

Country	Georgia
Request ID#	
Title	<i>Cost Benefit Analysis for the introduction of EU vehicle emission standards in Georgia</i>
NDE	<i>Ministry of Environmental Protection and Agriculture Mr. Grigol Lazrievi, Head of the Climate Change Division, E-mail: g.lazrievi@moe.gov.ge and grigol lazrievi@gmail.com Address: 6 G, Gulua street, Tbilisi, 0114 Georgia.</i>
Proponent	<i>Caucasus Environmental NGO Network CENN Ann Inasaridze project manager E-mail: ann.inasaridze@cenn.org Address: 27 Betlemi street. Tbilisi, Georgia.</i>

Summary of the CTCN technical assistance

To assess which policies to implement and how best to enforce them, the Georgian government requires a full Cost Benefit Analysis (CBA) study on introducing low emission transport policies and standards in Georgia, in consultation with lead project partners including CENN, CTCN and UN Environment.

The CBA prepared by the selected expert should be based on country specific requirements and circumstances. The in-country work will be completed in collaboration with the Ministry of Environmental Protection and Agriculture of Georgia, CENN and other stakeholders (with organisational support from CENN).

A list of policies and enforcement measures agreed with the national government have been the basis to define four scenarios (three plus the do nothing one). The experts will need to collect data and derive trends for the relevant indicators for the four scenarios including an assessment of the effectiveness of the policies.

The scenarios will be compared on the basis of their socioeconomic NPV (Net Present Value) and for the best scenario analyse the differential effects on different stakeholders identifying winners and losers and suggesting corrective policies.

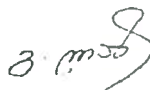
Agreement:

(If possible, please use electronic signatures in Microsoft Word file format)

**National Designated Entity to the UNFCCC
Technology Mechanism**

Name: Grigol LAZRIEVI
Title: Head of the Climate Change Unit
Ministry of Environmental Protection and
Agriculture of Georgia
Date: 20/09/2018

Signature:



Proponent (signature of the Proponent is optional)

Name:
Title:

Date:
Signature:

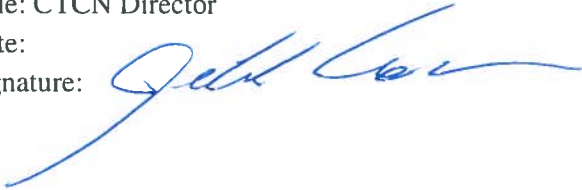
UNFCCC Climate Technology Centre and Network (CTCN)

Name: Jukka Uosukainen

Title: CTCN Director

Date:

Signature:



1. Background and context

In 2014, Georgia signed the EU-Georgia Association Agreement with European Union and in 2016, the Ministry of Environment Protection and Agriculture of Georgia developed a Road Map for EU approximation in the environmental and climate action field. Road map requires developing a concept and legislation on eco classes for vehicles, including supporting incentives for import and production of cleaner vehicles. The aim is EU Regulation 715/2007 (Euro 5/6), with consideration for previous Directive 98/69/EC.

To assess which policies to implement and how best to enforce them, the Georgian government requires a full Cost Benefit Analysis (CBA) study on introducing low emission transport policies and standards in Georgia, in consultation with lead project partners including CENN, CTCN and UN Environment.

The CBA prepared by the selected expert should be based on country specific requirements and circumstances. The in-country work will be completed in collaboration with the Ministry of Environmental Protection and Agriculture of Georgia, CENN and other stakeholders (with organisational support from CENN).

The current Transport Policies and Regulations Related to Environment in Georgia are as follows:

- Rejuvenation of car fleet and improvement of its technical conditions
 - Gradual reintroduction of mandatory roadworthiness test for all vehicles (from 2018)
 - From 1 January of 2017 excise duty was increased by approximately 25% for almost all vehicles but it was doubled for 10 years old cars and tripled for the cars older than 14 years.
 - From 1 January of 2016 excise duty was reduced by 60% for up to 6 years old hybrid vehicles.
- Promotion of electric transport:
 - New 23rd metro station in Tbilisi (autumn 2017)
 - No taxes on the import of electric cars
 - Development of charging network for electric vehicles (more than 50 charging stations)
- Improvement of fuel quality
 - Euro 5 standard for petrol from 1 January 2017.
 - Euro 4 standard for diesel fuel from 1 October 2018.
 - Euro 5 standard for diesel fuel from 1 October 2019.
 - Establishment of state control on fuel quality.
 - From 1 January of 2017 excise duty for import of petrol was doubled and almost tripled for diesel import.

