

GHG INVENTORY SYSTEM IN TURKEY

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Turkey

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Background

- Turkey's name was deleted from Annex II of the UNFCCC, and the Parties were invited to recognize the special circumstances of Turkey – decision 26/CP.7, Marrakesh 2001
- The United Nations Framework Convention on Climate Change (UNFCCC) was ratified by Turkey – May 2004
- The Kyoto Protocol was ratified by Turkey – August 2009
- Turkey does not have emission reduction targets under the Kyoto Protocol.
- Turkey submitted its first national inventory report and CRF tables for 1990-2004 period in 2006.
- Turkey submitted its INDC as %21 GHG reduction compared to BAU (base year: 2010).

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Institutional arrangements

- The Turkish Statistical Institute (TurkStat) is the responsible agency for compiling the National Greenhouse Gases Inventory and submitting it to the UNFCCC Secretariat.

Legal Base:

- Coordination Board on Climate Change and Air Management (CBCCAM)
Decision on the setting up of technical working groups and defining the coordinator institutions of working groups
 - Greenhouse Gas Emission Inventories working group: Turkish Statistical Institute (TurkStat) responsible from coordination of the WG.
- The Official Statistics Program (OSP), based on the Statistics Law of Turkey No: 5429,

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Institutional arrangements

The institutions involved in GHG Inventory WG;

- Turkish Statistical Institute (TurkStat),
- Ministry of Energy and Natural Resources (MENR).
- Ministry of Transport, Maritime Affairs and Communications (MTMAC),
- Ministry of Environment and Urbanization (MoEU),
- Ministry of Food, Agriculture and Livestock (MFAL),
- Ministry of Forestry and Water Affairs (MFWA),
- Turkish Cement Manufacturers Association
- Turkish Steel Producers Association

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Roles and Responsibilities

Sector	CRF Category	Responsible Organization
Energy	Energy – 1 (excluding 1.A.1.a – Electricity and heat generation and 1.A.3 – Transportation)	Turkish Statistical Institute (TurkStat)
	Electricity and Heat Generation – 1.A.1.a	Ministry of Energy and Natural Resources (MoENR)
	Transportation – 1.A.3	Ministry of Transport, Maritime Affairs and Communications (MoTMAC),
Industrial Process	Industrial Process – 2 (excluding Halocarbon and SP6 consumption - 2.F)	TurkStat
	Halocarbon and SF6 consumption - 2.F	Ministry of Environment and Urbanization (MoEU)
Solvent and other product use	Solvent and other product use – 3	
Agriculture	Agriculture – 4	TurkStat
Land Use, Land Use Change and Forestry	LULUCF - 5	Ministry of Forestry and Water Affairs (MoFWA), Ministry of Food, Agriculture and Livestock (MoFAL)
Waste	Waste – 6	TurkStat
Analysis	Trend analysis Key Category Assessment Uncertainty	TurkStat

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Roles and Responsibilities

Sector	Activity Category/ CRF Code	Activity Data Source	Methods and Emission Factors Selection	Calculations
Energy	Energy – 1 (excluding 1.A.1.a – Electricity and heat Production and 1.A.3 – Transportation)	MENR	TurkStat	TurkStat
	Electricity and Heat Production – 1.A.1.a	MENR	MENR	MENR
	Transportation – 1.A.3	MTMAC	MTMAC	MTMAC
Industrial Process	Industrial Process – 2	TurkStat	TurkStat	TurkStat
	Cement Production - 2.A.1	TurkStat & TCMA	TurkStat	TurkStat
	Lime Production - 2.A.2	TurkStat & TLA	TurkStat	TurkStat
	Lime Stone and Dolomite Use - 2.A.3	TurkStat & ETİ Aluminum Co. Inc.	TurkStat	TurkStat
	Aluminum Production - 2.C.3	MCT, TurkStat	MoEU	MoEU
Solvent and other product use	Paint Application – 3.A	TurkStat & Automobile Manufacturing Association	TurkStat	TurkStat
	Chemicals manufacturing and processing – 3.C	TurkStat	TurkStat	TurkStat
Agriculture	Agriculture – 4	TurkStat	TurkStat	TurkStat
Land Use, Land Use Change and Forestry	LULUCF - 5	MFWA, MFAL	MFWA, MFAL	MFWA, MFAL
Waste	Waste – 6	TurkStat	TurkStat	TurkStat

