducted during the PPG. Should this reveal that there are inefficiencies that could only be covered by UNIDO support, based on the request and confirmation by the government, UNIDO will provide execution assistance.

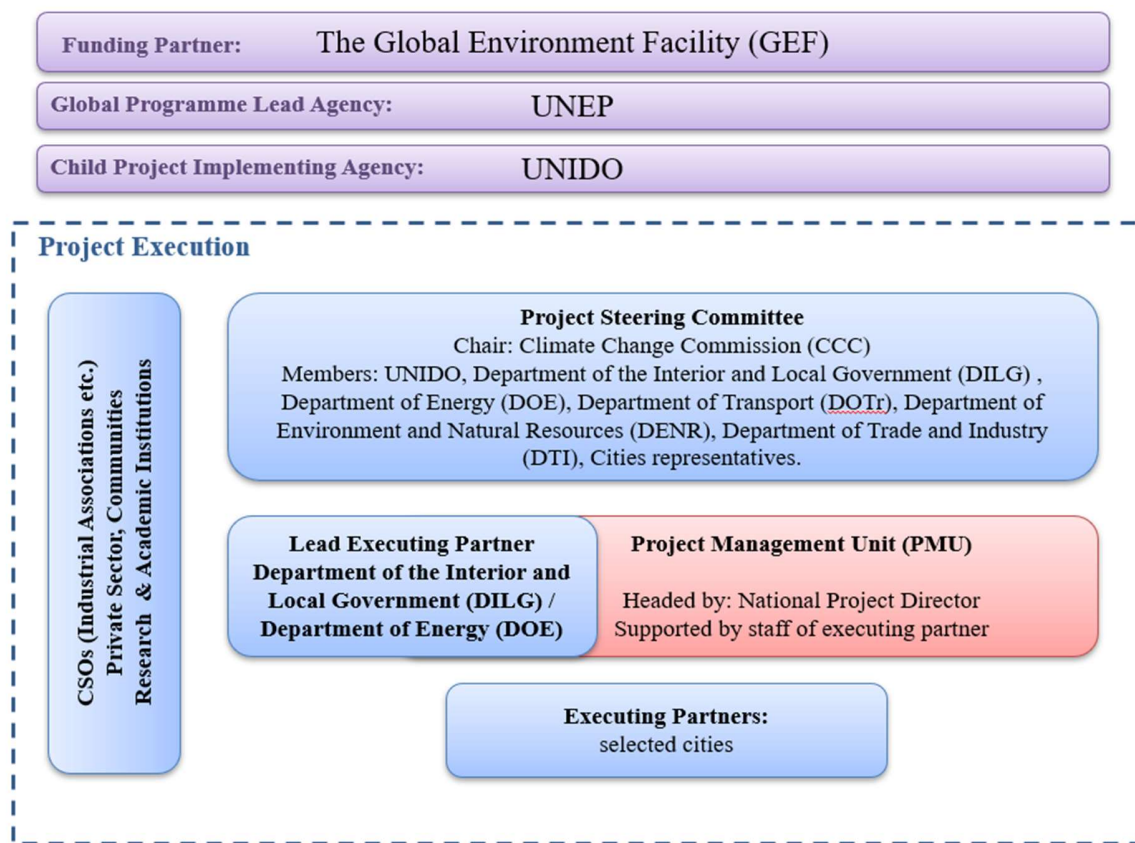
GEF Executing Agency would be Department of Energy (DOE) in cooperation with Department of the Interior and Local Government (DILG). Selected Cities will act as executing partners at the municipal level and will ensure that the activities are properly coordinated with the government programs and other on-going activities. Local governments (cities) will carry out duties in line with the approved project document and work plan, as well as per partnership agreement with UNIDO. Main counterparts include:

- Climate Change Commission (CCC),
- The Department of Energy (DOE),
- Department of Transportation (DOTr),
- Department of Environment and Natural Resources (DENR),
- Department of Trade and Industry (DTI),
- Philippine Cities – and League of Cities of the Philippines (LCP).

The following partners have been preliminarily selected to execute component within their respective mandates and capacities:

| Component | Executing partners (TBC during the PPG) |
|---|--|
| Component 1: Integration of e-mobility in cities' energy planning and management policies | Department of Energy (DOE), Department of the Interior and Local Government (DILG), Selected Cities |
| Component 2: Development of viable business models | Department of Energy (DOE), Department of the Interior and Local Government (DILG), International Finance Corporation (IFC), Selected Cities |
| Component 3: Demonstration and early deployment of innovative infrastructure and technology eco-investments | |
| Component 4: Scale-up of investments through partnerships, knowledge management and capacity building | Department of Energy (DOE), Department of the Interior and Local Government (DILG), Selected Cities |

Project Steering Committee would include Department of the Interior and Local Government (DILG), Climate Change Commission (CCC), The Department of Energy (DOE), Department of Transportation (DOTr), Department of Environment and Natural Resources (DENR), Department of Trade and Industry (DTI) and other relevant stakeholders. During the PPG specific consultations will be held with national government counterparts to determine their readiness to act as executing entries.



The project development team will endeavour to establish and strengthen linkages with other agencies and actors that are currently planning or implementing relevant projects which will contribute to the overall outcome of the proposed GEF project. Some of such partners active in this area are the World Bank, Asian Development Bank, local private entrepreneurs, CSOs and NGOs, academia, etc. The project development team will identify the most relevant partners during the project preparation phase. During the PPG stage, numerous stakeholders' consultation including the log frame analysis will be organized to discuss related issues and concerns and prepare comprehensive structures for project implementation and management. A detailed stakeholders' involvement plan will be designed too. This will ensure complementarity and build on best practices and lessons learned by the stakeholders. During the implementation stage, the coordination mechanism will be further established to ensure proper coordination and involvement of the baseline project proponents.

| Stakeholder | Role |
|--|--|
| Department of the Interior and Local Government (DILG) | DILG is responsible for the general supervision, law implementation and assisting local governments and on public order and safety. The agency ensures that LGU complies with national government directives and same time promote harmonization of various plans and programs vertically (municipality, province, region) and horizontally (across sectors). Replication of best practices is also being facilitated by DILG, having the institutional capacity and mandate to do so. Since private commercial transport (3-wheelers) is supervised by local governments and that main project activity will be carried out in the pilot cities, the DILG would be extensively engaged in execution of the project. |

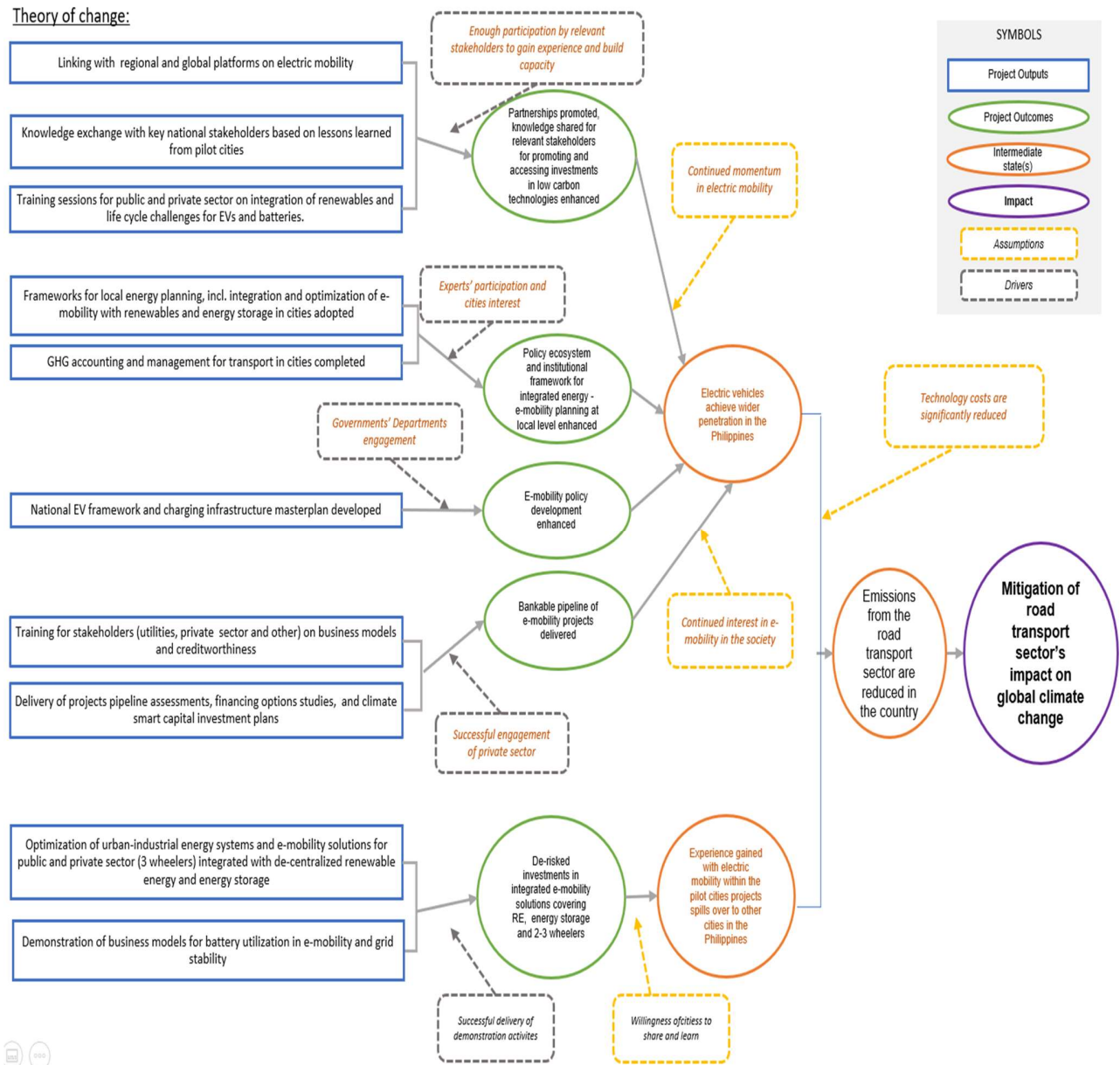
| Stakeholder | Role |
|--|--|
| The Department of Energy (DOE) | DOE is the lead implementing agency for the National Energy Efficiency and Conservation (NEEC) Act and the Renewable Energy Act is mandated to provide adequate, reliable and affordable energy to industries to enable them to provide continuous employment and low cost of goods and services, and to the ordinary citizen to enable them to achieve a decent lifestyle. DOE is responsible for the development of the Philippines E-mobility framework and charging infrastructure masterplan, as well as energy efficiency standards for vehicles. DOE conducts the National Policy Review on Energy as part of the initiative to continually assess the state of the energy sector of the country. DOE would be the main agency involved in project execution. |
| Department of Environment and Natural Resources (DENR) | DENR plays a key role in research and development in environmental protection and energy. The NOU specifically is a stakeholder in this project in view of the focus of this project on synergies between the UNFCCC and the Stockholm Convention. |
| Climate Change Commission (CCC) | The CCC is a policy-making government body tasked to coordinate, monitor and evaluate programs & action plans tackling the impacts of climate change in the Philippines. The CCC aims to converge cross-sectoral issues, advocating solutions and initiatives. CCC has a Climate for Resilience (CORE) program that acts as a replication platform for local government units. The CCC is presently developing and finalizing the National Portfolio Formulation Documentation (NPF) to provide overall guidance on various assistance and support to the Philippines in terms of climate change initiatives. CCC's involvement will include providing insight into lessons learned from previous and ongoing climate initiatives. CCC serves as the National Focal Point for the UNFCCC as well as for the Kyoto Protocol. CCC also fosters multi-stakeholder and multi-level approach in climate governance, engaging relevant agencies and stakeholders to various forms of collaborations and partnerships. CCC's critical role is being the lead government partner in project governance, noting CCC's mandate to coordinate, monitor and evaluate programs and action plans of the government relating to climate change. It serves as a clearinghouse, ensuring all initiatives on climate change are well-coordinated and directed. |
| Department of Trade and Industry (DTI) | The DTI is the executive department of the Philippine Government tasked as the main economic catalyst that enables innovative, competitive, job-generating, inclusive business, and empowers consumers. It acts as a catalyst for intensified private sector activity in order to accelerate and sustain economic growth through comprehensive industrial growth strategy, progressive and socially responsible trade liberalization and deregulation programs and policymaking designed for the expansion and diversification of Philippine trade - both domestic and foreign. The DTI will be engaged on how to best integrate private sector activity into the project. DTI is also responsible for standards development for e-mobility charging infrastructure. |
| Department of Transportation (DOTr) | The DOTr is the primary policy, programming and administrative entity of the executive branch of the government dedicated to transportation systems. The DOTr plays an important role in e-mobility policy development and transportation planning, thus it will be one of key stakeholders in the project. |
| Local Government Units (LGUs) in | LGUs are divided into three levels – provinces and independent cities; component cities and municipalities; and barangays. According to the |