2. Problem statement

The CBA will monetise the external benefits, sum them with the financial costs of the policies (incentives to sustain the vehicle market, costs for vehicle inspection, ...) and with the economic “disbenefits” this might cause as by-product (e.g. economic losses for freight shippers, job losses, ...).

The objectives of the government are:

1. Reducing GHG emissions
2. Improving air quality
3. Improving road safety
4. Increase employment opportunities
5. Making national freight shippers more competitive nationally and internationally

The CBA will monetise all externalities and side effects besides accounting for cash flows.

The time span is 10 years with starting date year 2020 and end date year 2029.

The Economic Net Present Value (NPV) (calculated using as discount rate the interest rate for the 10-years national governmental bonds) is the CBA output index per each scenario. Any scenario is evaluated against a reference scenario (do-nothing).

For the scenario with the highest NPV the analysis of “winners” and “losers” must be done and compensations for losers suggested.

A final to make is the verification of the financial coverage for the selected policies and enforcement measures.

3. Logical Framework for the CTCN Technical Assistance:

The CBA will combine policies and enforcement measures in scenarios and then evaluate the scenarios.

The key policy is to adopt the EU type approval procedure and to set an accelerated pace to lower emission thresholds adopting more recent emission standards.

Such key policy needs to be complemented with other policies and enforcement measures.

The key tasks of the expert performing the CBA are: to quantify the effectiveness of the policies combined in each scenario with the relevant enforcement measures; to quantify the costs to enact the policies and measures in each scenario; and to estimate the side-effects in each scenario on the social and economic activities.

Here follows a list of policies and measures included in the scenarios.

Vehicle fuel economy labelling – this is a policy which leverages on the improved image of people and companies (mostly companies) using cleaner vehicles. When registered the vehicle can be branded with a label according to its environmental friendliness.

Used import restriction (in terms of vehicle age and emission standards) – Georgian’s vehicles are mostly imported from abroad when already used. The restriction in allowing import of vehicles not complying with the new regulations would restrict the market for older and dirtier vehicles

CO₂ based vehicle acquisition, registration and ownership taxes – all vehicle related taxes are modulated according to the CO₂ emissions levels of the vehicle.

Old vehicle progressive phasing out – this policy is normally implemented at local level creating areas which are not accessible to older vehicles pushing vehicle owners to change the vehicles. In the case of Georgia as most of private cars (more than half) are concentrated in the capital city Tbilisi this could be applied only in the city of Tbilisi.

Private vehicles substitution incentives – if the *phasing out* is a typical “push measure”, a measure which **forces** people to make certain choices, the *incentives* are always a “pull measure”, a measure which **convinces** people to make the same choices. In this case financial incentives are provided to acquire a new vehicle if it substitutes an older one.

Vehicle control (periodic inspections to allow continuing to circulate) – This policy is already set by the government which is awarding the contract to a private partner to install the necessary test facilities to perform the periodic inspections. It is however not defined yet which enforcement measures will be adopted to make this policy effective. Today periodic inspections are already mandatory for heavy duty vehicles but the number of inspected vehicles remain low (no official data are available but the percentage is estimated to be at 25%) it is therefore necessary to test appropriate enforcement measures.

Incentives for cleaner vehicles technologies – Cleaner vehicle technologies, especially plug-in hybrid electric and battery electric vehicles, give the main opportunity to have a significant impact on CO₂ emissions (other than other noxious emissions) especially in Georgia where the electricity production mix is partly renewable with hydroelectric plants. Specific incentives can foster the adoption of these technologies to significant levels.

Incentives for charging point establishment for electric vehicles in urban areas – electric vehicles need charging and specific policies to reserve parking spaces for electric vehicles in desirable zones allowing nearby shops to install private charging points to “sell” electric energy can have an impact in fostering clean vehicles diffusion.

Emission limits for heavy duty vehicles – Heavy duty vehicles for freight transport are responsible for pollutant and CO₂ emissions as much as passenger cars. Emission limits for freight vehicles are as necessary as those for cars. However This must be assessed very carefully because Georgia aims at becoming an international hub for freight shipping especially for freights travelling on the black sea and the national economy and its growth depends on freight traffic. In assessing the effectiveness of this policy it will be necessary therefore to investigate international freight transport with neighbouring countries.

Phase out from the national streets of heavy duty vehicles not complying and incentives to substitution – similarly to passenger transport the two measures of phase out and incentivising should go together with the additional care of investigating how to integrate this policy with those of the neighbouring countries as said above.