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Activity Data sources

Sector	Category	Activity Data Source
Energy	Energy – 1 (excluding 1.A.1.a – Electricity and heat generation and 1.A.3 – Transportation)	MENR
	Electricity and Heat Generation – 1.A.1.a	MENR
	Transportation – 1.A.3	TurkStat , MENR MTMAC
Industrial Process	Industrial Process – 2	TurkStat
	Cement Manufacturing - 2.A.1	TurkStat & TCMA
	Lime Manufacturing - 2.A.2	TurkStat & TLA
	Lime Stone and Dolomite Use - 2.A.3	
	Aluminum Manufacturing - 2.C.3	TurkStat & ETİ Aluminum Co. Inc.
Solvent and other product use	Halocarbon and SP6 consumption - 2.F	MCT, TurkStat
	Dye use – 3.A	TurkStat & Automobile Manufacturing Association
	Chemicals manufacturing and processing – 3.C	TurkStat
	Agriculture – 4	TurkStat
Land Use, Land Use Change and Forestry	LULUCF - 5	MFWA, MFAL
Waste	Waste – 6	TurkStat

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The process of inventory preparation (QA/QC Plan)

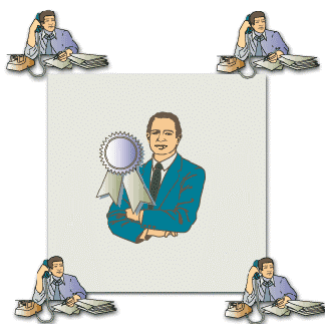
	Activity	Start date	Deadline
1.	Inventory planning by GHG Inventor Working Group (Creating Inventory Improvement Plan, recalculation, etc.)	01.05.XX-1	30.09.XX-1
2.	Reviewing emission calculation methods, EFs, activity data sources, etc. by GHG Inventor Working Group	15.09.XX-1	30.11.XX-1
3.	Collection of activity data and quality control of the data by the institutions involved	01.11.XX-1	31.12.XX-1
4.	Calculation of all emissions from electricity production, transportation, F-gas, emissions and removal from LULUCF by the related Institutions, and transfer to TurkStat.	15.12.XX-1	15.02.XX
5.	Calculation of emissions under the responsibility of Turkstat	15.12.XX-1	15.02.XX
6.	Quality control of the calculated emissions (recalculation by TurkStat IT solution)	15.12.XX-1	15.02.XX
7.	Preparation of the CRF tables by TurkStat	15.02.XX	15.03.XX
8.	Performing key source, trend and uncertainty analysis by TurkStat	15.02.XX	15.03.XX
9.	Preparation of Emission Inventory Report by by the institutions involved and compilation by TurkStat	15.02.XX	31.03.XX
10.	Approval of National Greenhouse Gas Emission Inventory by Inventory Focal Point	01.04.XX	10.04.XX
11.	Release of the National Greenhouse Gas Inventory as news release on Turkstat webpage.	01.04.XX	10.04.XX
12.	Reporting of Inventory to UNFCCC Secretariat by TurkStat	10.04.XX	15.04.XX
13.	Documentation and archiving processes	15.04.XX	30.05.XX

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QA/QC Plan

- QA/QC Plan of Turkish GHG Emission Inventory is approved by Coordination Board on Climate Change and Air Management (CBCCAM) in May 2014



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Responsible institutions for Quality Control

