



This project is co-financed by the European Union
and the Republic of Turkey.

National Programme for Turkey 2013 –
Instrument for Pre-Accession Assistance

Technical Assistance for Developed Analytical Basis for Formulating Strategies and Actions Towards Low Carbon Development

Project Identification No: EuropeAid/136032/IH/SER/TR

Contract No: TR2013/0327.05.01-01/001

Component 3 – Briefing on Consultation Meeting with Transport Sector's Stakeholders

Ankara 2018



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Abbreviations

LCDTR	Technical Assistance for Developed Analytical Basis for Formulating Strategies and Actions Towards Low Carbon Development
MoEU	Ministry of Environment and Urbanization (Beneficiary)
MoTI	Ministry of Transport and Infrastructure
TAT	Technical Assistance Team



1. Summary of the Meeting

Project Name	Technical Assistance for Developed Analytical Basis for Formulating Strategies and Actions Towards Low Carbon Development	
Project No	TR2013/0327.05.01-01/001	
Date	20.11.2018, 14:30	
Location	MoEU 5 th Floor Meeting Room, Ankara, Turkey	
Name of the Meeting	Consultation Meeting with the Ministry of Transport and Infrastructure	
Participants	Ministry of Environment and Urbanization (MoEU)	Gürcan SEÇGEL – Head of Unit
	Ministry of Transport and Infrastructure (MoTI)	Ufuk KOCA – Engineer. H. Umur ALSANCAK – Engineer Emre ALBAYRAK - Expert Şerife TOGUR - Coşkun BİLGİN – Engineer
	Technical Assistance Team (TAT)	Mykola RAPTSUN – Team Leader Burak YÜCEYALÇIN- Project Manager Aynur TOKEL – Statistic, data and sector liason expert Teksin ÖZTEKİN – Project translator
	Project Sectoral Expert	Doç. Dr. Hediye TÜYDEŞ YAMAN – Senior expert, transport sector

2. Agenda

- Opening speech
- Briefing on the project progress
- Briefing on component 3
- Data needs in component 3
- Discussion and evaluation of GHG mitigation actions and data needs
- Identification of participants for Working Group 3 and 4

Mr. Seçgel commenced the meeting stating that national climate change action plan will be developed in 10 cities. He also emphasized that actions regarding bike roads must be studied within the scope of the project since the ministry has been working in this regard.

The representative from MoTI indicated that it is more preferred to study actions regarding fuel efficiency, alternative fuels and shifting freight transport from road to other modes.

Mrs. Yaman stated that Intelligent Transport Systems are not considered as mitigation actions. Therefore, she suggested ITS to be added into all mitigation actions as a cost element.

It was decided to change the 1st action as “Combine transport at intercity passenger transport” and last action as “Shifting intercity freight transport from road to other transport modes through intermodal / combined transport”. Also it was agreed to revise 3rd action as 2 separate actions as “At intra city transport increasing the share of public transport” and “At intra city transport increasing the share of biking”

As a result of the assessments, following draft actions are identified:

- Combine transport at intercity passenger transport
- Increasing share of the electric vehicles at public transport
- At intra city transport increasing the share of public transport
- At intra city transport increasing the share of biking
- Vehicle fuel efficiency (increasing rates of the Hybrid and LPG and electrical vehicles)
- Increasing the use of alternative fuels (bioethanol, bio gasoline, biodiesel)
- Shifting intercity freight transport from road to other transport modes through intermodal / combined transport

Mr. Rapsun thanked all representatives from the Ministry for their contribution & participation and closed the meeting.

Component/Result 3

Annex 10

Briefing note on the first phase WG consultation meeting
with TurkStat



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**Component 3 – Briefing on Consultation Meeting with
TurkStat (all sectors)**

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MoAF	Ministry of Agriculture and Forestry
MoEU	Ministry of Environment and Urbanization (Beneficiary)
TAT	Technical Assistance Team
TurkStat	Turkish Statistical Institution