These policies and measures have been selected among those potentially applicable by the Georgian government and are combined (below) in 4 scenarios.

Do nothing

Any scenario is evaluated against a reference scenario which is the do-nothing one. Such scenario is the one in which no new policy is implemented; all already implemented (or that are already decided to be) are included in it and all the economic indicators varies in the ten years’ time according to the projected trends. With respect to the CBA the most important policy that will be operational since January 2019 is the mandatory periodic vehicle inspections.

First incremental scenario: adopting light and heavy-duty vehicles emission standards + limiting vehicle import (according to emission standards) + CO₂ labelling + enforcing periodic inspections

In this first scenario the basic policy is to adopt EU emission standards for all newly registered vehicles (used or new). If a vehicle is imported, and needs new registering, it needs to comply with the emission standards. Such new vehicles will also be labelled depending on their fuel economy and CO₂ emissions.

New heavy-duty vehicles will be subject to new emission standards as well but no limits will be set (in this scenario) to continuing the use of older vehicles or in accepting foreign heavy duty vehicles doing pick up or delivery of goods in Georgia. Periodic inspections are mandatory in the do-nothing scenario; but in this (and in the following) the effectiveness of the policy is affected by a tougher way of enforcing the respect of this new policy; vehicles’ licence plate are in a national database alongside with the deadline for the periodical inspection and unless the inspection facility updated the database with the positive outcome of the inspection before the deadline the vehicles are towed away and stopped.

Second incremental scenario: first scenario + vehicle renewal and tax incentives + older vehicles phase out (heavy duty mostly)
The additional policies with respect to the previous scenario are pull and push measures to make new vehicle technology diffusion more effective. On the one hand the pull measures will incentivise the renewal of the vehicles with tax deductions and one-off incentives to change the vehicles. Older vehicles (not compliant with the newest emission standards) will in time be prohibited from circulation and even at borders foreign heavy duty vehicles not complying with the emission regulations will be denied entry.

Third incremental scenario: second scenario + HEV and BEV specific diffusion policy

The third and final incremental scenario will add specific incentives to the diffusion of ultra low emission vehicles even beyond EU emission standards such as battery electric vehicles (BEV) and Hybrid Electric Vehicles (HEV).

Besides incentives to purchase and operate such vehicles (especially in commercial fleets), the main effort will be to develop a recharging infrastructure suitable to guarantee such vehicles can circulate without range anxiety. For this scenario a rough estimation of the needed vehicle charging points and their cost is needed.

Indicators to account for

Here it follows a list of indicators which need to be measured in each scenario.

As little aggregated data are available it is suggested to measure them incrementally in each scenario compared with the do nothing one using estimations, surveys and simulations.

Economy

National GDP divided by sectors

Trends of the national GDP and trends of the different GDP sectors

Number of Employees in each sector

Employees in fast growing high technology sectors

Passenger transport

Number of daily trips (passengers) and pkm

Modal split of the different daily trips

Number of daily private vehicle trips (passengers) and vkm

Number of daily trips divided by area (Rural, Interurban and Urban)

Current circulating fleet status (age, emission standards if any, regularity of maintenance)

Fuel consumed daily for passenger vehicles

Car ownership rate

Yearly cost of a passenger vehicle (depreciation+maintenance+ taxes) or average vehicle.kilometre cost

Freight transport

Number of freight shipping companies

Share of internal freight shipping market for companies of different nationalities

Tons of freight shipped daily and tkm

Modal split (rail, air, waterways and road)

Current national freight fleet divided by:

gross weight

freight services; own shop deliveries

age

emission standard if any

regularity of maintenance

Fuel consumed daily for freight vehicles

Yearly cost of a heavy duty vehicle (depreciation+maintenance+ taxes) or average vehicle.kilometre cost

Environment

CO₂ emitted daily [tons]

Activity 2.2: Economic indicators and trends derivation	Team leader 5 Transport Engineer 10 Transport Economist 20				8850	10000
Activity 2.3: Surveys and data collection	Team leader 5 Survey specialist 25 10 interviewers (30 days each)	Survey and data collection (survey specialist 15 days + interviewers -local people- for 30 days each)			40250	47250
Output 3: Indicators quantification and NPV calculation for scenario 1					8900	10000
Activity 3.1: Indicators quantification for scenario 1	Team leader 5 Transport Engineer 5 Transport Economist 5 Survey specialist 5				5550	6250
Activity 3.2: NPV calculation for scenario 1	Team leader 5 Transport Economist 5				3350	3750
Output 4 : Indicators quantification and NPV calculation for scenario 2					8900	10000
Activity 4.1: Indicators quantification for scenario 2	Team leader 5 Transport Engineer 5 Transport Economist 5 Survey specialist 5				5550	6250