| Stakeholder | Role |
|--|--|
| selected cities/provinces | Constitution of the Philippines, the local governments "shall enjoy local autonomy", and in which the Philippine president exercises "general supervision". As such, LGUs are tasked with sustainable urban planning (including transport and energy) on a local level and thus will be a key stakeholder for the selected cities/provinces. |
| Housing and Land Use Regulatory Board (HLURB) | HLURB's mandate is to review, evaluate and approve or disapprove land use plans of cities and municipalities. Its role is critical in ensuring climate risk assessment integration in spatial/land use plans and all other relevant sectoral plans (includes LCCAP and other development plans of the LGU). |
| Public-Private Partnership Center of the Philippines | The PPP Center facilitates the implementation of the country's Public-Private Partnership (PPP) Program. It is a government institution that serves as the central coordinating and monitoring agency for all PPP projects in the country. It champions the country's PPP Program by enabling implementing agencies (IAs) in all aspects of project preparation and by providing projects advisory and facilitation services. The Center serves for the country's inclusive growth and sustainable development. To achieve this, it facilitates and optimizes public-private partnerships in the country for the delivery of public infrastructure and other development services. The PPP Center provides technical assistance to national government agencies (NGAs), government-owned-and controlled corporations (GOCCs), government financial institutions (GFIs), state universities and colleges (SUCs), and local government units (LGUs) as well as to the private sector to help develop and implement critical infrastructure and other development projects. Thanks to it's role it would be one of key stakeholders in the project to ensure effective scaling-up activities. |
| Development Bank of the Philippines (DBP) | The Development Bank of the Philippines is a state-owned development bank. In its developmental mission and initiatives, DBP is committed to environmental protection and sustainable development and promotes projects that contribute to environmental protection thru its lending activities, CSR and other advocacy projects. They seek to provide credit facilities where funding gaps exist, i.e., in environmental management and protection projects and will be engaged in support the investment components of the project. |
| Bank of the Philippine Islands (BPI) | BPI is the oldest bank in the Philippines still in operation and is the country's largest bank in terms of market capitalization. Through its Sustainable Energy Finance (SEF) Program, it offers financing opportunities that invest in technologies aimed at improving the efficiency of energy generation, energy distribution and energy use. One of the 3 focus areas of projects that can be funded under the SEF Program is Energy Efficiency (EE) to shift to equipment, which consumes less energy while achieving the same or higher output. This funding will be further explored during the PPG phase through stakeholder consultation process. |
| International Finance Corporation (IFC) | The IFC offers investment, advisory, and asset management services to encourage private sector development in developing countries. It is a key expert in PPP projects with its aim to create opportunities for people to escape poverty and achieve better living standards by mobilizing financial resources for private enterprise, promoting accessible and competitive markets, supporting businesses and other private sector entities, and creating jobs and delivering necessary services. Furthermore, through its Excellence in Design |

| Stakeholder | Role |
|--|--|
| | for Greater Efficiencies (EDGE) program it empowers partners to achieve the most resource efficient design in fast growing emerging markets. IFC is one of key stakeholders to be included in the project in the context of scaling-up activities and co-financing for investment component. |
| Philippine Chamber of Commerce and Industry (PCCI) | PCCI is the voice of Philippine business recognized by government and international institutions. The main responsibility of PCCI is to provide focused advocacy for business growth and sustainable development by providing business services for the advancement of grassroots entrepreneurship, chamber development, international trade relations, business innovation and excellence, and operating efficiency. The PCCI and the Chamber of Commerce of specific regions are crucial to build the capacity of trade associations in the region also in regards to efficient and sustainable CC management. The PCCI will offer inputs from the Philippine business community into the project. |
| Civil Society Groups/NGOs Policy | Important for policy advise and commitments on co-financing resources for policy advocacy. These groups will be engaged as part of the policy outputs under Component 1. |
| National Economic and Development Authority | The National Economic and Development Authority will assist in offering guidance to place the proposed project within the context of national policy and planning regarding socio-economic, environmental, SDGs and climate change mitigation goals. |
| League of Cities of the Philippines | A formal organization of 145 cities, its role is to foster unity and cooperation among all cities in the country, advocate integrated development planning, coordination of basic services between the national government and the cities as well as between cities, and democratization of participation, representation and resources in local governance. The League of Cities will be engaged in the project to provide municipalities inputs into the project as well as assist in the effective scale-up of the project to other cities in the Philippines. |
| Private Sector | Industrial enterprises and waste management actors as well as other high-energy consuming equipment (e.g. Carrier, IBM, and other industry players). Other private sector actors that will be engaged include the Electric Vehicle Association of the Philippines (EVAP) that are active in promoting e-mobility by working to shape the policy environment and overall system design. |

Annex 2 –Theory of Change

Theory of change:



Annex 3 – Incremental Reasoning

| Components | Business as usual | Incremental reasoning cost | Main outcomes expected |
|--|--|---|---|
| 1. Integration of e-mobility in cities' energy planning and national e-mobility framework development | Lack of policy coherence and standards results in a lower rate of RE-EV grid integration and adoption of EV public/private fleets Existing projects target transport planning, standards and incentives, not charging infrastructure development. | The systematic promotion of mutually reinforcing policies for EV charging infrastructure and RE integration are developed | Policy ecosystem and institutional framework for electric mobility and decarbonization of power grid enhanced |
| 2. Development of viable business models | Lack of viable business models for private investment in charging infrastructure and EV. Previous E-trike project did not yield a successful business model for the private sector. | Development of viable investments pipeline, increased creditworthiness of cities create a favorable investment environment. Development of business models for successful utilization of EV in commercial transport. | Unlocked private investment in charging and energy storage infrastructure |
| 3. Demonstration and early deployment of innovative infrastructure and technology eco-investments | Adoption of new technologies will follow market at a rate inconsistent with meeting required targets for mitigation of transport GHG The existing project focus on public transport demonstrations and public utilities. | Innovative electric mobility technologies and life-cycle solutions for EVs and batteries are trialled, increasing national awareness, interest and evaluation of their use | Investment in innovative electric mobility and battery technologies is de-risked, accelerating their mainstreaming and adoption |
| 4. Scale-up of investments through partnerships, knowledge management and capacity building | Knowledge and expertise on EVs, RE integrated charging infrastructure and life-cycle issues for batteries is insufficient to meet national targets | Increased national technical capacity and knowledge developed with connections through the national, regional and global programme and networks | Capacity development and knowledge exchange on lessons learned scale-up to national, regional and global networks |
| 5. Monitoring and evaluation | Lessons from implementation are not captured and project risks not meeting its objectives | Effective monitoring and evaluation of the project is completed | The project achieves objectives with lessons learned for improving future projects |

Annex 4 – Baseline projects

A. Government initiatives

So far in the Philippines, some actions have been taken for the development of e-mobility on a wider scale. These developments include implemented by the Department of Energy “E-Trike Project”, which aimed to deploy 100,000 e-trikes nationwide to replace fossil fuel ones. The project was supported by the Asian Development Bank (ADB) and the Clean Technology Fund (CTF) with 500 million USD, however, it did not yield satisfying results in terms of successful business models. Also, improvement of the road-based public transport in the Philippines was targeted by “Jeepney+ NAMA” which included transport policy improvements and consolidation and modernization of the jeepney fleet (EURO4 diesel and e-buses, mini-buses and “modern jeepneys”), as well as regulation of the jeepney market. In 2018 DOTr started deployment of modern e-buses in Metro Manila as a part of the government’s public utility vehicle modernization program. DOE has also been working on fuel diversification strategies for transport in the Philippines, which included e-vehicles.

B. Other projects

GEF6 funded project Promotion of Low Carbon Urban Transport Systems in the Philippines, implemented by UNDP, which has been structured to create an enabling environment for the commercialization of low carbon urban transport systems (e.g. electric, hybrid vehicles and AGT systems) in the Philippines. This project targets mass public transport vehicles such as electric and hybrid buses, e-jeepneys. It focuses mainly on the institutional capacity building and demonstration activities in public transport (through planning; feasibility studies for the mass transit system and introduction of at least 15-20 low carbon transport modes such as hybrid and e-buses). It also foresees the development of charging infrastructure only on a small scale (installation in 2 pilot cities).

The project is general and cross-cutting, focuses on the development of local planning capacity and technical knowledge for e-mobility as well as deployment on e-vehicles for public transportation with supporting infrastructure and necessary standards. Proposed UNIDO child project is complementing the UNDP project by being charging infrastructure and renewables specific, focusing on the development of business capacities of the local private sector and utilities in the context of e-mobility development as well as the wide deployment of charging infrastructure for private and commercial transport, integration of infrastructure with deployed renewables; deployment of battery swapping.

Integrating Electric 2&3 Wheelers into Existing Urban Transport Modes in Developing and Transitional Countries, funded by GIZ, implemented by the UN Environment. The project focuses on planning and project baseline setting – including the characterization of fleets, existing policies as well as other issues such as the state of the art of the electric grid; policy design and piloting – including stakeholder mobilization, awareness-raising, technical assessments, pilot projects, policy development etc.; knowledge management and policy replication – through communications, global studies, training tools development, policy best practices etc. On 26 November 2019 the pilot with the Philippine Post Corporation (PHL Post), TAILG and Clean Air Asia was launched during a Press Conference in Pasig City, Philippines.

European Commission Solutions Plus Programme aims at developing integrated urban electric mobility solutions in the context of the Paris Agreement, the sustainable development goals and the New Urban Agenda. This programme will be closely linked with UN Environment global e-mobility programme through cross-participation in each other’s Steering Committees and working groups, increasing the impact

and country coverage, reduce overlap and duplication, and mutually reinforce both projects to achieve enhanced impact. Demonstration projects of EC Solutions Plus will be implemented in Pasig City (Philippines) among other locations in the world.

South Africa

Child project title: Accelerating the shift towards electric mobility in South Africa

GEF Agency: DBSA

Total Project Cost: USD 4,713,224 (without IA fee); co-financing: USD 101,592,961; PPG: USD 150,000 (without IA fee)

PROJECT DESCRIPTION

1. Country Context

Describe the country's relevant environmental challenges and strategic positioning relative to the systems transformation proposed for the program, including relevant existing policies, commitments, and investment frameworks. How are these aligned with the proposed approach to foster impactful outcomes with global environmental benefits?

