



## **Transition Towards Electric Mobility in Armenia**

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

#### **Name of Parent Program**

**Global Programme to Support Countries with the Shift to Electric Mobility.**

#### **GEF ID**

**10280**

#### **Project Type**

MSP

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

GET

#### **CBIT/NGI**

CBIT

NGI

#### **Project Title**

Transition Towards Electric Mobility in Armenia

#### **Countries**

Armenia

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

UNEP

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

Ministry of Environment of the Republic of Armenia

#### **Executing Partner Type**

Government

#### **GEF Focal Area**

Climate Change

**Taxonomy**

Focal Areas, Climate Change, Sustainable Urban Systems and Transport, Climate Change Mitigation, Technology Transfer, Energy Efficiency, Financing, Influencing models, Demonstrate innovative approaches, Convene multi-stakeholder alliances, Strengthen institutional capacity and decision-making, Transform policy and regulatory environments, Stakeholders, Civil Society, Non-Governmental Organization, Academia, Communications, Awareness Raising, Behavior change, Education, Private Sector, Financial intermediaries and market facilitators, Individuals/Entrepreneurs, Capital providers, SMEs, Type of Engagement, Partnership, Consultation, Participation, Information Dissemination, Gender Equality, Gender Mainstreaming, Women groups, Gender-sensitive indicators, Sex-disaggregated indicators, Beneficiaries, Gender results areas, Capacity Development, Access to benefits and services, Participation and leadership, Knowledge Generation and Exchange, Capacity, Knowledge and Research, Innovation, Knowledge Generation, Enabling Activities, Knowledge Exchange, Learning, Theory of change

**Rio Markers****Climate Change Mitigation**

Climate Change Mitigation 2

**Climate Change Adaptation**

Climate Change Adaptation 0

**Submission Date**

12/8/2020

**Expected Implementation Start**

9/1/2021

**Expected Completion Date**

8/31/2024

**Duration**

48In Months

**Agency Fee(\$)**

53,298.00

**A. FOCAL/NON-FOCAL AREA ELEMENTS**

<b>Objectives/Programs</b>	<b>Focal Area Outcomes</b>	<b>Trust Fund</b>	<b>GEF Amount(\$)</b>	<b>Co-Fin Amount(\$)</b>
CCM-1-2	Promote innovation and technology transfer for sustainable energy breakthroughs for electric drive technology and electric mobility	GET	592,202.00	4,835,000.00
<b>Total Project Cost(\$)</b>			<b>592,202.00</b>	<b>4,835,000.00</b>

**B. Project description summary**

**Project Objective**

Reduce transport sector GHG emissions by promoting transition to e-mobility

<b>Project Component</b>	<b>Financing Type</b>	<b>Expected Outcomes</b>	<b>Expected Outputs</b>	<b>Trust Fund</b>	<b>GEF Project Financing(\$)</b>	<b>Confirmed Co-Financing(\$)</b>
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Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Component 1. Institutionalization and strategic planning for low-carbon e-mobility	Technical Assistance	1. Political and technical consensus, institutional mandate and strategic vision for electric mobility in Armenia among key stakeholders is built	<p>1.1. An inter-sectorial electric mobility coordination body is established and includes a women rights NGO</p> <p>1.2. Key stakeholders are trained in the EV global programme activities, with the prioritization of specific women needs</p> <p>1.3. A national e-mobility strategy is developed including all modes of transport and covering charging infrastructure requirements as well as a gender analysis and action plan and submitted for adoption.</p>	GET	122,500.00	35,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Component 2: Short term barrier removal through low-carbon e-mobility demonstrations	Technical Assistance	2. Proven technical, financial and environmental feasibility enables project stakeholders to consider scaled-up investment in e-mobility.	2.1. Agreement on demo project is reached between Armenian public entities and EPIU  2.2. Public procurement project is designed, data collection systems, reporting and analytical framework are established, including environmental provisions (i.e. waste management).	GET	57,865.00	
-	Investment	-	2.3. Electric vehicles are procured, demonstration projects are implemented and monitored, and data are collected, analysed and disseminated.	GET	280,000.00	328,800.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Component 3. Policy development for scale-up and replication of low-carbon electric mobility based on lessons learned from the pilot	Technical Assistance	3. Armenia is able to shift the vehicle market towards low-carbon electric mobility and accelerate introduction of appropriate electric vehicles among different market segments through establishing an enabling policy and institutional environment.	3.1. Procurement guidelines including technical specifications for electric fleet vehicles are developed and submitted for adoption to Government procurement department  3.2. Package of policy and regulatory measures to facilitate the uptake of electric mobility in the medium and long-term is developed and submitted for adoption to relevant Ministries.	GET	55,500.00	4,076,030.00
Monitoring and Evaluation Costs		-	-	GET	29,500.00	
<b>Sub Total (\$)</b>					<b>545,365.00</b>	<b>4,439,830.00</b>

**Project Management Cost (PMC)**

**Project Management Cost (PMC)**

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GET	46,837.00	395,170.00
<b>Sub Total(\$)</b>	<b>46,837.00</b>	<b>395,170.00</b>
<b>Total Project Cost(\$)</b>	<b>592,202.00</b>	<b>4,835,000.00</b>

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

<b>Sources of Co-financing</b>	<b>Name of Co-financier</b>	<b>Type of Co-financing</b>	<b>Investment Mobilized</b>	<b>Amount(\$)</b>
Recipient Country Government	Ministry of Environment	In-kind	Recurrent expenditures	275,000.00
Recipient Country Government	Ministry of Environment	In-kind	Recurrent expenditures	4,500,000.00
GEF Agency	UNEP	Grant	Investment mobilized	60,000.00
<b>Total Co-Financing(\$)</b>				<b>4,835,000.00</b>

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

The contribution of the Government of the Republic of Armenia to this project is from tax exemptions on import of E vehicles. In accordance with new Eurasian Commission legislation (in force as of January 1, 2020), taxes for a private consumer associated with a vehicle purchase and import consist of VAT and custom duty, which are combined into one cumulative tax and applied to any vehicle imported from third countries (all countries except for Armenia, Russia, Belarus, Kyrgyzstan, and Kazakhstan). The government has waived the VAT and import duty on E vehicles. According to the most recent data on electric vehicle imports in Armenia the contribution to the project from the government is estimated at USD 4.5 million. Though this is a foregone tax and not a one time budgetary allocation, the impact is similar to a government allocation to subsidize the purchase of E-vehicles and thus could be considered as investment mobilized. Nonetheless for this project, due its annual nature, this contribution has been classified as in-kind, in alignment with the current GEF guidance on co-financing categorization. Part of this financial support equaling USD 268,800 will be availed by the pilots in Component 2, which are partially financed by GEF Funds. The rest of it is accounted to co-finance Component 3, where enabling policies are expected to result in an increased uptake of E-vehicles by end-users. UNEP is contributing with a grant of USD 60,000, which UNEP has mobilised through the European Commission funded Solutions Plus project (Grant Agreement number: 875041 ? SOLUTIONSplus ? H2020-LC-GV-2018-2019-2020/H2020-LC-GV-2019, started implementation January 2020). This grant is to build upon an existing project with Electric Vehicles (EV) demonstration activities, and to replicate lessons learnt from the Solutions Plus demonstration projects. The grant portion will be used for procurement of charging equipment, installation, and / or operation of the equipment. In the pilot in Component 2, it is expected that the project will be able to leverage additional resources of up to USD 22,000 per vehicle, while these amounts have not been portrayed in the co-finance table, these amounts will be accounted for and reported as leverage in the PIR reports when realized during project implementation. In addition, the Asian Development Bank (ADB) has issued a letter of support, which informs about the ADB's intention to closely cooperate with this UNEP GEF project. The letter highlights that the objective of the GEF funded project is in full alignment with the ADB's partnership strategy for Armenia, which envisages participation

of Armenia in a newly developed ADB-GCF programme to foster e-mobility within ADB's Developing Member Countries (DMCs). The new ADB-GCF programme is anticipated to have a total budget of around USD 880 million to finance investments in (i) battery-electric bus fleets, (ii) commercial and institutional fleets, (iii) public fast-charging infrastructure and (iv) technical assistance including capacity building, policy assistance, EV roadmaps, project sourcing and monitoring. The ADB is currently collecting support letters from the countries including Armenia.

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

<b>Agency</b>	<b>Trust Fund</b>	<b>Country</b>	<b>Focal Area</b>	<b>Programming of Funds</b>	<b>Amount(\$)</b>	<b>Fee(\$)</b>
UNEP	GET	Armenia	Climate Change	CC STAR Allocation	592,202	53,298
<b>Total Grant Resources(\$)</b>					<b>592,202.00</b>	<b>53,298.00</b>

**E. Non Grant Instrument**

NON-GRANT INSTRUMENT at CEO Endorsement

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Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

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

PPG Required

**PPG Amount (\$)**

50,000

**PPG Agency Fee (\$)**

4,500

<b>Agency</b>	<b>Trust Fund</b>	<b>Country</b>	<b>Focal Area</b>	<b>Programmin g of Funds</b>	<b>Amount(\$)</b>	<b>Fee(\$)</b>
UNEP	GET	Armenia	Climate Change	CC STAR Allocation	50,000	4,500
<b>Total Project Costs(\$)</b>					<b>50,000.00</b>	<b>4,500.00</b>

## Core Indicators

### Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO <sub>2</sub> e (direct)	0	197450	0	0
Expected metric tons of CO <sub>2</sub> e (indirect)	0	43202	0	0

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

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

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

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO <sub>2</sub> e (direct)		197,450		
Expected metric tons of CO <sub>2</sub> e (indirect)		43,202		
Anticipated start year of accounting		2022		
Duration of accounting		13		

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

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)		5,817,337,056		

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

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)
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**Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment**

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
<b>Female</b>		530		
<b>Male</b>		510		
<b>Total</b>	0	1040	0	0

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

Methodology to estimate project's beneficiaries: Direct beneficiaries accounted for are: 1. Participants of workshops. 2. Stakeholders participating in meetings and events to be organized under this project and also jointly with the Global Electric Mobility Programme, as well as the number of trainings; 3. Unique passengers being transported by the demonstration vehicles and equipment over the lifetime of this equipment 4. All users of new charging infrastructure The gender disaggregation is based on: 1. Desired quotas for workshops and trainings; 2. Gender and transport data available for Armenia. The number of users of the demonstration vehicles was calculated taking into account average load factors, trips per day and vehicle lifetime. Since the same user is regularly using the same vehicle, lifetime passengers per vehicle are divided by lifetime trips per passenger on the vehicle to identify single users. For the methodology of GHG emission reduction potential of the project please see Annex M.

## Part II. Project Justification

### 1a. Project Description

## 1a. Changes in project design

1. The project design is in line with the original Concept Note. Some changes have been introduced to streamline and simplify the design in view of project's limited budget and timeframe, as summarized in the Table 1 below.

Table 1: Summary of the changes in the project design and the original Concept Note

Subject of change	Changes proposed at CEO Endorsement	Rational for changes
Component 4	To integrate Component 4 ?Promotion of long-term sustainability of electric mobility: Measures are developed to ensure the long-term sustainability of e-mobility ? in the scope of Component 2 ? Electric vehicle demonstration: Demonstrations provide evidence of technical, financial and environmental sustainability to plan for scale-up of e-mobility? and Component 3 Policy development for scale-up and replication of low-carbon electric mobility based on lessons learned from the pilot	In view of project's limited timeframe and budget, it is proposed that measures to ensure the long-term sustainability of e-mobility are integrated in the design of project's other components as follows:  Component 2 will integrate provisions for re-use, recycling and sound disposal of used electric vehicle batteries in the scope of suppliers' obligations under the pilot EV public procurement program  Component 3 will incorporate relevant provisions for battery disposal and management of environmental and safety risks in the technical guidelines for EV procurement and in the package of policy and regulatory measures
# of vehicles procured	According to the Concept note, the project aims to demonstrate up to 12 light duty vehicles in a government fleet in Yerevan. At CEO Endorsement document, this number has been changed to 28	Revised number of EVs is based on the analysis of incremental costs and the total cost of ownership



Global environmental benefits	At PIF approval, GHG emissions reductions were estimated of at least 404,575tCO <sub>2</sub> e, including 330,864 tCO <sub>2</sub> e in direct GHG emissions. At CEO Endorsement GHG emission reduction benefits have been revised and are lower at 240,653 tCO <sub>2</sub> e, including 197,450 tCO <sub>2</sub> e in direct GHG emission reduction, as summarized in the Section A.1.5. Nevertheless, the resulting cost-effectiveness of GEF financing stands at 3.0 USD GEF/tCO <sub>2</sub> e for direct GHG emission reduction which is well below appropriate benchmark for climate change mitigation measures in the transport sector.	Direct and indirect GHG emissions have been re-calculated to align with approach adopted at PIF stage for GHG emissions. The resulting direct emissions reduction are lower than estimates at PIF due to more conservative assumptions on the EV market development in Armenia compared to the ones used at PIF stage due both to COVID-19 impact and the implications of the military conflict in Armenia on country's economic development, which were not foreseen a year ago. See Annex M for detailed methodology and assumptions for ex-ante estimates of GHG emissions reductions
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Subject of change	Changes proposed at CEO Endorsement	Rational for changes
Geographical Target	In the Concept Note, only Yerevan has been chosen for the pilot project. In this document, two other biggest cities in Armenia, Gyumri and Vanadzor, have additionally been proposed to participate in the project	Interest of Vanadzor and Gyumri municipalities; main transport routes and connectivity with Yerevan with a better potential for scale-up and replication of project activities.
Executing Agency name	Ministry of Nature Protection has changed to Ministry of Environment of the Republic of Armenia.	The ministry is the same and it's more currently referred as Ministry of Environment. Thus, the latter name was selected for the project document.

Co-financing amount	Concept Note: 5,875,000 CEO Endorsement: 4,835,000	At the concept note very tentative estimates of the co-financing has been provided, in particular the evaluation of the size of the financial incentives. At CEO Endorsement State the value has been re-assessed taken into account the latest trend in EV imports to Armenia in 2020. In addition, the project will leverage substantial amount of co-financing from ADB, the Bank is working on a portfolio of new e-mobility initiatives through which GEF pilot initiative can be replicated and scaled-up. (See the attached letter in Annex O)
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## 1b. Project Description

### 1) Global environmental and/or adaptation problems, root causes and barriers that need to be addressed

Global environmental problem:

2. A global transition to low- and zero- emission mobility is essential to meet international climate commitments, including the Paris Climate Agreement. The **transport sector** is currently responsible for approximately **one quarter of energy-related carbon dioxide emissions**, this is expected to grow by 2050. In addition, the transport sector is a leading contributor to short-lived climate pollution, especially black carbon. The global vehicle fleet is set to double by 2050, and almost all this growth will take place in low- and middle-income countries[1]<sup>1</sup>. By 2050, two out of three cars will be found in developing countries. This means that achieving global climate targets will require a shift to zero emissions mobility in all countries, including low- and middle-income ones.

3. In 2014, the Republic of Armenia contributed with circa 10,450.71 kt CO<sub>2</sub> equivalent (without Land use, land-use change, and forestry (LULUCF)), 0.029% of the global GHG emissions. Within 1990-2014 periods, total GHG emissions decreased by around 59.4% (Figure 1)[2].

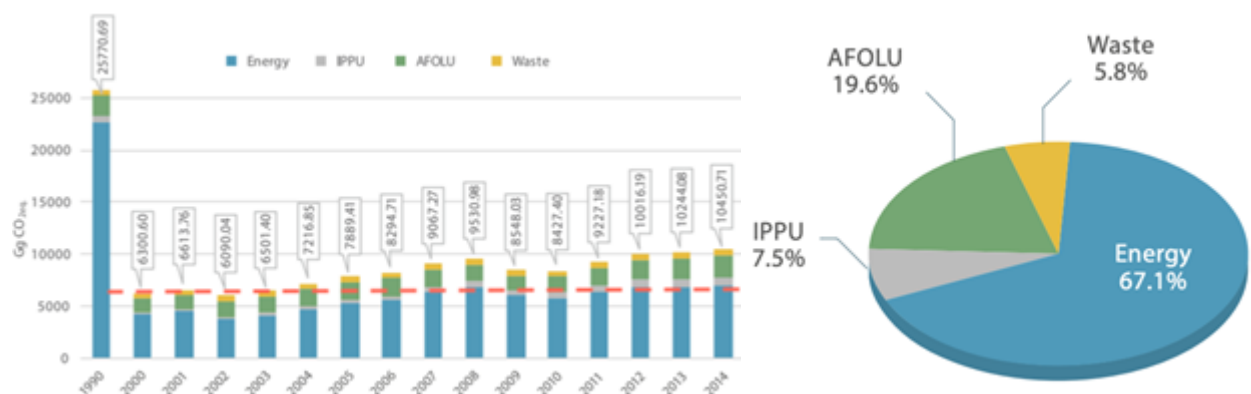


Figure 1 and 2. Total GHG emissions by sector 1990-2014 (red line ? First National Determined Contribution (INDC)); GHG emissions by sector in 2014

5. This reduction, however, is related to the Soviet Union collapse which resulted in Armenian independence in 1991. Since its independence, industrial and economic capacities of the country went significantly down, which has also reflected in total GHG emissions reduction. From 2000, after 9 years of economic stagnation and recession, total GHG emissions have been increasing quite rapidly up until now. In 2000-2010, they increased by over 66% which is explained by revitalization of the national economy after initial period of deep recession in the 1990s. Therefore, it should be pointed out that, in case of Armenia, comparing 1990 with 2016 or further would draw a wrong, unreliable picture of total emission reductions. The same situation occurred in every post-Soviet country.

6. In its *Nationally Determined Contributions (NDC)*[3]<sup>2</sup>, the Government of the Republic of Armenia says that the country attempts achieving a target for ?GHG neutral emissions volume? (i.e. the annual volume of GHG emissions, which can be fully absorbed by the earth's ecosystems in Armenia) of 2.07 tons per capita (Figure 1, red line with assumption of the constant population) by 2050 (2.46 in 2010; 2.87 in 2014), highlighting the importance of technical and financial assistance from international institutions in order to reach this target. However, according to the *Third National Communication of the Republic of Armenia and Second Biennial Report under the UNFCCC (United Nations Framework Convention on Climate Change)*, total GHG emissions as well as the energy sector emissions (Figure 3) are still forecasted to grow till 2030 in all three scenarios: without measures (WOM), with measures (WM), and with additional measures (WAM).



Figure 3. Emission projections in the energy sector under WOM, WM and WAM scenarios

7. As it is shown in Figure 2, the most polluting and the fastest growing sector in the country is energy (67.1% of total emissions). The energy sector also has the biggest GHG reduction potential, which is about 5500 kt CO<sub>2</sub>eq (more than overall GHG emissions from the sector in 2010). About **60% of electricity is generated from zero-carbon sources, domestic hydro and nuclear** powerplants, resulting in one of the cleanest electricity grids in the region (**160 tCO<sub>2</sub>/GWh**)[4]<sup>3</sup>. This serves as an advantage for e-mobility not only in terms of GHG emission reductions but also in terms of energy security (100% of petroleum is imported) and potential contribution to grid stability and electricity demand stimulation (10-15% of electricity produced in the country is exported annually).

8. Within the energy sector, transport accounted for 29.4% of CO<sub>2</sub> emissions (28.03% of total CO<sub>2</sub> emissions without LULUCF), contributing 1,580 kt CO<sub>2</sub>eq in 2014 (1240 kt - in 2012; 640 kt - in 2000, Figure 11 below)[5]<sup>4</sup>. **Transportation is also the fastest GHG emissions growing sub-sector** within the energy sector: it had grown by 145% in 2000-2014 and is expected to experience a twofold increase in emissions from 1.467 to around 2.7 Mt CO<sub>2</sub>eq in 2015-2030 taking the average values from the three scenarios provided in *Second Biennial Report under the UNFCCC*[6]<sup>5</sup>. This projection possesses a serious threat to achieving the NDC target indicated above. Energy and transport sectorial GHG emissions reduction mechanisms, including renewable energy expansion, energy efficiency, and **electrification of transport** are mentioned in the list of six main directions of the national climate change mitigation measures in NDC.

9. Armenia's total primary energy supply (TPES) is based largely on imported natural gas and oil (60% and 10%), domestic nuclear and hydro power (24% and 6%), whilst the demand for energy has been growing ever since 1994. Fuel consumption in the transportation sector has almost doubled from 10.9 to 20.0 PJ in 2000-2012, reaching **29% of the total energy consumption** in 2014 and 23% of total fuel consumption in the country according to the *Third National Communication of the Republic of Armenia*. The main fuel used in the transportation sector of Armenia is petroleum, which accounts for 19% of overall national fuel consumption.

10. **Individual transport modes domination:** private and commercial vehicles contributed to 98.5% of the total transport sector energy consumption in Yerevan in 2012 (2216 GWh, Figure 4). Also, cars,

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SUVs, vans, and light four-wheeled trucks account for 83% of registered vehicles; while buses and heavy trucks for 12% and 5% respectively (2015) [7]<sup>6</sup>.