1. Summary of the Meeting

Project Name	Technical Assistance for Developed Analytical Basis for Formulating Strategies and Actions Towards Low Carbon Development	
Project No	TR2013/0327.05.01-01/001	
Date	29.11.2018, 14:30	
Location	TurkStat 19. Floor Meeting Room, Ankara, Turkey	
Name of the Meeting	Consultation with Turkish statistical Institution on data needs in transport, agriculture, buildings and waste sectors	
Participants	Ministry of Environment and Urbanization (MoEU)	Volkan Polat - Expert
	TurkStat	Sabahattin SARI- Head of Department F. Bdetül DEMİROK – Head of Unit Mehmet GEDİK – Head of Unit Kadir AKSAKAL - Expert Hasan. E. PINAR – Statistician Can DEMİRCİGİL – Ass. expert Mustafa AYDOĞAN – Ass. expert Müzeyyen PAMUK - Statistician Yakut Yüksel - Expert
	Technical Assistance Team (TAT)	Mykola RAPTSUN – Team Leader Aynur TOKEL – Statistic, data and sector liaison expert Erdoğan ERSOY – Project expert Teksin ÖZTEKİN – Project translator
	Project Sector Experts	Doç. Dr. Kemal SARICA Modelling Expert Prof. Dr. İlkay DELLAL – Senior Expert-Agriculture Sector Doç. Dr. Hediye Tüydeş Yaman Senior Expert-Transport Sector M. Özgür Şakı – Senior Expert-Waste Sector Gülfem İnaner - Senior Expert-Buildings Sector

		Gülçin Dalkıç – Expert -Transport Sector
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2. Agenda

- Opening speech
- Briefing on the project progress
- Briefing on component 3
- Data needs in component 3
- Discussion and evaluation of GHG mitigation actions and data needs
- Identification of participants for Working Group 3 and 4

Project Team Leader, Mr. Rapsun commenced the meeting and thanked all participants for their participation. Mr. Mykola Rapsun to give information on project progress and component 3.

- Overall objective and purpose of the project
- Stakeholders and target groups
- Project consortium
- Expected results
- Identification of GHG mitigation actions
- Suggested actions for the all sectors (buildings, transport agriculture and waste) within component 3

Following to Mr. Rapsun's presentation, senior expert Mrs. Tokel took the floor to inform participants regarding the needed data on assessment of potential GHG mitigation actions and cost for the all sectors.

Please see ANNEX for detailed presentation.

Compiled within the scope of Household Budget Survey related to the building sector; sharing of information on the type of housing, household size, the date of construction of the building, and the type of fuel were evaluated. Within the scope of the research, it is stated that there are some restrictions related to the sharing of data related to fuel consumption values.

Regarding fuel prices, it is stated that unit fuel price has been compiled as of 2007 in accordance with Energy Statistics and it is available on TurkStat web site.

It was stated that there is no current data on building stock however, approximate building sock can be estimated by using building numbers in 2000 and annual building



permits statistics starting from 2011. It was also indicated that building permits cover data on building heating systems.

Regarding transport sector, it was stated that vehicle-km data has already been published and available on TurkStat's webpage. However, it was also indicated that vehicle-km data for trucks is not included.

It was indicated that in agriculture sector, emissions caused by enteric fermentation is calculated with T2 method for cattle and T1 method is used for other animal breeds. It was also stated that lime use in agriculture is will be considered "zero" since its percentage is very low and cannot be reported.

As regards the waste sector, it was stated that the waste composition data used in the greenhouse gas inventory was taken from the national waste action plan. According to the 2018 municipal waste statistics, waste composition data will be compiled.

Mrs Tokel underlined that the needed data will be requested by MoEU with an official letter.

Stating that TurkStat is the most important data source for project, Mr. Rapsun thanked all participants for their contributions.

Mr. Sarı stated that they will support the project regarding data needs and closed the meeting.

ANNEX
Presentation(s)



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Technical Assistance for Developed Analytical Basis for
Formulating Strategies and Actions towards
Low Carbon Development



LCDTR - introduction to the Project and Component 3

Dr. Mykola Raptun
Team Leader

November 2018, Ankara



REPUBLIC OF TURKEY
MINISTRY OF ENVIRONMENT
AND URBANISATION

Project's Overall Objective and Purpose

Project title: *Technical Assistance for Developed Analytical Basis for Formulating Strategies and Actions towards Low Carbon Development*

This project is co-financed by the European Union and the Republic of Turkey

Overall objective: To reduce anthropogenic GHG emissions to contribute to the global efforts to mitigate climate change in line with the scientific evidence

Purpose: To increase national and local capacity to prepare for medium and long term climate action towards climate resilient low-carbon development, which will gradually align with EU climate policy and legislation by providing an analytical basis to support realisation of low carbon in the long-term, specifically focusing on cost-effective climate change mitigation actions related to building, waste, transportation and agriculture sectors of the National Climate Change Action Plan (NCCAP)

