

TERMS OF REFERENCE**E-MOBILITY STRATEGY AND MARKET STUDY IN EGYPT****1. BACKGROUND**

Electric mobility has gained attention as a strategy to 1) mitigate GHG emissions; 2) improve air quality; 3) decrease petroleum dependency and; 4) boost energy security in the context of increasing world-wide vehicle demand. Transport is a major energy consumer and among the largest sources of GHG emissions. It is also one of the principal sources of urban air pollution, which impacts the local environment and human health. International trends signal that ownership of passenger vehicles will continue to grow in the coming decades. At the same time, the world will have to undertake measures to reduce total global GHG emissions by 40-70% below 2010 levels by 2050 in order to limit the worst impacts from global climate change.

The European Bank for Reconstruction and Development (“EBRD” or “the Bank”), under the Green Economy Transition (“GET”) approach, seeks to increase the level of the Bank’s financing in low carbon systems and enhanced innovation across all sectors, thus ensuring that proposed immediate investments do not lock the economies of our countries of operation into inefficient solutions. Technical Assistance plays an important role to deliver this approach: the Bank works with clients from project identification and in all steps through to project implementation.

Despite the many uncertainties about the future of electric vehicles, governments and car manufacturers are increasingly moving forward. The Government of Egypt, as a front runner in the region has announced a number of recent initiatives such as recent relationship with China’s BYD for the sale of electric buses in Alexandria as well as private company Revolta Egypt recently having installed 20 charging units (with a plan to install up to 65) across seven Egyptian governorates.

It is the understanding of the Bank that the Government of Egypt intends to develop an E-mobility strategy to eliminate some of the most common barriers for deployment of electric mobility in an effort to 1) reduce emissions; 2) reduce the dependency on fuel imports and subsidies and; 3) create policies to incentivise the usage of electric vehicles. The effect of this e-mobility strategy on the existing energy market will also need to be understood and scoped. Furthermore, increasing the share of electric vehicles in major metropolitan cities such as Cairo, Alexandria and major highways may be constrained by the capacity of the energy sector and may require additional investments in energy generation.

At this turning point in the development of the market in Egypt and the potential for investments in greener transport, the EBRD is considering assisting the Ministry of Transport and the Ministry of Electricity and Renewable energy of the Government of Egypt in the review of existing policies and the development of an e-mobility strategy with a focus on prioritization of funding support and policy interventions. The Bank now seeks to engage a consulting company

(the “Consultant”) to provide support in carrying out this analysis and developing an E-mobility strategy for Egypt. The proposed first step in the assignment is to review existing and planned charging infrastructure, in order to identify the most suitable business model for operation & maintenance of the charging infrastructure. Additionally EBRD would like to investigate the potential market for the acquisition of EVs for public fleets/car sharing/taxis/vans, in order to accelerate the introduction of electric vehicles (“EVs”). Furthermore, the Bank would like to develop a short to medium-term action plan to pilot the roll-out of EVs.

2. OBJECTIVES

The main objective of the assignment will be to develop an e-mobility strategy, which will allow the Government of Egypt to assess the short to medium term market potential and readiness to roll out EVs in selected cities as well as the development and design of the associated charging infrastructure.

In particular, the objectives of the assignment are:

- **Market (Macro) and Policy Study:** To perform an analysis of the current e-mobility policies (if any), the market potential, the national readiness and policy framework in order to provide the Bank and the Egyptian Government with an opinion regarding the appropriateness of charging infrastructure and electric vehicles. Provide a critical assessment on the technical aspects (proposed size, electricity requirements, costs, configuration, etc.) as well as project risks, ownership and actors involved. **(A)**;
- **Charging infrastructure Investment assessment:** To set out alternative charging infrastructure business models, based on an analysis of business models in countries that are very successful with the introduction of electric vehicles and charging infrastructure (e.g. the Netherlands and Norway) **(B)**;
- **Task Plan and Economic Impact of the strategy (A + B):** To assess the potential economic benefits (including reduced energy use and environmental benefits on air quality and emissions) of the strategy and its recommended policy measures **(C)**.
- **Market (Micro) and immediate private and public sector opportunities:** To identify the additional investment needs and benefits (in terms of reduced energy use and reduced environmental impacts) of electrifying specific captive fleets. This should include a fleet analysis and assess opportunities for electric buses in public fleets, e-car sharing, e-vans, electric 2-3 wheelers and electric taxis **(D)**;
- **Energy Sector Impact:** To assess the overall impact of the strategy and take up of EV’s on energy demand, explore the links between electrification of transport sector and accelerating renewable energy deployment, with a view to scaling up the use of renewables in e-mobility. and identify potential network constraints of the implementation of the e-mobility strategy **(E)**;
- **Stakeholder awareness raising:** To disseminate the results of the study to wider range of stakeholders in Egypt, raising awareness and ownership of the results.