To date, South Africa has one of the highest carbon footprints of grid electricity worldwide. Almost 90% of the generated electricity is based on coal. However, the new Integrated Resource Plan 2018 states that “The decommissioning of coal plants (total 28GW by 2040 and 35GW by 2050), together with emission constraints imposed, imply that coal will contribute less than 30% of the energy supplied by 2040 and less than 20% by 2050”

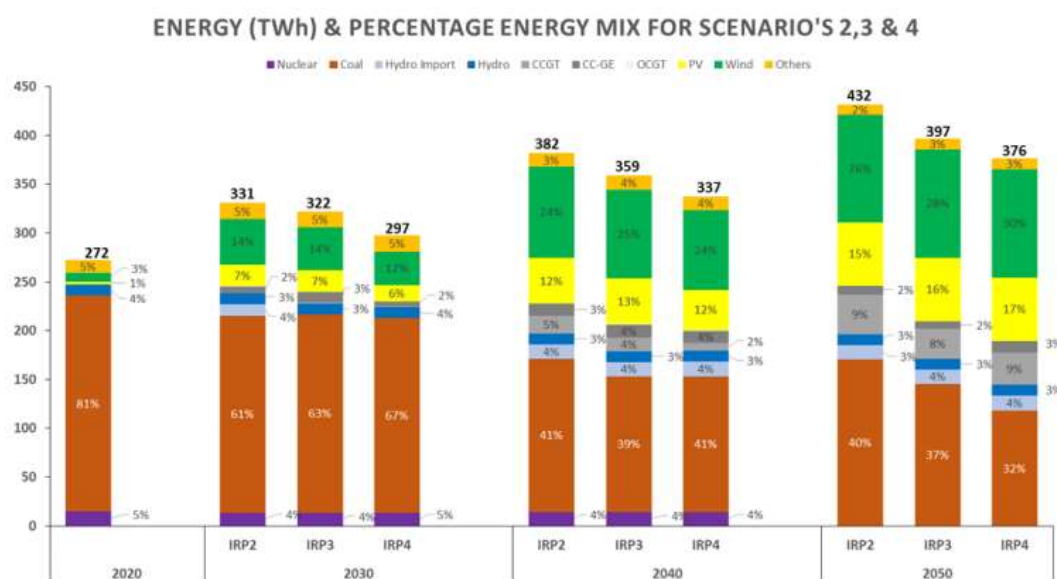


FIGURE 1 SOUTH AFRICA ENERGY MIX 2020 TO 2050 ACCORDING TO THE INTEGRATED RESOURCE PLAN 2018

Irrespective of the different scenarios (IRP1 to IRP6) tested, the share of coal-based energy supply will drop from around 90% today to 81% in 2020 and then to somewhere between 61% and 64% by 2030 (Figure 1). Since almost all of the decline in coal power will be covered by an increase in renewable power supply,

the carbon content of the South African grid power is expected to be reduced by 25% to 30% in 2030 compared to today.

In 2015, the transport sector accounted for about 13% of energy related CO₂ emissions, with road transport being responsible for more than 90% of all transport emissions (Figure 2).

At city level for example, the Greenhouse Gas Emissions Inventory for the City of Johannesburg (GPC CoJ 2012) identifies transport to be the third largest contributor to urban GHG emissions, accounting for 25% of total CO₂ emissions, whereby road transport accounts for 82% of all transport emissions. Light passenger cars are responsible for 43% of all road energy use and mini taxis/minibus and buses accounting for 14% and 3%, respectively

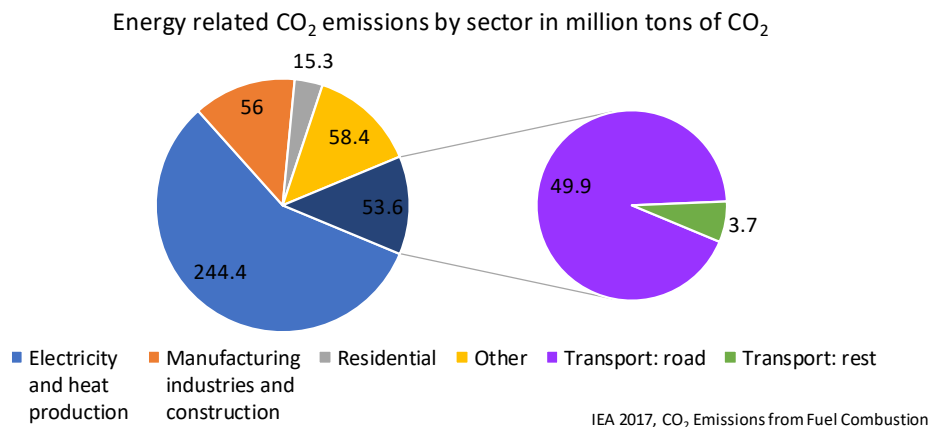


FIGURE 2 CO₂ EMISSIONS BY SECTOR IN SOUTH AFRICA IN 2015

The national Green Transport Strategy (GTS) (2017-2050 promotes green mobility and suggests “to achieve modal shifts in transport that reduce GHG and other harmful emissions [...]” and, in particular, “[...] a 20% shift of passenger transport from private cars to public transport and eco-mobility [...]”. The GTS identifies “significant investment needs to take place [...]” in the area of bus rapid transit (BRT) and suggests the significant expansion throughout large cities in South Africa. In addition, the GTS proposes a Vehicle Energy Efficiency Programme which includes the development of procurement guidelines for the government vehicle fleet. Another policy, the National Transport Master Plan 2050 (NATMAP) outlines the need for reduction of GHGs and other emissions as well as the reduction of environmental impact through the promotion of public transport as one of the main pillars of future development. The proposed electrification of public transport in combination with the integration of renewable energies for low carbon charging contributes to both, the environmental as well as the public transport improvement targets.

Hence, it may be concluded that together with existing policies, that promote cleaner energy deployment and localization of the technology, South Africa has a basis to commercially exploit the electric vehicle market.

2. Project Overview and Approach

This project aims at accelerating the shift towards electric mobility in South Africa by demonstrating the technical, operational and economic viability of electric buses in the City of Johannesburg, City of Tshwane, and eThekweni Municipality. It is the aim of the project to:

1. Reduce the financial and operational risk linked to the introduction of this novel technology through granting part of the necessary funds to put in service electric buses within the demonstration phase of the project, co-financed by the City of Joburg and the City of Tshwane and EThekweni municipality. A total of up to fifty (50) buses (depending on the actual unit costs plus charging equipment) will be procured for the demonstration phase of the project (through a mix of co-finance and GEF grant). Twenty (20) of the buses will be tested in the City of Tshwane, seventeen (17) in EThekweni municipality whilst the remaining thirteen (13) will be demonstrated in the City of Johannesburg. In this way, the three cities will gain the necessary experience and prove the economic benefits of electric buses.
2. Prove the economic feasibility of the integration of renewable power into the South African transport sector.
3. Provide a policy review to create an enabling environment for the roll-out of electric buses in South Africa as well as build capacity for operation and maintenance.
4. Reduce barriers associated with the high upfront investment cost of electric buses during the scaling-up of the project through blending of GCF resources with a loan of up to USD 70 million issued by DBSA to the 3 metros.

Geographical Target:

The project will be implemented in the City of Johannesburg and City of Tshwane which are both located in the Gauteng Province in South Africa. The third metro that will participate in the project is EThekweni municipality, located in the KwaZulu Natal Province (see Figure 3 below).

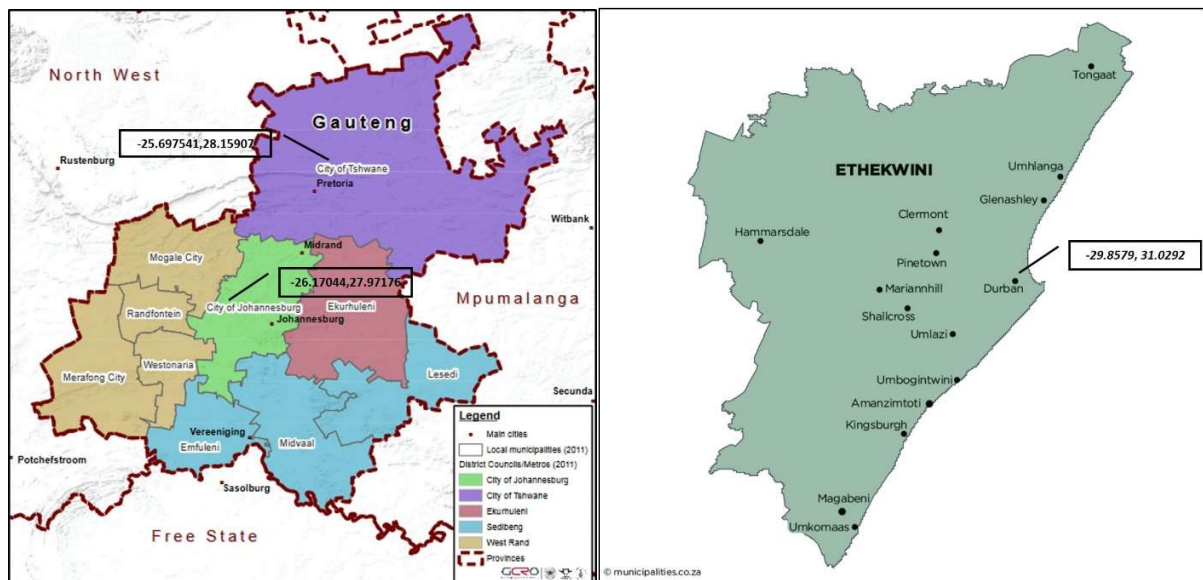


FIGURE 34 PROJECT MAP AND COORDINATES

Systemic challenges and specific environmental threats:

Although sales of electric cars saw a huge increase during the past five years, they still account for less than 1.5% on a global scale. In South Africa, sales of electric vehicles are very low, with a few hundred cars running on the roads so far (~ 375). Electric buses are even more un-common, for example, in 2017, the City of Cape Town started a demonstration project aiming at putting in service 11 electric city buses, but it is only in 2018 that the buses manufactured by BYD finally started operating. The slow uptake of electric vehicles in South Africa denies the country opportunities to not only reduce emissions emanating from diesel run public transport vehicles but also to forgo the exploration of using renewable energy sources (through charging) of energy, thus gradually moving away from coal based electricity. In addition, since South Africa is home to many car, bus and truck manufacturers, the project focusing on the demonstration of deployment of electric buses will raise the necessary awareness for e-mobility in general to trigger a discussion to switch towards the local manufacturing of electric vehicles.

Associated drivers:

Challenges faced by the country with regards to transition from diesel to electric buses emanate from drivers such as the following:

- Lack of necessary regulation and the existence fragmented standards that create an uncompetitive market with limited suppliers.
- High upfront capital cost of electric vehicles
- Lack of financial products that can be used to fully leverage the lower operating cost of the electric technology, both for buses and mini-taxis.
- Electric buses present a very specific risk profile associated with the vehicles and the batteries, which raises the demand for alternative business models that can better allocate risk between stakeholders.
- Electric buses are still a relatively novel technology and only little experience exists in South Africa. There's generally lack of awareness on government and private sector on benefits of new technology.
- Lack of capacity to operate electric buses resulting in poor management

Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration.**Baseline Investments:**

Three metros, City of Tshwane, City of Johannesburg and EThekweni City are signatories to the C40 Clean Bus Declaration, a coalition of cities to reduce harmful emissions and combat climate change by introducing only zero emission buses starting from 2025 to the city's public transport fleet. These cities are also engaged in different initiatives that are meant to reduce emissions from transport e.g. the City of Johannesburg initiated in 2013 a Diesel-Dual-Fuel (DDF) and EThekweni municipality is preparing to pilot 12 electric buses and large-scale deployment strategy. This initiative will form a part of this project. The City of Tshwane has plans to put in service 15 electric buses. This demonstration project will also be supported by the current project. In 2017, the City of Cape Town started a demonstration project aiming at putting in service 11 electric city buses. By the end of 2018, the buses manufactured by BYD started operating.