Sector	Activity Category / CRF Code	Responsible Authority
Energy	Energy – 1 (Excluding 1.A.1.a - Electricity and Heat Generation and 1.A.3 -Transportation)	TurkStat
	Energy – 1.A.1.a (Electricity and heat generation)	MENR
	Energy – 1.A.3 (Transportation)	MTMAC
Industrial Processes	Industrial Processes (2.F –excluding Consumption of Halocarbon and SF ₆)	TurkStat
	2.F –Halocarbon and SF ₆ consumption	MoEU
Solvents And Other Product Use	3.A –Paint Application 3.C- Chemicals production and processing	TurkStat
Agriculture	Agriculture – 4	TurkStat
Land use, Land use Change and Forestry	LULUCF	MFWA, MFAL
Waste	Waste – 6	TurkStat

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Quality Control Procedures

General QC procedures for Inventory;

- Assumptions and criteria employed for selection of activity data and for other calculation parameters
- Data entry errors
- Calculations for emissions and removals
- Selection of parameters, units and conversion factors
- Completeness of database folders
- Consistency of data and parameters used in emission and removal calculations
- Consistency of time series
- Uncertainty calculations for emissions and removals

The general QC procedures are implemented by sector experts and they will fill and sign the checklist and sent to TurkStat

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General control check list

DATA GATHERING, INPUT, AND HANDLING ACTIVITIES: QUALITY CHECKS	
1. Check a sample of activity data for data entry errors	
2. Review spreadsheets with computerized checks and/or quality check reports	
3. Other (specify):	
DATA DOCUMENTATION: QUALITY CHECKS	
4. Check inventory files for completeness	
5. Check that activity data are documented according to the references	
6. Check that references stated in calculation tables are also present in inventory document	
7. Check completeness of calculation tables and inventory (i.e., include all relevant information)	
8. Check that assumptions and criteria for selection of activity data, emission factors and other estimation parameters are in line with IPCC Guidance	
9. Check that changes in data or methodology are documented along with their reasons	
10. Check that information in calculation tables and inventory document is acceptable.	
11. Other (specify)	

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General control check list

CALCULATING EMISSIONS AND CHECKING CALCULATIONS:	
12. Check that all calculations are included in archive	
13. Check whether units, parameters, and conversion factors are presented appropriately	
14. Check if units are properly labelled and correctly carried through from beginning to end of calculation	
15. Check that conversion factors are correct	
16. Check that temporal and spatial adjustment factors are used correctly	
17. Check the data relationships (comparability) and data processing steps (e.g., equations) in calculation tables	
18. Check that input data for calculation tables and calculated data are clearly differentiated	
19. Check a representative sample of calculations, by hand or electronically	
20. Check the aggregation of emission results within a category	
21. When methods or data have changed, check consistency of time series inputs and calculations	
22. Check for any unexplained or unusual trends for activity data or other calculation parameters in time series	
23. Check value of implied emission/removal factors across time series and investigate unexplained outliers	
24. Check for any unexplained or unusual trends for activity data or other calculation parameters in time series	
25. Check for consistency with IPCC inventory guidelines and good practices, particularly if changes occur	
26. Other (specify):	

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Quality Control Procedures

Category Specific QC procedures

- Assumptions for activity data, emission factors and other parameters are compared with IPCC values and significant differences are noted.
- National and regional comparability, trends, etc. of activity data are checked.
- Data entry, measurement units, calculation errors for emission and removal calculations are checked.

The category specific QC procedures are implemented by sector experts and they will fill and sign the checklist and sent to TurkStat

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Category specific control check list

EMISSION DATA QUALITY CONTROL
1. Check historical data for emission comparisons, sources and significant sub sources
2. Check with independent calculations or calculations made with alternative methods
3. Check with reference calculations
4. Check completeness
5. Other (specify):
EMISSION FACTOR QUALITY CONTROL
6. Check the suitability of emission factors to national conditions and similar emission data
7. Check by comparing with alternative factors (factor assumptions of IPCC, factors of other countries, literature)
8. Search for more representative data options
9. Other (specify):
ACTIVITY DATA QUALITY CONTROL: ACTIVITY DATA ON NATIONAL LEVEL
10. Check trends
11. Compare with different references
12. Check the applicability of data
13. Check methodology for filling in time series for data that are not available annually
14. Other (specify):
ACTIVITY DATA QUALITY CONTROL: SITE SPECIFIC ACTIVITY DATA
15. Check inconsistencies for different sites
16. Compare aggregated data with national data
17. Other (specify):