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**Technical Assistance Response Plan -
Terms of Reference**

Activity 4.2: NPV calculation for scenario 2	Team leader 5 Transport Economist 5				3350	3750
Output 5: Indicators quantification and NPV calculation for scenario 3					8900	10000
Activity 5.1: Indicators quantification for scenario 3	Team leader 5 Transport Engineer 5 Transport Economist 5 Survey specialist 5				5550	6250
Activity 5.2: NPV calculation for scenario 3	Team leader 5 Transport Economist 5				3350	3750
Output 6: Scenario comparison, selection of the best and identification of winners and losers					7800	8750
Activity 6.1: Scenario comparison and selection of the best	Team leader 5 Transport Engineer 5 Transport Economist 5				4450	5000
Activity 6.2: Identification of winners and losers	Team leader 5 Transport Economist 5				3350	3750
Output 7: Policy recommendations					4450	5000
Activity 7.1: Policy recommendations	Team leader 5 Transport Engineer 5				4450	5000
Estimated range of costing for the entire Response Plan						
					100100	115000

5. Profile and experience of experts

Experts required	Brief description of required profile
Team leader	Transport Engineer, economist, or political scientist with a minimum of 10 years' experience in applied transport projects and specific experience on transport policy assessment and CBA
Transport economist	Economic background; experience in economic modelling and transport economic modelling
Transport engineer	Transport engineering background; experience in transport macroscopic modelling and transport policy assessment
Survey specialist	Experience in designing and coordinating stated and revealed preferences and discrete choice modelling.
Interviewers	Minimum 10 people to perform locally the surveys (face to face and remotely by telephone) with fluent Georgian language skills.

6. Intended contribution to impact over time

The expected contribution is to facilitate the adoption of a legislation which will foster a sustainable growth reducing GHG emissions as well as other noxious emissions.

Georgia is a growing country; in short time it is expected that GDP per capita will be in the range of European countries. This growth is accompanied by a growing motorization rate and most of the imported cars are used ones. To reduce the impact on CO₂ emissions the growing motorization rate will have Georgia has already decided to “follow” Europe adopting its type approval vehicle certification procedures and its vehicle emission standards. However, to understand how best configure the policy framework to support and make these political choices effective this study will perform a CBA comparing different policy scenarios and helping the government selecting the most effective one to implement to mitigate GHG emissions and consequent global warming impacts while still fostering the economic growth. Policies will shape the vehicle market for the next ten years.

7. Relevance to NDCs and other national priorities

Georgia is starting to be very active to develop policies to tackle environment and climate change. In 2012 a TNA has been undertaken in the country. It highlights the need for technology transfer as a form of international assistance to meet its conditional targets.

Georgia has developed a TAP for efficient wood stoves which includes measures to address identified technology barriers and identifies the priority of the implementation of the measures and other elements such as, inter alia, the implementing agency, time frame and estimated costs for each measure.

A Feasibility study (V-NAMA) is undergoing for the urban transport sector. It addresses: Public transport, Rail cargo, Passenger vehicles, Urban planning and Transit management. The objective of the NAMA is to reduce GHG emissions in the urban transport sector.

This work, to assess which policies to implement and how to foster adoption of cleaner vehicles in Georgia, is crucial to the overall goal of selecting technologies and how best facilitate their deployment in the country to make Georgia economic development sustainable.

8. Linkages to relevant parallel on-going activities:

Several activities are already ongoing in the field of transport and cleaner fuel. Specifically, with regard to fuel since petrol quality standard in Georgia is already Euro 5 (since 2017). Regrading diesel fuel, last Friday July the 27th of 2018 The Georgian Prime Minister announced that diesel fuel quality standard will reach Euro 4 from 1 October 2018 and Euro 5 from 1 October 2019.

Appropriate legislative changes will be adopted by Government in the nearest future.

Georgia conducted a full auto fuel economy baseline (CENN supported this) and so has collected the data for vehicle CO₂ emissions and registration information as well as fuel economy ratings from 2008-2012.

This study will not deal with fuel quality by choice of the Georgian government; several initiatives are already undergoing for that. The study will focus on vehicle fuel economy. However, a close relation between this and the other ongoing activities in the realm of fuel quality will need to be taken.

9. Anticipated follow up activities after this technical assistance is completed:

Policy actions are already ongoing in Georgia in response to the international commitments taken by the state on greenhouse gasses.