Name	Electrical energy			Petroleum			Diesel fuel			Compressed gas		
	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
Karen Demirchyan Yerevan Metro	18,131	18,411	17,712							579	1,075	1,075
Electrified land transport	6,075	6,552	6,042							135	124	105
City minibuses							21,350	18,682	11,342	252,069	241,675	235,828
City buses							36,600	40,302	64,770	12,413	9,811	7,008
<b>Total, public</b>	<b>24,206</b>	<b>24,963</b>	<b>23,753</b>				<b>57,951</b>	<b>58,983</b>	<b>76,113</b>	<b>265,197</b>	<b>252,684</b>	<b>244,015</b>
AD passenger vehicles				2,797	3,442	5,150						
Passenger vehicles of commercial organizations				3,010	2,797	2,316			3	31	104.4	191.5
Load-carrying trucks of commercial organizations				677	609	526	501	435	212	686	607	601
Various vehicles of support services				1,079	1,154	1,610	100	867	1,130	541	638	717
Vehicles of healthcare institutions				3,656	3,619	3,837	22	9	0	15		
Garbage-removal trucks				5,270	5,281	5,345	2,036	2,040	2,065	9,541	9,541	9,541
<b>Total, municipal</b>				<b>16,489</b>	<b>16,902</b>	<b>18,783</b>	<b>2,659</b>	<b>3,351</b>	<b>3,407</b>	<b>10,814</b>	<b>10,890</b>	<b>11,051</b>
Private and commercial vehicles				1,437,889	1,309,979	1,076,815	556,139	541,729	591,195	347,765	452,774	548,717
<b>Total, private</b>				<b>1,437,889</b>	<b>1,309,979</b>	<b>1,076,815</b>	<b>556,139</b>	<b>541,729</b>	<b>591,195</b>	<b>347,765</b>	<b>452,774</b>	<b>548,717</b>
<b>Grand total (public, municipal and private)</b>	<b>24,206</b>	<b>24,963</b>	<b>23,753</b>	<b>1,454,378</b>	<b>1,326,881</b>	<b>1,095,598</b>	<b>558,798</b>	<b>545,080</b>	<b>594,602</b>	<b>358,579</b>	<b>463,664</b>	<b>559,768</b>

Figure 4. Energy consumption in the transportation sector of Yerevan<sup>7</sup>

11. According to the *Yerevan Green City Action Plan*[8]<sup>7</sup>, **old and inefficient vehicle fleet** which averages around 16 years (10.8 EU average) dramatically increases air pollution rates in Yerevan. Despite low motorization rate of 170 vehicles per thousand people which is significantly lower than, for example, the least motorized European Union (EU) country ? Romania (362), there is a high traffic congestion in the capital city. The Environmental Impact Monitoring Center (EIMC) has found out that the hardest hit districts in terms of air pollution are related to the downtown Yerevan due to the traffic issues. According to EIMC, acceptable norms for carbon monoxide levels were occasionally registered at a 4-fold excess from the permissible amount and 50-fold excess for sulphur dioxide in 2016-2017, vast majority of them in the city centre. Figure 5 and 6 are derived from the study by Akopov et al. (2019), which models temporal and spatial distribution of pollutants in Yerevan[9]<sup>8</sup>. Moreover, the growing number of vehicles on the roads and their high concentration in certain districts of Yerevan also leads to soil degradation. According to the study by Tepanosyan et al. (2016), the mean concentrations of lead, copper, and zinc, which are all related to road transport (but not only), are exceeding the acceptable concentrations in Yerevan[10]<sup>9</sup>.



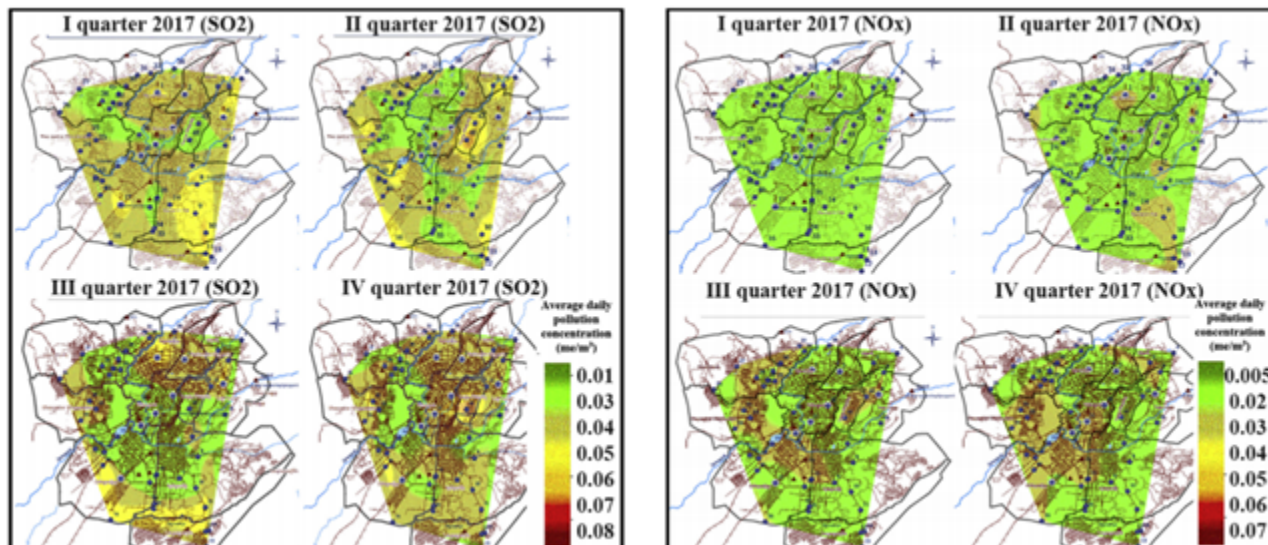


Figure 5 and 6. Spatial and temporal distribution of air pollutants in Yerevan (Source: Akopov et al. 2019)

12. The demand for mobility and vehicle sales have experienced a steady growth from the year of Armenian independence, scaling down during economic crises. Transport demand for private vehicles is growing together with GDP per capita rates (vehicle sales details are described below).

13. The increase in transport energy demand will lead to a considerable decrease in energy independence since neither petroleum products nor natural gas are domestically extracted in Armenia. Some of the strategic measures in the transportation sector include transition to natural gas (CNG) vehicles which can provide for a short-term GHG emissions reduction but will intensify energy dependence of the state. On the contrary, around 60% of electricity production is based on nuclear and hydro sources which can be considered domestic sources and thus could lead to cuts in fossil fuel imports and long-term GHG emission reductions.

Barriers to transition to e-mobility in Armenia:

14. There is a range of barriers which will have to be tackled in order to promote and develop electric mobility in Armenia. Based on the literature review of adoption barriers and feasibility constraints, the

following **list of barriers** was initially created and discussed during the subsequent stakeholder workshop.

1. High upfront cost;
2. Insufficient charging infrastructure;
3. Lack of consumer and stakeholder awareness, capacity and knowledge;
4. Lack of EV model availability in Armenia.

15. Prior to the workshop, stakeholders were asked to fill in the **online questionnaire**. As a result of both questionnaire and subsequent workshop, another barrier was raised by stakeholders and added to this subchapter ? **lack of coherent policy framework and absence of strategical vision for e-mobility?**. This barrier was included in the further analysis and project design.

### Do you agree that these barriers influence the decision of the average consumer in Armenia (to buy an EV)?

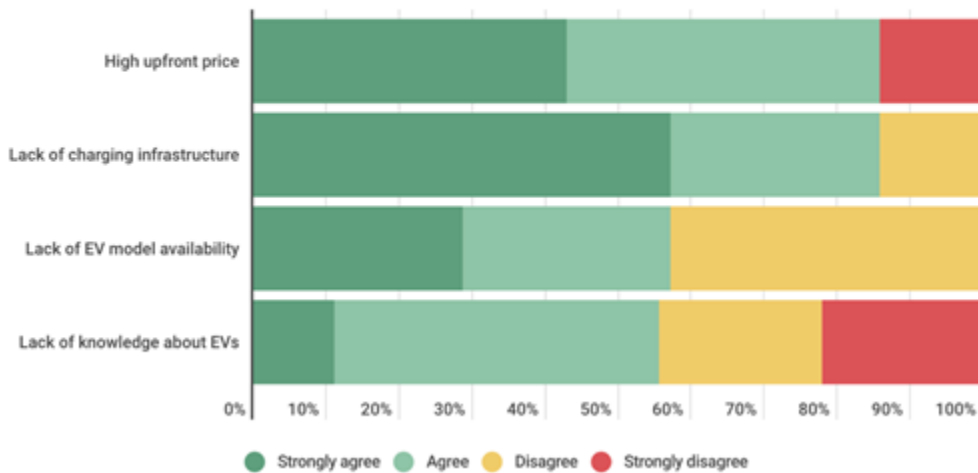


Figure 7. Questionnaire results (# of participants = 10)

16. **Barrier 1: Lack of strategic vision and coherent policy framework for e-mobility.** At present, there is a limited general and technical knowledge regarding electric mobility development and implementation of supportive policies in key transport agencies, as well as among representatives of municipal and national authorities. The majority of politicians also do not have information about the

effectiveness, efficiency and, more importantly, feasibility of relevant political actions at the international level and locally.

17. As was stated by a representative from the Ministry of Environment, "Prioritization of country activities in the field of e-mobility is the best way to achieve positive outcomes [for the transportation sector]" however, we do not have any priorities now". Armenia has already introduced some e-mobility related policies (described below), but there is a lack of further development planning capacity. Another participant of the workshop has expressed his positive opinion about e-mobility development in Armenia and added, "I hope that one of the outcomes of this program will be a detailed action plan". A well-coordinated and structured approach for policymaking to promote transition to e-mobility is vital, requiring the organization of interaction between key institutions, such as ministries of energy, transport, and environment; municipalities; customs, and so on. Subsequent cooperation with private businesses, public organizations, and consumers is possible only after appropriate allocation of powers from above. In some countries, such procedures result in the creation of a separate intergovernmental group for the development of electric mobility or an initiative group consisting of representatives of ministries, private businesses, public organizations, academics, etc.

18. There is a strong need in assistance on designing, framing, and implementing enabling policy and regulatory framework under the umbrella of e-mobility strategy, technical regulations for charging infrastructure, transport system regulations for EVs, introducing national targets and plans for a continuous EV adoption, data collection, designing performance indicators and monitoring mechanisms of potential outcomes of policies introduced. As indicated above, although some incentives have already been implemented in Armenia recently, there is still no framework for a continuous development of electric mobility in the transportation sector. Whether or not implemented measures will lead to any uptake, how long they will last, and what is a consumer perception about it is still unknown. Due to this complexity and variability of e-mobility policies, they should be included in national planning documents, such as transport strategies and plans, or a separate e-mobility strategy, which have not been done in Armenia yet.

19. Among the most common regulations for a continuous integration of electric vehicles, the most relevant barriers in Armenia relate to the absence of **charging infrastructure development regulations** (land ownership, connection to the grid, technical possibility to install a Direct Current (DC) charger, etc.) and regulations on **battery waste management** (reuse and recycling of batteries). These barriers were pointed out and supported with actual examples by both charging infrastructure developers and EV dealers in Armenia. For instance, according to the law and energy sector regulations in Armenia, the electricity in Armenia cannot be re-sold to consumers by 3rd party companies (a company cannot sell electricity to individuals, even that being a supply for charging stations), which makes it impossible to develop any viable business model for charging infrastructure hence the lack of it in the country.

20. **Barrier 2: Higher upfront costs.** EVs still have not reached the upfront cost parity with conventional vehicles. In Armenia, a new EV model, on average, is around USD 10-12,000 more expensive than a comparable Internal Combustion Engine Vehicle (ICEV) (Table 2). For second-hand vehicles, this cost gap is much smaller but still exists (depending on the condition of a vehicle), even after the VAT and custom duty tax exemptions for EVs in 2020. High upfront costs of EVs force Armenians to import old, sometimes damaged or right-handed EVs and ICEVs from the U.S. and Japan for a relatively cheap price and repair them in Armenia (due to low labour costs)As one of the workshop participants has noticed, *Monetary incentives in such distant locations, as California, decrease second-hand prices for EVs, making them more accessible for Armenians?*

Table 2. Comparison of new EV and ICEV upfront prices in Armenia[11]<sup>10</sup>[12]<sup>11</sup>

	MG ZS EV	Nissan Kicks
		
Fuel type	Electricity	Petrol (gasoline)
Length (mm)	4314	4295
Width (mm)	1809	1960
Height (mm)	1644	1590
Engine power (kW/HP)	105/150	118 HP
<b>Purchase price</b>	<b>USD 32,000</b>	<b>USD 20,000</b>

21. As for the total cost of ownership (TCO), EVs can financially benefit some of its owners in Armenia. Due to lower operation and maintenance costs of EVs, both cost-effectiveness and environmental benefits are more dominant for those social groups which use a vehicle more frequently. The results of the total cost of ownership analysis performed for this project have shown that EVs are indeed a more cost-effective option for vehicles with at least 30,000 km of annual mileage. Based on the collected data, such a frequent usage of a vehicle is characteristic of the Armenian public sector and

a small group of private drivers who tend to commute a lot. On average, public sector vehicles in Armenia (do not confuse with public transportation) cover 40,000 km annually and using an EV instead of ICEV in this case could save up to USD 13,000 in total costs of ownership depending on the length of usage. For the average private consumer (20,000 km per year or less), the analysis concludes with a cost gap in favour of conventional vehicles caused by the difference in upfront costs (Figure 8 and Figure 9).

22. To conclude, the analysis of the total cost of ownership shows that, in Armenia, new[13]<sup>12</sup> EVs are still more expensive than ICEVs for households, but cheaper for the public sector. More specifically, the ownership of EVs in the private sector could be financially beneficial only if its upfront price does not exceed the price of a conventional vehicle by more than USD 8,250. In the public sector, an electric vehicle would be more economically beneficial unless its price does not exceed the price of conventional vehicle by more than USD 16,500. In reality, the current price of an EV is about USD 10-12,000 more than of a comparable conventional model, which makes it economically attractive for public but yet not for individual use. One of the main contributors to the operational cost-effectiveness of EVs as compared to ICEVs is cheap charging. According to the Asian Development Bank, such fuel prices put Armenia on the edge between 'Moderate' and 'High' price group which serves as another advantage of switching to EVs. Moreover, for the last year diesel fuel increased in price by almost 5%, CNG ? 3%, and petrol ? 2.2%. On average, it makes **conventional cars five times more expensive to fuel** than EVs.

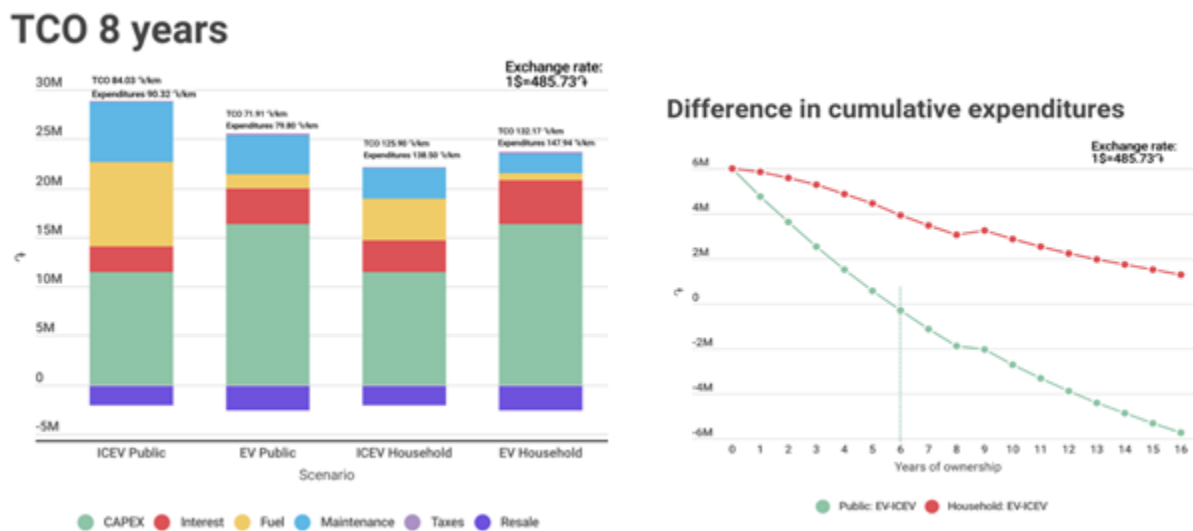


Figure 8. Total cost of ownership of MG ZS EV and Nissan Kicks for public and private sectors over an 8-year period of ownership.

Figure 9. Difference in cumulative expenditures: expenditures of EV ownership subtracted from ICEV ownership. Return of investment by the year 6 for the public sector; cost gap for households[14]<sup>3</sup>

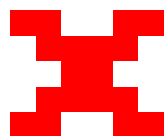
23. **Barrier 3: Lack of charging infrastructure** is one of the most often mentioned barriers to adoption and is always an issue to consider when taking the first steps towards e-mobility. There is no official statistics regarding charging stations. Based on information provided by stakeholders at the workshop, there are about ten charging points in the entire country. In January 2019, a USD 50,000 ?PLUG.am? project funded by GEF Small Grants Programme has started, aimed at installing 25 charging points around the country, focusing mainly on Yerevan and the transport corridor with Georgia (the only country with borders opened to Armenia).

24. This barrier is multidimensional and can be lowered through a range of incentives and subsidies for a corporate, public, and household charger installation of different modes of charging equipment (Mode 1-4). Besides the government, there are lots of potential stakeholders who might be involved: local authorities, companies, charging network developers, shopping malls, gas stations, construction companies, urban developers and planners, parking companies, etc.; therefore, the process of charging infrastructure development might be allocated to these agents by a government through a regulatory policies and standards.

25. In order to develop the charging infrastructure network in Armenia, the actual infrastructure needs and conditions should be identified and studied first. Therefore, the barrier that should be addressed firstly is the data unavailability and the lack of infrastructure planning and demand analysis. Factors to be reviewed should include, for example, the housing structure (private or block housing domination in the country), electricity network compatibility with chargers, future EV market growth, and so on. A cross-country comparison of charging infrastructure development experiences would not be efficient for this purpose, but some lessons can be considered from the global experience (see Box 1).

#### Box 1. Approaches to charging infrastructure development

The most complicated piece of charging network planning is defining the location and capacity of a charger. Overall, more than 50% of charging events happen at home, including charging in residential areas. When it comes to charging specifically at home, it usually happens overnight. The proportion of home and public chargers varies globally. In countries with a high share of private houses (e.g. US, Norway) the share of public chargers (per 1000 EVs) is significantly lower than, for example, in China. More than 15% of charging events occur at work. So-called ?corridor? charging stations are being used



in 5% of all charging events, but their importance should be anyway underlined since this charging events usually happen during a long-distance travel (Hardman et al. 2018). However, this is not the case for Armenia since it is a small landlocked country with borders opened only with Georgia. According to the workshop consultation, the main transport corridor with Georgia is already under the charging infrastructure development. Therefore, although there is a need for more public chargers in Armenia, it does not imply a huge national rollout program.

However, charging infrastructure development requires further framing and target setting. For example, Latvia, which is also considered as a late-adopter of EVs, the main methodology for the distribution of chargers was the following: on the national and international highways, the distance between stations should not be more than 40 km; on the regional roads connected with (inter)national roads ? not more than 60 km; one station in every town with 5-10 thousand inhabitants; one station per thousand inhabitants in towns with 10-60 thousand; one charging station per 15 thousand inhabitants in cities with 60-100 thousand; one station per 25 thousand inhabitants in cities with over 100 thousand (Raslavičius et al. 2015).

26. Finally, charging infrastructure regulations and policies should be conceptualized and incorporated in broader e-mobility strategies, plans, and policy packages. The long-term planning for charging infrastructure development should go in line with potential driving range extension due to the technology advancement.

27. **Barrier 4.1: Lack of technical knowledge and expertise.** Another potential issue with electric vehicles is its integration in the transportation system of Armenia. First, although the need for maintenance is not as frequent as for ICEVs, there is a lack of expertise and capacity among service technicians caused by a small number of EVs on the roads. Second, technical knowledge is required for a charging network development, both from technological and business perspective, which was described as "poor" by the charging network developer participated in the workshop.

28. Therefore, this relationship between the governmental representatives, dealers, as well as charging networks and repair services should be maintained in order to enable knowledge generation and awareness raising. Integration of electric vehicles in the transportation system should be supported by facilitated processes of vehicle legal registration and road signs introductions (especially vital when non-monetary incentives are introduced e.g. free parking). Lastly, a certain level of technical knowledge is required to integrate EV chargers into the country's energy system, connecting them to the grid, balancing and forecasting supply and demand for electricity from EVs, etc.

29. **Barrier 4.2: Lack of awareness and consumer's perceptions.** From consumers' perspective, the main concerns about electric vehicles (besides the price) are mostly related to its technical constraints, such as range anxiety and lack of charging infrastructure. These concerns with regard to the

mountainous topography in the country were reasonably raised by the network developer who had participated in the workshop. This perceived range limitation of EVs can potentially affect consumer's willingness to consider and buy an EV and should be addressed with further studies and charging infrastructure planning.

30. The majority of consumers are unaware of the rapid EV technological development and other benefits of the technology, such as air quality improvement, health and safety, noise pollution reduction, etc. There are currently about 304 EVs (as of 30.06.2020) on the roads in Armenia which also reflects the level of awareness and lack of potential to increase it. This lack of any marketing and awareness raising programs leads to situations when citizens (even in urban areas) either do not know what is an EV and charging stations and how they look like or that they do exist in Armenia.

31. Moreover, one of the stakeholders pointed out that "[One of EV adoption barriers in Armenia is] the lack of a strong willingness to become a part of environmentally friendly and green activities by the usage of green equipment, such as electric vehicles". Therefore, the promotion of environmentally friendly behavior is required not only for the adoption of electric vehicles in Armenia, but, on much greater sense, for a continuous sustainable development of the country.

**Additional barrier : Lack of EV model availability** barrier was identified as insignificant although many stakeholders believe this is a barrier (according to the questionnaire results presented above), the structure and trends of the local vehicle market shows a different picture. The vast majority of newly registered vehicles in Armenia (both EVs and ICEVs) is second-hand vehicles. According to the data acquired during the workshop, the **percentage of second-hand vehicles out of the total registered in Armenia in 2019 was 99.4%**. The average Armenian consumer does not consider buying a new vehicle, so the lack of EV models amongst retailers in Armenia is not yet considered as a major barrier for the uptake of EVs at this stage, perhaps only for a very limited number of consumers.

32. Gender issues in the transportation sector. According to the Food and Agriculture Organization (FAO) [15]<sup>14</sup>, women have limited access to means of transportation in Armenia, especially in rural areas. Women's limited access to, and control over, equipment and transportation constrains their income earning opportunities. Women's limited mobility is directly related to their limited access to markets, training, information, business networks, providers and administrative paperwork. However, there is a limited number of sources regarding gender issues in the transportation sector in Armenia.