The DBSA currently participates in the financing of the renewable energy independent power producer procurement programme (REIPPP). During and beyond the implementation period of this GEF project, there shall be a total of 4,533MW of renewable energy produced (CSP, hydro and wind) in South Africa of

which 340 MW is financed by the DBSA with loans worth USD 696,841, 910. These investments provide renewable energy sources for charging electric buses both at demonstration and upscaling stage.

The Department of Trade and Industry (DTI) currently operates one electric vehicle (EV), the Council for Scientific and Industrial Research (CSIR) has 15 EVs and the Department of Environmental Affairs (DEA), through their Zero Emission Electric Vehicle Pilot Programme, is operating another 15 EVs. There are several charging stations in South Africa, ninety of them being in Gauteng. Most charging points are installed by South African companies. In 2014, through work done by a collaboration of BMW, Nissan, SANEDI, Gridcars and the Technology Innovation Agency's (TIA's) uYilo e-Mobility Programme, EVIA made recommendations with regards to the EV conductive charging station standards. From 2014 onwards, all electric vehicle conductive charging equipment supplied and installed in South Africa had to adhere to the latest versions of the following standards which have been adopted as SANS national standards:

- SANS 10142-1 – Low voltage installations Part 6.
- IEC 62196-2 Allowed configuration for AC conductive charging on domestic, industrial and commercial charging stations is Type 2 socket.
- SANS 62196-3 Allowed configuration for DC conductive charging on domestic, industrial and commercial charging station is configuration type AA (CHAdemo) or configuration type FF (COMBO 2) or both.

A macroeconomic study proposed by the Department of Trade and Industry (DTI), to understand the possible economic and social risks and opportunities of transitioning to electric mobility is currently underway. The DTI is also currently developing a new automotive development plan, which will replace the current Automotive Production and Development Programme (APDP) from 2020 on. The proposed policies are expected to include support for new technologies and the integration of electric vehicle manufacturing.

The three South African cities participating in this project are signatory to the C40 Clean Bus Declaration. The Declaration forms an international coalition of cities to reduce harmful emissions and combat climate change by introducing only zero emission buses starting from 2025 to the city's public transport fleet. The national electricity utility, Eskom, and local municipality electricity suppliers are preparing to play a key role in supporting the electric vehicle industry in planning and preparing for the uptake of EVs. Eskom commissioned a three-year research project on electric vehicles in collaboration with Nissan to understand charging characteristics and methodologies, user profiles and the impact on the electrical grid.

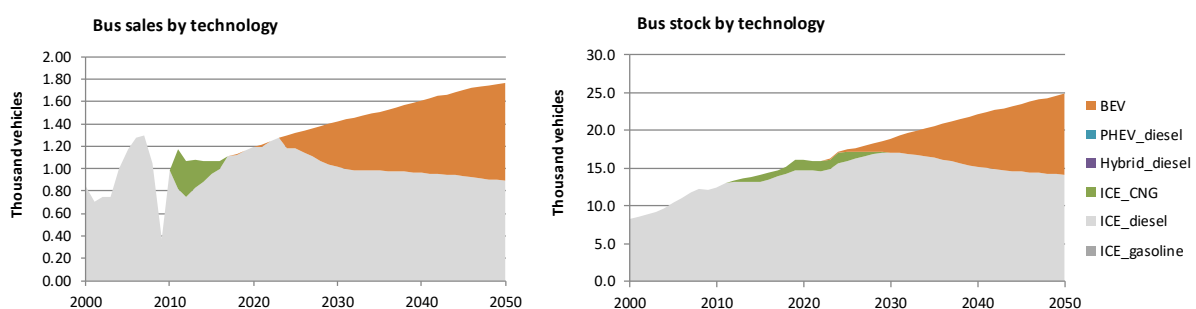


FIGURE 4 BUS SALES AND STOCK BY TECHNOLOGY UNDER AN ELECTRIC MOBILITY SCENARIO IN SOUTH AFRICA

The procurement of electric buses in the City of Johannesburg, the City of Tshwane, EThekweni Municipality and Gautrain will be replicated in other cities throughout the country so that by 2030 the share of electric buses on new city buses achieves 30% and by 2050 50% of new buses are electric. Based on the much faster sales of electric buses in the alternative scenario, the share of electric buses on the entire fleet will account for more than 30% by 2030.

The much earlier and faster introduction of electric buses to the South African market has great implications on energy use and CO₂ emissions. In the electric mobility scenario, energy use and CO₂ emissions from city buses throughout South Africa plateau by 2025. By 2030, energy use is reduced by 6% compared to the baseline scenario and by 2050, energy use is reduced by almost 22% compared to the baseline and falls back to 2005 levels. In terms of CO₂ emissions, electrification leads to a 5% reduction by 2030 and to almost 22% reduction by 2050.

Since South Africa has one of the highest grid electricity carbon footprint worldwide, in the near future significant CO₂ emission reductions can only be achieved if the carbon footprint of the electricity used to charge the buses is at least 30% lower than the average grid. This is why the demonstration projects will seek for ways to use lower carbon footprint electricity for example based on agreements with renewable power producers to buy their electricity either for direct use to charge the e-buses, or by off-setting emissions elsewhere in the grid.

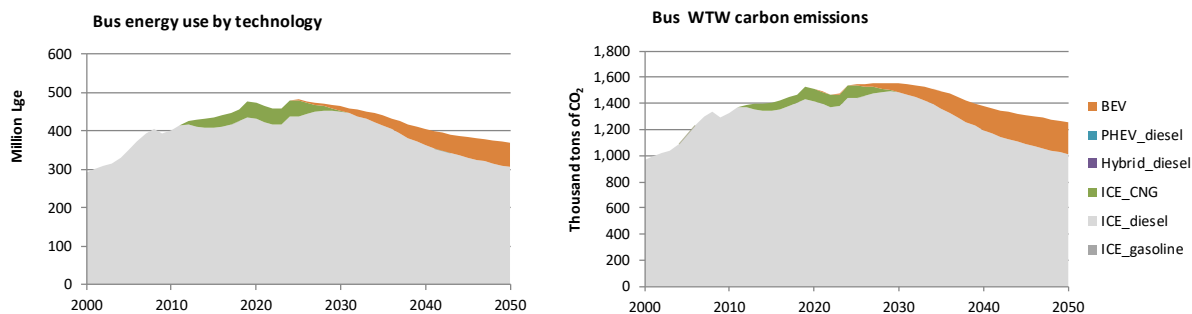


FIGURE 5 BUS SALES AND STOCK BY TECHNOLOGY UNDER AN ELECTRIC MOBILITY SCENARIO IN SOUTH AFRICA

Institutional framework:

The DBSA is the implementing agency for the project whilst SANEDI will play the role of an executing agency. The three metros (City of Johannesburg, City of Tshwane and EThekweni City) in which the project will be implemented, particularly the demonstration of the new technology, are very important for its success. However, government institutions such as the DoT which will have the responsibility of reviewing and setting new policy and regulations that will enable the successful implementation of the project are also key. The Department of Trade and Industry proposed a study to understand the impacts of mass adoption of electric vehicles on the country's trade balance, employment levels in the liquid fuels sector, the implications for electricity prices as well as on the manufacturing strategies of the original equipment manufacturers (OEMs). The DTI is now developing a new automotive development plan, which will replace the current Automotive Production and Development Programme (APDP) from 2020 on. The proposed policies are expected to include support for new technologies and the integration of electric vehicle manufacturing.

Other government organisations are the Department of Science and Technology's (DST's) Technology Innovation Agency which in turn established uYilo e-Mobility Technology Innovation Programme with the aim of enabling and accelerating the development and commercialization of South African electro mobility technologies. Uyilo Mobility will host the project's national knowledge hub to disseminate the findings from the e-bus demonstration and large-scale procurement.

More institutions include the Automotive Industry Development Centre (AIDC) is a subsidiary of the Gauteng Growth and Development Agency which will play the role of skills development for this programme. C40's South Africa E-Bus Working Group already does a lot of work on electric mobility in the metros. The initiatives of the C40 and the three metros Working Group will be integrated into the project focusing in project. Manufacturers of electric motor vehicle components such as Nissan, Mercedes and BMW will form a key part of the institutional framework for the project.

All these institutions are deemed essential to form part of a knowledge management hub for South Africa to serve the greater communities and municipalities in sharing knowledge in policy development, supplier development in electrified mass transportation, development of the necessary technologies for mass consumption and disseminating the knowledge into South African metros and municipalities.

Stakeholder Engagement:

| Organization | Potential Role and Responsibilities |
|---|--|
| City of Johannesburg | One of demonstration cities of e-bus piloting. Possibly scaling up of project. |
| City of Tshwane | It will participate in demonstration of electric bus technology. City will also participate in scaling up of technology. |
| EThekweni Municipality | EThekweni will play a role of demonstration cities of e-bus piloting and possibly scaling up of project pilot |
| The Gauteng province | The Gauteng province will play a role as demonstration region of e-bus piloting and possibly scaling up of project pilot. |
| International Energy Agency | IEA will play a role of knowledge and experience transfer on national, regional and/or local level. |
| The South African National Energy Development Institute | SANEDI will be the executing agency and host of the project |
| The Department of Transport | Responsible for revised or developed national policies and legislation with regards to new energy vehicles – especially the implementation of procurement guidelines and the Green Transport Strategy to achieve national targets of reducing GHG emissions. |
| The Department of Energy | Responsible for energy policies. The project will investigate introducing renewable energy use as an alternative to power the pilot fleet. Department will look into developing and/or revising policy and regulatory framework related to energy for transport. |
| Department of Trade and Industry | It will investigate EV tariffs, incentives for local manufacturing of electric buses and development of supportive standards. |
| Department of Environment, Fisheries | Department will be engaged throughout project development and implementation to oversee project progress and strategically maintain the direction of the project in line with environmental priorities. |

| | |
|--|---|
| and Forestry (also GEF Operational Focal Point). | |
| The South African Local Government Association | SALGA will be part of the project as a link to other municipalities in South Africa. It will support the replication of the project in South African cities other than the demonstration cities. |
| The South African Cities Network. | SACN will be part of the project as a link to other municipalities in South Africa. |
| C40 Cities | C40 shall also play a role as knowledge partners and a link between country and international initiatives. The Participation in training workshops and monitoring activities. |
| Private investors (e.g. Nissan, BMW, Mercedes) | They will partner with government on capacity building for bus operations. They will manufacture some of electric vehicle components. |
| Technology Innovation Agency (TIA) | uYilo Electric Mobility Technology Innovation Programme is an initiative of the TIA, a sub-national entity of the Department of Science and Technology with a mandate to fast track the development and commercialization of key technologies that will primarily support the electric vehicle industry, with supplementary support towards electric mobility. Through TIA, the project will seek support of uYilo on EV testing services and commercialization of EV technologies. |
| The Automotive Industry Development Corporation (AIDC) | Role will be to coordinate engagement with automotive manufacturers. Relevant OEMs and bus operators will be identified and consulted during the PPG phase. |
| South African Network Women in Transport | SANWIT, together with regional organizations, as well as DOE's programme on Women in Energy will be engaged on gender mainstreaming matters. |

Gender:

Gender analysis will be used to determine baseline data and gender-based constraints on policy decision-making level, in the business of bus procurement, supply chain management contracts, operation and maintenance. Possible interventions for gender mainstreaming and women empowerment may include promoting energy and transport technologies and understand gender-based constraints related to access to energy, finance, training, employment and entrepreneurship. The project will work with the National Government departments and cities to ensure that women gain experience equally. The South African Network Women in Transport (SANWIT), a strategic body under the Integrated Transport Planning Branch will also be involved in the project. The organization engages business and government on issues that impact on women development in the transport sector, including entrepreneurship. It seeks to be a link between women and public resources in order to strengthen women's enterprises.

Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits.

The project reflects the global program's theory of change in the sense that its objective and components are in line with those of the program. It is designed in such a way that though it aligns to the global program, it is also customized to and addresses the South Africa environment. The project will demonstrate the electric bus technology in three metros, the City of Johannesburg, City of Tshwane and eThekweni

municipality and possibly the Gautrain bus unit. It will further look into reviewing or developing new policies that impact electric vehicles particularly buses and also build capacity to operate and maintain the technology. Renewable energy sources for charging of buses will be sought by the project.

Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.

This project aims at accelerating the shift towards electric mobility in South Africa by demonstrating the technical, operational and economic viability of electric buses in the City of Johannesburg, the City of Tshwane and eThekweni Municipality. The project has the following components:

Component 1: Institutional capacity building to support the implementation of a large-scale public transport sector transformation.

Component 2: Deployment and demonstration of electric buses in the demonstration cities. A comprehensive feasibility study including a cost benefit analysis for the demonstration of up to 50 (partly through co-finance and partly through GEF grant) electric buses operating different routes within selected bus operating companies in the City of Johannesburg, the City of Tshwane, the eThekweni Municipality and Gautrain bus unit will be done. In demonstrating the technology, about three percent of the total renewable energy (340MW) financed by DBSA in the REIPPP shall be attributed to charging of the buses at demonstration phase.

Component 3: Policy enhancement and pilot replication with other South African municipalities for an integrated, viable and sustainable mass-transit transport solution for South African Cities.

Component 4: Implementation of the GEF project will lead to scaling up of the technology with loans of up to USD 70 million issued by DBSA blended with resources from GCF for procurement of about 200 buses for operationalisation in the three metros. Feasibility studies that will be developed will also examine the impact of the E-bus power demand on local grids and power generation capacity, including renewable power provision through independent power producers, as well as the grid integration. A fraction (8%) of the total renewable energy (340MW) that is financed by the DBSA in the renewable energy independent power producer programme (REIPPP) is attributed to the upscaling of the electric bus technology.

3. Engagement with the Global / Regional Framework

Describe how the project will align with the global / regional framework for the program to foster knowledge sharing, learning, and synthesis of experiences. How will the proposed approach scale-up from the local and national level to maximize engagement by all relevant stakeholders and/or actors?

The proposed project is fully aligned and consistent with the goal of the two GEF-7 climate change objectives, which are to promote innovation and technology transfer for sustainable energy breakthroughs for electric drive technologies and electric mobility (CCM-1-2). As part of the effort to scale-up the project outcomes, the policy framework includes fiscal, regulatory and local measures to scale-up electric mobility in public transport sector and to facilitate the introduction of electric buses.

Finally, the experience with low carbon charging of electric buses will feed into national renewable energy planning to help overcome the dependency of South Africa on electricity largely generated from coal and

to proof that an increased integration of renewable energies is economically feasible and can generate a whole suite of benefits at the city, regional and national level.

It will further build upon the materials and trainings provided by the GEF Global Programme on Supporting the Shift to Global Electric Mobility and will in return feed-back the experience gained, best practices identified, and policies developed to the global knowledge hub hosted by the International Energy Agency. Identified stakeholders from government, academia as well as the private sector of South Africa will join the regional meetings and thematic platforms organized by the Global Programme to share their knowledge with other countries of the region and to benefit from the know-how generated within the thematic platforms. The transfer of knowledge and best practices from South to South, North to South and peer to peer is a core component of the GEF Programme on Supporting the Shift to Global Electric Mobility and will ensure the effective use of funds, both at the country as well as at the global level.

Sri Lanka

Child project title: Sustainable and Efficient Electric Mobility System in Sri Lanka

GEF Agency: UNEP

Total Project Cost: USD 1,096,789 (without IA fee); co-financing: USD 7,600,000; PPG: USD 50,000 (without IA fee)

PROJECT DESCRIPTION

1. Country Context

The Government of Sri Lanka (GoSL) key environmental challenge are increased air pollution in urban areas and increased trend of GHG emissions. Trends over the last three decades show the percentage share of transport sector on energy demand has been increasing. Transport sector accounts for about 40% of the total energy related GHG emissions, which itself accounts for 55% of national GHG emissions from non AFLOU sector. In 2017, total vehicles numbered 7.2 million. Motorcycles account for over half, followed by autorickshaws and cars. Private vehicles are expected to further increase as per-capita income increases. Like many cities, Colombo also experience high levels of air pollution attributed to vehicles, particularly from old diesel buses and 3-wheelers plying the city. Within the passenger transport segment, 2-wheelers account for 18%, 3-wheelers account for 19%, and buses for 22% in the passenger transport segment. Buses, taxis and 3-wheelers are the main public transport modes in the country. The bus fleet accounts for a disproportionate NO_x, and particulate matter emissions (PM), despite making up only 2% of the fleet.

Transport sector is the main source of energy consumption and suffers from energy insecurity as the country relies significantly on imported fossil fuels, with transport sector accounting for 70% of imported oil. Without oil reserves, the country is highly vulnerable to global oil price fluctuations.

In view of the above challenges of air pollution and energy security, the development of sustainable transport has opportunities to improve sustainability of the sector. This is highlighted in both the Clean Air 2025 Action Plan and the Nationally Determined Contributions (NDCs) under the Paris Agreement. Following COP-21 Paris in 2015, Sri Lanka's NDC has identified transportation as one of the priority sectors as shown below:

- Establishment of energy efficient and environmentally sustainable transport systems by 2030
- Develop Urban Transport Master Plans (UTMP) to improve the transport system in line with the Megapolis Plan
- Enhance efficiency and quality of public transport modes
- Electrification of the railways system from Veyangoda to Panadura
- Encourage and introduce low emission vehicles such as electric and hybrid
- As per the Budget proposal 2018, it was proposed that:
 - all vehicles in the country will be powered by non-fossil fuel sources by 2040
 - and all government vehicles will be converted to hybrid and electric vehicles by 2025

A key element of sustainable transport is increased share of public transport to reduce the congestion as well as address air pollution and energy use. The government is focused on improving the public bus system and introducing LRT, BRT and Metro systems in urban areas to increase the share of public transport in

passenger mobility. The use of electric vehicle additionally addresses the issue of energy security. This is complemented by the GoSL's pledge to include renewable energy for electricity generation by 2050. Currently, Sri Lanka's electricity sector operates using a 40%-60% share of renewable energy.

Electric mobility and sustainable transport can help achieve the Sustainable Development Goals, particularly SDGs 3, 7, 9, and 11 below:

- Goal 3: Good health and well-being for people
- Goal 7: Affordable and clean energy
- Goal 9: Industry, Innovation, and Infrastructure
- Goal 11: Sustainable cities and communities

2. Project Overview and Approach

Geographical Target:

The proposed project uses two pronged approach to drive the transformation: support development of national strategy, action plan, and an integrated policy framework to guide the upscaling of e-mobility; and support the upscaling of public transport through supportive actions for 2/3 wheelers and supporting e-bus scale through demonstration in Colombo metropolitan area. The Government of Sri Lanka has put in place fiscal policies to promote electric light-duty vehicles. However, these policies are not enough to mainstream e-mobility. The government is now planning to improve public transport and integrate various modes. These modes include improving rail, buses and 2- and 3-wheelers, as well.

Systemic challenges and specific environmental threats:

An analysis of the policy environment in Sri Lanka shows that while the existing policy framework does foster introduction of electric vehicles (EVs), there are barriers that need to be overcome to accelerate the adoption of EVs across all transport modes. Sri Lanka's fiscal policy framework is the main instrument that supports electric vehicles in Sri Lanka. The excise taxes for gasoline and diesel light-duty vehicles are 200-300% of the vehicles cost while about 50% only for electric cars. The additional barriers listed below however are slowing the establishment of an integrated framework for e-mobility in Sri Lanka and facilitating the integration of e-buses and electric 2- and 3-wheelers into the transport system:

- Lack of a coordinating framework at different levels of governments: coordinating with various government levels and agencies to support electrification of public transport both buses and 3-wheelers.
- Lack of adequate policy framework for electric vehicles and electric vehicle supply equipment: Clarity and certainty of policies and regulations is required to enable the private sector to make long term investments and profits.
- Lack of public charging infrastructure is a perceived impediment to the market uptake of EVs: If the electric vehicle fleet is increased the demand for charging will also be increased. Although daily driving distances in Sri Lanka are relatively low, the subjective perception of lack of a public charging network generates anxiety and insecurity to potential electric vehicle users. There are 53 electric vehicle charging stations in Sri Lanka with capacities ranging from 10 to 55kW as at February 2019.
- Lack of technical capacity to respond to technical requirements: There is limited experience in procuring, operating and maintaining electric vehicles. Local mechanics and technical staff need to be trained on the specific requirements to operate and maintain EV fleets.

- Lack of robust financial system and business models. Although EVs have reduced import duties, higher initial purchase costs are hindering the wider adoption of EVs in Sri Lanka. 2/3 Wheeler EVs are competitive with ICEs but lack of financing and business models such as battery swapping, hinders faster uptake. E-buses are not sufficiently competitive and lack of exposure to it creates an increased perceived risk of using E-buses. Lack of financing and business models prevent addressing the high up-front cost issues and lack of demonstration projects too has added to reluctance of moving to E-buses.
- Lack of industry and private sector involvement: A need to support industrial policy to encourage the electric vehicles including fiscal incentives and reward systems for emission reduction of the industrial sector. The private sector also needs to match the ambition of the GoSL.
- Lack of management policy for electric vehicle batteries: Proper management of used batteries will be critical to avoid future concerns arising from mismanagement.

Associated drivers:

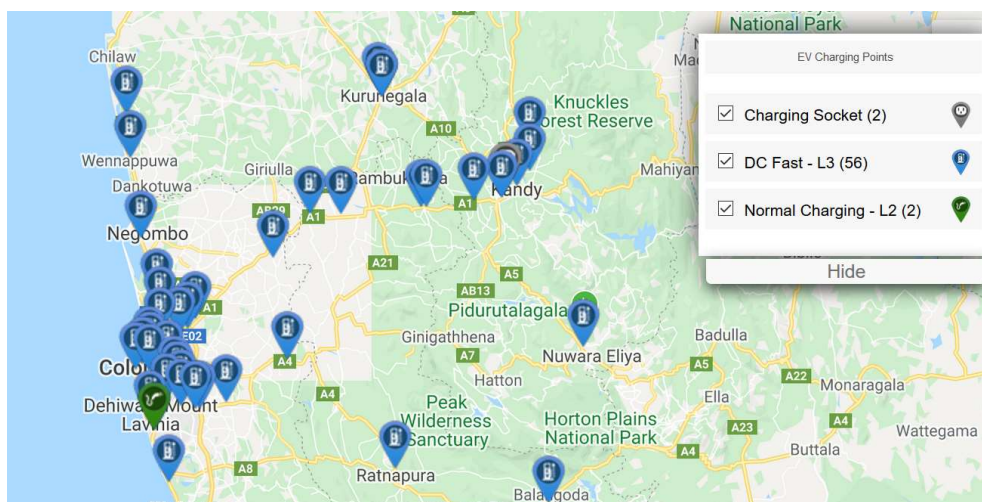
Energy security to reduce dependence on imported fossil fuel and reducing air pollution and congestion in urban areas are the two key drivers of government push towards electricity-based transport system, and public transport system in particular.

Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration.

Baseline Investments:

Sri Lanka has successfully put in place fiscal policies to promote the adoption of electric and hybrid vehicles since 2015 and has one of the highest per-capita electric cars ownership in developing countries (7,000 EVs as of 2018⁵²). As mentioned in the challenges section above, Sri Lanka does not have additional and integrated policies that support electric mobility. As such, there are limited initiatives that support electrification of buses and 2&3 wheelers. While there are electric vehicle charging stations as shown in the Figure below, there is no comprehensive national effort to support the charging infrastructure development and to integrate renewable energy. The figure below shows the current electric vehicle charging network in the Colombo Metropolitan Area including Kandy. There is also no national program for electric vehicle battery collection, re-use, and recycling management.

⁵² <https://ceylontoday.lk/columns-more/860> (ADB mentioned report)



Source: <https://www.evclub.lk/map/> (Accessed March 2020)

The Ministry of Transport has a plan to purchase 80 low floor city service buses (diesel) at a cost of Rs. 1500 million (~USD 7.5 million). This project will support funding the incremental cost of procuring electric buses as part of demonstration project supported by the project. The Ceylon Electricity Board (CEB) also have a plan to establish about 50 charging stations in the country at a total cost of \$1million.

A task force established under the Ministry of Environment last year has proposed further reduction of taxes imposed on e-vehicles. Further the tax component imposed on EV batteries are also planned to be reduced. The Ministry of Skills Development and Vocational Education has a project for improving the quality of technical colleges and training for the workforce for servicing and repairing EVs. The project will build on these baseline investments.

Institutional framework:

The main implementing agency is the Ministry of Environment and Wildlife Resources but closely coordinated with the Ministry of Transport and Civil Aviation and the Sustainable Energy Authority.

| | Institutions | Role |
|--------------------------------|--|---|
| <i>Government stakeholders</i> | Ministry of Environment and Wildlife Resources | <i>The Ministry will act as the executing agency and will play an advisory role and provide expert advice on aspects related to climate change mitigation.</i> |
| | Ministry of Transport Systems Management | <i>The Ministry of Transport and Civil Aviation will serve as an implementing partner through the department of Motor Traffic and will lead efforts in integrating electric mobility for other modes of transport, particularly for Components 1 and 2.</i> |
| | Ministry of Power and Energy (M/P&E) | <i>The M/P&E is the central ministry responsible for formulation and implementation of policies, programmes, and projects pertaining to power and energy. The Ministry will be involved in</i> |

| | | |
|--------------------------------------|---|--|
| | | <i>Components 1 and 2 in the context of charging infrastructure development and linkage to renewable energy.</i> |
| | Ministry of Finance (MoF) | <i>The MoF is responsible for developing and executing Sri Lanka's public finance policy, economic policy and long-term planning. The Ministry will primarily contribute to Components 1 and 2 particularly for developing integrated fiscal policies for electric light-duty and heavy-duty vehicles (buses) and as well as 2 & 3-wheelers. The Ministry will also develop fiscal policies enabling the development of the charging infrastructure and integration of renewable energy.</i> |
| | Ministry of Local Governments and Provincial Councils | <i>The ministry is responsible for the development of efficient and effective provincial and local administrative system to promote sustainable and economic development. The Ministry will play a role in Component 3 for capacity building and awareness raising efforts.</i> |
| | Ministry of Urban Development and Sacred Area Development | <i>Principle planner and developer of sustainable urban centers in Sri Lanka. The Ministry will primarily play a role in the development of the infrastructure charging network.</i> |
| | Public Utilities Commission of Sri Lanka (PUCSL) and Ceylon Electricity Board | <i>The PUCSL is the national regulator and licensor for the electricity sector (in addition to other public utilities) in Sri Lanka. CEB generation accounts for 66 percent of the installed capacity on the Sri Lanka grid. The remaining generation capacity is held by the private sector. The Commission and the Board will contribute to Component 2 particularly in the integration of renewable energy into the charging network.</i> |
| | Sri Lanka Sustainable Energy Authority (SLSEA) | <i>Assist's in developing the national policy on energy, and implement policy for renewable energy, energy efficiency and conservation. SLSEA will play a major role in developing policies and measures for integrating renewable energy into the charging network. SLSEA will also contribute to Component 1 in the development of the integrated policy framework for electric mobility in Sri Lanka.</i> |
| <i>Private sectors (IPP's, etc.)</i> | Solar Industries Association, Colombo Power Pvt. Ltd., | <i>Provide advice and support on planning and design of the project, low carbon interventions selection etc. Role in the carrying out the</i> |

| | | |
|----------------------|---|--|
| | JLanka Technologies, etc. | <i>research, field testing and data management. Sri Lankan electricity market consists of several Independent Power Producers responsible for setting up power generation projects across the country. The Association will contribute to the development of policies and measures to better integrate renewable energy into charging network.</i> |
| | Ceylon Motor Traders Association | <i>The Motor Traders Association will be vital for scaling up efforts on e-mobility in the country and will contribute technical inputs to all Components.</i> |
| | Central Bank of Sri Lanka, Development Finance Corporation of Ceylon, Commercial Bank of Ceylon International Donor Agencies | <i>Sri Lanka has multiple financial institutions participating in financing generation of electricity through renewables in the country While there is no explicit Component for financing and business models, local and development banks and international donor agencies will be informed on the implementation of the project and will explore potential cooperation and support.</i> |
| <i>Civil Society</i> | Clean Air Sri Lanka, and other civil society organizations | <i>Clean Air Sri Lanka is a long-time partner of UNEP in developing clean and efficient fuels and vehicle policies in Sri Lanka. The organization can spearhead efforts to involve civil society and seek inputs for all the Components. Civil societies will also play a major role in awareness and outreach.</i> |

Stakeholder Engagement:

Key stakeholders will be involved from the beginning of the project and will include integration in the implementation of various components of the project.

Gender:

The project will incorporate gender considerations on mobility. The project will disaggregate data collection to capture gender-specific differences in the modes of transport used, trip patterns and destinations travelled. This will be undertaken to ensure services and infrastructure planned respond to the specific needs of women, men and children. The electric bus demonstration will be designed in way to respect privacy and increase comfort of women.

Finally, a Gender analysis will be conducted during the project development phase and will lead to the preparation of a Gender Action Plan with indicators and targets, to be implemented and monitored during project execution.

Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the

systemic challenges, and to achieve the desired transformation with multiple global environmental benefits.

The project is aligned with the Global Electric Mobility Programme's Theory of Change. The outcome of this child project includes adoption of an integrated framework for e-mobility, establishment of a national coordination body that oversees e-mobility policies, adoption of supportive policies to increase the uptake of e-mobility, and capacity building. The child project also includes a demonstration project for electric buses. These elements are all in line with the Global Electric Mobility Programme's theory of change.

The Global Programme will also address the bankability of electric mobility in Sri Lanka by offering a platform to invite follow-up finance through the Programme's regional Support and Investment Platform for Asia and the Pacific. This Child project will also benefit from the Global Programme through its network of experts and trainings.

Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components.

The objective of this project is to reduce GHG and air pollutant emissions through the accelerated introduction of electric mobility in Sri Lanka. Sri Lanka has been promoting electric and hybrid vehicles since 2015 but only for private cars. There is a strong commitment from the GoSL to provide a nationwide effort to completely shift to electric mobility by 2040. This project will enable the establishment of a nationwide program encompassing all modes of transportation and facilitating a shift towards electric mobility linked with renewable energy. The project will also establish the necessary policy and institutional groundwork to enable the shift towards electric public transport in the country.

Component 1 will result in the institutionalization of electric mobility and EV charging infrastructure in Sri Lanka, including the development of an integrated policy and institutional framework, including strategy and action plan. It will ensure the sustainability of government efforts by reviewing baseline information of vehicles and fuels policies in Sri Lanka. Component 1 will also support the development of a strategy to strengthen the charging infrastructure and network in Sri Lanka. It will include development of financing mechanisms and business models to financial institutions and private sector, and battery swapping standards for MoTSM to promote 2 and 3 wheeler transformation to e-vehicles. It will also include development of regulations for collection, re-use, recycling and safe disposal of EV batteries. Planned outputs are: *1.1 Technical Support provided to relevant ministries of Transport, Energy and Environment for developing overarching framework, including institutional arrangement, strategy and action plan for integrated electric mobility implementation; 1.2 Technical support provided for integrated policy framework for promoting e-mobility developed, including Fiscal Policies to MoTSM, MoP&E, MoFEPD; 1.3 Technical Support provided for developing financing mechanisms and business models to financial institutions and private sector, and battery swapping standards for MoTSM to promote 2 and 3 wheeler transformation to e-vehicles; and 1.4 Technical support provided to MoEWR for developing National policies and regulations for collection, re-use, recycling and safe disposal of EV batteries.*

Component 2 will provide evidence for the the integration and scaling-up of electric buses in the public transport bus system in Colombo. This will include development of E-bus Implementation strategy and plan for Sri Lanka Transport Board (SLTB) technical and financial support to MoTSM and SLTB for developing and implementing E-Bus demonstration project. Planned outputs are: *2.1 Technical assistance provided to develop E-bus Implementation strategy and plan for Sri Lanka Transport Board (SLTB); 2.2.*

Technical and financial support provided to MoTSM and SLTB for developing and implementing E-Bus demonstration project. (INV).

Component 3 will increase the capacity of planners and users to use new knowledge in developing and adopting an integrated sustainable low emission transport solutions and options. This will include development of a national capacity building program on e-mobility planning and policy for policy makers and financing sector. Stakeholders from government and private sector will be trained in Global Programme events. Planned outputs are: *3.1 National capacity building program on e-mobility planning and policy for policy makers and financing sector developed including the training of stakeholders through the Global Electric Mobility Programme events; 3.2 Knowledge management including lessons learnt from policies adopted, demonstration project documented, and advocacy material for awareness developed and disseminated.*

3. Engagement with the Global / Regional Framework

The proposed project will build on the ongoing partnerships and existing knowledge networks. MOEW will manage information sharing including the public awareness-raising and advocacy campaign. The capacity building activities as part of this project will also be integral to the knowledge management plans of the project.

This project will receive knowledge in the form of trainings, best practices and tools provided by the Global Electric Mobility Programme. On the other hand, overall lessons from the proposed project will be of substantial value to the Global Electric Mobility Programme which will disseminate the lessons of Sri Lanka through its regional hubs, which link the global programme activities to the child projects. Linkages to the Global Electric Mobility Programme will provide countries a unique opportunity to exchange on-the ground experiences with electric mobility South to South, North to South and Peer to Peer.

Tunisia

Child project title: Scaling-up the adoption of electric mobility in Tunisia

GEF Agency: UNIDO

Total Project Cost: USD 1,784,862 (without IA fee); co-financing: USD 11,000,000; PPG: USD 50,000 (without IA fee)

PROJECT DESCRIPTION

1. Country Context

Tunisia is a middle-income country undergoing strong urban growth with more than two thirds of its population currently living in towns and cities. Urbanization and population levels are steadily increasing, resulting in high levels of unemployment, a growing number of emitters, and an increasing demand for urban transportation. Since 1995, car registrations have multiplied by 1,000. In 2014, around 27% of households were motorized, compared to 10% in 1984. Efforts to invest in public transport to meet the growing need for urban mobility have been challenged by a lack of coordination and delegation between authorities. In addition, a precarious financial situation has led to delays and cost increases in public transit planning efforts. During this time, private non-scheduled transport options such as collective taxis have seen widespread success. The absence of reliable and adequate scheduled public transport options has contributed to an increased number of cars on the road, exacerbating traffic congestion, air pollution, and GHG emissions.