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Quality Control Procedures

Quality Control process conducted by QA/QC manager:

- Check lists with all QA/QC processes are part of the plan which will be implemented,
- Sectoral experts fill check lists for the sectors they are responsible for as a QC expert,
- Sectoral QC expert checks the data and the correctness of CRF tables and relevant parts of NIR; if there are corrections reports it to TurkStat by filling in the data correction form,
- QA/QC manager prepares a summary report by using QC results,
- For the next reporting term, an inventory improvement plan regarding the outputs from QC process is prepared by the whole inventory team within the coordination of QA/QC manager.

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Quality Assurance Procedures

Quality assurance;

- periodic review conducted by an expert or an expert team not directly involved in the inventory compilation/development process
- aims to verify that best possible estimations are made

QA procedures' comprehensive and costly.

- key categories is prioritized for QA.
- mainly review process of UNFCCC is considered as QA

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Key category analysis

Steps of the identification of key categories of the GHG inventory

- Identifying categories,
- Choice of method, Tier 1
 - Level Assessment excluding LULUCF
 - Level Assessment including LULUCF
- Key categories without LULUCF comprise 418 585 Gg CO₂ eq (2012), ----- corresponds to 95.16% of Turkey's total GHG emissions (without LULUCF).
- Key categories including LULUCF amounted to 355 488 Gg CO₂eq (2012), corresponds to 95.08 % of total GHG emissions (with LULUCF).

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Uncertainty analysis

Quantitative estimates of the uncertainties in the emissions

Tier 1 method using a spreadsheet IPCC GPG 2000

Uncertainty information;

IPCC default values

expert judgement

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Data management

- Calculation sheets is Excel spreadsheets,
- TurkStat file server stores and archives (back to 2006)
 - calculation sheets prepared by the inventory experts.
 - all products (reports, tables) needed for UNFCCC submissions
 - all relevant activity data used for inventory preparation such as statistics, documents/reports relevant to inventory reviews.
- Also Activity data and EFs also stored and archived in TurkStat institutional database system.

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Data Dissemination



News Release

No: 16174

07 April 2014

Hrs: 10:00

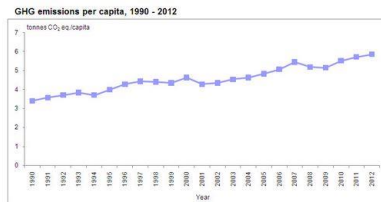
Greenhouse Gas Emissions Inventory, 2012

Total GHG emissions increased to 439.9 million tonnes CO₂ equivalent in 2012

The inventory results revealed that the overall greenhouse gas (GHG) emissions as CO₂ equivalent for the year 2012 were 439.9 million tonnes. In overall 2012 emissions, the energy sector had the largest portion with 70.2%. The energy sector was followed by the industrial processes with 14.3%, the waste with 8.2% and the agricultural activities with 7.3%.

GHG emissions per capita increased

Total greenhouse gas emissions as CO₂ equivalent increased 133.4% in 2012 compared to the emissions in 1990. CO₂ emissions per capita was 5.9 tonnes in 2012, while it was 3.4 tonnes for the year 1990.



Metadata

Close

Analytical Framework, Concepts, Definitions, and Classifications

Scope of the Data

Accounting Conventions

Characteristics of Basic Data Sources

Compilation Practices

Other subjects

Footnotes

Before submission to UNFCCC, summary of the results is published as news release annually in April on TurkStat web page in English and Turkish www.tuik.gov.tr

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Thank you for your attention

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