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33. Rural women rarely drive cars, and they depend on their husbands or male relatives for transportation. For rural communities, and in particular communities in the more remote mountainous areas, improvements in transportation infrastructure are crucial. As identified during field research conducted by the Asian Development Bank, mobility limitations and restrictions are more usually related to social norms rather than road or transport infrastructure. A Yerevan-based NGO that works extensively with young people in the regions mentioned that it encounters difficulties inviting young women to attend training events in the capital, as families frequently do not want women to travel unless they are accompanied by a male relative. The same attitudes restrict young women from travelling to the capital to study. The transportation problems are related not only to distance to Yerevan, but also within the marz (regions), where long distances, bad intercommunity roads and insufficient public transportation create difficulties for business activities and communication between people, especially for women.

## 2) Baseline scenario and any associated baseline projects

34. Transportation is the fastest GHG emissions growing sector within the energy sector, which is expected to experience a 2.5-fold increase in emissions by 2030 compared to 2010. *The National Energy Efficiency Action Plan (NEEAP)* envisions increasing levels of fuel-gas use, the use of biofuel, the gradual replacement of old vehicles with new ones, the development of public transportation in general and, in particular, **electric transportation** in Yerevan[16]<sup>15</sup>.

35. In 2012, fuel distribution in the transportation sector of Yerevan was the following: 48% ? petroleum; 26% ? diesel; 25% ? CNG; 1% ? electricity. Due to the custom import duty increase for ICEVs from 2020 (discussed below), vehicle sales experienced a significant growth in 2019 (Figure 10). However, sales will most probably get back to 2017-2018 levels from 2020 onwards.

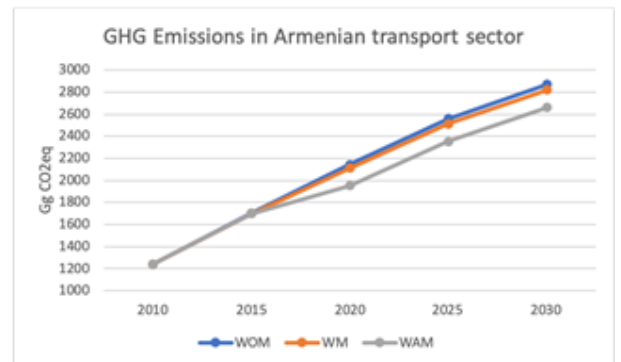
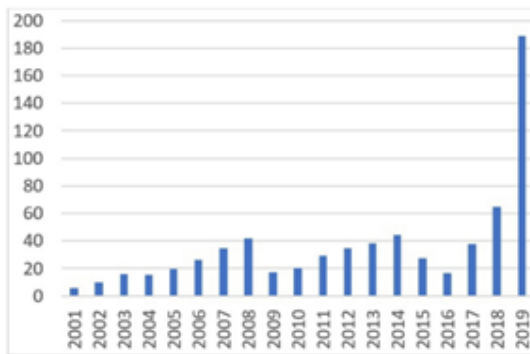


Figure 10. Vehicle sales in Armenia (thousands, left)[17]<sup>16</sup>

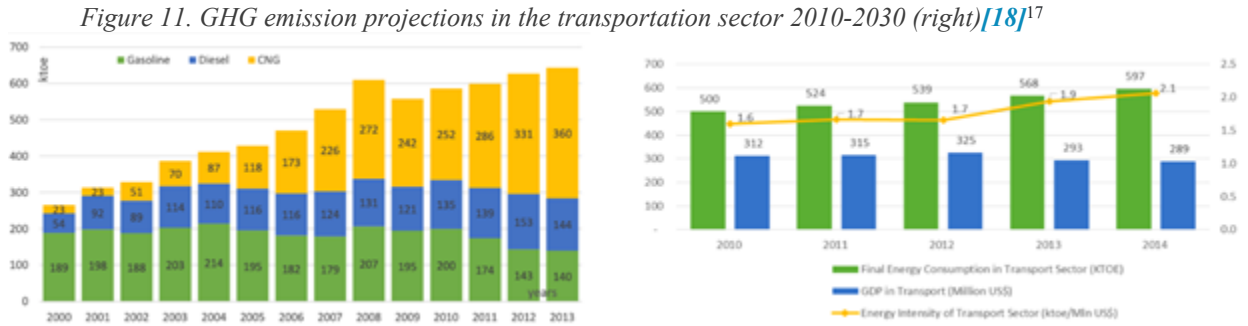


Figure 12 and 13. Fuel consumption in the transport sector; Energy intensity of the transport sector[19]<sup>18</sup>

36. In accordance with historical trends, it is worth to assume that, with a high level of certainty, the growth of second-hand vehicle sales will ultimately lead to the increase in fuel consumption in the transport sector, causing the fuel inefficiency lock-in due to the increasing age of the average vehicle fleet and growing demand for mobility. This, in turn, will reflect on the transportation GHG emissions in the mid-term (Figure 12 and 13). Also, from Figure 11 we can see that activities planned in this fastest GHG emission growing sector are insufficient to slow down the growth.

37. In the business-as-usual scenario, the expected continuation of the Armenian vehicle fleet growth (despite the 2019 sales data) will be caused by the **increase in mobility demand in the private sector** (i.e. households) and income growth. This enlargement of the vehicle fleet will be mostly represented by **old fossil fuel based inefficient and polluting vehicles**, thus increasing the energy intensity and the contribution to air pollution. Ultimately, this **will increase GHG emissions from the sector by 84% by 2030**, which is shown in Figure 11. Also, from figure 12 it is clear that any measures to reduce the GHG Emissions from transport sector are insufficient to slow down the growth.

38. Based on the sales data from 2010-2017 and stakeholder consultations, we can also assume that 0.6-1.2% of vehicles sold in Armenia annually will be new vehicles, while the majority (more than 50%) of vehicles will be 7-12 years old. Although the addition of used vehicle purchased lowers 7-12 years old vehicles make the fleet relatively more efficient (currently the average vehicle age is 16 years), the environmental impact of such development is still very damaging in the long run due to

inefficient fuel use and potential to lock-in. The approximate fuel distribution among the future new vehicle registrations (in Business as Usual (BAU)) is 50% petroleum, 30% CNG, 19% diesel, and less than 1% electricity.

39. Within the BAU scenario, the public sector plays a minor role in vehicle sales growth. In January-April 2020, the total of 102 vehicles were procured by the public sector in Armenia<sup>[20]</sup><sup>19</sup>. Based on the vehicle sales data, we can assume that the share of public procurement of vehicles contributes to 0.3-0.5% of annual new vehicle registrations in the country (i.e. public and private car registrations). However, the share of fuel consumption and GHG emissions from these vehicles can reach 1% of total GHG emissions in the transportation sector of Armenia due to the high annual mileage. All the vehicles procured during the period indicated above were new and run solely on petroleum. Due to the high mileages and distinct services, visibility of public sector vehicles in Armenia is high.

40. Overall, the current state of e-mobility in Armenia can be characterized as follows:

? The RA Law "On making amendments to the Tax Code of the Republic of Armenia" (Article 64, Paragraph 2, Subparagraph 52) adopted on June 7, 2019 (valid until January 1, 2022), the import and alienation of vehicles (electric vehicles) classified under the codes EEC AA 8702 40 000, 8703 80 000 and 8711 60 is exempt from VAT (20%), both new and second-hand EVs are covered by this policy.

? Pursuant to the United Nations Economic Commission for Europe (UNECE) board's decision No. 54 dated July 16, 2012, a tax rate of 0% has been set for M1 or M1G category (light duty vehicles' categories according to Armenian legislation) passenger vehicles (EAEU EEC AA 8703 80 000 2) working only with electric engine, which has entered into force since May 4, 2020, and the mentioned privilege will be valid until January 1, 2022 (applicable for both new and second-hand vehicles).

? Recent tax (VAT and custom duty) exemptions have drawn some attention to e-mobility and brought about 150 EVs in 2019 (less than 0.1% of newly registered vehicles). The future impact of these policies to EV sales remains uncertain (see next chapter for details) ? as of 30.06.2020, 304 EVs were imported;

? The vast majority of EVs bought in 2019 were brought by private buyers from insurance auctions (i.e. vehicles after car accidents) in the U.S. and Japan, then delivered and refurbished in Armenia. Due to these import trends, the impact of EU e-mobility targets for Armenia is uncertain.

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- ? Currently, there is a limited number of official retailers (3-4) in Armenia which offer EV models;
- ? Armenian banks offer financial products (e.g. loans) for vehicle purchase, with a couple of such products offered specifically for electric vehicles;
- ? The ?PLUG.AM: Promotion of Electric Vehicles in Armenia? project, amounting to \$ 50,000, launched in January 2019 with financing from the GEF Small Grants Program. The objective of the project is to install 25 charging stations throughout the country, focusing primarily on Yerevan, regional centers in Armenia, as well as on the transport corridor with Georgia;
- ? In his recent interview[21]<sup>20</sup>, the ex-Minister of Environment of RoA have expressed the interest of the Armenian government in creating enabling environment for foreign investments in vehicle manufacturing sector, especially in relation to electric vehicles. At the moment, Armenia does not have any vehicle assembling companies ? only automotive parts and mechanical equipment manufacturers;
- ? There are no policies or regulations in place which govern treatment of e-waste, including specifically the disposal of batteries, and the collection of batteries is limited to the capital and to lead-acid batteries.

## **Baseline policies, strategies and projects**

### *Transportation and e-mobility*

41. There are no specific institutional arrangements related to e-mobility in Armenia, while transport-related policy of the country is led by various ministries (there is no Ministry of Transport). **The Ministry of Environment** (former the Ministry of Nature Protection) of the Republic of Armenia is a central body of executive power that elaborates and implements the state policy in the field of environmental protection and rational use of natural resources. The Ministry of Environment is also the central policy-making body in the area of national climate change policies and in this capacity is leading on e-mobility promotion in the country, including, inter alia, the initiation of the comprehensive package of fiscal incentives enacted by the Ministry of Finance (see below). The Ministry is also in charge of other aspects which are relevant to e-mobility such as the regulation of e-waste and other hazardous waste management.

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42. The Republic of Armenia **Ministry of Finance** collects data on the state procurement of vehicles (with the signed contracts available in the e-procurement system of RA [www.armeps.am/ppcm](http://www.armeps.am/ppcm), in the section named ?Contracts?). Relevant to this project (see Component 2 of the project below), the restrictions on the compilation of the technical characteristics of the vehicles are envisaged by Article 13 of the RA Law on Procurement and by the decision N 830-N of RA Government dated on 24.07.2008, and the maximum prices of vehicles are envisaged by the order N 938-A of the Minister of Finance RA, dated on 24.10.2013. The Ministry is also responsible for tax amendments (VAT exemptions) for electric vehicles implemented by the state.

43. **The Ministry of Territorial Administration and Infrastructure** of the Republic of Armenia develops and implements policy related to renewable energy (there is no Ministry of Energy) from the point of view of territorial and urban development regulation, determination of geography and conditions of connection to the grid, technical specifications, and the possibility of network capacity for the provision of safety and reliability. Within these and other topics, the Ministry works closely with the Ministry of Environment. In the context of energy efficiency and reduction of greenhouse gases emissions, the Ministry encourages the development of electric vehicle usage, taking into account the growth of the share in renewable energy resources. However, the infrastructure development programs, and appropriate legislative changes are still to be made. Within this project, the Ministry is willing to contribute to the regulatory processes and update of the legislation.[22]<sup>21</sup>

44. **The Environmental Project Implementation Unit** of the Ministry of Environment of the Republic of Armenia (EPIU) is a national entity established by the government of the Republic of Armenia with the main objective of ensuring efficient implementation of the governmental environmental sector projects. The main spheres of the EPIU's activities include implementing projects/programmes by the Ministry of Environment of and territorial administration bodies in environmental sector, including implementation of state-wide sector-based projects on the sustainable usage of natural resources, lithosphere, soil, water, atmosphere, fauna and flora, and the preservation of specially protected areas, as well as those developed using funding from international financial organizations.

45. In the *Development Strategy of the Republic of Armenia*[23]<sup>22</sup>, programs and measures to be implemented in the transportation sector are mainly related to infrastructure (e.g. roads, railways) and public transport accessibility and development. It also aims at the maximization of energy security and independence through the increased usage of domestic resources, especially renewable ones, and promotion of energy efficiency in transportation.

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46. *The Second National Energy Efficiency Action Plan (NEEAP)* highlights the increase in energy intensity of the transportation sector that is attributed to the lack of efficiency of the fleet and infrastructure. It also indicates the list of measures essential to solving this problem, including regulatory framework introduction (legislation, emission norms), modernization of electrified public transport, and transitioning away from gasoline and diesel vehicles.

47. Energy and transport sectorial GHG emissions reduction mechanisms, including renewable energy expansion, energy efficiency, and **electrification of transport** are mentioned in the list of six main sectors for the mitigation measures in *Nationally Determined Contributions under the UNFCCC*.

48. In 2018, the Eurasian Economic Commission (includes Armenia, Belarus, Russia, Kazakhstan, and Kyrgyzstan) announced the transition to common custom duties for the import of vehicles (i.e. import tax and other related taxes) from 2019 (for vehicles imported into EEU). This measure will lead to a considerable increase in custom duties in Armenia and other member-countries, leading in some cases to a three-fold increase in import taxes depending on the vehicle age. EVs, however, are exempt from this tax from 2019 until 2023. In addition, in June 2019, the National Assembly of the Republic of Armenia has accepted the correction amendment to the Tax Policy exempting electric vehicles from VAT (20%) until 2022. Together, these incentives bring the total cost of ownership of an EV significantly closer to an ICEV.

49. *Yerevan City Sustainable Energy Action Plan (2016)* considers a group of seven activities aimed at climate change mitigation in the transportation sector. One of these measures, "Modernization of the transport pool of Yerevan Municipality; Yerevan Municipality Strategy Program for promotion of electric vehicles" outlines main benefits of possible e-mobility development in the city: reduced fossil fuel dependency, reduction of GHG emissions, direct energy savings from vehicle efficiency and indirect energy savings through promotion of certain charging behaviors (based on time of charging and following demand for electricity). The Action Plan refers to Armenian NEEAP which proposes a two-stage promotion planning leading to development of e-mobility in the country and Yerevan in particular. It suggests that in 2017-2020, 72 EVs will be tested and strategy drafting activities will take place, including EVs charging and maintenance planning. The government also considers analyzing Public Private Partnership (PPP) framework for investments in energy efficient technologies, including electric and hybrid vehicles, based on existing experience. These demonstrations haven't materialized too date due to a number of factors including government re-organization which left unclear the ownership of NEEAP.

50. With the 61st point of the action plan included in the Armenia-EU Comprehensive and Enhanced Partnership Agreement (CEPA) approved by Prime-Minister's decree on 1 June 2019, it is envisaged to approximate the **directive for promotion of the use of energy-efficient transport by 2026**. New legislative and sub-legislative regulations are envisaged. The coordinator of process is the Ministry of Territorial Administration and Infrastructure of RoA. The involvement of the Ministry of Environment of RoA is very important. The Directive requires that contracting authorities, as well as some operators during usage, should take into account the environmental impacts including the amount of consumed energy and CO<sub>2</sub>eq and pollutants' emissions.

51. Yerevan's *Green City Action Plan* (2017) suggests a range of actions and long-term targets in order to enhance the transportation system in the city of Yerevan, including promotion of e-mobility. Some of these measures are directly related to electric mobility in both private and public sectors:

- ? Modernization of electrified public transport which is currently in an inefficient state; this measure includes metro and trolleybus networks highlighted in the *Second National Energy Efficiency Plan*. It has already been partially implemented for the metro network in Yerevan (stock modernization, escalator replacement, depot rehabilitation, etc.) via
- ? European Bank for Reconstruction and Development (EBRD) and European Investment Bank (EIB) financing, but still in its pre-feasibility stage for trolleybuses.
- ? Introduction of 10 EVs by the end of 2020;
- ? Project-based development of charging infrastructure and electric transportation network by introducing smart mobility measures;
- ? Parking fee exemption for EVs in Yerevan;
- ? Organization of a public tender for a pilot project in smart EV mobility (e.g. carsharing).

Although the timeline suggested by the plan, in September 2020 the Municipality confirmed the plans for e-vehicle procurement but was not certain of the timeframe due to the on-going Covid-19 emergency and the unfolding military conflict.

- Asian Development Bank's Partnership Strategy for Armenia prioritises strategic investments in transport, energy, and urban development. ADB sees the e-mobility as an opportunity for Armenia to reduce its oil imports and improve energy security, as well as reduce GHG emissions and local pollution. The Bank is preparing a number of new initiatives which could enable scaling-up pilot investment in procurement of e-vehicles, envisaged under UNEP-GEF projects. Specifically, a new funding proposal for a joint ADB-GCF e-mobility promotion project is currently under development

(expected duration 2022 ? 202X) to promote investment in the e-fleet of publicly-used vehicles in the country and other support measures. In addition, ADB is working with the Government of Armenia on design of new line of credit for local financial intermediaries to finance purchase of e-vehicles by individual and businesses. The proposed UNEP-GEF project will play an important foundation for the development of e-mobility sector in Armenia and we look forward to collaborate with your team in the course of its implementation.

52. MG Motor, one of the existing EV dealers in Armenia, was consulted during the stakeholder engagement phase of the project design. It has been less than a year that the company is offering EVs in the country (first batch of EV was brought in December 2019 and the second one in May 2020). MG Motor?s representative has pointed out two main regulatory barriers related to charging infrastructure and waste management. The company has its own plans for promotion of EVs in the country via introducing first DC chargers. However, the regulatory barriers did not let the company to implement the plan, and due to the COVID-19 outbreak it has been postponed. The representative has also shared his vision on the promotion of e-mobility in Armenia, stating that there is a lot Armenia should learn from the pioneering countries in the field (policymaking and business) and that the government has to ?lead by example? in demonstrating benefits of owning an EV since the average vehicle consumer in Armenia is still unaware and sceptical about the technology.

### ***Power and Renewable Energy***

The government calls for the **development of renewable energy resources**, which is outlined in the *National Development Strategy* and *National Security Strategy*. Some incentives and feed-in tariffs are already in place, as well as regulations and tax amendments. The Energy Law of the Republic of Armenia also prioritizes investments, environmental protection, uses of alternative energy sources, and energy efficiency.

53. With the 47th point of Armenia-EU Comprehensive and Enhanced Partnership Agreement (CEPA) approved by Prime-Minister?s decree on 1 June 2019 it is envisaged to approximate the **directive for promotion of the use of energy from renewable sources by 2024**. It is envisaged to create legislative and institutional preconditions (targets) for the energy carriers which are alternatives of fossil fuels, as well as for the application of ?Certificates of Origin? and other necessary regulations. Ministry of Territorial Administration and Infrastructure of RoA and Ministry of Environment of RoA are the main coordinators of process. The Directive establishes a common framework for promoting energy usage from renewable sources. It defines compulsory national limits on the final gross energy consumption, including the share of renewable energy in the transport sector[24]<sup>23</sup>. It sets rules, which relate to the transfer of statistical data between EU member states, to the mutual projects between EU member states and third parties, to administrative procedures, information, and training, as well as to the accessibility of the distributive grid of renewable energy supply.

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54. The main regulatory body of the energy sector in Armenia is the **Energy Regulatory Commission** of the Republic of Armenia which consists of five members appointed by the President. The Commission is responsible for setting up tariffs, issuing and conditioning operation licenses, monitoring, contracting, forecasting, and quality assessment of the energy sector. In 2007, the Public Services Regulatory Commission (PSRC) introduced feed-in tariffs for electricity generated from renewable energy sources, signing power purchase agreements with newly installed plants for 15 years. Transmission, distribution, and operational licenses, which are of a direct relevance to EV charging infrastructure, and all rights that are granted for its holders are described in the Law.

55. "High-Voltage Electric Networks" is a governmental company is the transmission operator in Armenia. ESPO is a government-owned company responsible for transmission and dispatch for the domestic market as well as imports and exports. Privatized "Electrical Networks of Armenia" is the distribution operator, the only buyer and seller of electricity.

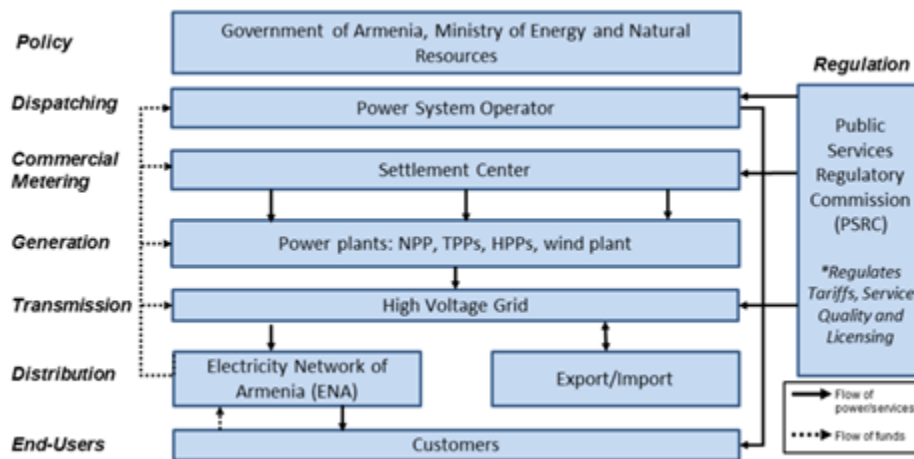


Figure 14. Structure of the electricity sector of Armenia

56. In 2017, the country generated 7,765 GWh of electricity, exporting around 15% of this amount. The main consumers are households (34%), industry (29%), and commercial (18%) sectors. Regarding energy sources, three carriers almost equally contribute to the overall electricity generation in the country – natural gas (37%, imported), nuclear (34%), and hydro (29%). Asia Development Bank (ADB) classifies Armenian electricity sector to have a high GHG reduction potential with deployment of EVs due to its relative cleanness – 0.16 kgCO<sub>2</sub>eq/kWh (2015). Shares of other renewable energy sources are still surprisingly low – electricity generation from solar and wind were only 3 and 2 GWh respectively. Although according to the *Scaling Up Renewable Energy Program* which was prepared by the Renewable Resources and Energy Efficiency Fund (R2E2), the country sets significant targets for the mass deployment of renewable energy, aiming at 88, 117, and 373 GWh annual generation from

solar Photovoltaic (PV), wind, and geothermal sources by 2020 with more than doubling of these numbers by 2025. The Program also incorporates forecasts of renewable energy resource potentials in Armenia, and some of them argue that they are far from being explored ? Armenian energy (incl. renewable) resources are used at 1/500 of their potential.

