Recommendations on E-Mobility in Jordan

Based on a Delegation Trip to Germany

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Friedrich-Ebert-Stiftung
Regional Project on Climate and Energy Policy

FRIEDRICH EBERT STIFTUNG

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The following report was prepared by the Regional Project of Climate and Energy Policy of Friedrich-Ebert-Stiftung (FES) and is based on the discussions and recommendations concluded from the Jordanian and Egyptian delegation

"The Electrification of Private and Public Transport – Resemblances, Differences and Common Challenges"

to Berlin 6-9 May 2019. The delegation was represented by the following institutions:

Jordanian Ministry of Transport

Energy and Mineral Regulatory Commission

Greater Amman Municipality

Jordanian Department of Statistics

Maan Nasel

Electric Vehicles Association

The Centre for Environment and Development for the Arab Region and Europe

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Background

With a fast-growing population and innovative policies on electric transport, both Jordan and Egypt are interesting countries in questions of electrification of transport.

The public transport system in Jordan is not very developed, described to be inefficient, unreliable and reform-resistant. The majority of the transport fleet is privately owned and does not operate within fixed schedules and routes. Several projects have been proposed over the last decade to address the problems associated with the current transportation system but have never been realized one of them being the Amman Bus Rapid Transit Project (BRT).

On the other hand, Jordan is considered pioneering in electric car mobility. More than 18,000 electric vehicles (EVs) are found on the streets of Jordan in 2018, driven by both the low prices of electric cars compared to conventional fuel combustion and the exemptions granted of customs duties and licensing taxes. However, appropriate infrastructure is lagging behind. Electric car owners find themselves waiting 1.5 hours at charging stations and miss appropriate advice and maintaining service on batteries. Businesses are interested to invest into infrastructure, but the current tariff system seems to be economically unviable.

Similar policies are being tested in Egypt, a country that suffers heavy congestion, air pollution and emission due to transport. Custom duty exemption for electric cars are in place, public procurement of full electric buses is in the pipeline and charging stations being rolled out. Egypt also starts economic activity in the sector by assembling and manufacturing EV and charging stations, developing plans for batteries production, and lining up after-sales services. Given the fiscal burden of fuel subsidies, reducing transport sector fuel consumption and emissions should be a priority in Egypt. Activities however remain ad hoc and need coordination, a common vision and the exchange with experiences from other countries.

Recommendations are given to

1) **Ministry of Transport (MoT) and Ministry of Environment (MoEnv)**
2) **Ministry of Energy and Mineral Resources (MEMR) and Energy & Minerals Regulatory Commission (EMRC)**
3) **Greater Amman Municipality**
4) **Electric Vehicles Association (EVA) and the Civil Society in Jordan**

Recommendations

The recommendations are directed to three Jordanian core institutions dealing with e-mobility, namely, Ministry of Transport (MoT), Greater Amman Municipality (GAM), Energy and Mineral Regulatory Commission (EMRC), Electric Vehicles Association (EVA) and the civil society in Jordan. Given the 18.000 electric vehicles that are decorating Jordanians streets, Jordan is by now a pioneer in using electric vehicles and has more experience, together with Norway, than any other country in the world. In order to keep this dynamic up, the delegation has summarized the following recommendations, which are generally directed to a more sustainable transport in Jordan.

To 1) Ministry of Transport (MoT) and Ministry of Environment (MoEnv):

- **Infrastructure Policies**
  - Diversify transportation modes – including electric vehicles. Transition from the focus on car ownership, which is affecting the environment and taking urban space, to smaller sized electric vehicles and public transport. Electric Scooters and bikes should be encouraged, e.g. through procurement programs.
  - Enable more EV Charging Stations: The government should encourage private sector investments in EV charging stations by minimizing governmental procedures to obtain necessary permits. The current waiting time for fast charging discourages e-mobility.
  - Conduct comprehensive feasibility studies about electrification of public transport beyond Amman. Electric buses are rapidly decreasing in costs and a large part of the future of public transport. The studies need to be comprehensive, including aspects such as the charging infrastructure and environmental impact assessments. E.g. in Marrakesh, one solar panel field feeds the entire BRT fleet.
  - Enable Jordan to not just become the leader in private but also public EV mobility.
  - Emphasize connectivity in addition to electrification, by extending charging infrastructure and public transportation networks
  - Reduce car ownership: Europe is moving towards lower car-ownership and not only focusing on electrification, as the issue is not only improving efficiency but (1) reducing the total energy consumption and emissions (you can double the efficiency of vehicles but triple the overall number of vehicles), and (2) reducing the continuous loss of public spaces.
  - Establish a high-level national e-mobility committee to follow up on the updates in electrification of private and public transport.