Period of implementation: 36 months (June 2017 – May 2020)

Project Stakeholders and Target Groups

- **Ministry of Environment and Urbanisation –Beneficiary**
 - **Central Finance and Contracts Unit (CFCU) - Contracting Authority**
 - **Ministry of Energy and Natural Resources**
 - **Ministry of Agriculture and Forestry**
 - **Ministry of Transportation and Infrastructure**
 - **Ministry of Foreign Affairs**
 - **Coordination Board on Climate Change and Air Management**
 - **Turkish Statistical Institute**
 - **Local level governmental institutions**
 - **NGOs and private sector - with focus on the key sectors of buildings, transport, waste and agriculture**
-

Project Consortium



Consortium Leader - Human Dynamics, is a leading provider of premium public sector consulting services



The Regional Environmental Centre for Central and Eastern Europe (REC) is an international organisation with a mission to assist in addressing environmental issues



Agriconsulting Europe S.A. (AESA), is a leading international development consulting firm that has been in operation since 1994.

Expected results and project components

- **Result/Component 1:** Review of existing strategies in relation to Climate Change
- **Result/Component 2:** Preparation of regulatory and sectoral impact assessments for EU climate acquis
- **Result/Component 3:** Determination of the costs and emission mitigation potential of the actions specified in NCCAP within the **buildings, waste, transport and agriculture sectors**
- **Result /Component 4:** Developing analytical basis for possible strategies and actions ensuring green growth in the long term

Component 3: Determination of the costs and emission mitigation potentials of the actions specified within the buildings, waste, transport and agriculture sectors of the NCCAP and other policy documents

3.1 Assess the GHG emission mitigation potentials of at least ten actions in the focus sectors (buildings, waste, transport and agriculture) of the project

3.2 Assess the financial costs and benefits of the actions analysed in activity 3.1

3.3 Identify and analyse other potential positive and negative non-financial societal gains and losses of the analysed mitigation actions

Component 4: *Developing GHG scenarios and carbon mitigation actions and supporting development of key stakeholders*

4.1 Carry out GHG scenario modelling for focus sectors of the project

4.2 Identify carbon mitigation activities entailing significant benefits to Turkey with a perspective to reconcile climate, growth, and energy security in the selected sectors

4.3 Capacity building for key stakeholders (training, coaching and mentoring services, study visits)

Component 3: identification and selection of the actions for GHG mitigation potentials and costs assessment

Phase
1

- Preliminary sectoral GHG mitigation actions screening and evaluation

Phase
2

- Consultations with the project stakeholders

Phase
3

- Selection of the actions (at least 10) for GHG mitigation potentials and costs assessment

Criteria for GHG mitigation actions selection

- Belong to four project target sectors - transport, buildings, agriculture and waste
- Included in NCCAP and/or other governmental strategic documents
- Cost effectiveness
- High potential for GHG emission reduction
- Other non-financial societal criteria – social, economic, environmental, etc.

Sectoral GHG emissions in 1990 and 2016

Sector	GHG Emissions (kt CO ₂ -eq)		GHG Emissions in total (%)	
	1990	2016	1990	2016
Transport Sector	26968.90	81841.20	12.8	16.5
Buildings Sector	27215.06	56837.30	12.9	11.5
Agriculture Sector	42402.30	56485.70	20.1	11.4
Waste Sector	11090.59	16181.19	5.3	3.3
Total for 4 Sectors	107676.85	211345.39	51.1	42.6

Buildings sector: actions suggested based on preliminary screening

Suggested actions for Buildings sector	Selection Criteria		
	Including in National Climate Change Action Plan (NCCAP)	Cost Effectiveness* (EUR/tCO2)	Mitigation Potential* (MtCO2)
Increasing usage rate of energy efficient appliances in buildings (higher than A+)	√	-205	0.9
Improving energy performance of existing buildings(improved insulation and energy-efficient windows)	√	-152 to -157	4.5 to 11.2
Energy efficient buildings - heating and cooling system	√	-300** (for cooling) -42 to -106 (for heating)	1.0 (for cooling) 1.2 to 6.9 (for heating)
Dissemination of green building, passive building and nearly zero energy building applications	√	?	?
Fuel shifting in buildings from high emission intensity to low (renewable energy)	√	?	?
Increasing usage rate of LED lighting system in buildings	√	-300	1.0

* Abatement cost and potential values are taken from, “The Demand for GHG emissions Reductions: An investors’ MACC for Turkey, prepared for EBRD” report as reference.