### **3) Proposed alternative scenario with a description of project components, outcomes, outputs and deliverables**

57. The overall objective of the project is to contribute to the achievement of Armenia's national GHG emission reduction targets in transport sector by supporting transition to e-mobility at the scale and pace consistent with Paris Agreement. It will enable Armenia to reach compound annual growth rate (CAGR) for EV sales of 11 % and the share of EVs in total annual sales of vehicles of 1,6% compared to 0,2% in the baseline (See Figure 15). At this point, the market shall reach its inflection point and even in the most conservative scenario will be able to at least sustain the same level of EVs sales in the following decade. The assumption made in this document about market inflection point and post-project growth rate is based on comparison of EV market growth projections for other EV markets globally and in the region (See Figures 15 below and discussion on scenarios later in the document). This project design has been informed by the review of the best practices and examples of e-mobility promotion in the countries of Eastern Europe with similar socio-economic profile and mobility patterns. This approach was approved by private and public stakeholders consulted during the project design stage. The green line in Figure 15 illustrates an alternative scenario for e-mobility development which is modelled assuming adoption of ambitious EV targets and policies comparable in scale and influence on the policies adopted by the countries with high CAGR. The baseline scenario (blue) illustrates the situation when such policies and targets are not enacted, and the package of fiscal incentives end in 2021 as is currently planned.

## EV sales scenarios for Armenia

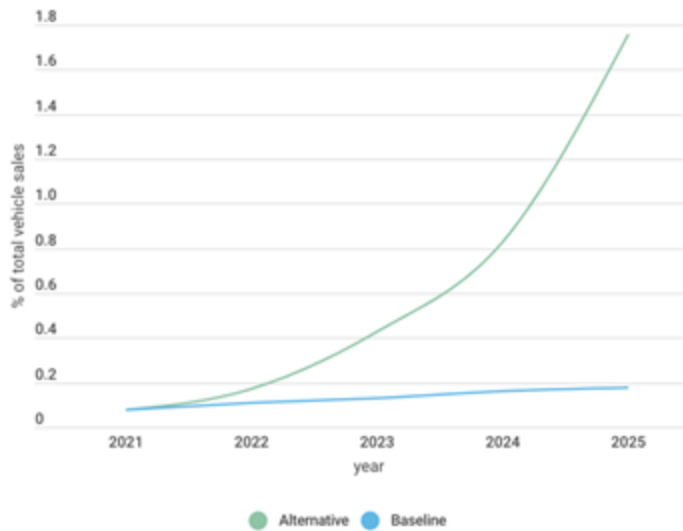


Figure 15. Scenarios for shares of EV sales in Armenia. Source: own research.

58. The project has been designed to achieve its stated objective by addressing prevailing barriers to the development of e-mobility sector through three inter-linked components, namely:

- ? Component 1: Institutionalization and strategic planning for low-carbon e-mobility
- ? Component 2: Short term barrier removal through low-carbon e-mobility demonstrations
- ? Component 3: Policy development for scale-up and replication of low-carbon electric mobility based on lessons learned from the pilot

### Component 1: Institutionalization and strategic planning for low-carbon e-mobility

59. **Component 1** is aimed at providing **strategic directions for the development of e-mobility** in Armenia and building consensus regarding specific near and long-term e-mobility targets and appropriate **institutional set-up** to govern the sector. The project will support the establishment, operationalization and institutionalization of an inter-sectoral e-mobility coordination body consisting of representatives from relevant ministries, municipalities, NGOs, and academia, to coordinate and guide policy-making process, facilitate exchange of knowledge and information among sector

stakeholders, and build consensus regarding Armenia's long-term e-mobility strategy. Technical assistance will also be provided under this Component to build capacity of the e-mobility inter-sectoral coordination body and relevant stakeholders in the various aspects of e-mobility, including exposure to international best policy and regulatory practices. The **national e-mobility strategy** will be focused on road transport, in particular light-duty vehicles. The strategy shall address, inter alia, the following key **cross-sectoral issues** essential for the sustainable development of this new sector in Armenia:

- i. intelligent use of electric vehicle batteries for storage to raise overall power supply efficiency by smoothing out production peaks, aligning production and load curves more closely and supplying balancing energy in future;
- ii. modifications of urban planning laws and changes in future land use (location of and access to charging stations in public spaces)
- iii. enabling framework to address environmental and social risks of e-mobility, in particular waste battery management and recycling
- iv. business models for investment in charging infrastructure and appropriate regulatory framework
- v. fostering social acceptance of e-mobility and communicating benefits to the wider audience.

#### **Outcome 1:**

Political and technical consensus, institutional mandate and strategic vision for electric mobility in Armenia among key stakeholders is built

Output 1.1: An inter-sectoral electric mobility coordination body is established and includes a women rights NGO

60. As the first step in creating institutional framework for e-mobility in Armenia, the project will support establishment, operationalization and institutionalization of an inter-sectoral e-mobility coordination body, comprising representatives of the relevant stakeholders, including women rights NGO. The Ministry of Environment will lead this process and solicit nominations of the members from relevant agencies. Environmental Project Implementation Unit (EPIU) will act as the Secretariat and throughout the project will provide planning and operational support. Towards the end of the project, provisions will be worked out to institutionalize and secure official recognition of the established body as the Inter-sectoral e-mobility Working Group (or other appropriate organizational form). Institutional set-up will also be elaborated in the National e-mobility Strategy (see Output 1.3). To ensure gender

aspects are well integrated and addressed by policies and programme the body will include a civil society organization working on gender issues.

Deliverables:

1.1.1 The list of members of the group signed up for serving in the body is complete; the intersectoral coordination body and the list of its members are approved by the government;

1.1.2 The plan and schedule of Working Group meetings including KPIs of its work are adopted;

1.1.3 Working Group meeting protocols;

1.1.4 Approval of the intersectoral coordination body as a strategic working group on e-mobility, including a CSO working on gender issues recognized by the Government of Armenia

Output 1.2: Key stakeholders are trained in the EV global programme activities, with the prioritization of specific women needs

61. To enable the Inter-sectoral e-mobility Working Group and its members in guiding and steering e-mobility sector development in Armenia, capacity building programmes will be designed and delivered continuously through the course of the project. It will help build the knowledge and capacities of the sector stakeholders, including public authorities, municipalities, and non-governmental organizations on various e-mobility related issues, such as policy and regulatory environment, technical aspects and cross-sectoral linkages, environmental risk management, etc. Gender issues in the transportation sector of the Republic of Armenia, identified during the preliminary gender analysis (see below), have led to the addition of 'Gender in transport' topic for stakeholders training. At its start, capacity assessment will be conducted to identify gaps and target groups in order to inform the design of the capacity building programme. Thematic working groups and knowledge materials created under the regional e-mobility platform facilitated by EBRD will be used to provide the content and help develop the capacity building programme for Armenian stakeholders. Global Programme on Electric Mobility will also facilitate exchange of international experience and best practices.

62. Training topics will include:

- ? Charging infrastructure development and planning
- ? E-mobility batteries waste management
- ? Policies and regulation, including international best practices on e-mobility

- ? Gender in transport
- ? Technical aspects of e-mobility
- ? Financing e-mobility

Deliverables:

1.2.1 Capacity assessment report and stakeholder capacity building program design, including the identification of public (national and regional) and private target groups to train including technical, financial, legal, and environmental aspects are designed and posted online

1.2.2 Stakeholders for each type of training are identified

1.2.3 Six (6) training packages prepared and delivered to identified stakeholders

1.2.4 Participation in the EBRD platform

Output 1.3: A national e-mobility strategy is developed including all modes of transport and covering charging infrastructure requirements as well as a gender analysis and action plan and submitted for adoption.

63. The development of Armenia's national e-mobility strategy will be preceded by the analysis of relevant international best practices, including specifically setting feasible e-mobility targets and addressing cross-sectoral issues (linkages with power sector development, urban planning, environmental and safety risks management, communication and awareness). In addition, in order to develop the charging infrastructure network in Armenia, actual infrastructure needs, and conditions should be identified and studied first. Assessment of charging infrastructure needs in Armenia will be elaborated and recommendations developed to address them, including appropriate business model, regulatory changes and financing structures. Based on undertaken analysis of international best practices and needs in Armenia, the draft national e-mobility strategy will be elaborated, presented to and discussed with stakeholders and submitted to the Government for adoption. The strategy will also include aspects to ensure equal benefits to all genders and identify specific elements of gender sensitivity in design of policies and programmes through analysis. UNEP-GEF project will provide advisory support (national and international experts) and facilitate stakeholder engagement and exchange of international best practices through its Global Programme on Electric Mobility.

Deliverables:

1.3.1 Report containing the analysis of best practices in national e-mobility adopted by other countries in national e-mobility projects, including battery waste management, the gender analysis and action plan, assessment of their replication to Armenia including success and limitation factors, and recommendations is submitted

1.3.2 Report containing the analysis of potential charging infrastructure needs and the assessment of electricity demand management, network, and distribution quality

1.3.3 Report containing the analysis of gender issues to be mainstreamed through the scope of project's components is submitted and incorporated in the draft strategy

1.3.4 Draft e-mobility strategy is submitted for stakeholder consultation

The draft should include the following topics:

- ? intelligent use of electric vehicle batteries for storage to raise overall power supply efficiency by smoothing out production peaks, aligning production and load curves more closely and supplying balancing energy in future;
- ? target-setting processes for the long-term electrification of various vehicle fleets (e.g. private, public, etc.) and charging infrastructure;
- ? modifications of urban planning laws and changes in future land use (location of and access to charging stations in public spaces)
- ? enabling framework to address environmental and social risks of e-mobility, in particular waste battery management and recycling
- ? business models for investment in charging infrastructure and appropriate regulatory framework
- ? fostering social acceptance of e-mobility and communicating benefits to the wider audience.

1.3.5 Final draft e-mobility strategy is submitted for adoption

## **Component 2: Short term barrier removal through low-carbon e-mobility demonstrations**

64. **Component 2** will demonstrate technical, financial and environmental feasibility of e-mobility through the **pilot national EV procurement program**. Its principal objective is to take Armenia's first significant step towards creating demand for EVs, demonstrate market potential to manufacturers, which are currently not present in Armenia, and enable Armenian public institutions, municipalities, and ministries to procure EVs under optimal conditions, including appropriate provisions for environmental and social risk management. Moreover, the project will fasten charging infrastructure development in Yerevan and initiate this development in Gyumri and Vanadzor (2<sup>nd</sup> and 3<sup>rd</sup> biggest cities in Armenia). The primary focus of demonstration activities will be on Government publicly used vehicles due to a number of reasons, elaborated below:

1. First, due to lower operational costs of EVs compared to conventional vehicles (ICEVs), both cost-effectiveness and environmental benefits are more dominant for those groups which use a vehicle more frequently.
2. Moreover, the frequent usage of a vehicle makes it more visible to the public, thus increasing the awareness among other social groups.
3. In addition, lower cost of capital for public bodies (such as the Government or Municipalities, which have access to concessional financing through IFIs) makes financing of such program easier to secure and cheaper for public sector than for individuals.

65. Furthermore, individual car market in Armenia is heavily dominated by the second-hand vehicles, whereas public bodies are more likely to procure new vehicles, and several are already considering upgrading their fleet with EVs, in particular for public transport. Monitoring, evaluation, data collection and use from the pilot project will be easier in the public sector, while bidding and tendering process can be centralized and streamlined by the responsible governmental bodies.

66. International experience similarly proved the effectiveness and scaling-up potential of public-led EV procurement when national and municipal authorities acted as role models to create buying power and develop a market for EVs. For example, in Lithuania, the first demonstration project was focused on a taxi fleet in the most touristic places in the country, maximizing the benefits of EV usage and raising awareness among passengers. This measure, however, has had some disadvantages related to the replicability potential ? it was difficult to transition the entire or at least some part of the taxi fleet to EVs since the final decision was still taken by taxi companies or private drivers. In Estonia, a different approach was taken, providing social workers with EVs as a part of EVs public procurement scheme and introducing an EV rental pilot project at the same moment.



67. Armenian stakeholders throughout the consultation have also unanimously agreed that the best way to promote EVs would be through the pilot project with a focus on public sector, which should lead by example country's transition to e-mobility. In addition, it was suggested that to incentivize public partners to join the program and in a view of limited public budgets, GEF-financed incentive will be provided in the form of investment grant to cover a share of CAPEX for early adopters willing to join the scheme in addition to technical assistance to prepare and implement pilot procurement actions. In parallel the project will facilitate dialogue with IFIs (e.g. EBRD and ADB with whom consultations have been initiated at project development stage) about their potential financing to scale-up the pilot. The agencies have in fact expressed their interest in the project activities, e.g. to use the results and data from the pilot in their work on pipeline development.

68. Based on information provided by stakeholders at the workshop, there are about ten charging points in the country. In January 2019, a USD 50,000 PLUG.am project funded by GEF Small Grants Programme has started, aimed at installing 25 charging points around the country, focusing mainly on Yerevan and the transport corridor with Georgia. However, the development of charging infrastructure in Armenia is only about to gain momentum, and the number of chargers to be provided by the above mentioned projects is still not sufficient for the whole country as many other big cities (e.g. Gyumri, Vanadzor) are still lacking charging infrastructure. This component also aims to install additional chargers in these cities to enhance the network of chargers in the country, and make EVs more attractive to a private consumer, This output will, in turn, serve as an additional incentive for municipalities to join the pilot procurement program.

69. Through this pilot project, capacity of stakeholders to undertake similar procurement actions will be built and the blueprint developed for its replication by all interested public, but also private sector organizations. In addition, by demonstrating e-mobility in action and disseminating results awareness will be built among relevant stakeholders, such as fleet managers, but also public at large about the social, economic benefits of e-mobility.

**Outcome 2:** Proven technical, financial and environmental feasibility enables project stakeholders to consider scaled-up investment in e-mobility.

Under Outcome 2 pilot national EV procurement program will be designed and implemented to demonstrate technical, financial and environmental feasibility of e-vehicles. **The program will pursue the following specific demonstration objectives:**

- Demonstrate cost-effectiveness of publicly used e-vehicles on a total cost of ownership (TOC) basis;
- Demonstrate approaches to managing environmental risk associated with e-mobility, specifically the e-waste and batteries;

- Demonstrate approaches to public procurement of e-vehicles which maximizes cost-effectiveness while ensuring high quality standards and environmental risk management;
- Demonstrate how public sector can lead by example when promoting e-mobility.

National EV procurement program will be implemented in two batches in Year 2 and year 3. Two requests for expression of interest will be issued by EPIU to solicit applications from public sector entities with budgets and procurement plans for the purchase of government 4-wheelers vehicles. Based on received applications specifications for the procurement of e-vehicles will be elaborated and tender procedures organized. It is anticipated that at least 28 electric vehicles will be procured and in addition, at least 20 charging stations will be installed in three main Armenian cities to stimulate participation in the pilot procurement program. Further details on the pilot procurement programme is provided below ? see description of Output 2.1, 2.2, and 2.3.

Output 2.1: Agreement on demo project is reached between Armenian public entities and EPIU

70. In parallel with creating institutional and strategic framework for e-mobility sector, the project will start implementing its demonstration component. It will start with identification of a group of ?early adopters?, public sector entities with budgets and procurement plans for the purchase of government 4-wheelers vehicles. For this purpose, call for expression of interest will be issued specifying modalities and conditions of participation in the program and the UNEP-GEF support, including provision of investment grant. Applications will be reviewed by the project team and a list of ?early adopters? identified and submitted to the Inter-sectoral coordinating body (Output 1.1) for approval. Based on decision, agreements will be signed with selected participants.

71. Environmental Project Implementation Unit (EPIU) established under the Ministry of Environment will launch the call for expression of interest and sign agreements with selected entities in its capacity of project?s implementing partner as further described in the Section 6 below.

Deliverables:

- 2.1.1 Public call to interested public sector parties for participation in UNEP-GEF project issued by EPIU
- 2.1.2 Procurement project beneficiaries are selected in Yerevan, Gyumri, and Vanadzor
- 2.1.3 IFI?s (e.g. EBRD, ABD) consulted about potential financing to scale-up the pilot

Output 2.2: Public procurement project is designed, data collection systems, reporting and analytical framework are established, including environmental provisions (i.e. waste management).

72. The design of pilot procurement program will be based on the best international cases such as, for instance, a Swedish procurement program which took place in 2010, when the share of EVs in the country was also way below 1%, similar to the current situation in Armenia. It was one of the first attempts to introduce EVs and stimulate the market in Sweden[25]<sup>24</sup>. The following scope was designed for a successful implementation of this demonstration project:

- ? Assistance to the project by defining the parameters for bidding qualification and implementation of the tender process;
- ? Facilitation of the procurement process and structuring contract provisions, including environmental and social risks managements, data collection, and assessment of results;
- ? Financial incentive to cover a share of CAPEX costs to incentivize ?early adopters? to join the program (up to the difference in CAPEX cost between EV and regular vehicle). Differentiated level of subsidy will be offered to different programme partners (municipal entities, commercial, NGOs, etc)
- ? UNEP with support from the EC SOLUTIONS plus project, will finance the charging equipment and will cover required cost of insurance. EPIU will run procurement process following official procurement policies established by the GA for public procurement

Deliverables:

- 2.2.1 Technical, operational, service and maintenance, environmental, and financial qualification and selection criteria are formulated and approved by PSC for procurement programme
- 2.2.2 The public call for procurement of EVs issued by EPIU, including environmental requirements (e.g. battery end-of-life services management (recycle/reuse))
- 2.2.3 The analysis of offers published; the contract with the winner signed by EPIU, including environmental requirements (e.g. battery end-of-life services management (recycle/reuse))

Output 2.3: Electric vehicles are procured, demonstration projects are implemented and monitored, and data are collected, analyzed and disseminated.

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73. One of the benefits of public procurement pilot is that it allows collecting and analyzing the data regarding vehicles and use, as opposed to private sector where access to data could be limited. To maximize the benefits of demonstration, a monitoring system will be set up to collect and analyze quantitative and qualitative data on vehicles usage, financial and energy savings, bottlenecks, experience of vehicle users (charging, maintenance, etc.), including any potential gender-related aspects of e-mobility. Analysis of collected data will be used to inform development of recommendations on required policy and regulatory changes to be undertaken under Component 3.

74. It is envisaged that at least 28 electric vehicles will be procured within the project lifetime (2021-2023). As for charging, at least 20 stations (the actual number might be lower if technical capacity is higher) will be installed via USD 60,000 UNEP grant co-financing.

#### Deliverables:

2.3.1 A set of key performance indicators to monitor the progress and to evaluate the pilot (financial and energy savings, bottlenecks, experience of vehicle users charging, maintenance, etc., including any gender-related aspects) upon its completion are identified and a methodology for data collection for monitoring and evaluation is prepared, including excel-based tool to collect and analyze data

2.3.2 EVs are delivered and transferred to the participating entities

2.3.3 Charging infrastructure procured and installed

2.3.4 The monitoring report with preliminary lessons learned containing the corrective measures, if needed, is submitted by the end of year 2, including confirmation of the number and characteristics of procured vehicles (as one of the KPIs)

2.3.5 The evaluation report with lessons learned and recommendations for scale up is submitted and disseminated among project stakeholders and the Global Programme.

#### **Component 3: Policy development for scale-up and replication of low-carbon electric mobility based on lessons learned from the pilot**

75. **Component 3** aims at creating **enabling policy and regulatory environment** to stimulate transition to e-mobility by building on the results of the pilot program in Component 2 and in line with strategic directions, targets and priorities defined and agreed-upon under Component 1. First, building on the results of pilot EV procurement programme, official guidelines and technical specifications for procurement of EV vehicles for both public and private sector organizations will be developed and

feasible target for public EV procurement proposed in line with international best practices. Second, in line with strategic priorities identified in the national e-mobility strategy and identified policy and regulatory gaps, recommendations will be formulated to address key cross-sectoral issues and barriers, such as the regulations to enable charging infrastructure development on a market-basis, integration of e-mobility and power grid management, environmental and safety regulations for used battery management, as well as financial and non-financial incentives to stimulate individual EV market growth post 2021 (when existing exemption from VAT and import duties will expire). At this point the effectiveness of existing fiscal incentive package will be assessed, as well as over-all market readiness for uptake of e-mobility, including the need for additional financial incentives.

76. The three components of the project are **closely inter-linked**. Component 1 will create an overarching strategic and institutional framework both for the project, but more broadly for e-mobility sector development in Armenia in the long-term thus ensuring sustainability of project results under both components beyond project timeframe. Without clearly assigned roles and strategic directions, it will be impossible to promote policy and regulatory changes, neither to ensure sustainability and replication of demonstration program. On the other side, demonstration in Component 2 is essential for both raising awareness of and achieving strategic consensus as regard e-mobility among decision-makers (Component 1), as well as for the design of policy and regulatory measures envisaged under Component 3. Lastly, Component 3 will provide for policy and regulatory framework for implementation of e-mobility strategy (Component 1) and replicate the results of pilot EV procurement program (Component 2).

**Outcome 3:** Armenia is able to shift the vehicle market towards low-carbon electric mobility and accelerate introduction of appropriate electric vehicles among different market segments through establishing an enabling policy and institutional environment.