Between 1990 and 2011, Tunisia's GHG emissions grew 73%, with electricity production and transportation accounting for the largest shares. The transport sector makes up 35% of final energy consumption and consumes 55% of all fuel products. To contribute to global mitigation efforts, Tunisia has committed in its NDC to a 41% reduction in carbon intensity compared to 2010 levels. In the energy sector, the primary contributor to emissions, it aims to reduce carbon intensity by 46% compared to 2010 levels. To accomplish this goal, primary energy demand should decrease by 30% by 2030.⁵³

Tunisia is undertaking various initiatives to achieve these objectives. Namely, Tunisia must decarbonize its grid, which as of 2016 supplied only 3% of its capacity from renewable sources.⁵⁴ The Tunisia Solar Plan aims to reach 30% renewable electricity production by 2030 through investments in solar to the tune of 4 billion Tunisian Dinars (USD 1.6 billion). Other sustainable development initiatives include the Sustainable Cities 2050 strategic program, which focuses on studying the sustainable development needs of cities and investing in pilot programs for urban development. A series of Nationally Appropriate Mitigation Actions include emissions reductions in waste, energy, buildings, cement production, and forest regeneration. With regard to transport, Tunisia's National Transport Master Plan for 2040 establishes a vision for a global, integrated, and coordinated transport system which contributes to sustainable development and meets the needs of the population.

⁵³ <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Tunisia%20First/INDC-Tunisia-English%20Version.pdf>

⁵⁴ <http://blogs.worldbank.org/arabvoices/tunisia-faces-tough-strategic-choices-demand-energy-begins-outstrip-supply>

While these efforts will help mobilize coordination and investment in sustainable development and urban mobility, they require support through international financing in order to operationalize their visions. Thus, a GEF investment in combination with institutional capacity building, planning, and pilot investments will complement existing initiatives in Tunisia, catalyzing additional progress on reducing emissions from transport.

2. Project Overview and Approach

Geographical Target:

The project will scale up electric mobility in Sfax, Bizerte and Djerba.

Sfax is Tunisia's major port and second largest city (population: 400,000), located on the coast about 270 km from the capital. Sfax' rapid growth has been accompanied by air pollution from industry and transportation due to congestion, and high dependency on fossil fuels.

The "Tunisia 2020" initiative aims to make the coastal city of Bizerte (population 143,000) a smart cities leader in Tunisia and in Africa. Municipal authorities are focused on electric mobility and sustainable tourism.

North Africa's biggest island, Djerba, (population: 163,726 as of 2016), has a large potential for electric mobility for individual and public transport. Energy consumption is driven by the growth of the tourism industry (6% per annum).

Systemic challenges and specific environmental threats:

Systemic challenges in transport include: 1) lack of policy coordination amongst ministries and key stakeholders; 2) lack of an enabling policy environment; 3) high CAPEX costs for e-vehicles; and 4) lack of infrastructure and standards. An overarching barrier to e-mobility is lack of awareness and understanding of the technology, which is the first intervention area for the *Global Programme to Support Countries with the Shift to Electric Mobility* (henceforth, Global Programme) and the proposed Tunisia child project.

Associated drivers:

Drivers of the congestion and pollution problems from the transport sector are strong urban growth and an associated surge in private car registrations, in addition to weak public transportation systems. Limited understanding of EV-RE integration further reinforces the status quo.

Describe the existing or planned baseline investments, including current institutional framework and processes for stakeholder engagement and gender integration.⁵⁵

Baseline Investments:

The project design will build upon existing and planned baseline investments in the region through its synergistic activities with the Global Programme (Component 3) and through country-level policy building

⁵⁵ As per UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), the Environmental and Social screening template has been completed and this project has been categorized as "B". Hence, an Environmental and Social Management Plan (ESMP) will be developed during the PPG phase.

(Component 1) and investment (Component 2). As the GEF Implementing Agency, UNIDO will be responsible for the implementation of the project, providing overall administrative management and ensuring adherence to GEF standards and requirements. Existing and planned baseline investments are described in the table in Annex B.

Institutional framework and Stakeholder Engagement:

The National Executing Entities and primary stakeholders are the Ministry of Environment and the National Agency for Energy Management (ANME) – roles described in Annex C. Partners are likely to include the public institutions listed under Annex C alongside private sector partners. Indicated partners have been identified through early consultations and will be confirmed during the PPG phase.

Gender:

UNIDO recognises that gender equality and the empowerment of women have a significant positive impact on the development of sustainable transport. Gender mainstreaming will be based on GEF's Policy on Gender Mainstreaming and UNIDO's (i) Policy on Gender Equality and the Empowerment of Women (2009) as well as (ii) the Guide on Gender Mainstreaming Environmental Management Projects. To establish a gender baseline and develop gender-based targets, basic data and qualitative information on social and gender aspects of the project will be collected during PPG; gender markers will be assigned at the output level in the project design. PPG funds will be allocated towards a review of the project design by a gender expert.

Describe how the integrated approach proposed for the child project responds to and reflects the Program's Theory of Change, and as such is an appropriate and suitable option for tackling the systemic challenges, and to achieve the desired transformation with multiple global environmental benefits.

The Tunisian child project aligns with the theory of change of the Global Programme (Annex A). It seeks to mitigate the road transport sector's impact on climate change by reducing emissions associated with fossil-fuel based commercial and passenger vehicles. The child project focuses on lowering barriers to e-mobility and expanding e-connectivity in Tunisia; it puts the country on a path towards low-carbon transportation infrastructure development. Systemic challenges addressed by the project are listed below:

- Improved urban freight mobility and adoption of low carbon transport technologies
- Reduction of GHG emissions from Tunisia's transport sector
- Air quality and noise pollution improvements
- Increased use and accessibility of renewable energy
- Sustainable urbanization

Without the project, initiatives in sustainable transport (and e-mobility specifically) would continue to be sporadic and would not coherently push the sector towards innovation and energy efficiency, resulting in growing pollution.

Describe the project's incremental reasoning for GEF financing under the program, including the results framework and components

| <i>Baseline</i> | <i>Summary of GEF incremental intervention</i> | <i>Benefits</i> |
|--|--|--|
| <i>Component 1: Institutionalisation of low-carbon electric mobility</i> | | |
| <i>Outcome 1: Capacity building and support for the implementation of the National Transport Master Plan</i> | | |
| <p>Lack of awareness on how to shift to electric vehicles.</p> <p>Lack of capacity for smart grid integration</p> <p>Lack of policy schemes for EV-RE integration</p> <p>Lack of policy coordination</p> | <p>A National Transport Coordination Unit (NTU) will gather stakeholders from relevant national agencies to coordinate innovative transport solutions, promote e-mobility, and advance the National Transport Master Plan for 2040.</p> <p>Output 1.1.1 NTU established</p> <p>Output 1.1.2 Policy supporting the deployment of EV-RE infrastructure drafted and ready for adoption</p> <p>Output 1.1.3 Policy catalysing RE uptake and enabling grid integration drafted and ready for adoption</p> | <p>An enhanced enabling environment and regulatory framework for the adoption of electric vehicles (EVs) with renewable energy and for the importation of used e-vehicles, alongside strengthened institutional capacity, will help catalyse and accelerate widespread use of EVs in Tunisia resulting in GHG reductions, local manufacturing, job and income creation and environmental improvements such as improvement in air quality. The project also seeks to improve access to employment as well as to health services and businesses to generate economic and social gains.</p> |
| <i>Component 2: Demonstration of low-carbon e-mobility solutions</i> | | |
| <i>Outcome 2: Potential benefits of sustainable mobility are demonstrated</i> | | |
| <p>Dependency on fossil fuels for national energy supply</p> <p>Strong urban growth and surge in car registrations leading to increasing GHG emissions, congestion, and air pollution.</p> | <p>Focusing on the pilot cities of Sfax, Bizerte and Djerba, the project will strengthen the interplay between their local economic vision and transit network. The precise nature of the pilot demonstrations in Sfax, Bizerte and Djerba will be established at PPG phase.</p> <p>Output 2.1.1 Capital investment plan for Sfax (industrial zone), Bizerte (industrial and free zones) and Djerba (logistics hub) is developed</p> <p>Output 2.1.2 EV-RE pilot demonstrations in Sfax, Bizerte and Djerba are financed and implemented</p> | <p>E-mobility solutions demonstrated as financially feasible.</p> <p>Cities will be greener, more connected, resilient and competitive due to lower transportation and infrastructure costs.</p> <p>I. Enhanced connectivity and accessibility will provide efficient access to jobs and services.</p> <p>7. Low-carbon transportation infrastructure will mitigate GHG emissions and improve air quality and public health.</p> <p>Sfax, Bizerte and Djerba and their transit-oriented sustainable development will constitute blueprints for replication.</p> |
| <i>Component 3: Preparing for scale-up and replication for long-term sustainability of low-carbon electric mobility</i> | | |

| Baseline | Summary of GEF incremental intervention | Benefits |
|--|--|--|
| <i>Outcome 3: EV-RE pilot demonstrations are showcased in the Global Programme, resulting in new investments</i> | | |
| <p>Limited understanding of EV-RE integration at municipal/regional levels</p> <p>Lack of data/information on technical and financial aspects of e-mobility</p> | <p>Exchanging knowledge and lessons learned through national and international Global Programme events to scale e-mobility.</p> <p>Output 3.1.1 Events, annual meetings, and targeted training programmes on the use of tools and methodologies held in four Tunisian cities.</p> <p>Output 3.1.2 Participation in Global Electric Mobility Programme events, annual meetings, and targeted training programmes.</p> | <p>I. Strengthened stakeholder capacity to design, plan and implement innovative transport solutions across Tunisia.</p> <p>II. Together with the Global Programme, training workshops will help policymakers introduce electric fleets (2&3 wheelers, cars, and buses) by developing fiscal and regulatory policies to promote e-transport.</p> |
| Component 4: Knowledge management and monitoring and evaluation | | |
| <i>Outcome 4: Adequate monitoring of all project indicators in line with GEF, UNIDO and GoT requirements</i> | | |
| <p>This component aims at establishing and implementing effective project monitoring and evaluation mechanisms alongside capturing progress and lessons learnt. Gender- disaggregated data will be captured wherever possible during monitoring and evaluation efforts.</p> <p>Output 4.1.1 Monitoring and mid-term review</p> <p>Output 4.1.2 Terminal evaluation conducted</p> | | |

3. Engagement with the Global / Regional Framework

The global programme will develop a suite of knowledge materials for e-mobility policy making, development of business models and finance schemes, methodologies for e-mobility demonstrations etc. which will be provided to the countries through the Regional Support and Investment Platforms. It envisages 6 events held by the platforms over the 4-year project lifetime in each of the regions. While the materials, trainings etc. are funded through the global programme, participation in the events (i.e. travel and accommodation) is integrated into the Tunisian child project in order to enable the child project to fully benefit from the global programme. Particular attention will be given to the collection, re-use and recycling with regards to batteries.