3. SCOPE OF WORK

Task A. Review and analysis of the current market and policy situation regarding charging infrastructure, electric vehicles, policies and strategies concerning e-mobility.

- Survey existing and potential users (demand), dealerships (supply) and financial institutions (intermediaries) to identify existing market barriers faced for the proliferation of electric vehicles and charging stations.
- Review and summarise the current state of the e-mobility market in Egypt providing statistics on electric vehicles (demand and supply), charging stations, private and public sector players etc. This should also include overarching statistics on the fleet split in Egypt.
- Review and opine on existing policies related to the non-technical aspects of the introduction of charging infrastructure for electric vehicles (including light vehicles, two wheelers) in Egypt (e.g. market design, stakeholder involvement and procedure for new charging points) and that of electric vehicles (regulations on new and second hand vehicle imports, taxation and duties, procedures etc);
- Review the existing regulatory framework for charging infrastructure (e.g. electricity market access, existing energy subsidies) and suggest options for business models and payment systems. Based on the study, create investment plans and develop and recommend financial and policy incentives for the private sector with the aim to scale up the initial charging network to encourage demand and the sale of electric vehicle ownership and necessary infrastructure.
- Briefly identify at least three PPP/concession forms – with increasing level of financing provided by the private sector – under which the selected project can be implemented. For example:
 - ✓ no private investment but privately managed operations,
 - ✓ partial private investment (superstructure and equipment) and privately managed operations,
 - ✓ full private investment (infrastructure, superstructure and equipment) and privately managed operations;
- Recommend the best applicable model based on existing legal and regulatory arrangements, potential attractiveness to the private sector and bankability.
- Recommend options for raising funds for implementation of the e-mobility strategy, including domestic sources (e.g. energy subsidy reform, carbon tax or ETS) and international sources (e.g. climate funds).
- Policy action plan: Catalyse the above work in a short and medium term action plan covering policy changes and incentives to accelerate electric vehicle ownership and the deployment of charging stations.

Task B. Suggestion for faster introduction of charging infrastructure using different business models

The Consultant shall benchmark and review available international business models and best practices for development, operation and maintenance of charging infrastructure. They shall include at a minimum case studies of the introduction of electric vehicles and charging infrastructure in the Netherlands and Norway.

- Summarise international experience with the development of charging infrastructure (e.g. procurement procedures, long term use, ownership after contract ends, introduction of innovations and upgrades, fees, stimulating demand for charging point use);
- Summarise important lessons learned, including opportunities for additional benefits for the electricity grid (e.g. controlled charging, increasing grid stability);
- Stakeholder mapping and identification of key actors in Egypt. Summarise the types of companies involved in best practice examples and the most important risks.
- Review and opine on the best procurement strategy for charging infrastructure including suitable arrangements to minimise the operation and maintenance risks (e.g. state owned company with PSC, PPP, transfer to utilities, etc.)
- Identify key steps for implementation of best practices and develop a road-map for the most cost effective (for the government) and the fastest introduction of charging infrastructure.
- Review and opine on the possible locations, technical specifications (standardization), technology and design (location and relative number of charging stations to vehicles) and the performance levels (slow and fast charging) of EV technology.
- Review the potential demand for the charging infrastructure for Egypt based on the countries existing fleet (xx million vehicles) and changes in the stock: propose appropriate technology and size/type of the charging infrastructure. The review should take into account battery and vehicle price developments, split between plug-in and full electric and expected range of EVs, which all have an impact on the desired charging infrastructure.
- Conduct a strength, weaknesses, opportunities and threats analysis which can provide a list of the main technical, market and regulatory risks, the implications and the options for mitigation for the current strategy;
- Provide an estimate of the investment cost for the charging infrastructure of the current strategy with breakdown per major component;
- Provide an estimate of the investment cost for the charging infrastructure envisaged by the new strategy with breakdown per major component for 2-3 cities and 5 of the busiest highways;
- Assess the potential economic benefits (including reduced energy use and environmental benefits) of the strategy and its recommended policy measures. This should include an analysis of fleet composition and the market penetration of EVs against a baseline counterfactual.
- Investment action plan: Develop a short and medium term action plan for the transition and roll-out of a pilot set of charging stations in selected 2-3 cities in Egypt and 5 of the busiest highways. The Electric Mobility Transition Strategy chapter should contain at a minimum i) outlined approach for incentive development (tax, non-tax and mandates), ii) public awareness strategy, iii) policy for end of life batteries with an emphasize on storage post usage/recycling/disposal and iv) resource mobilisation strategy.