Output 3.1: Procurement guidelines including technical specifications for electric fleet vehicles are developed and submitted for adoption to Government procurement department

77. This output will support replication and scale-up of the pilot EV procurement program in public & private sector by developing procurement guidelines, as well as assessing the feasibility and proposing EV procurement targets by national or municipal actors. For example, a minimum annual procurement share of EVs is already implemented in the European Union according to the Clean Vehicles Directive of 2009 (2009/33/EC). The Directive sets minimum country-based percentages (targets), which currently vary from 17.6 to 38.5% for light duty vehicles. For Armenia, these percentages might be derived from a total number of annual procurements of light-duty vehicles and the total number of participants in the EV public procurement project. This target setting process will enable the

continuous scaleup of EVs adoption rates in the public vehicle fleet, ultimately leading to development of charging infrastructure and contribute to awareness raising among general public.

Deliverables:

3.1.1 The assessment of possible public procurement targets and regulations related to EVs, and charging infrastructure including the recommendations for the targets and set of provisions to adopt (esp. for battery and e-waste management), taking into account the lessons learned from the demonstration

3.1.2 The draft proposal for procurement regulations including EV-related targets, taking into account the lessons learned from the demonstration, is submitted and distributed for stakeholder consultation

3.1.3 Stakeholder consultation on the draft proposal conducted with the Project Board and beyond; the feedback is gathered

3.1.4 Proposal for procurement regulations which takes into account the feedback is finalized and submitted for adoption by relevant national and municipal entities (mandates for adoption to be assigned in the national e-mobility strategy as they are currently lacking).

Output 3.2: Package of policy and regulatory measures to facilitate the uptake of electric mobility in the medium and long-term is developed and submitted for adoption to relevant Ministries (to be defined as part of Component 1)

78. Armenia has already put in place certain policies and regulations to promote e-mobility. Recent amendments to the fiscal policy have exempted electric vehicles from the VAT tax. Moreover, in Yerevan, a free parking for EVs is available in designated areas. Although fiscal measures have a significant impact on adoption rates, they tend to be temporal (till 2022 in this case), thus bringing only a short-term impact. Therefore, there is a need to implement other, less costly but longer-term measures that will increase the attractiveness of owning an EV in a long-term for a wider group of users, including individuals and private sector.

79. At project design stage a preliminary review of e-mobility policies in countries with similar economic and geographical conditions was conducted. As the Table 3 below illustrate there is a number of monetary (e.g. grants), non-monetary (e.g. free parking), and recurring (e.g. ownership tax exemption) e-mobility policies. Depending on the adopted national EV target (Component 1), an appropriate policy and regulatory package will be identified for Armenia to bring the country on the appropriate EV sector development trajectory (See Figure 14). Recommendations will be discussed with stakeholders and along with results of demonstration projects presented to wider audience during the National E-Mobility Forum and awareness raising campaign to be conducted in the project end.

80. The complete set of policies and regulations to be implemented will also include municipal regulations for charging infrastructure development facilitation (e.g. land ownership) and battery management.

Table 3. Variability of e-mobility incentive instruments.

Incentives	Lithuania	Latvia	Bulgaria	Romania
Direct subsidies		Grant covering 35-85% of capital costs (2014)		Scrappage eco-premium of up to EUR 10,000 (2017-ongoing)
Charging grant				80% coverage (2016)
Company car tax reduction		77% reduction		
Circulation tax reduction		Exemption	Exemption	Exemption
Fee waivers	Free parking	Free parking	Road toll exemption; Free parking	Free charging (some providers)
HOV lane access	Priority lane access	Bus lanes		
Restricted traffic zones access		Some cities		

Deliverables:

3.2.1 Development of regulatory provisions to address the following topics, as recommended by the e-mobility strategy - battery use and energy supply, various vehicle fleets, urban planning and land use, environmental and social risks, business models for charging, awareness raising

3.2.2 Report on the recommended policy package and its success and limitation factors based on the assessment of potential policy packages is submitted for consideration and adoption to relevant Ministries (to be identified and assigned appropriate mandate as part of e-mobility strategy to be prepared under Component 1)

3.2.3 National e-mobility forum conducted

**4) Alignment with GEF Focal Area and/or Impact Program strategies**

81. This programme is aligned with Objective 1 of the Climate Change Focal Area to 'Promote innovation and technology transfer for sustainable energy break-throughs', through CCM 1-2 - Promote innovation and technology transfer for sustainable energy breakthroughs for electric drive technologies and electric mobility.

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

82. Barriers, gaps and challenges to low-emission transport in Armenia are presented in the table below, which also explains how those barriers will be addressed in the baseline and GEF alternative scenarios and specifies the expected contribution of the project to baseline and its incremental reasoning.

*Table 4. Key planned outputs and activities to address barriers by the project*

Barrier	Baseline	Alternative Scenario	Outcomes planned
<p><b>Lack of strategic vision and coherent policy framework for e-mobility</b></p>	<p>Lack of policy-making body, poor coordination among relevant stakeholders</p>	<p>Key stakeholders will cooperate to ensure the successful implementation of the project. Their commitment over time is ensured</p>	<p>Output 1.1: An inter-sectorial electric mobility coordination body is established and includes a women rights NGO</p>



Barrier	Baseline	Alternative Scenario	Outcomes planned
	Low expertise and capacity of relevant stakeholders	Key stakeholders are regularly trained and therefore they are able to make effective project-related decisions	Output 1.2: Key stakeholders are trained in the EV global programme activities, with the prioritization of specific women needs
	Lack of strategic vision and targets	The vision towards low carbon including e-mobility is created, national targets and plans for a continuous EV adoption are introduced	Output 1.3: A national e-mobility strategy is developed including all modes of transport and covering charging infrastructure requirements as well as a gender analysis and action plan and submitted for adoption.
	Lack of procurement guidelines and regulations	Procurement regulations are designed and effectively used within and beyond the project	Output 3.1: Procurement guidelines including technical specifications for electric fleet vehicles are developed and submitted for adoption to Government procurement department
	Lack of policy framework	A strong need in assistance on designing framing, and implementing enabling policy and regulatory framework under the umbrella of e-mobility strategy is addressed	Output 3.2: Package of policy and regulatory measures to facilitate the uptake of electric mobility in the medium and long-term is developed and submitted for adoption to relevant Ministries.

Barrier	Baseline	Alternative Scenario	Outcomes planned
<p style="text-align: center;"><b>Higher upfront costs</b></p>	<p>Initial investment cost for EVs is too high, even for the demonstration projects</p>	<p>The use of GEF funds to cover incremental cost of EVs over conventional vehicles enables the demonstration of the benefits of EVs and the fact that TCO are lower for EVs as compared to ICEVs; this could help private and public actors invest into EVs regardless of their higher CAPEX</p>	<p>Output 2.2: Public procurement project is designed, data collection systems, reporting and analytical framework are established, including environmental provisions (i.e. waste management).</p> <p>Output 2.3: Electric vehicles are procured, demonstration projects are implemented and monitored, and data are collected, analyzed and disseminated</p>
	<p>Existing financial incentives for supporting EV uptake are insufficient.</p>	<p>The policies to tackle the issue of higher upfront costs are designed and stimulate higher EV sales</p>	<p>Output 3.2: Package of policy and regulatory measures to facilitate the uptake of electric mobility in the medium and long-term is developed and submitted for adoption to relevant Ministries.</p>

Barrier	Baseline	Alternative Scenario	Outcomes planned
<p><b>Insufficient charging infrastructure</b></p>	<p>The charging infrastructure of EVs is at early development stage and not available across the country</p>	<p>Early adopters of EVs are carefully selected for the pilot to ensure they can deliver the service given the available infrastructure. Public procurement project is provided with necessary charging infrastructure in the three biggest cities in Armenia.</p>	<p>Output 2.1: Agreement on demo project is reached between Armenian public entities and EPIU</p> <p>Output 2.2: Public procurement project is designed, data collection systems, reporting and analytical framework are established, including environmental provisions (i.e. waste management).</p>
	<p>Existing incentives for the expansion of the charging infrastructure are insufficient.</p>	<p>The policies to stimulate the expansion of charging infrastructure are designed</p>	<p>Output 1.3: A national e-mobility strategy is developed including all modes of transport and covering charging infrastructure requirements as well as a gender analysis and action plan and submitted for adoption</p> <p>Output 3.2: Package of policy and regulatory measures to facilitate the uptake of electric mobility in the medium and long-term is developed and submitted for adoption to relevant Ministries.</p>

Barrier	Baseline	Alternative Scenario	Outcomes planned
<p><b>Lack of technical knowledge and expertise</b></p>	<p>Potential EV users are not yet convinced about the performance of the EV</p>	<p>Only EVs with sufficiently high performance should be included in the programme to avoid dissemination of vehicles with insufficient performance that would impact negatively the consumers' attitude towards EVs.</p>	<p>Output 2.2: Public procurement project is designed, data collection systems, reporting and analytical framework are established, including environmental provisions (i.e. waste management).</p> <p>Output 2.3: Electric vehicles are procured, demonstration projects are implemented and monitored, and data are collected, analyzed and disseminated.</p>
	<p>Proper handling and disposal of batteries is not guaranteed.</p>	<p>To reduce potential future impacts of exhausted batteries the following measures the EVs are bought the option of battery recycle and reuse, the implementation of this requirement is controlled</p>	
<p><b>Lack of awareness and behavioral perceptions of consumers</b></p>	<p>Lack of examples attesting the benefits of EVs</p>	<p>The demonstration project is realized, the benefits are monitored and reported</p>	<p>Output 2.3: Electric vehicles are procured, demonstration projects are implemented and monitored, and data are collected, analyzed and disseminated</p>

Barrier	Baseline	Alternative Scenario	Outcomes planned
	Lack of consumer awareness regarding EVs.	? Information among the public regarding environmental benefits of EVs is disseminated through media and social media campaigns.	Output 3.2: Package of policy and regulatory measures to facilitate the uptake of electric mobility in the medium and long-term is developed and submitted for adoption to relevant Ministries.

## 6) Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

83. Annex M of the project documentation package elaborates on the global environmental benefits from this project, including methodology, calculations and targets, and modelling the future uptake growth in Armenia. Targets for global environmental benefits are provided in the Annex B ?Project Results Framework?.

*Table 5. Project GHG emission reductions*

Total direct emission mitigation, tCO <sub>2</sub>	197,450
Total indirect emission mitigation, 2025-2035, tCO <sub>2</sub>	43,202
<b>Total project related emissions reductions, tCO<sub>2</sub></b>	<b>240,653</b>
<b>Direct GHG emission abatement cost</b>	<b>3.0 USD (GEF)/tCO<sub>2</sub></b>

84. **Other environmental benefits:** Transition to e-mobility will help to reduce air pollution, and ultimately healthcare costs, damage to nature, and the built environment in particular in Armenia's three largest cities, Yerevan, Gyumri and Vanadzor. Internal combustion engines create air pollution in two ways. They release primary pollutants, such as particulate matter, carbon monoxide, and sulphur and nitrogen dioxides, directly into the atmosphere. They also create secondary pollution, such as

ground-level ozone, when direct emissions react chemically with elements of the atmosphere. This air pollution causes early death, cardiovascular harm (e.g. heart attacks, strokes, heart disease, congestive heart failure), respiratory harm (e.g. worsened asthma, worsened Chronic Obstructive Pulmonary Disease (COPD), inflammation), may cause cancer, and may cause reproductive and developmental harm. Furthermore, it destroys the built environment, including buildings, monuments, and infrastructure. As a result, the of transition to e-mobility the quality of environment in Armenia's urban centers can be improved.

## **7) Innovativeness, sustainability and potential for scaling up**

85. Innovativeness: e-mobility is an entirely new sector for Armenia and therefore the project by default is innovative. First, national e-mobility strategy will be developed for the first time in the country (Component 1). The demonstration project in Component 2 contains several innovative elements. It will be the first example of public EV procurement in Armenia: for the first time various public sector stakeholders will be exposed to e-mobility sector and familiarize themselves with various aspects pertinent to the sector, including measures related to environmental and safety risk management. The project also puts a special attention on gender-related aspects of e-mobility and more broadly of sustainable transportation. Gender-transport nexus has also not been yet looked upon systematically and the project offers an opportunity not only to better understand gender-related nuances of e-mobility but also involve women more actively in the implementation of transport initiatives. More specifically the project will demonstrate innovation in the following areas:

- Technical: by demonstrating the use of EVs in publicly used fleets;
- Environmental: by putting in place provisions for sustainable disposal and management of e-waste
- Social: by mobilizing a wide range of stakeholders to participate in the public procurement programme for EVs
- Governance: by establishing new institutional framework to govern the development of e-mobility in the country

86. Environmental Sustainability: in the context of Armenia's power sector dominated by zero-carbon power generation (hydro and nuclear), the transition to e-mobility represents a low-carbon solution resulting in net GHG emissions reduction. The project also envisages measures to address any potential environmental risks, in particular the issues related to handling of used batteries by incorporating respective requirements in the tender provisions and responsibilities of EV suppliers.

87. Sustainability of market development after the project: By addressing the underlying barriers that impede the development of the e-mobility sector in Armenia, the project aims at creating conditions for sustainable EV market growth. The very first step towards the achievement of long-lasting sustainable outcomes of this project will be taken to create a long-term vision and strategy of the Armenian Government and various stakeholders towards e-mobility development with a provision of trainings on related topics and by gathering them together under the e-mobility coordination body (Component 1). Taking into account the very nascent stage of EV market in Armenia, public EV procurement program is envisaged to stimulate both the demand and supply in the initial market development phase. At the same time, policy and regulatory support under Component 3 is meant to ensure conditions are created to facilitate replication of EV procurement experience by other public, as well as private sector actors beyond project timeframe. As the economic analysis has demonstrated publicly, the TCO of publicly used EVs is already lower than the TCO of conventional cars and therefore gradual switch to EVs by public sector actors shall be expected. To ensure sustainable development of other market segments, in particular, for individuals, the project will propose an appropriate policy and regulatory package under Component 3, including appropriate financial and fiscal instruments (please refer to Table 3 for a list of options) and other policies, which have proved effective in ensuring sustainable growth of EV sector in other countries with similar economic capacities. This growth in the demand for EVs caused by institutional, regulatory, and fiscal instruments, many of which are somehow included in the project, might eventually lead to foreign investments in EV manufacturing in Armenia since currently this region does not have any manufacturing and/or assembling facilities. Therefore, Armenia will be in the most advantageous position to pioneer the whole region towards e-mobility transitions, enable economic development, and create a bigger, more sustainable, and zero emission vehicle market.

Potential for scaling-up: The project puts public sector in the vanguard of e-mobility sector in Armenia. While publicly used fleet constitute only a small share of the total vehicle fleet in the country, in terms of new vehicle procurement public sector is an important player (individual fleet in Armenia almost entirely comprises second-hand cars). The project will promote adoption of mandatory EV procurement targets in line with those in practice in EU (EU Clean Vehicle Directive). The Government of the Republic of Armenia has already taken the first step in this direction with the 61<sup>st</sup> point of the action plan included in the Armenia-EU Comprehensive and Enhanced Partnership Agreement (CEPA) approved by Prime-Minister's decree on 1 June 2019, it is envisaged to approximate the **directive for promotion of the use of energy-efficient transport by 2026**. New legislative and sub-legislative regulations are envisaged. The Directive requires that contracting authorities, as well as some operators during usage, should take into account the environmental impacts including the amount of consumed energy and CO<sub>2</sub>eq and pollutants' emissions. Moreover, through public procurement, domestic market of EVs will gradually be created creating spill-over effect on the uptake of EVs by individuals. The scaling-up potential in the individual market segment is substantial: over 100,000 vehicles are being brought annually to Armenia. However, to jump-start this market segment, the price parity with conventional vehicles have to be reached first. Various financial and fiscal products can bridge this gap but their feasibility under local conditions needs to be studied more. Project design puts a strong emphasis on promoting scaling-up opportunities both through the implementation of public procurement programme and its institutionalization via relevant procurement

guidelines, regulations and targets, as well as more broadly by enabling the adoption of the long-term e-mobility strategy and comprehensive policy and regulatory measures and incentives to enable scaling-up potential to be realized.

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[1] Sims R., R. Schaeffer, F. Creutzig, X. Cruz-Núñez, M. D'Agosto, D. Dimitriu, M.J. Figueroa Meza, L. Fulton, S. Kobayashi, O. Lah, A. McKinnon, P. Newman, M. Ouyang, J.J. Schauer, D. Sperling, and G. Tiwari. 2014. Transport. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

[2] Republic of Armenia. 2015. Third National Communication on Climate Change under the United Nations Framework Convention on Climate Change. URL: <https://unfccc.int/sites/default/files/resource/armnc3.pdf>

[3] Government of the Republic of Armenia. 2015. On approving the Intended Nationally Determined Contributions of the Republic of Armenia under the UN Framework Convention on Climate Change. URL: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Armenia%20First/INDC-Armenia.pdf>

[4] Grøtter, J.M., Kim, K-J. 2019. e-mobility Options for ADB Developing Member Countries. ADB Sustainable Development Working Series. URL: <https://www.adb.org/publications/e-mobility-adb-developing-member-countries>

[5] RA Ministry of Environment. 2015. National Greenhouse Gas Inventory Report of the Republic of Armenia for 2012. URL: <https://unfccc.int/sites/default/files/resource/GHG%20national%20inventory%20report.pdf>

[6] RA Ministry of Environment. 2018. Second Biennial Update Report under the United Nations Framework Convention on Climate Change. URL: [http://www.mnp.am/uploads/1/15302535542BUR\\_eng\\_final.pdf](http://www.mnp.am/uploads/1/15302535542BUR_eng_final.pdf)

[7] Covenant of Mayors. 2016. Yerevan City Sustainable Energy Action Plan. URL: [https://mycovenant.eumayors.eu/docs/seap/21190\\_1472392319.pdf](https://mycovenant.eumayors.eu/docs/seap/21190_1472392319.pdf)

[8] Ernst & Young. 2017. Yerevan Green City Action Plan. URL: <https://www.yerevan.am/uploads/media/default/0001/72/e7224f93ad7096478f9aaddb96ba61ea0ca693c9.pdf>

[9] Akopov, A.S., Beklaryan, L.A., Beklaryan, G.L. 2019. Data on air pollutants and greenery in the city of Yerevan, Armenia. *Data in Brief* 25: 104028. <https://doi.org/10.1016/j.dib.2019.104028>



[10] Tepanosyan, G., Sahakyan, L., Belyaeva, O., Saghatlyan, A. 2016. Origin identification and potential ecological risk assessment of potentially toxic inorganic elements in the topsoil of the city of Yerevan, Armenia. *Journal of Geochemical Exploration* 167: 1-11.

<https://doi.org/10.1016/j.gexplo.2016.04.006>

[11] Nissan Motors Armenia. Technical specifications of Nissan Kicks. URL:

<https://en.nissan.am/vehicles/new/kicks.html>

[12] MG Motors Armenia. Technical specifications of MG ZS EV. URL:

<https://www.mgmotor.am/model>

[13] As for second-hand vehicles, such analysis has not been conducted due to data limitations

[14] The models were developed during project preparation phase, based on consultations with relevant stakeholders.

[15] FAO. 2017. Gender, Agriculture, and Rural Development in Armenia. Country Gender Assessment Series. URL: <http://www.fao.org/3/i6737en/I6737EN.pdf>

[16] Econoler. 2015. Second National Energy Efficiency Action Plan for Armenia. First Draft. URL: <http://policy.thinkbluedata.com/sites/default/files/Second%20National%20Energy%20Efficiency%20Action%20Plan%20%28NEEAP%29%20%282015%20Draft%29.pdf>

[17] Jam Armenian News with reference to National Assembly deputy Michael Melkumyan. 2019. Armenia's automobile boom and the car dealers who brought thousands of old cars into the country. URL: <https://jam-news.net/armenias-automobile-boom-and-the-car-dealers-who-brought-thousands-of-old-junk-heaps-into-the-country/>

[18] Author's calculations based on the Second Biennial Update Reports and Third National Communication under the United Nations Framework Convention on Climate Change and NEEAP.

[19] Econoler. 2015. Second National Energy Efficiency Action Plan for Armenia. First Draft. URL: <http://policy.thinkbluedata.com/sites/default/files/Second%20National%20Energy%20Efficiency%20Action%20Plan%20%28NEEAP%29%20%282015%20Draft%29.pdf>

[20] Based on the correspondence with the Ministry of Finance.

[21] ArmenPress. 2019. Interview with Eric Grigoryan, ex MoE. Available only in Russian and Armenian. URL: <https://armenpress.am/rus/news/1004681.html>

[22] Based on the correspondence with the Ministry of Territorial Administration and Infrastructure

[23] RA Government. 2014. Armenia Development strategy for 2014-2025. URL: [https://policy.asiapacificenergy.org/sites/default/files/Development%20Strategy%20of%20the%20Republic%20of%20Armenia%20for%202014-2025\\_ENG.pdf](https://policy.asiapacificenergy.org/sites/default/files/Development%20Strategy%20of%20the%20Republic%20of%20Armenia%20for%202014-2025_ENG.pdf)

[24] Based on the correspondence with the RoA Ministry of Territorial Administration and Infrastructure.

[25] [https://ec.europa.eu/environment/gpp/pdf/news\\_alert/Issue24\\_Case\\_Study53\\_Sweden\\_EV.pdf](https://ec.europa.eu/environment/gpp/pdf/news_alert/Issue24_Case_Study53_Sweden_EV.pdf)

### 1b. Project Map and Coordinates

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

Yerevan: 40.1872° N, 44.5152° E

Gyumri: 40.7929° N, 43.8465° E

Vanadzor: 40.8074° N, 44.4970° E

The three projects sites are shown in red dots in the map below. These projects sites are in Areas with no national territorial disputes.



Figure 16. Project map

### 1c. Child Project?



**If this is a child project under a program, describe how the components contribute to the overall program impact.**

The current project is hosted under the 'Global Programme to Support Countries with the Shift to Electric Mobility', led by UNEP.