Agriculture sector: actions suggested based on preliminary screening

Sub-sector	Suggested actions for Agriculture sector	Selection Criteria		
		Including in National Climate Change Action Plan (NCCAP)	Cost Effectiveness (EUR/tCO ₂)	Mitigation Potential
Enteric Fermentation	Using fat supplement in the diet to reduce enteric CH ₄		69-508 (EUR/tCO ₂) (for fat supplementation)*	?
	Breeding to reduce enteric CH ₄ with higher productivity		0 to 4576 (EUR/tCO ₂)*	?
Manure Management	Reduce the N content in the diet of dairy cattle to decrease N ₂ O in manure		-11.6 EUR/animal/yr**	0.12 tCO ₂ e/animal/yr**
	Centralised (big farm) level Anaerobic digestion (biogas)	√	0 to 153 (EUR/tCO ₂)*	75-93% reduction*
	Covering slurry stores and install flares		10,075 EUR/farm/year**	170 tCO ₂ e/farm/yr**
	Improve pasture quality and extend the grazing period	√	?	?
Agricultural Soils	Adjust fertiliser application rates to realistic yield targets		-8.7 EUR/ha/year	0.22 tCO ₂ e/ha/yr**
	Make better use of organic fertiliser	√	-11.6 EUR/ha/year	0.16 tCO ₂ e/ha/yr**
	Adjust application dates to crop requirements		-22.7 EUR/ha/year	0.23 tCO ₂ e/ha/yr**
	Nitrification Inhibitors		9.2 to 1903 (EUR/tCO ₂)*	0.3 tCO ₂ e/ha/yr
	Crop rotation	√	18 to 189 (EUR/tCO ₂) (for crop rotation)*	0.17 to 1.02 (for crop rotation)*
Fuel Combustion	Reduce tillage, no tillage	√	?	?
	Increasing solar-powered irrigation systems		?	?

Abatement cost and potential values are taken from,

* Cost-Effectiveness of Greenhouse Gas Mitigation Measures for Agriculture, A literature review, OECD, 2015"

** Identifying cost competitive greenhouse gas mitigation potential of French agriculture, 2017

Transport sector: actions suggested based on preliminary screening

Suggested actions for Transport Sector	Selection Criteria		
	Including in National Climate Change Action Plan (NCCAP)	Cost Effectiveness (EUR/tCO ₂)	Mitigation Potential (MtCO ₂)
Combine transport at intercity passenger transport	√	?	?
Increasing share of the electric vehicles at public transport	√	?	?
At intra city transport increasing the share of public transport	√	?	?
At intra city transport increasing the share of biking			
Vehicle fuel efficiency (increasing rates of the Hybrid and LPG and electrical vehicles)	√	-246*	13.3*
Increasing the use of alternative fuels (bioethanol, biogasoline, biodiesel)	√	?	?
Shifting intercity freight transport from road to other transport modes through intermodal / combined transport	√	?	?

* Abatement cost and potential values are taken from, “The Demand for GHG emissions Reductions: An investors’ MACC for Turkey, prepared for EBRD” report.

Waste sector: actions suggested based on preliminary screening

Sub-Sector	Suggested actions for Waste sector	Selection Criteria		
		Including in National Climate Change Action Plan (NCCAP)	Cost Effectiveness (EUR/tCO ₂ e)	Mitigation Potential (MtCO ₂)
Solid Waste	Methane utilization for energy production at waste disposal and treatment facilities	√	24 to 77	2.9 to 5.1
	Improving recycle rate	√	?	?
	Rehabilitation of uncontrolled waste disposal sites	√	?	?
Wastewater	Improving WWTP technology		?	?
	Increasing use of biogas from WWTP		?	?

* Abatement cost and potential values are taken from, “The Demand for GHG emissions Reductions: An investors’ MACC for Turkey, prepared for EBRD” report as reference.

Data Needs-General Information

Data needs

Possible data source

- Population, population growth rate

TurkStat

- GDP, GDP growth rate

Directorate of Strategy
and Budget ?,
TurkStat

- Sectoral growth rate

?