- **Financial Policies**
  - Introduce carbon-taxing regulations so that vehicles pay their annual registration fees based on their carbon emissions.
  - Proportionate taxes/customs based on car size; big cars such as SUVs shall pay higher taxes due to their comparably higher emissions.
  - Incentivize electric cars for taxi companies. Reduces air pollution and traffic – the taxis can wait at charging stations and be requested through mobile applications.
  - 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.
  - Utilize available international funds related to climate change and linking them to the leading case of EVs in Jordan.

- **Private Sector and Economic Policies**
  - Adopt technological solutions like mobile applications, which can minimize overhead commuting of EVs and in return reduce the range (mileage) constraints. Learning from international experiences in e-mobility with start-ups that promote e-cycling and e-scooters. A rising number of e-scooters and e-bikes will also boost the charging infrastructure. Start-ups have the ability to set examples of successful business models which can create jobs and advance charging infrastructure of start-ups and businesses.
  - Encourage Start Ups and local businesses in developing solutions for EV batteries. Recycling EV's batteries is a major concern to e-mobility, however it also can present an opportunity for start-ups and small businesses.
  - Promote ride sharing services, e.g. for carpooling on daily commutes or ride hailing services like Uber/Careem, and incentivize these services to include and use electric fleets instead of traditional fuel vehicles.
  - Offer suitable incentives to the private sector i.e. hotels, hospitals, shipping agencies, delivery shops, restaurants, tourists, etc. They can create a momentum to adopt electric mobility.
  - Raise awareness and accountability of fuel consumption and vehicle efficiency, e.g. by using fuel efficiency labels on cars.
  - Confirm the importance of collecting and sharing data related to e-mobility.

All in all: The lesson learnt for Egypt and Jordan is to focus on the combination of collective transport (e.g. electric buses), connectivity solutions (of various vehicle sizes and entrepreneurial approaches), and smaller vehicle sizes in general, while preserving the urban environment for pedestrians and cyclists in the limited public spaces available.

To 2) Ministry of Energy and Mineral Resources (MEMR) and Energy & Minerals Regulatory Commission (EMRC):

- **Infrastructure Policies**
  - 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.

- **Financial Policies**
  - 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, e.g. Two-hours waiting time per customer.
  - EMRC can serve as a regulatory body for the charging tariff however without setting the tariff itself. In an open market model, supply and demand will automatically provide an equilibrium and the tariff can benefit from the market competition.
  - Introduce zero-tax policy on all EVs supply chain, for example chargers and maintenance parts.

- **Research and Awareness Policies**
  - 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 center 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.

- **Private Sector and Economic Policies**
  - Allow the market to use different charging, including portable charging stations.

To 3) Greater Amman Municipality:

- **Infrastructure Policies**
  - Develop the charging infrastructure in Amman and incorporate the public transport infrastructure. For example, install charging points in the bus terminals.
  - Be a leading example and shift the entire GAM fleet into an electric fleet in the long term, thus:
  - Evaluate the advantages and disadvantages of electrification of the BRT system. As there is a lack of international experience, no international standards have been developed yet. As the lifespan of conventional BRT buses is about ten years, it is important to evaluate whether conventional buses could be easily replaced by electric buses after this period. Again, a transition solution would be using hybrid or hydrogen buses.
  - Purchase electric, hybrid or hydrogen buses. Hydrogen busses are promising as they do not include the battery problem of electric buses. Nevertheless, electric buses are getting cheaper and more affordable quickly and will align to the price of conventional busses.
  - Create a small pilot project of few electric buses on the shortest path available, buses do not have to be the largest size, smaller buses with more frequent stops might be adequate.
  - Improve the experience of pedestrians, right now pavements are small, they are also full of short trees that impede walking and vision, and is not always friendly for strollers.
  - Introduce a bicycle project for selected GAM employees: the management incentivizes a group of GAM employees to commute to work using bicycles. If the road conditions allow, the bike itself will be provided free of charge from GAM, in return, the employee is requested to provide detailed feedback on the experience, road conditions, risks involved, temperature and sweating, how other drivers handle it, etc. GAM would then use the provided feedback to improve bicycle driving conditions.