The Global Programme is based on the following four components:

- ? Component 1: Global thematic working groups and knowledge materials
- ? Component 2: Support and Investment Platforms
- ? Component 3: Country project implementation
- ? Component 4: Tracking progress, monitoring and dissemination

The Global Programme has put in place the monitoring framework below to track progress both globally and at the level of the country child projects. 12 indicators have been designed for this purpose: 6 relying on global level information (highlighted in blue) and 6 relying on country level information (highlighted in green).

Global E-mobility Programme Monitoring Framework			
 Global level monitoring		 Country level monitoring	
Objective level indicators			
Indicator A: Direct and Indirect Greenhouse Gas Emissions Mitigated (metric tons of CO2) mitigated			
Indicator B: Direct and indirect energy savings (MJ)			
Indicator C: Number of direct beneficiaries (disaggregated by Gender)			
Component 1 Global thematic working groups and knowledge materials	Component 2 Support and Investment Platforms	Component 3 Country project implementation (Child Projects)	Component 4 Tracking progress, monitoring and dissemination
<b>Outcome 1</b> Knowledge products are generated to support policy making and investment decision-making through four global thematic working groups	<b>Outcome 2</b> Conditions are created for market expansion and investment in electric mobility through support and investment platforms	<b>Outcome 3</b> Conditions are created at country and city level for the introduction of electric mobility demonstration projects, and wider up take of electric mobility	<b>Outcome 4</b> Projects and electric mobility markets are tracked, and key developments, best practices and other lessons learned are shared to promote wider uptake of electric mobility
<u>Indicator 1.1</u> # of knowledge products developed by the four thematic working groups and used by the Support and Investment platforms in their training and outreach activities	<u>Indicator 2.1</u> % of countries using services and knowledge products offered by the Support and Investment Platform	<u>Indicator 3.1</u> % of countries with an improved institutional framework and a strategy to promote the uptake of low-carbon electric mobility	<u>Indicator 4.1</u> % of countries generating and sharing best practices and other lessons learned on low-carbon electric mobility with the global programme
	<u>Indicator 2.2</u> # of e-mobility scale-up and / or replication concepts facilitated as a result of the match-making	<u>Indicator 3.2</u> % of countries with nationally generated evidence of the technical, financial and/or environmental benefits of low-carbon electric mobility	<u>Indicator 4.2</u> # of e-mobility knowledge products refined based on evidence coming from the country projects
	<u>Indicator 2.3</u> # of financial institutions / development banks (national/regional) that have been engaged through the Global Programme and are actively supporting e-mobility projects	<u>Indicator 3.3</u> % of countries that have improved preparedness to accelerate market transformation towards low-carbon electric mobility	<u>Indicator 4.3</u> # of non-e-mobility programme countries committing to actively promote the uptake of low-carbon e-mobility
	<u>Indicator 2.4</u> # of US\$ leveraged to scale-up low-carbon electric mobility through the support and investment platforms	<u>Indicator 3.4</u> % of countries with measures in place to ensure the long-term environmental sustainability of low-carbon electric mobility	

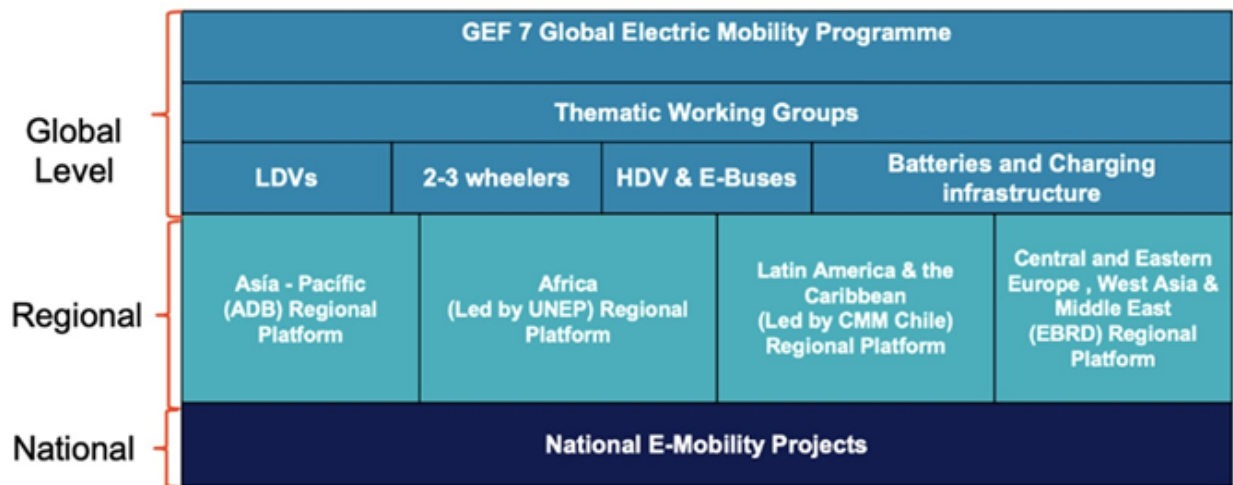
The global project will report against this framework on an annual basis, using (1) the global level data from the Global Thematic Working Groups and from the Support and Investment Platforms, and (2) country level data provided by each country project during their annual Project Implementation Review (PIR) process.

For this purpose and whenever applicable, the global level indicators highlighted in green are translated into a country-level indicator in the Project Results Framework located in Annex A of the present CEO

Endorsement Document. During project implementation, the Science and Technology Center in Ukraine (STCU),

European Bank for Reconstruction and Development (EBRD) will be requested to report against the indicators of the country Project Results Framework (Annex A) on an annual basis, during the PIR process, in addition to the usual GEF Core Indicators (mentioned at the top of the table above).

At the global level, a steering committee led by the United Nations Environment Programme will coordinate and monitor the implementation and the outputs of the GEF 7 Electric Mobility Programme. On technical gaps, four thematic working groups at the global level will support the rapid introduction of electric mobility in GEF recipient countries. These working groups will generate universal knowledge products that contain best practices, factsheets, interactive tools and guidance, as well as experiences from countries that have advanced their e-mobility market. The working groups will be integrated by representatives from the global programme regional platforms, GEF-7 countries, IEA, vehicle manufacturers, utilities, researchers and the civil society. The governance structure is presented in the figure below.



Governance structure between the global programme, the national e-mobility projects, and the regional Support and Investment Platform:

The coordination between the global program, the steering committee, the thematic working groups, and the national projects will be facilitated by the regional Support and Investment Platform. The role of the regional platform is to provide customized technical assistance to ensure the success of the country projects. Moreover, knowledge products developed by the working groups will be adapted and disseminated by the regional platform according to the regional and national context, specific needs and languages.

The 4 Support and Investment Platform will interact with and support participating countries in the region to link with each other through the following activities:

- ? The creation of a community of practice for the GEF 7 regional countries;
- ? Facilitation of knowledge transfer between countries, and regions, especially those with common characteristics like SIDS;
- ? The creation of thematic groups in light-duty vehicles (LDVs), 2-3 wheelers, and buses at regional level;
- ? A marketplace between countries, technology providers and financial institutions;
- ? Help desk for technical assistance to GEF 7 countries;
- ? Personalized assistance from international experts in electric mobility;
- ? Generation of training sessions and workshops.

The national child projects will generate a learning curve on electric mobility that can be transferred to other countries within and outside of the region through the global programme. As a first contact point, the regional Support and Investment Platform will facilitate the flow of learnt lessons from child projects, such as: data and demonstration results, working business models, operational know-how, working financial instruments, and working policies and regulations. At the global level, the scenarios proposed to share country knowledge and experiences on electric mobility are the thematic working groups, while at the regional level the countries will participate in the community of practice, the thematic regional groups, the marketplace, trainings and workshops.

## **2. Stakeholders**

**Please provide the Stakeholder Engagement Plan or equivalent assessment.**

1. Please refer to the report: ?Summary of stakeholder consultation meetings and validation workshop?, for information on the engagement of stakeholders during the development of the CEO Endorsement document and associated annexes. This stakeholder engagement plan builds upon the interviews and workshops conducted during project preparation. The project will aim at maintaining fluid and two-way dialogue with the relevant national and local government institutions and agencies, the private sector, and civil society for national activities, as well as with local and international NGOs, the international community and other participating countries at the global programme level.
2. Public consultation will follow relevant national guidelines and the GEF Guidelines, which require that all GEF-funded projects meet best international practice and specifically the requirements for stakeholder engagement and public consultations. The project stakeholder engagement activities will be robust, and disclosure on information will be made in order to promote better awareness and understanding of its strategies, policies and operations. During disclosure, the project will: (1) Identify people or communities that are or could be affected by the project as well as other interested parties; (2) ensure that such stakeholders are appropriately engaged on environmental and social issues that could

potentially affect them, through a process of information disclosure and meaningful consultation; and (3) maintain a constructive relationship with stakeholders on an on-going basis through meaningful engagement during project implementation. The stakeholder consultations will be an on-going process taking place during the project life and will ensure that stakeholders are informed about environmental and social consequences of the project implementation and ensure the opportunity for feedback.

3. A range of stakeholders will be involved in the project (see Annex Q and Table 6 below). First, the Ministry of Environment will lead and coordinate these efforts in line with its mandate for implementation of national climate change policies and NDC and being in charge of other aspects which are relevant to e-mobility, such as the regulation of waste management.. In addition, the Ministry of Territorial Administration and Infrastructure Territorial will be closely involved in view of its mandate for energy, transport, and infrastructure development. Municipalities of Armenia's largest cities (Yerevan, Gyumri, Vanadzor) will play critical role in the implementation of public EV procurement program. Other stakeholders, including private sector (EV dealers) and NGOs will be involved in specific project activities in line with their mandate and expertise. The project will also work closely with IFIs, EBRD and ADB, to support their on-going efforts to prepare and finance e-mobility projects in Armenia as part of their broader mandate to support investment in infrastructure and development.

*Table 6. Stakeholder Engagement Plan*

<b>Stakeholder main group</b>	<b>Stakeholder name</b>	<b>Existing activities with potential to be leveraged</b>	<b>Content engagement, contributions to the project (identified by Component)</b>
<i>Government</i>	Ministry of Environment and Environmental Project Implementation Unit (EPIU)	Experience in implementation and facilitation of climate change mitigation projects; coordination with other governmental bodies (e.g. municipalities, ministries, etc.)	The Ministry will act as an executing and coordinating agency. It will also play an advisory role on aspects related to climate change mitigation (Component 1, 2, 3) and batteries end-of-life management.



Stakeholder main group	Stakeholder name	Existing activities with potential to be leveraged	Content engagement, contributions to the project (identified by Component)
	Ministry of Finance	Facilitation of public procurement mechanisms in the country; experience with promoting EVs through specific financing products with ACBA-Credit Agricole Bank (see below).	The Ministry will play an advisory role and provide expert advice on aspects related to policy formulation and legal / regulatory measures related to the public procurement project (Component 2) and further replication and scaleup of the project via financial incentives introduction (Component 3). It is expected to participate in the stakeholder's capacity building program with a following involvement in the intersectoral body for e-mobility decision making (Component 1)
	Ministry of Territorial Administration and Infrastructure	Ministry develops and implements policy related to territorial and urban development regulation, such as the determination of geography and conditions of connection to the grid the technical specifications and the possibility of network capacity are being considered for the provision of safety and reliability.	Within the project, the Ministry is expected to participate in the stakeholder's capacity building program and be involved in the intersectoral body for e-mobility (Component 1). The Ministry can be involved in addressing land ownership issues that might arise with regard to future charging infrastructure development and promotion of EV usage (e.g. free parking), as well as in EVs integration in the transport and energy sector (e.g. traffic signs, vehicle plates for EVs) (Component 3).
CSO	Armenian Energy Agency	Expertise in charging infrastructure development in Armenia (PLUG.am project)	Potential to scaleup their charging infrastructure development activities after or in parallel with the project activities.
	Women in Climate and Energy	Women rights NGO with previous experience in gender imbalance in the transport sector in Armenia.	Awareness raising on gender issues in the transportation sector in regard to e-mobility (Component 3). This NGO is also expected to participate in the stakeholder's capacity building program with a following involvement in the intersectoral body for e-mobility decision making (Component 1).

Stakeholder main group	Stakeholder name	Existing activities with potential to be leveraged	Content engagement, contributions to the project (identified by Component)
<i>Municipalities</i>	Municipal Governments (Yerevan, Vanadzor, Gyumri)	Experience with arranging introductory incentives in these three biggest cities in Armenia (e.g. free parking in some places in Yerevan)	Support in the design and implementation of demo projects and co-financing investments (Component 2). Municipalities are also expected to participate in the stakeholder's capacity building program with a following involvement in the intersectoral body for e-mobility decision making (Component 1).
<i>Financial institutions</i>	ACBA-Credit Agricole Bank (ACBA Leasing)	One of the leading financial institutions of Armenia, providing an exclusive leasing terms for electric vehicles in cooperation with MG Motors Armenia.	Providing financing for replication of the pilot procurement project with potential introduction of new financial products for EVs.
	HSBC, Evoka Bank, Ameria Bank, VTB Bank, Global Credit, Converse Bank, ArmSwissBank	Banks with transport-related financial products (car loans or leasing terms, etc.) without specific EV offers	Providing financing for replication of the pilot procurement project with potential introduction of new financial products for EVs.
	EBRD, ADB	Portfolio of climate change mitigation projects in developing countries, design of knowledge materials on e-mobility, research capacity	Providing financing for replication of the pilot procurement project and investment in charging infrastructure
<i>Vehicle manufacturers</i>	MG Motors, Nissan, Jaguar, JAC	Car dealers in Armenia offering an EV	Participation in the tender for the public procurement project (Component 2) and co-investment in charging infrastructure
	Toyota, Chevrolet, BMW	Car dealers in Armenia having low-cost EV models in their portfolio (but not offering it in Armenia)	Participation in the tender for the public procurement project (Component 2) with potential introduction of new EV models for sale in Armenia.



In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement.

Engagement of selected stakeholders will be facilitated by the project team located at the Environmental Project Implementation Unit (EPIU). They will be consulted, and subsequent information disseminated via e-mail channels and online video conference software due to future travel uncertainties and restrictions caused by the COVID-19 pandemic. This approach has proved its effectiveness during the project design stage. With travel restrictions in place, multilateral stakeholder consultations will be required for Deliverable 1.2.3 (Capacity building program for stakeholders), 1.3.4 (Stakeholders consultation on the draft e-mobility strategy), 2.2.1 (Formulation of tender criterion), 2.3.4 (Evaluation of the public procurement project), 3.1.3 (Evaluation of the draft proposal for procurement regulations), 3.2.2 (Report on the recommended policy package). If travel restrictions are lifted, at least one stakeholder event is recommended to take place in Armenia (combining at least Deliverable 1.3.4 and 3.1.3). Capacity building program and stakeholder trainings will be prepared to be held online. Please refer to the Annex B for the project workplan, timing, and deliverables.

**Select what role civil society will play in the project:**

**Consulted only;**

**Member of Advisory Body; Contractor; Yes**

**Co-financier;**

**Member of project steering committee or equivalent decision-making body; Yes**

**Executor or co-executor;**

**Other (Please explain)**

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

**Provide the gender analysis or equivalent socio-economic assesment.**

**Gender analysis:**

1. Women have limited access to means of transportation in Armenia, especially in rural areas. Women's limited access to, and control over, equipment and transportation constrains their income earning opportunities and their access to markets. Women's limited mobility is directly related to their limited access to markets, training, information, business networks, providers and administrative

paperwork. Despite the lack of gender-sensitive information in the transportation sector in Armenia, here are the main findings from stakeholder consultations and literature review in the field.

2. As for the employment status, there is a significant gap between men and women as well. In 2018, 53% of women aged 15-75 had no job, mainly being engaged in household's unpaid activity. Housekeeping activities absolutely dominate as a reason for unemployment among not economically active group, having a more than 98% share of women in this group among all age groups. In 2018, the percentage of women employed in the "Transportation and storage" sector was 37% and their monthly wages were 19.9% lower during the given period. On the other hand, women tend to have a higher education enrolment ratio, university-degree and postgraduate education percentage.

3. Rural women rarely drive cars, and they depend on their husbands or male relatives for transportation. For rural communities, and in particular communities in the more remote mountainous areas, improvements in transportation infrastructure are crucial. As identified during field research conducted by the Asian Development Bank, mobility **limitations and restrictions are more usually related to social norms rather than road or transport infrastructure**. A Yerevan-based NGO that works extensively with young people in the regions mentioned that it encounters difficulties inviting young women to attend training events in the capital, as families frequently do not want the women to travel unless they are accompanied by a male relative. The same attitudes restrict young women from travelling to the capital to study. The transportation problems are related not only to distance to Yerevan, but also within the marz (regions), where long distances, bad intercommunity roads and insufficient public transportation create difficulties for business activities and communication between people, especially for women[1].

4. Since the public procurement of electric vehicles is one of the key activities of this project, relevant gender statistics regarding **women representation in the public sector** was collected for this gender baseline assessment. According to the latest "Women and Men in Armenia" report Only 14.3% of ministers and deputy ministers in the Republic of Armenia were women; 22.2% were the members of the Constitutional Court; 27.7% of judges; 40% of lawyers. The proportion of women members of the National Assembly in Armenia, which used to be very low, has seen a gradual increase in the last decade. The introduction of a quota of female candidates on party lists virtually doubled the number of women elected to the National Assembly, from 5.3% in 2005 to 9.9% by 2016. Further amendments to the Electoral Code, adopted in May 2016, increased the minimum quota for female representation to 25% for the 2017 parliamentary elections, and resulted in the election of 18 women (17%) among the 105 parliamentarians and 32 (24.2%) in 2018. The same set of amendments projects are planned to increase the percentage to 30% for any national elections held after 1 January 2021[2]<sup>25</sup>. Therefore, introduction of EVs in the public sector through a public procurement project might unequally benefit men and women.

5. Moreover, some authors emphasize a disproportional influence by air pollution depending on gender[3]. In Armenia, there is a gap in health conditions between men and women. In urban areas, the percentage of men and women indicating their health level between "normal", "good", and "very good?"

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is 90% and 87% respectively. For rural areas, these percentages are 91% and 88%. Although this should be studied more thoroughly, but assumption can be made that both the gender gap and urbanization status might be caused by the level of air pollution from transport.

#### **Gender Action Plan:**

6. Firstly, the entire project will ensure the engagement of women stakeholders at all stages, from project design to its implementation. The project has already involved a **higher number of women at the stakeholder consultations stage**. By the beginning of May 2020, a multilateral online stakeholder workshop was conducted, having involved 7 women and 4 men representatives from ministries, municipalities, private and public organizations.

7. The first project component is concentrated on the arrangement of institutional environment for e-mobility in Armenia and recommends the organization of an intersectoral body for e-mobility decision-making. Based on the increased number of women representatives participated in consultations and workshops so far, we are sure that women involvement in this institutional entity will be significant. Moreover, the project design ensures that **the participation of women in stakeholder workshops and capacity building program will be at least 50%**. This way, the first component of the project will allow newly created (as a result of forecasted uptake) e-mobility jobs and services to be run and employ by trained women.

8. Another action to be taken within this component is the **inclusion of a women rights NGO in the intersectoral body** on e-mobility development and incorporation of a gender analysis and plan in the national e-mobility strategy. These measures will, in turn, positively affect a long-term gender-sensitive e-mobility development in the country, thus increasing mobility options for women in both urban and rural areas in Armenia. This introductory e-mobility project concentrates mainly on the three biggest cities in Armenia, so the only feasible way to address gender issues in rural areas is to create an institutional setup for further research in this area, which would also provide women's perspective and needs for e-mobility development. Therefore, it **will allow to conduct a rigorous research on gender-sensitive e-mobility development** across different fleets (i.e. both private and public transportation).

9. Under Outcome 1 "Political and technical consensus, institutional mandate and strategic vision for electric mobility in Armenia among key stakeholders is built", the following gender-sensitive indicators have been proposed:

? Indicator 1.1: Number of institutions involved in the intersectoral body from ministries, municipalities, academia, public and private entities ? 14, including a women rights NGO (end of project target);

? Indicator 1.2: Number of stakeholders trained (% of women) ? 50% (end of project target).

? Indicator 1.3: Status of the delivery of a national e-mobility strategy ? The strategy is proposed for adoption; among others, it includes the gender assessment and data analysis (end of project target).

10. In order to create a comprehensive emphasis on women rights within the project component, a preliminary list of suitable NGOs was created and presented in the Table 7 below.

*Table 7. Gender equality and women rights NGOs in Armenia*

#	Organization	Contact
1.	Women's Resource Center of Armenia	Yerevan, Armenia Baghramyan 50/c Phone: +374 94 565626 E-mail: womenofarmenia@gmail.com
2.	Human Rights House Yerevan	Lara Aharonian (board member; founder of (1))
3.	Armenian Young Women's Association	37, Abovyan str., apt.9. +37410 58 07 87. Lilit.asatryan@aywa.am Mrs. Asatryan (president)
4.	Women's Fund of Armenia	50g Baghramyan street, apt 2, Yerevan, Armenia 0019 +374 98 244933 contact@womenfundarmenia.org
5.	Women's Rights Center	Susanna Vardanyan, Founder and President of Women's Rights Center
6.	The Human Rights Defender (Ombudsman) of Armenia	Armenia, 0002, Yerevan, 56a Pushkin St; Dr Arman Tatoyan
7.	Yerevan State University /YSU/ Center for Gender and Leadership Studies	Gohar Shahnazaryan (Director) Tel: +374 60 71 03 90 E-mail: goarshahnazaryan@gmail.com
8.	Women's Support Center	374-99-887808 maro@womensupportcenter.org
9.	Real World Real People NGO	119/2 Hovsep Emin str. Yerevan 0012 Armenia Phone: +374 77 522533 E-mail: info@realwrp.com

11. The second component of the project is focused on the public procurement of electric vehicles to the ministries, municipalities and the National Assembly of the Republic of Armenia. In order to increase safety and mobility of women representatives of these public institutions, the project will ensure that **the distribution of EVs will be equally split among men and women**, although the proportion of women in these institutions is significantly lower than men. Moreover, other regulatory and legislation measures, workshops and trainings, will also point out the importance of improved mobility conditions for women.