- Complete Energy balance table
- Sectoral Energy Consumption
- Fuel prices and projections

Ministry of Energy and
Natural Resources
(MENR)

Data Needs-Building Sector

Data needs	Possible data source
Current building stock specifications; number of dwelling, household per dwelling, insulation status, future building stocks expectations etc.	TurkStat
Commercial building specifications	TurkStat
Political baseline projections (coal, natural gas, cogeneration, solar penetration etc.)	Ministry of Energy and Natural Resources (MENR)
Building directives and their corresponding energy consumptions etc.	MENR Ministry of Environment and Urbanisation
Demands (water heating, space heating, refrigeration etc.)	?

Data Needs-Agriculture Sector

Data needs for enteric fermentation and manure management	Possible data source
Number of Livestock by categories (head) Technical mitigation options (%); <ul style="list-style-type: none">• Feeding practices (e.g. more concentrates, adding certain oils or oilseeds to the diet, improving pasture quality, etc)• Specific agents: specific agents and dietary additives to reduces CH4 emisisions (Ionophores, vaccines, etc.)• Breeding: increasing productivity through breeding and better management practices (reduction in the number of replacement heifers)	TurkStat_ MoAF
Production of milk, meat (tons of products per yr) Mean Annual Temperature °C	MoAF DG Meteorology

Data Needs-Agriculture Sector

Data needs for rice cultivation	Possible data source
Cultivation period	
Water regime during cultivation period;	Ministry of Agriculture and Forestry (MoAF), TurkStat_National GHG inventory
Water regime before the cultivation period;	MoAF
Organic amendment type (straw, compost, farmyard manure, green manure, etc.)	MoAF
Yield (t/ha-yr)	MoAF
Area (ha)	MoAF

Data Needs-Agriculture Sector

Data needs for agricultural inputs	Possible data source
Lime application (amount applied per year)	MoAF
Fertilizers (amount applied per year) ; (urea, other N-fertilizers, sewage, compost, other fertilezes	MoAF
Pesticides application (amount applied per year)	MoAF

Data Needs-Agriculture Sector

Data needs for agriculture sector	Possible data source
Current machinery including tractors, and other equipments <ul style="list-style-type: none">• number of agricultural machinery and types• Average usage per annum• average specific fuel consumptions,• vehicles emission standars (EURO 3,4,5,6 etc.)	TurkStat MoAF
Future technology characterization	MoAF?
Political baseline projections (mechanisation targets, size of producers etc.)	MoAF ?
Demand (production) projections	?
Agronomic and animal husbandry supply chain information for each product considered and change of projections. (e.g. Lime application, Fertilizers (urea, other N-fertilizers, sewage, compost, other fertilezers), Pesticides applications)	?

Data Needs-Transport Sector

Data needs for road transport

Possible data source

Current fleet including train, air and shipping <ul style="list-style-type: none">• number of vehicles and types (LDV, MDV, HDV, trailers),• average km per vehicle per annum,• average specific fuel consumptions,• vehicles emission standars (EURO 3,4,5,6 etc.)	TurkStat
Future technology characterization	Ministry of Transportation and Infrastructure (MoTI) ?
Political baseline projections (master transportation plan, permitted fuels etc.)	MoTI ?
Demand projections	?
Rapid trains projects, etc.	MoTI?

Data Needs-Waste Sector

Data needs for waste disposal and treatment	Possible data source
Proportion of residents with waste collection services	Turkstat
Waste composition (%); (paper/cardboard, textiles, food waste, yard waste, wood, rubber and leather, plastics, metal, glass, others)	MoEU, Turkstat-(National GHG inventory)
Waste disposal and treatment by waste type (%)	Turkstat
Landfill methane capture rate (%)	Turkstat-(national GHG inventory)

Data Needs-Waste Sector

Data needs for waste disposal and treatment

Possible data source

Waste facility type;

Open dumps ; >5m deep or <5m deep

Landfills ; anaerobic or semi-aerobic

Incinerators ; continuous, semi continuous, batch-type incineration

Turkstat (national GHG inventory)

MoEU

Anaerobic digester biogas end use

(flared, electricity generation, thermal energy or cogeneration)

Turkstat

Incineration heat energy end use

(combustion, electricity generation, thermal energy or cogeneration)

Turkstat

MoEU

Waste collection vehicle annual energy consumption

Municipalities?

Waste transfer station annual energy consumption

Waste operators



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Thank you for your attention!

<http://www.lowcarbonturkey.org/>



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