- **Private Sector and Economic Policies**
  - Give current taxi owners needed incentives to shift to EV fleets, e.g. tax or customs exemptions. In Amman, the yellow taxi fleet is significant as it accounts for more than 88% of the 13,000 commercial taxi services in Jordan.
  - Adopt technological solutions like mobile applications for taxi requests can reduce the range problem. Taxis can wait and charge in certain parking visible to the customer.
  - Establish a market of small and light e-mobility start-ups in Jordan like e-cycling and e-scooter. They can create jobs and enhance charging infrastructure.

To 4) Electric Vehicles Association (EVA) and the Civil Society in Jordan:

- Change EVA business model to be focused on corporates instead of membership of individuals, the companies would pay a yearly recurring fee to EVA, in return we will provide them with marketing and networking, we will also continue to do research and consultations and lobbying. This will help us create a coalition of all private entities that are vested in e-Mobility.
- 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)
  - 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.

DELEGATION PARTICIPANTS

Ahmad Abu Raddad

Mr. Ahmad Abu Raddad is the president of the Electric Vehicles Association of Jordan. The EV association promotes electric mobility and looks for solutions in EV infrastructure. He also is an entrepreneur that owns a King EV, a company round electric vehicle technology.

Ahmed Al Khawaldeh

Mr. Ahmed Al Khawaldeh was the Operation Department Manager for the project on Bus Rapid Transit (BRT) at Greater Amman Municipality (GAM). He is an engineer and was at the time conducting feasibility studies on the electrification of the BRT project.

Fadia Barjous

Ms. Fadia Barjous is a representing the civil society campaign called “Ma’an Nassel”, advocating for more, better and more efficient public transport in Jordan. The initiative has developed the “Unofficial Public Transport Map Amman”. Fadia is a co-founder, project architect and spatial planner at Barjous architects where she develops urban projects on Jordan, the region and worldwide.

Ahmed El Dorghamy

Mr. Ahmed El Dorghamy is a consultant for energy and environment at the Center for Environment & Development for Arab Region & Europe (CEDARE) based in Cairo, Egypt and works in the Electric Mobility Program. He previously worked for the Egyptian Environmental Affairs Agency (EEAA) as well as in the Environmental Impact Assessment team for the Greater Cairo Metro Line No.4. He has completed his PHD at Humboldt University in Berlin on transport.

Majdi Abu-Hammoudeh

Mr. Majdi Hammoudeh is the Director of the Transport Safety and Environment Directorate at the Jordan Ministry of Transport and is responsible for electric mobility programs in the Hashemite Kingdom of Jordan. He is a logistics and transport engineer.

Muna Almusa

Mrs. Muna Sa'ed Almusa is the Head of Energy Conservation Section in the Jordanian Energy and Minerals Regulatory Commission (EMRC). She is a specialist in the public charging infrastructure for electric vehicles as well as the electricity grid in Jordan. EMRC is responsible for all licenses and permissions for public charging stations.

Sudqi Hamdan

Mr. Sudqi Hamdan is an expert in sustainable transport and environment statistics at the Jordanian Department of Statistics (DoS). He is currently participating in preparing the third national communications report on climate change. He is a scientific researches in the field of electric mobility and solid & electronic waste. Mr. Sudqi worked on providing a Concept Note in the field of electric buses working on solar energy at a cost of $50 million, and was presented to Green Climate Fund (GCF).

Waleed Mansour

Mr. Waleed Mansour is a consultant for environmental urban planning and works currently on the electrification of private and public transport in Cairo. Waleed is active in awareness campaigns for more environmental friendly traffic and transport.

The delegation participants in front of the Bundestag Dome in Berlin

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