12. The last project component will recommend policies and measures for a long-term replication potential increase. The successful implementation of the above components, by its own, will create a **gender-equal e-mobility environment**, where men and women could equally benefit from the long-term e-mobility development and EV adoption. This approach is expected to be sustained after project termination through the inclusion of the project's recommendations within the practice of the national government and urban public transport authorities, as well as within the private sector.

13. Finally, the last component will also raise awareness and building capacity of relevant authorities and the society on the important of gender mainstreaming in transport policies, industries, and preferences.

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[1] FAO. 2017. Gender, Agriculture, and Rural Development in Armenia. Country Gender Assessment Series. URL: <http://www.fao.org/3/i6737en/I6737EN.pdf>

[2] Statistical Committee of the Republic of Armenia (ArmStat). 2019. Women and Men in Armenia. Statistical Booklet. URL: [https://www.armstat.am/file/article/gender\\_2019.pdf](https://www.armstat.am/file/article/gender_2019.pdf)

[3] Clougherty, J.E. 2010. A Growing Role for Gender Analysis in Air Pollution Epidemiology. Environmental Health Perspectives 118: 167-176. <https://doi.org/10.1289/ehp.0900994>

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

Yes

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

**Improving women's participation and decision making** Yes

**Generating socio-economic benefits or services or women** Yes

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

Yes

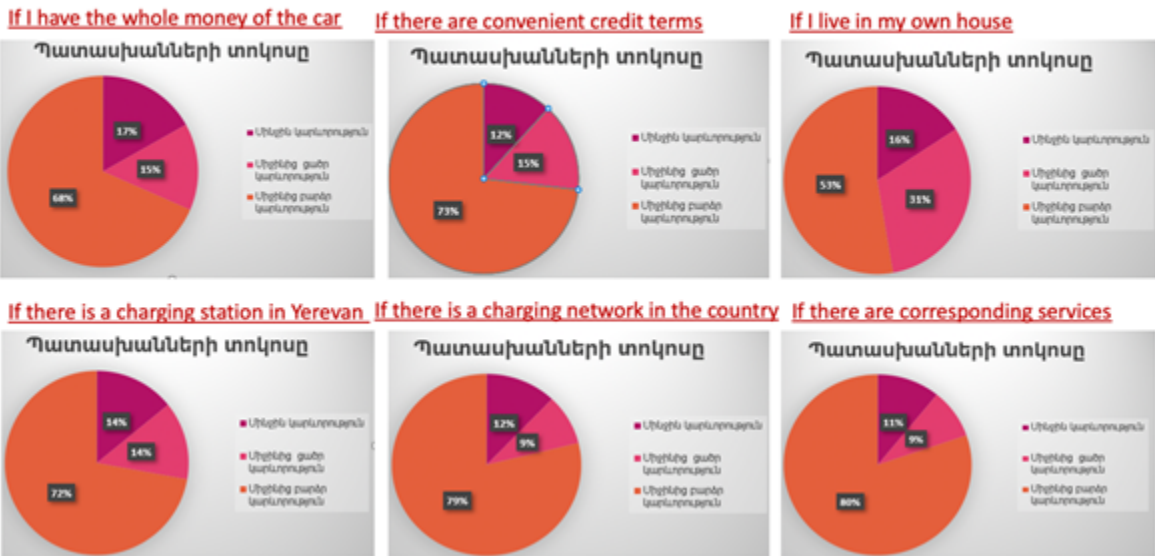
**4. Private sector engagement**

**Elaborate on private sector engagement in the project, if any**

- Throughout project development process a series of stakeholder workshops and consultations have been undertaken to reveal preferences and constraints of the private sector stakeholders to engage in e-mobility development, including dealers, charging infrastructure and RE project developers, financial sector and public at large (i.e. potential users of e-vehicles). An additional workshop was organized with private sector in December 2021. The section below provides detailed information on the current status of financial sector current and perspective engagement in e-mobility.

- SHTIGen, one of the first Armenian renewable energy project developers, has conducted a survey on public awareness about and willingness to pay for electric vehicles. Results of the study have shown that O&M services, charging infrastructure, and financing conditions are among the most dominant factors affecting the willingness to buy and electric vehicle among Armenian consumers, whereas 53 percent of respondents said they would buy an electric vehicle only if they live in a private house.

## I will buy EV if. . .



- Regarding O&M's and charging infrastructure developers, it is worth mentioning Plug.AM and a licensed service centre of Henan Derry New Energy Automobile Co. In January 2019, ?PLUG.am? project, aimed at installing 25 charging points around the country, focusing mainly on Yerevan and the transport corridor with Georgia. The licensed service centre of Henan Derry New Energy Automobile Co. was founded in 2020 and offers technical service of conventional, hybrid, and electric vehicles. For HEVs and EVs, the center also has a spare parts store for all key EV models run in Armenia. It also has a parking space with five fast charging stations. These two companies will serve as catalysers for the ongoing transition to EVs in Armenia.

- The survey highlights that 3 key factors influence decision of consumers in choosing between EV and ICEV, namely: lack of easy access to financial credit for, both, new and used EVs to address issue of higher CAPEX costs; state of charging infrastructure; and, repair services.

- Regarding the willingness to pay for EVs, the same survey has found out that 96 percent of respondents are ready to pay about US\$20,000 for an EV, with the remaining 4 percent being ready to pay more. This means that not a lot of Armenians can't afford a new EV as their upfront costs start from US\$25,000, and what they are ready to pay is basically the usual upfront cost for a new ICEV, meaning that consumers will only pay for an EV when its price tag is the same as for a comparable ICEV. On the other hand, a small share of change agents (i.e. early-adopters, 4 percent) is ready to buy an EV and thus start creating a market in the country, raising technological awareness and creating more demand for infrastructure and O&M services.
  
- Another important part of the transition where the role of the private sector is vital is vehicle dealership. Currently, a relatively small number of official EV dealerships can be found present in the country. EVs popular in, for instance, EU and US, such as Chevrolet Bolt, Renault ZOE, and VW e-Golf, are still not being officially sold in the country. This also reflects in the lack of consumer awareness and marketing. The proposed project will help to gain market's attention towards Armenia.
  
- Vehicle manufacturing can be considered as a long-term goal of the project and overall transition to EVs. At the moment, Armenia does not have any vehicle assembling companies ? only automotive parts and mechanical equipment manufacturers. EVs are not manufactured in the neighboring countries either. This project would help to demonstrate Armenian EV market potential, as well as the Government's intentions and quality human resources to key and emerging EV market players.
  
- Due to geographic conditions and mobility patterns of Armenian drivers, range anxiety of EVs, especially of second-hand ones which seem to be a more popular option for Armenian consumers in the future due to its affordability, does not seem to be an issue, with 88 % of respondents willing to obtain a second-hand EV with a 250-300km range.
  
- Private Sector will be an important partner in the project implementation, specifically EV suppliers (there are currently 4 dealers, see Table 6). The purpose of pilot procurement programme will be to stimulate their interest in the local market and establish supply and O&M chain, including for example co-design the approach for used battery re-use and/or recycling, as well as appropriate business models for charging infrastructure development. Engagement with EV suppliers will happen throughout all project component:
  
- Component 1: Views will be sought on appropriate and feasible national e-mobility targets consistent with capacities of domestic EV suppliers and market potential. Also, private partner will be consulted to identify prevailing regulatory barriers and design appropriate strategy to address them
  
- Component 2: EV suppliers will play critical role in ensuring success of the pilot and therefore will be consulted on the design of technical specifications and other program elements. Their network of partners and existing clients in Armenia will be used to distribute information about the pilot and solicit expression of interest from potential program participants
  
- Component 3: EV suppliers will be consulted and asked for inputs in the process of developing policy and regulatory recommendations for e-mobility in Armenia.

- In addition, Armenian financial institutions (listed in Table 6) has been consulted throughout the design of policy and regulatory package to identify financial barriers and most appropriate financial and non-financial incentive to address them.

## 5. Risks to Achieving Project Objectives

**Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):**

*Table 8. Risks associated with the project*

Risk	Description	Mitigation measures
Institutional	The e-mobility is a new topic for Armenian policy making and the bodies designing and implementing it do not yet exist. Currently, the stakeholders involved into the policy making and implementation are fragmented and it will take time to build enough capacity, establish an effective institutional system with a responsible body, and ensure effective exchange and coordination between its stakeholders. Until it exists, the fragmentation of related structures and their low expertise and capacity in regard to e-mobility is a risk for the project success.	To address the risk, the project envisions component 1 on the institutionalization of e-mobility. Implementing this component, it is important to ensure that by the end of project a responsible governmental body for e-mobility is appointed, the stakeholders involved are assigned clear and not overlapping tasks, and the project shall assist these processes. The project envisions a series of trainings conducted at least three times during the project timeframe. In case of frequent stakeholder turnover, it shall conduct these trainings even more often, for individual (new) stakeholders.
Financial	Whereas the total costs of ownership of EVs over 8 years is lower than for ICEV, the vehicle upfront acquisition costs of EVs are significantly higher than ICEV (CAPEX), as illustrated in Figure 8. This is the major financial risk which may constrain the upscale of EV sales.	To address the risk, the project shall envision the work towards decreasing the difference in CAPEX of EVs and ICEVs, for instance through concessional lending. Following the pilot and awareness campaign, the financial institutions will be more aware of the new potential product in their portfolio. It would be essential to assist their cooperation with international donors (EBRD, WB and others) so that they could obtain credit lines from them and design low-interest loans for EV purchase.



Technical	EVs will only be able to effectively replace ICEVs, if they will be able to deliver at least the same service. This however could be constrained by the availability of the charging infrastructure along the routes of those who will purchase EVs. Armenia is already implementing one project which aims to build several charging stations. This might be however not be enough.	The project envisions direct support for charging infrastructure development and will support analysis of the needs for charging infrastructure and will facilitate mobilization of funding for its development, in particular through IFIs.
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<p>Organizational / Economic</p>	<p>The COVID-19 pandemic affects project implementation due to travel restrictions, restrictions with regards to meetings and meeting size and restricted access to offices.</p>	<p>In order to estimate the potential project implementation impacts from the risks highlighted above, 3 possible scenarios are considered below:</p> <p>Limited Delay Scenario: International travel is operational as of fourth quarter of 2020 (or before) with little additional restrictions. Meetings with up to 50 participants are allowed. New working arrangements including part-time telecommuting are fully adapted and cause no additional inefficiencies. Under this scenario, the start of implementation of the Armenia e-mobility Child Project would be delayed between 3 and 6 months (compared to the original deadline for submission 13<sup>th</sup> of June 2020).</p> <p>Medium Delay Scenario: International travel is feasible without significant restrictions during 1st half of 2021. Meetings with up to 50 participants are allowed and new working arrangements including part-time telecommuting are fully adapted and cause no additional inefficiencies. No significant changes occur in government priorities. Under this scenario, the start of the implementation of the Armenia e-mobility Child Project would be delayed between 6 and 12 months.</p> <p>Severe Delay Scenario: International travel is feasible without major restrictions by second half of 2021. Only by this time, meetings with up to 50 people are possible without any further restrictions. Most of the project partners continue to work from home without any restrictions in terms of accessing documents etc. Under this scenario, the start of the implementation of the Armenia e-mobility Child Project would be significantly delayed.</p> <p>Under all scenarios, replacement of physical meetings by virtual meetings will affect travel budgets and eventually the amount of co-financing through in-kind contributions.</p>
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Political / Economic	The COVID-19 pandemic leads to a severe economic crisis	Under the Severe Delay Scenario, due to the anticipated economic crisis, changes in government priorities are likely, which in turn might require changes in project design. For example, the government might not want to implement any incentives. In this case, focus needs to be shifted to purely market-oriented interventions. In addition, project partners might not have the resources to expand / renew their vehicle fleet which can impact the feasibility of the demonstration project.
Climate Risk	Climate risk assessment is provided below	

### Impact of the COVID-19 pandemic

1. The COVID-19 pandemic presents several challenges but also opportunities to the Armenia Electric Mobility Child Project. According to today's knowledge, there seems to be a correlation between air quality and COVID-19, whereby COVID-19 incidence and mortality are significantly higher in areas that have high levels of local air pollution. This includes particulate matters (e.g. PM2.5, PM10) as well as N<sub>2</sub>O from both mobile (e.g. trucks and cars) and stationary emission sources. Since electric mobility has the potential to significantly contribute to improved urban air quality, it is assumed that it will play an important role in Armenia's strategy to respond to the COVID-19 pandemic. Similarly, a shift to electric mobility will significantly reduce the dependency of Armenia to import petroleum fuels. It therefore increases resilience against restrictions or price spikes resulting from international crisis. Furthermore, in terms of green recovery, clean mobility is expected to play a key role in getting the country's economy back on track.

2. In the short term, the COVID-19 pandemic poses a number of risks, which can negatively affect project implementation in Armenia. These risks include:

- Travel restrictions;
- Restrictions with regards to meetings and meeting size;
- Restricted access to offices;
- Shift of government priorities.

3. To estimate the potential project implementation impacts stemming from the COVID-19 pandemic, three possible scenarios are considered within the section on risks.

### Climate Risk Assessment

(i) *How will the project's objectives or outputs be affected by climate risks over the period 2020 to 2050, and have the impact of these risks been addressed adequately?*

4. As a mountainous country with arid climatic conditions, Armenia is considered to be **highly susceptible to climate change across its entire territory**. In recent years, along with the increase in air temperature and decrease in precipitation, also a significant increase in frequency and intensity of extreme weather events (droughts, heat waves, frost, hail, strong winds and precipitation) and natural disasters (floods, inundations, forest fires etc.) has been observed, which have a negative impact on ecosystems, economy, human welfare and health.

6. E-mobility development not only implies the use of unconventional vehicles but also **new infrastructure development**, such as charging stations. In Armenia, especially in rural regions, infrastructure development has to meet certain engineering and environmental standards because the settlements and infrastructures across the country are exposed to **climate-induced natural hazards**, particularly, floods, mudflows, landslides, rockfalls and avalanches. The latter can lead to major devastations and cause damages to settlements, roads, nearby structures and infrastructures in their respective areas. Main climate-induced natural hazards in Armenia identified by the Fourth National Communication to UNFCCC (2020) are:

? **Floods** are mainly caused by heavy precipitations, snow melt, river inundations, as well as damage of hydraulic structures. In 2012-2018 there has been a significant decrease in the incidence of floods. The highest number of floods was recorded in spring, mainly in Vayots Dzor and Gegharkunik regions.

? Most **mudflows** are caused by mountainous terrain, heavy rainfall, hail, and rarely by snow melt. The highest number of heavy rainfalls, about 80%, was recorded in May- June.

? **Landslides** are widespread in mountainous and foothill regions, where heavy rockslides occur due to heavy atmospheric precipitations and over-humidity of foothills. Most of the landslides are located in Dilijan, Ijevan, Kapan, Vanadzor and in other settlements in the Debed, Aghstev, Vedi, Getik and Vorotan river basins. The number of rockfalls recorded during the period of 2012-2018 has increased compared to previous years.

? **Avalanches** are the main dangerous natural occurrence of the winter season in the mountains. Snow avalanches on the country's territory pose a danger in the highlands of Zangezur, Vardenis, Bazum and Aragats.

8. The project is promoting a sustainable transport infrastructure based on e-mobility, public transport and non-motorized transport. The impact of climate risks on the project created infrastructure is the same as those on other built environment infrastructure in Armenia. As mentioned above the mountainous territory of Armenia is highly vulnerable climate-induced natural hazards which are predicted to intensify as climate changes.

10. The GoA has, as defined in climate risk assessment, in place policy and strategic framework to reduce the climate vulnerability of its infrastructure which will be the basis of designing the infrastructure in the underlying project. A range of measures have been taken to reduce and prevent the risks of hazardous natural phenomena aimed at identifying, assessing, mapping and preventing hazardous events, as well as developing resilience to them.

(ii) *Has the sensitivity to climate change, and its impacts, been assessed?*

IAs mentioned above the sensitivity and its climate impacts have been undertaken by the Government of Armenia and reported in its 4<sup>th</sup> National Communication to UNFCCC. Identification and forecast of the impact of global warming and climate change on such natural hazards as, for example, floods and landslides is, however, not straightforward. It has been concluded that the dangerous natural phenomena, which have intensified in Armenia in recent years, could directly or indirectly be associated also with climate change. As a consequence of climate change, **significant increase in the number of cases of heavy rainfalls, fast snowmelt and non-seasonal overflow of rivers** is observed in the country, in addition to other natural extreme events, which, in turn, contribute to a more intensive occurrence of floods and mudflows.

Thus, it may be concluded that climate induced changes in terms of intensity and frequency of anticipated extreme events, most probably will have a **significant impact on the level of vulnerability of a large number of settlements and infrastructure** and the degree of risks associated with dangerous natural phenomena will increase.

(iii) *Have resilience practices and measures to address projected climate risks and impacts been considered? How will these be dealt with?*

The e-mobility strategy (Component 1) which will establish strategic vision for long-term e-mobility development in the country will take into account identified climate risks when assessing and planning for the development of charging infrastructure, in particular in the in rural and suburban areas, as well as in intracity transport network. Also, under Component 2, in locating the charging stations and selecting the vehicle models, weather and natural disaster factors will need to be factored in to avoid the damages from floods, landslides and avalanches, among others.

Climate-proofing road infrastructure in general, and specifically charging stations is an important practices which will be considered. This would entail climate hazard mapping and ensuring such location of the infrastructure which minimizes exposure to climate risks, such as landslides, avalanches, and flooding.

(iv) *What technical and institutional capacity, and information, will be needed to address climate risks and resilience enhancement measures?*

11. Assessment and mapping of dangerous natural phenomena and development of resilience capacities are the priority areas to be addressed. Development of hazard map is an important first step to gather relevant information and inform decision-making. Collaboration will be sought with relevant projects implemented by the Ministry of Environment as part of its climate risks assessment under the UNFCCC National Communication project.

12. The Government through its own resources and support from international community is already addressing this capacity and information gaps, including the following activities:

? In 2018, The Government adopted the methodology for ?Regional risk management?. The Community Risk Testimonials have also been developed, according to which consideration of community risks during community development programs, will ensure safer development of the community.

? Landslide inventory has been carried out by the MoE in 8 special protection areas. Digital maps have been developed, information on locations, coordinates, areas and the level of activeness has been summarized, and landslides have been identified.

## **6. Institutional Arrangement and Coordination**

**Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.**

1. Institutional arrangements: This project is funded by the GEF and co-financed by a several public bodies, including municipalities of Yerevan and Gyumri. UNEP will be acting as the GEF Implementing Agency and Ministry of Environment will be the project's Executing Agency. Refer to Annex K for further details on the roles and responsibilities of the Implementing and Executing Agencies. The main project bodies are the following.

2. **Project Steering Committee (PSC)** will be established to provide overall guidance and oversee the progress and performance of the project as well as to enhance and optimize the coordination and contribution with various project partners. The PSC will be chaired by the National Project Director (NPD) and will convene at least twice per year. The PSC members and responsibilities are defined in detail in Annex K of the attached CEO Endorsement Document.

3. **Environmental Project Implementation Unit (EPIU)** established within the Ministry of Environment will manage day-to-day operation of the project. Project team will include the Project Manager (PM), Procurement Specialist (part-time), Gender (part-time), and Financial Specialists (part-time). Project Manager will assume both managerial role (cca 50% of time), and also will, in his/her expert capacity contribute to the substantive outputs of the project (cca 50% of time).



Figure 19. Organizational arrangements within the project

Coordination with other activities

4. EPIU will also facilitate coordination with other initiatives (see below) by inviting respective agencies to participate in the Inter-Sectoral Working Group on e-mobility (as observers).

5. A planned **ADB project** on tourism infrastructure development in Armenia considers introducing a charging infrastructure network in major touristic hotspots of the country. ADB has already been contacted by the project design team and expressed its interest in further cooperation. Another related project planned by ADB in Armenia will focus on the identification of most feasible bus technology (trolleybuses vs fully electric) for Yerevan.

6. An on-going 'PLUG.am' project by the **Armenian Energy Agency** supported by the GEF Small Grants Programme is undertaking installation of some 25 charging stations across Armenia and also involved in capacity building and awareness-raising on e-mobility. So far it has been the only public initiative dedicated to e-mobility promotion in Armenia. Its team has accumulated a wealth of experience in the sector, in particular as regards charging infrastructure and will be closely involved and consulted in all project activities.

7. Although in September 2020 the Municipality confirmed the *Yerevan Green City Action Plan* for e-vehicle procurement, the activities implementation timeline is not clear due to the on-going Covid-19 emergency and the unfolding military conflict. Nevertheless, the project will ensure coordination with the *Green City Action Plan* (2017) activities for the demonstration component of this project, which will take place in, among others, the city of Yerevan.

8. Lastly, United Nations Country Team (UNCT) will be kept informed on the project activities and updates will be shared regularly by the project manager. They shall also be invited to various events and workshops of the project.

#### **7. Consistency with National Priorities**

##### **Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions from below:**

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

1. Energy and transport sectorial GHG emissions reduction mechanisms, including renewable energy expansion, energy efficiency, and **electrification of transport** are mentioned in the list of six main sectors for the mitigation measures in *Nationally Determined Contributions* (NDC). Therefore, this project and activities proposed go in line with priorities set by the Armenian government in order to achieve its ambitious NDC.

2. In its *Nationally Determined Contributions* (NDC)[1], the Government of the Republic of Armenia states that the country attempts achieving an ecosystem-neutral GHG target of 2.07 tons per capita (Figure 1, red line with assumption of the constant population) by 2050 (2.46 in 2010; 2.87 in 2014), highlighting the importance of technical and financial assistance from international institutions in order to reach this target. However, according to the *Third National Communication of the Republic of Armenia* and *Second Biennial Report under the UNFCCC*, total GHG emissions as well as the energy sector emissions (Figure 3) are still forecasted to grow till 2030 in all three scenarios: without measures (WOM), with measures



(WM), and with additional measures (WAM). This projection possesses a serious threat to achieving the NDC target indicated above.