Task C. Task List and Impact of the measures identified and recommended under Tasks A and B

- Assess the potential economic benefits (including reduced energy use and environmental benefits) of the strategy and its recommended policy measures. This should include an analysis of fleet composition and the market penetration of EVs against a baseline counterfactual.
- Assess the key selling/marketing points for the acceptance of the strategy for the various stakeholders (e.g. ministry of transport and power and others)
- Analyse the macro-level effects of introducing electric mobility, including a high level environmental assessment (e.g. reduction of CO₂ emissions, noise and air pollution) and a high level assessment of economic impact.
- Provide a 5-10 page strategy document summarising the key points of an Egyptian e-mobility strategy. This should be in a “for approval policy” format to be agreed and signed off by the Egyptian government and should include the most pertinent findings of Task A and B and a list of tasks in an annex with a time line. This would require some consultation with government.

Task D. Identification of electrification opportunities and investments in the Egyptian fleet

- Identify between 5-10 opportunities for electrification of the Egyptian fleet, which may include, inter alia, the following types of captive fleet:
 - The governmental fleet (e.g. buses, post, police);
 - Car sharing programmes. These lead to a reduction of the use of cars and the use of newer vehicles;
 - Courier services and operators of small vans
 - Motorbikes; and
 - Taxis.
 - Vehicle scrappage schemes
- Conduct a cost & benefit analysis for all recommended opportunities (including shadow carbon prices) and assess energy savings, CO₂ emission reduction, reduction of fuel bills as well as other benefits (lower operation and maintenance costs, better comfort, etc) from possible implementation.
- Present and discuss the findings with the Client’s representatives and take account on suggestions and recommendations; the Consultant will assess the impact of the additional recommendations agreed with the Client to be considered for inclusion.

Task E. To identify the overall impact in the energy demand and supply constraints of the implementation of E-mobility strategy

The consultant shall assess the implications of the e-mobility strategy on the Egyptian electricity system. In particular it should reflect 2 or 3 different scenarios for the development of electric transport in the country and should assess:

- The likely additional demand for electricity due to electrification of transport.
- The potential additional need for power generation capacity due to transport electrification.
- The possible impacts on greenhouse gas emissions of these scenarios based on the likely development of the electricity generation mix in the country and the displacement of conventional combustion engine vehicles from the market.
- Potential impacts on the electricity transmission and distribution grid from the addition of electric vehicle charging infrastructure. Identifying and key technical constraints and likely investment needs. Considering both charging infrastructure connected to distribution networks and fast chargers connected more directly to the transmission network.
- The feasibility of electric vehicles providing additional ancillary grid services (e.g. storage, frequency control etc).
- Potential regulatory issues or challenges for the owners and operators of charging infrastructure in accessing the electricity grid and electricity supplies.

Task F. Stakeholder consultation and awareness raising

The consultant shall communicate the results of the study to a variety of key stakeholders in Egypt. This shall include:

- Publication of the strategy and key messages on-line. The core elements should be translated into Arabic.
- Organisation of a workshop event to disseminate the strategy to a wider set of stakeholders. For example including: Government ministries and agencies; think tanks and civil society organisations, automotive and energy companies, and relevant international organisations.

4. IMPLEMENTATION ARRANGEMENTS AND DELIVERABLES

The Consultant will report to the Operation Leaders Rafael Rashid, Tara Shirvani, Adil Hanif and Philip Good. The Consultant will take responsibility to collect all information regarding the assignment and generate the appropriate deliverables.

It is anticipated that the Consultants will undertake the tasks described under the assignment in 5 months. It is anticipated that New and Renewable Energy Authority (“NREA”) will coordinate the implementation activities with the main Consultants and Ministries in Egypt. In the first week NREA will coordinate for a meeting with people responsible for the e-mobility strategy from ministers and the main consultants, subsequent visits will be proposed on a regular basis to discuss progress and main findings.

Any further follow-up activities to support the project will be considered by the EBRD following the result of this current assignment and arranged separately

The meeting with the Team will take place in time agreed with the Egyptian government and EBRD. The Consultant will be requested to produce the following outputs and reports:

- Within 14 working days from the start of the assignment, the Consultant will conduct a Client’s visit to collect data required to conduct individual tasks.
- Within 21 working days from the site visit the consultant will submit an inception report describing briefly the key findings
- Within 45 working days from the end of site visits the Consultant shall submit by email a draft Final Report covering all aspects of the assignment.
- Within 40 working days from receiving written comments, the Consultant will submit a Final Report which will reflect comments and suggestions raised.

All reports shall be submitted in English and upon completion of the final report, the Consultant will also translate it into Arabic.