There is an urgent need for this Technical Assistance because it needs to shape a policy framework. Policies are being crafted and implemented anyhow but the absence of such a study will lose the opportunity to shape them in a way to have the effectively implemented.

10. Gender and co-benefits:

Imbedded in design of the activities:	Most of data collection and assessment of the impact of policies and enforcement measures are based on survey as data available are in most cases not sufficient. Such surveys will allow to distinguish the reactions by gender and understand how the policies will impact differently on the genders.
Gender and co-benefits intended as result of the activities:	The analysis of winners and losers which is requested in activity 6.1 will need to concentrate on specific gender differences. In this way the study will be sure to select policies which do not hamper women thus promoting women's equality.

11. Main in-country stakeholders in implementation of the technical assistance activities:

In country stakeholder	Role in implementation of the technical assistance
<i>Government</i>	<i>Guidance and results acceptance</i>
<i>Police</i>	<i>Verification of enforcement measures and help in survey organization</i>
<i>Tbilisi Municipality</i>	<i>As main urban area in the country to verify the local effectiveness of the policies</i>
<i>Car dealer association</i>	<i>To verify how their interests will be affected</i>
<i>Freight forwarder associations</i>	<i>To verify how their interests will be affected</i>
<i>Resident NGOs and interest groups</i>	<i>To get support and insights on the local culture</i>

12. SDG Contributions:

Goal	Sustainable Development Goal	Direct contribution from CTCN TA (1 sentence for top 1-3 SDGs)
1	End poverty in all its forms everywhere	
2	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	
3	Ensure healthy lives and promote well-being for all at all ages	
4	Ensure inclusive and equitable quality education and promote life-long learning opportunities for all	
5	Achieve gender equality and empower all women and girls	
6	Ensure availability and sustainable management of water and sanitation for all	
7	Ensure access to affordable, reliable, sustainable, and modern energy for all (consider adding targets for 7)	
	7.1 - By 2030, ensure universal access to affordable, reliable and modern energy services	
	7.2 - By 2030, increase substantially the share of renewable energy in the global energy mix	
	7.3 - By 2030, double the global rate of improvement in energy efficiency	
	7.a - By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology	
	7.b - By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	The implementation of the scenarios drafted in the CBA TOR will allow a sustainable growth of the transport sector promoting new high-level skilled

		jobs resulting from the adoption of a low-carbon transport policy featuring higher technical standards in terms of vehicles and relating infrastructures
9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	
10	Reduce inequality within and among countries	
11	Make cities and human settlements inclusive, safe, resilient and sustainable	
12	Ensure sustainable consumption and production patterns	
13	Take urgent action to combat climate change and its impacts	<i>All TAs should indicate relevance to Goal 13 and at least one target below (13.1 to 13.b).</i>
	13.1 - Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	
	13.2 - Integrate climate change measures into national policies, strategies and planning	The CBA to be conducted will contribute to integrate low-carbon mobility standards into Georgian national transport policy
	13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	
	13.a - Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible	
	13.b - Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities	
14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development	
15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	
16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	
17	Strengthen the means of implementation and revitalize the global partnership for sustainable development	

13. Classification of technical assistance:

<i>Please tick off the relevant boxes below</i>	<i>Primary</i>	<i>Secondary</i>
<input checked="" type="checkbox"/> 1. Decision-making tools and/or information provision	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> 2. Sectoral roadmaps and strategies	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> 3. Recommendations for law, policy and regulations	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 4. Financing facilitation	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 5. Private sector engagement and market creation	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 6. Research and development of technologies	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 7. Feasibility of technology options	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 8. Piloting and deployment of technologies in local conditions	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 9. Technology identification and prioritisation	<input type="checkbox"/>	<input type="checkbox"/>

14. Monitoring and Evaluation process

Upon contracting of the implementing partners to implement this Response Plan, the lead implementer will produce a monitoring and evaluation plan for the technical assistance. The monitoring and evaluation plan must include specific, measurable, achievable, relevant, and time-bound indicators that will be used to monitor and evaluate the timeliness and appropriateness of the

implementation. The CTCN Technology Manager responsible for the technical assistance will monitor the timeliness and appropriateness of the Response Plan implementation. Upon completion of all activities and outputs, evaluation forms will be completed by the (i) NDE about overall satisfaction level with the technical assistance service provided; (ii) the Lead Implementer about the knowledge and learning gained through delivery of technical assistance; and (iii) the CTCN Director about timeliness and appropriateness of the delivery of the activities and outputs