3. Despite the clean electricity grid, Armenia's total primary energy supply (TPES) is based largely on imported natural gas and oil (60% and 10%), domestic nuclear and hydro power (24% and 6%), whilst the demand for energy has been growing ever since 1994. Fuel consumption in the transportation sector has almost doubled from 10.9 to 20.0 PJ in 2000-2012, reaching **29% of the total energy consumption** in 2014 and 23% of total fuel consumption in the country according to the *Third National Communication of the Republic of Armenia*. The main fuel used in the transportation sector of Armenia is petroleum, which accounts for 19% of overall national fuel consumption. This way, the project tackles one of the main causes of increased GHG emissions in Armenia by substituting fossil fuels with clean Armenian electricity and creating a demand for EVs.

4. The project is also consistent and will contribute to the practical implementation of the State Law of the Republic of Armenia on Providing Equal Opportunities for Women and Men (2013) by putting a strong emphasis on ensuring equal participation of both gender in the development of e-mobility sector.

5. In its Development Assistance Framework for 2016-2020, the Armenian government indicates resource, especially fossil fuel, dependence of Armenian economy which slows down the sustainable development. In the document, public private partnerships and application of the best practices in energy and transport infrastructures are considered as one of the key priorities for the development.

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[1] Government of the Republic of Armenia. 2015. On approving the Intended Nationally Determined Contributions of the Republic of Armenia under the UN Framework Convention on Climate Change. URL: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Armenia%20First/INDC-Armenia.pdf>

## **8. Knowledge Management**

**Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.**

1. The project will thoroughly analyze the effectiveness of its activities. A knowledge management system will be able to help monitor project implementation, assist the actions to improve it, allow evaluating the project ex-post, and assist drawing lessons learned for future e-mobility projects in Armenia and other countries, as well as the design and implementation of future projects planned by the GEF.

2. The following specific KM-related activities and deliverables are envisaged:

Component 1:

? Deliverable 1.3.1 ?Report containing the analysis of best practices in national e-mobility adopted by other countries, assessment of their replication to Armenia including success and limitation factors?

? Deliverable 1.3.2 ?Report containing the analysis of potential charging infrastructure needs and the assessment of electricity demand management, network, and distribution quality?

Component 2:

? Deliverable 2.3.3 ?Report with lessons learned from public EV procurement program and recommendations for scale up?

Component 3:

? Deliverable 3.2.2 ?National e-mobility forum?

3. The project is part of the global GEF-UNEP Programme on Electric Vehicles. It will actively participate in the Programme's global and regional activities through its component 1, for example by participating and contributing to the knowledge exchange in the regional knowledge and investment platforms and the relevant global working groups, as well as by providing insights and knowledge.

## **9. Monitoring and Evaluation**

### **Describe the budgeted M and E plan**

1. Monitoring and Evaluation (M&E) activities and related costs are presented in the costed M&E Plan (Annex J) and are fully integrated in the overall project budget.

2. The project will comply with UNEP standard monitoring, reporting and evaluation procedures. Reporting requirements and templates are an integral part of the legal instrument to be signed by the Executing Agency and the Implementing Agency

3. The project M&E plan is consistent with the GEF Monitoring and Evaluation policy. The Project Results Framework presented in Annex A includes SMART indicators for each expected outcome as well as end-of-project targets. These indicators along with the key deliverables and benchmarks included in Annex L will be the main tools for assessing project implementation progress and whether project results are being achieved. The means of verification to track the indicators are summarized in Annex A.

4. The M&E plan will be reviewed and revised as necessary during the project Inception Workshop (IW) to ensure project stakeholders understand their roles and responsibilities vis-?-vis project monitoring and evaluation. Indicators and their means of verification may also be fine-tuned at the inception workshop. General project monitoring is the responsibility of the Project Management Unit (PMU), but other project partners could have responsibilities in collecting specific information to track the indicators. It is the responsibility of the Project Manager to inform UNEP of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely fashion.

5. The project Steering Committee (PSC) will receive periodic reports on progress and will make recommendations to UNEP concerning the need to revise any aspects of the Results Framework or the M&E Plan. Project oversight to ensure that the project meets UNEP and GEF policies and procedures is the responsibility of the UNEP Task Manager. The UNEP Task Manager will also review the quality of draft project outputs, provide feedback to the project partners, and establish peer review procedures to ensure adequate quality of scientific and technical outputs and publications.

6. Project supervision will take an adaptive management approach. The UNEP Task Manager will develop a project Supervision Plan at the inception of the project, which will be communicated to the Project Management Unit and the project partners during the Inception Workshop. The emphasis of the Task Manager's supervision will be on outcome monitoring but without neglecting project financial management and implementation monitoring.

7. Progress vis-?-vis delivering the agreed project global environmental benefits will be assessed with the Steering Committee at agreed intervals. Project risks and assumptions will be regularly monitored both by the Project Management Unit, the project partners and UNEP. Risk assessment and rating is an integral part of the Project Implementation Review (PIR). The PIR will be completed by the Project Manager and ratings will be provided by UNEP's Task Manager. The quality of project monitoring and evaluation will also be reviewed and rated as part of the PIR. UNEP's Task Manager will have the responsibility of verifying the PIR and submitting it to the GEF. Key financial parameters will be monitored quarterly to ensure cost-effective use of financial resources.

8. Since this is a Medium-Size Project (MSP) of less than 4 years of duration, no Mid-Term Evaluation (MTE) will be undertaken. However, if the project is rated as being at risk or if deemed needed by the Task Manager, he/she may decide to conduct a Mid-Term Review (MTR). This review will include all parameters recommended by the GEF Evaluation Office for Terminal Evaluations (TE) and will verify information gathered through the GEF tracking tools, as relevant. The review will be carried out using a participatory approach whereby parties that may benefit or be affected by the project will be consulted. Such parties were identified during the stakeholder analysis (see section 2 above). Members of the project Steering Committee could be interviewed as part of the MTR process and the Project Manager will develop a management response to the review recommendations along with an implementation plan. Results of the MTR will be presented to the Project Steering Committee. It is the responsibility of the UNEP Task Manager to monitor whether the agreed recommendations are being implemented.

9. In-line with the GEF Evaluation requirements, the project will be subject to an independent Terminal Evaluation (TE). The TE will provide an independent assessment of project performance (in terms of relevance, effectiveness and efficiency), and determine the likelihood of impact and sustainability. The project performance will be assessed against standard evaluation criteria using a six-point rating scheme. It will have two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote learning, feedback, and knowledge sharing through results and lessons learned among UNEP staff and implementing partners. The direct costs of the evaluation will be charged against the project evaluation budget. The TE will typically be initiated after the project's operational completion. If a follow-on phase of the project is envisaged, the timing of the evaluation will be discussed with the Evaluation Office to feed into the submission of the follow-on proposal.

10. The draft TE report will be sent by the Evaluation Office to project stakeholders for comment. Formal comments on the report will be shared by the Evaluation Office in an open and transparent manner. The final determination of project ratings will be made by the Evaluation Office when the report is finalized.

11. The evaluation report will be publicly disclosed and will be followed by a recommendation compliance process. The evaluation recommendations will be entered into a Recommendations Implementation Plan template by the Evaluation Office. Formal submission of the completed Recommendations Implementation Plan by the project manager is required within one month of its delivery to the project team. The Evaluation Office will monitor compliance with this plan every six months for a total period of 12 months from the finalization of the Recommendations Implementation Plan.

12. The GEF Core Indicator Worksheet is attached as Annex F. It will be updated at mid-term and at the end of the project and will be made available to the GEF Secretariat along with the project PIR report. As mentioned above, the MTR/MTE and TE will verify the information of the tracking tool.

13. The direct costs of reviews and evaluations will be charged against the project evaluation budget. A summary of M&E activities envisaged is provided in Annex J. The M&E budget is as per table below US\$ 29,500 (See Table B above and GEF Budget in Annex I-1).

## 10. Benefits

**Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCE/SCCF)?**

1. Throughout stakeholder consultations a range of co-benefits associated with e-mobility development in Armenia has been identified, including the development of domestic supply chain, improved national energy security (less dependence on imported oil), improved air quality in urban centers, and increased demand for electricity where Armenia has access capacity. As can be seen from Figure 20 below, improved air quality has been identified by respondents as one of the most important co-benefit followed by potential to attract and develop domestic car manufacturing sectors.

**Please rank these benefits by their importance for Armenia.**

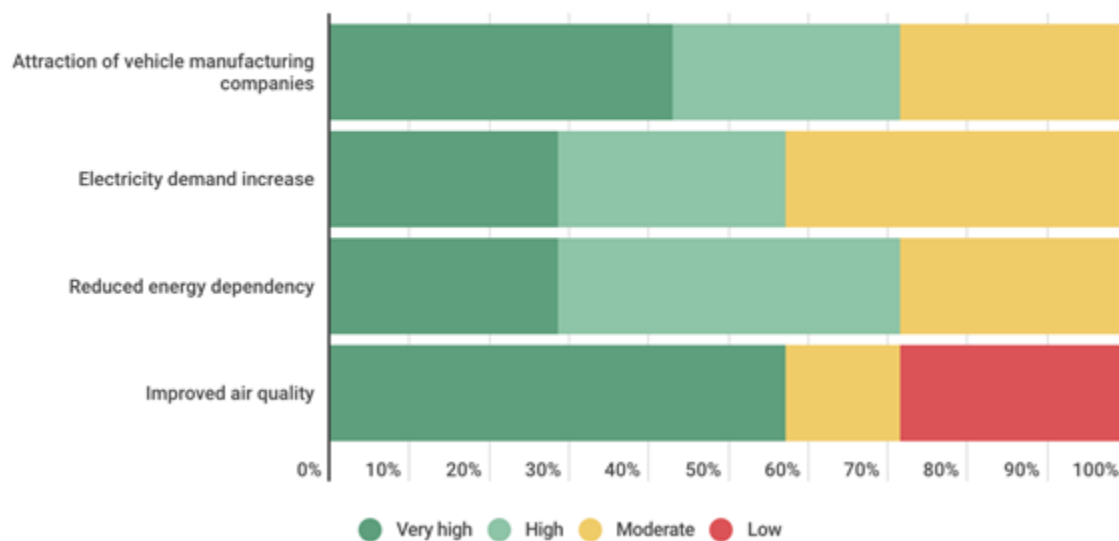


Figure 20. Importance of e-mobility benefits

2. After successful completion of all project's components, including the EV public procurement project, the attraction of foreign investment from automotive companies can be initiated via analyzing the

investment environment and the subsequent amendment of the relevant legislation, norms, and incentives. By this moment, key EV manufacturers will be aware of the governmental interest in e-mobility development as a result of the continuous procurement projects, participation in relevant tenders, and uptake of EVs in the private sector as a result of various policies and consumer stimulation mechanisms. Potentially, this outcome will create a significant number of new jobs.

3. The above applies not only to cars but also to vehicle components production, charging stations, batteries, and so on. An analysis of the current situation of the automotive sector will allow to find potential development vectors, and the already recommended intersectoral group on electric mobility, due to its versatility, may be able to conduct this assessment.

4. Important for a long-term development, participation in this project will enable Armenia and its stakeholders to continue learning about e-mobility policymaking and development from other countries by taking part in international e-mobility communities, conferences, sharing experiences with other countries participating in the Global Electric Mobility Programme.

**11. Environmental and Social Safeguard (ESS) Risks**

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

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

PIF	CEO Endorsement/Approval	MTR	TE
Low			

**Measures to address identified risks and impacts**

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

This is likely a low-risk project. UNEP ESSF guiding principles-- resilience and sustainability; human rights, gender equality and women empowerment, accountability and leave no one behind--are still applicable for low risk projects. Project level grievance mechanism (if the government does not have such venue) should be established for any complaints to be handled swiftly at the project level.

**Supporting Documents**

Upload available ESS supporting documents.

Title	Module	Submitted
10280_E-mobility Armenia__SRIF	CEO Endorsement ESS	

**ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).**

Please

Project Objective	Objective level Indicators	Baseline	Mid-Point Target (if applicable)	End of project Target	Means of Verification	Assumptions & Risks	UN Environment MTS reference
Reduce transport sector GHG emissions by promoting transition to e-mobility	Indicator A: Direct lifetime CO2 emission reductions as a result of project-facilitated increase of EVs (total emissions reduced)	Baseline A: None	Mid-point target A: n/a	End-of-project target A: Direct: 2,180 tCO2e Secondary: 26,201 tCO2e Indirect: 189,810 tCO2e Total: 218,191 tCO2e	Well-to-Wheel analysis of CO2 emissions from procured vehicles	The estimated CO2 emission reduction is 6.3 tCO2/car/year translating to app. 100 tCO2/car during its lifetime assuming its ownership 16 years. For details, please refer to the project GHG model.	UNEP MTS 2016-2021  Climate Change Objective: Countries increasingly transition to low-emission economic development and enhance their adaptation and resilience to climate change
	Indicator B: Number of beneficiaries (men/women), including the experts trained, workshop participants and e-vehicle users	Baseline B: 0 (0)	Mid-point target B:	End-of-project target B: 1,040	Official documents, attendance reports, procurement records.		
	Indicator C: Co-financing (USD)	Baseline C: None	Mid-point target C:	End-of-project target C: 4,835,000	Co-financing reports		
Project Outcomes	Outcome level Indicators	Baseline	Mid-Point Target (if applicable)	End of project Target	Means of Verification	Assumptions & Risks	MTS Expected Accomplishment
Outcome 1: Political and technical consensus, institutional mandate and strategic vision for electric mobility in Armenia among key stakeholders is built	Indicator 1.1: Number of institutions involved in the intersectoral body from ministries, municipalities, academia, public and private	Baseline 1.1: 1	Mid-point target 1.1: 7	End-of-project target 1.1: 14, including a women rights NGO	Official documentation, press releases	The list of institutions advised is submitted by the current request to endorsement, including a separate list of women rights NGOs in Armenia. Percentage of women to be trained is set as a minimum threshold	Expected Accomplishment (b): Countries increasingly adopt and/or implement low greenhouse gas emission development strategies and invest in clean technologies
	Indicator 1.2: Number of stakeholders trained (% of women)	Baseline 1.2: None	Mid-point target 1.2: 14	End-of-project target 1.2: 28 (50% women)	Attendance reports, press releases		
	Indicator 1.3: Long term vision formulation of e-mobility development in Armenia	Baseline 1.3: None	Mid-point target 1.3:	End-of-project target 1.3: Strategy for e-mobility development in Armenia adopted, which, among others, includes the gender assessment and data analysis	Government announcement (PMU)		
Outcome 2: Proven technical, financial and environmental feasibility of e-mobility and readiness for scale up.	Indicator 2.1: Number of EVs procured	Baseline 2.1: None	Mid-point target 2.1: 14	End-of-project target 2.1: 28	Procurement contracts	Procurement numbers consider meeting the Objective Level Indicator C (Co-financing). Grant/co-financing covers USD 10000 from CAP EX difference between EV/ICEV only.	

**ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).**

Please refer to the separate pdf file uploaded in GEF portal, which includes all responses to the GEF Secretariat's comments to the PFD

- ? Annex B.1 ? Responses to GEF secretariat reviews on the PFD;
- ? Annex B.2 ? Responses to GEF secretariat reviews on the PFD addendum;
- ? Annex B.3 ? Responses to STAP comments;
- ? Annex B.4 ? Responses to GEF Council comments.



**ANNEX C: Status of Utilization of Project Preparation Grant (PPG).**  
**(Provide detailed funding amount of the PPG activities financing status**  
**in the table below:**

PPG Grant Approved at PIF: US\$			
<i>Project Preparation Activities Implemented</i>	<i>GETF/LDCF/SCCF Amount (US\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent to date</i>	<i>Amount Committed</i>
AQMU Personnel	15,559.00	15,741.75	-
SSFA-EPIU Armenia	34,441.00	34,073.00	-
<b>Total</b>	<b>50,000.00</b>	<b>49,814.75</b>	<b>-</b>

**ANNEX D: Project Map(s) and Coordinates**

**Please attach the geographical location of the project area, if possible.**

Yerevan: 40.1872° N, 44.5152° E

Gyumri: 40.7929° N, 43.8465° E

Vanadzor: 40.8074° N, 44.4970° E

The project sites are indicated in Red dots. These locations are in undisputed territories of the country.



## ANNEX E: Project Budget Table

Please attach a project budget table.

GEF expenditure category	Budget line description	Outcome 1	Outcome 2	Outcome 3	Sub-total	M&E	PMC	Total	Responsible party
<b>02. Goods</b>				\$4,000	\$4,000			\$4,000	
02. Goods	Knowledge materials			\$4,000	\$4,000			\$4,000	Ministry of Environment of Armenia
<b>03. Vehicles</b>			\$280,000		\$280,000			\$280,000	Ministry of Environment of Armenia
03. Vehicles	Investment grants for Evs		\$280,000		\$280,000			\$280,000	Ministry of Environment of Armenia
<b>07. Contractual services company</b>			\$1,115		\$1,115		\$5,175	\$6,290	
07. Contractual services company	Organizing call for expression of interests (announcements)		\$1,115		\$1,115			\$1,115	Ministry of Environment of Armenia
07. Contractual services company	Independent financial audits						\$5,175	\$5,175	Ministry of Environment of Armenia
<b>08. International Consultants</b>		\$30,000	\$26,250		\$56,250	\$22,500		\$78,750	
08. International Consultants	International consultant to support e-mobility strategy	\$30,000			\$30,000			\$30,000	Ministry of Environment of Armenia
08. International Consultants	International Technical expert		\$26,250		\$26,250			\$26,250	Ministry of Environment of Armenia
08. International Consultants	Terminal Evaluation					\$22,500		\$22,500	UNEP
<b>09. Local Consultants</b>		\$48,100	\$23,500	\$43,000	\$114,600	\$7,000		\$121,600	
09. Local Consultants	Consultant to facilitate meetings of intersectoral body (agenda, minutes, etc)	\$17,500			\$17,500			\$17,500	Ministry of Environment of Armenia
09. Local Consultants	Capacity building program development and delivery consultant	\$15,000			\$15,000			\$15,000	Ministry of Environment of Armenia
09. Local Consultants	Local consultants for e-mobility strategy development	\$12,000			\$12,000			\$12,000	Ministry of Environment of Armenia
09. Local Consultants	Gender specialist	\$3,600			\$3,600			\$3,600	Ministry of Environment of Armenia
09. Local Consultants	Consultant to support organization of the public call		\$1,500		\$1,500			\$1,500	Ministry of Environment of Armenia
09. Local Consultants	Local Technical experts		\$18,400		\$18,400			\$18,400	Ministry of Environment of Armenia
09. Local Consultants	Charging infrastructure specialist		\$3,600		\$3,600			\$3,600	Ministry of Environment of Armenia
09. Local Consultants	M&E & dissemination consultant					\$7,000		\$7,000	Ministry of Environment of Armenia
09. Local Consultants	Local consultant to prepare tech regulations			\$14,000	\$14,000			\$14,000	Ministry of Environment of Armenia
09. Local Consultants	Local consultants to work on policy and regulatory packages			\$23,000	\$23,000			\$23,000	Ministry of Environment of Armenia
09. Local Consultants	Local consultant to facilitate stakeholder consultations and forum organization			\$6,000	\$6,000			\$6,000	Ministry of Environment of Armenia

<b>10. Salary and benefits/Staff Costs</b>		<b>\$14,000</b>	<b>\$7,000</b>	<b>\$21,000</b>	<b>\$27,262</b>	<b>\$48,262</b>	
10. Salary and benefits/Staff Costs	Project Manager /Transport Specialist	\$14,000	\$7,000	\$21,000	\$7,000	\$28,000	Ministry of Environment of Armenia
10. Salary and benefits/Staff Costs	Project assistant				\$9,625	\$9,625	Ministry of Environment of Armenia
10. Salary and benefits/Staff Costs	Financial assistant				\$3,600	\$3,600	Ministry of Environment of Armenia
10. Salary and benefits/Staff Costs	Translator				\$7,037	\$7,037	Ministry of Environment of Armenia
<b>11. Training, Workshops, Meetings</b>		<b>\$6,000</b>	<b>\$6,500</b>	<b>\$12,500</b>		<b>\$12,500</b>	
11. Training, Workshops, Meetings	Meeting costs	\$5,400		\$5,400		\$5,400	Ministry of Environment of Armenia
11. Training, Workshops, Meetings	Stakeholder consultations		\$1,000	\$1,000		\$1,000	Ministry of Environment of Armenia
11. Training, Workshops, Meetings	Organization of national e-mobility forum = stakeholder consultations		\$5,000	\$5,000		\$5,000	Ministry of Environment of Armenia
11. Training, Workshops, Meetings	Supplies for meeting	\$600		\$600		\$600	Ministry of Environment of Armenia
11. Training, Workshops, Meetings	Materials for workshop		\$500	\$500		\$500	Ministry of Environment of Armenia
<b>12. Travel</b>		<b>\$24,400</b>	<b>\$2,000</b>	<b>\$26,400</b>	<b>\$14,400</b>	<b>\$40,800</b>	
12. Travel	Travel & accommodation for Global Programme training events	\$24,400		\$24,400		\$24,400	Ministry of Environment of Armenia
12. Travel	Travel across Armenia		\$2,000	\$2,000		\$2,000	Ministry of Environment of Armenia
12. Travel	Travel to pilot regions across Armenia				\$14,400	\$14,400	Ministry of Environment of Armenia
<b>Grand Total</b>		<b>\$122,500</b>	<b>\$337,865</b>	<b>\$55,500</b>	<b>\$515,865</b>	<b>\$29,500</b>	<b>\$592,202</b>

#### ANNEX F: (For NGI only) Termsheet

Instructions. Please submit an finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

N/A

#### ANNEX G: (For NGI only) Reflows

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat or the Trustee) in the Document Section of the CEO endorsement. The Agencies is required to quantify any expected financial return/gains/interests earned on non-grant

instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

N/A

**ANNEX H: (For NGI only) Agency Capacity to generate reflows**

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies' capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).

N/A