The project draws directly from the suite of activities presented under the global programme and is synchronised with its theory of change. As such, it will encourage widespread use of EVs powered by a grid that utilizes a high proportion of renewable energy, which will radically reduce GHG emissions and local pollutants associated with road transport. The project will reinforce existing initiatives in Tunisia and focus on increasing their durability by reinforcing and expanding national policies and the national action plan for electric vehicles. It seeks to build capacity and awareness of relevant institutions to secure grid

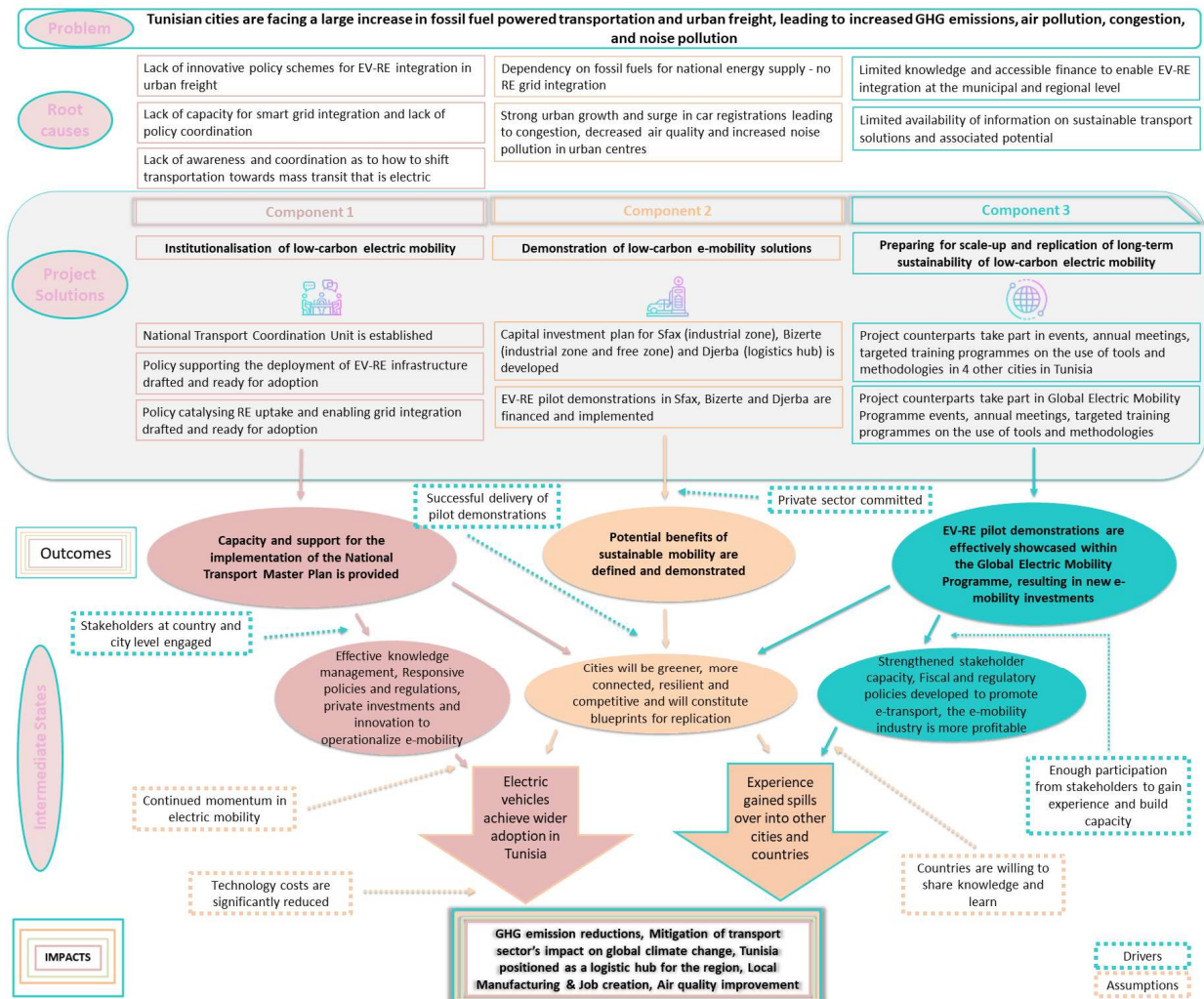
integration and smart grid optimization. The project will complement the already existing smart grid pilot project in Sfax which aims to further the national goal of getting thirty percent of the nation's electricity from renewable sources by 2030.

In Tunisia, the two main paths to renewable energy (RE) becoming the main power source for electric vehicles (EVs) are the incorporation of a high proportion of renewable energy into the power grid and entail the establishment of a vast number of distributed renewable energy micro-grids to power a fleet of EVs. Both paths can be pursued concurrently, yet both paths present substantial obstacles. Green infrastructure investments will be assessed to systematically address the mobility and environmental challenges within the country. Technology options and investment needs will be assessed through climate-smart capital investment planning for the mobility in Sfax, Bizerte and Djerba. Different modalities of public-private partnership for infrastructure investments will be considered. Private sector actors, such as the fuel concessionaires installed on the highway A1 or private companies specialized in the fabrication/assembly of EVs related components, have been preliminarily engaged for providing co-financing of replicable, low-carbon transportation investments.

The project will focus primarily on Sfax, Bizerte and Djerba at first but aims to share the experiences with other cities in the country to support capacity building and scale up of interventions. Exchanging knowledge, experiences and lessons through the establishment of a national partnership platform on electric mobility will guide and support the replication in the country.

As such, the project design is therefore tailored to the specific barriers to RE-based electric mobility within the Tunisian context (Components 1 and 2) and then it is designed to share lessons on its experience within the wider programme to leverage its lessons learned at a regional and global level (Component 3).

Annex A: Theory of Change



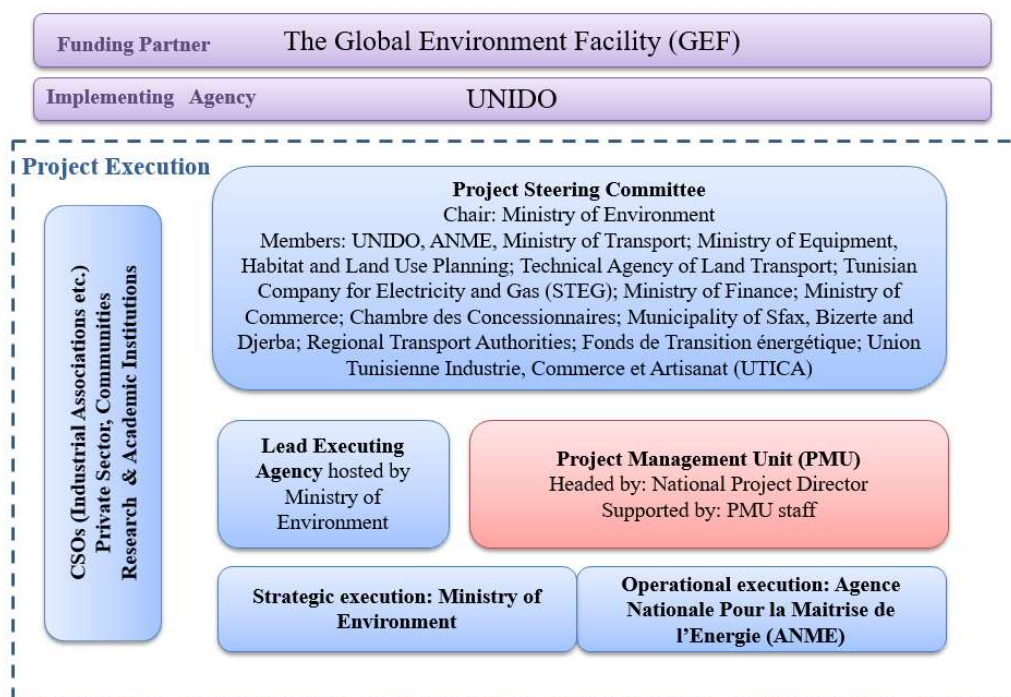
Annex B: Existing and Planned Baseline Projects

| No. | Project/Programme title | Budget | Source of funding | Year |
|-----|---|---|---|-------------------------------------|
| 1 | German-Tunisian Energy Partnership | 2 Million Euro for the period 2019/2022 | GIZ/BMVI | 2012-2022 (entire project duration) |
| 2 | Smart Grid programme in the Sfax region | USD 131.7 Million | STEG/AFD | 2017 |
| 3 | Urban Development and Local Governance Program Project for Tunisia | USD 300 Million | World Bank | 2014 |
| 4 | Study for the development of urban mobility in Greater Sfax | 1.1 Million Tunisian Dinars | GIZ/ANME/Municipalities | 2016 |
| 5 | Leapfrogging Tunisia's lighting market to high efficiency technologies ("All-LED Island" sub-component in Djerba) | USD 18 Million | UNEP/GEF | 2017 |
| 6 | Urban mobility plan for the island of Djerba | 900,000 Tunisian Dinars | Djerba communes: Houmet Souk, Midoun and Ajim | Ongoing |
| 7 | Youth Economic Inclusion Project | USD 60 Million | World Bank | 2017 |
| 8 | Energy Sector Performance Improvement Project | USD 151 Million | World Bank | 2019 |
| 9 | Green Cities Facility (multi-country) | USD 585 Million | EBRD/GCF | 2018 |
| 10 | ASTON Programme (E-vehicles) | 160,000 Euros | AFD | 2020-2021 |
| 11 | LED Bizerte | 700,000 Tunisian Dinars | Bizerte Municipality | 2020-2021 |
| 12 | ACTE Programme | 600,000 Tunisian Dinars | Swiss Agency for Development and Cooperation | 2020-2021 |
| 13 | Municipal Pact for energy transition | 3.6 Million CHF | SECO/ANME | 2018-2022 |
| 14 | Installation of connected public lighting solution Ras Jbel Bizerte | 0.5 million Euro | FASEP | 2020 |

Annex C: Stakeholders involved in the proposed project and Institutional Arrangement

| | Stakeholder | Description and role in the project |
|--|-------------------------|--|
| Lead Executing Entity (TBC during the PPG) | Ministry of Environment | The Ministry of Environment is the Lead Executing Agency. It provides key strategic expertise for the whole project and coordinates the project steering committee. It will contract the ANME for the operational activities. It is directly involved in the activities described under Components 1 and 3 and it helps to direct the research topics that are investigated under the different components. It coordinates its works with other relevant government ministries and stakeholders relevant to the project. It will also provide data and support to Monitoring and Evaluation (Component 4). |
| Second Executing Entity | ANME | ANME will be contracted directly by the Ministry of Environment (TBC during the PPG) and will be in charge of the operational activities of the project. It provides key technical expertise on energy issues in Tunisia. It will source researchers/technicians/engineers to support the investment into e-mobility infrastructure and vehicles (Component 2). It will facilitate the technical assistance activities and will assist in the identification of EV-RE infrastructure locations. It will also provide data and support to Monitoring and Evaluation (Component 4). |

Others Partners are likely to include the Ministry of Transport; Ministry of Equipment, Habitat and Land Use Planning; Technical Agency of Land Transport; Tunisian Company for Electricity and Gas (STEG); Ministry of Finance; Ministry of Commerce; Chambre des Concessionnaires; Municipality of Sfax, Bizerte and Djerba; Regional Transport Authorities; Fonds de Transition énergétique; Union Tunisienne de l'Industrie, Commerce et Artisanat (UTICA) alongside private sector partners. Indicated partners have been identified through early consultations and will be confirmed during the PPG phase. Some of these stakeholders will be part of the project's steering committee during implementation to ensure scale-up of lessons learned across the country and sustainability of the project.



The two main executing partners have been preliminary selected to execute the following components within their respective mandates and capacities:

| Component | Executing partner (TBC during the PPG) |
|---|--|
| Component 1: Institutionalization of low-carbon electric mobility | Ministry of Environment |
| Component 2: Demonstration of low-carbon e-mobility solutions | ANME |
| Component 3: Preparing for scale-up and replication for long-term sustainability of low-carbon electric mobility | Ministry of Environment |