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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 – Outcomes of the WG consultation meeting
with waste sector's stakeholders**

Ankara 2019



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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)
TAT	Technical Assistance Team



1. Summary of the Meeting

Name of the Project:	Technical Assistance for Developed Analytical Basis for Formulating Strategies and Actions towards Low Carbon Development	
Project ID Number	TR2013/0327.05.01-01/001	
Date and Time	05 March, 10:00	
Location	Ministry of Environment and Urbanization, 6 th floor Meeting Room, Ankara, Turkey	
Name of the Meeting	Consultation meeting with stakeholders on Waste sector	
Participants	Ministry of Environment and Urbanization (MoEU) (Beneficiary)	<p>Gürcan Seçgel, Head of Unit, MoEU</p> <p>Sezin Sönmez Erbaş, Expert, MoEU</p> <p>Hakan Aydoğan, Expert, MoEU</p> <p>Uğur Ş. Bıyıkoğlu, Engineer, MoEU,</p> <p>Münire Türkmen, Expert, MoEU</p> <p>Sule Baktaş, Expert, MoEU</p> <p>A.Teoman Sanalan, Expert, MoEU</p> <p>İrem Şeşenoğlu, Engineer, MoEU</p>
	Technical Assistance Team (TAT)	<p>Mykola Raptsun, TL, LCDTR</p> <p>Özgür Şakı, SE-Waste, LCDTR</p> <p>Aynur Tokel, SE-data, LCDTR</p> <p>Teksin Öztekin, Translator, LCDTR</p> <p>Elif Seyhan – Project Assistant</p>

2. Discussion topics

TIMES model structure for the waste sector, baseline projection approach, data availability and gaps.

3. Outcomes

Following the welcoming speeches by Mr. Segel and Mr. Raptsun, waste sector expert, zgr Őakı presented waste sector TIMES model structure, base year (2015) status of waste management system in Turkey, baseline projection approach till 2050 for waste generation, data availability and additional data needs for the GHG modelling.

After discussion with stakeholders, the meeting participants agreed that:

- The presentation made by Mr. Őakı will be sent to all participants till end of the day for their comments and feedback,
- Waste sector experts from MoEU, will review approaches and data description provided in the presentation, and send their comments/feedbacks till Friday (8th of March 2019),
- It will be considered for baseline projection to realize the targets in the National Waste Management and Action plan by 2023 without any delay,
- Ms. Turkmen, will try to provide information (if possible) on for base year (2015) status of each landfill site in terms of amount of waste deposition, treatment of landfill gas (e.g.: direct release in atmosphere, flaring, or used for energy production) by landfill sites.

In the meeting, no other recommendations of chance are requested upon the suggested list of actions.

Mr. Raptsun thanked all participants for their participation and contribution. Underlying the importance of collaboration on data, he closed the meeting.

ANNEX
Presentation(s)



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Presentation for consultation meeting on sectoral GHG mitigation actions assessment and modelling approach, data availability and gaps: **Waste Sector**

Özgür ŞAKI, Senior Waste Sector Expert

5 March 2019, Ministry of Environment and Urbanization, Ankara



REPUBLIC OF TURKEY
MINISTRY OF ENVIRONMENT
AND URBANISATION

Sectoral GHG mitigation actions selected based on consultations with the project stakeholders

- Waste Prevention / Reduction
- Re-use
- Collection and Transportation
 - Route optimization
 - Separate collection
- Recycling
- Composting and Anaerobic Digestion (Biological Recovery)
- Mechanical Biological Treatment (MBT)

Sectoral GHG mitigation actions selected based on consultations with the project stakeholders

- Thermal Treatment with Energy Recovery
- Landfilling including LFG to Energy Recovery
- Rehabilitation of Old Dumpsites
- Wastewater treatment

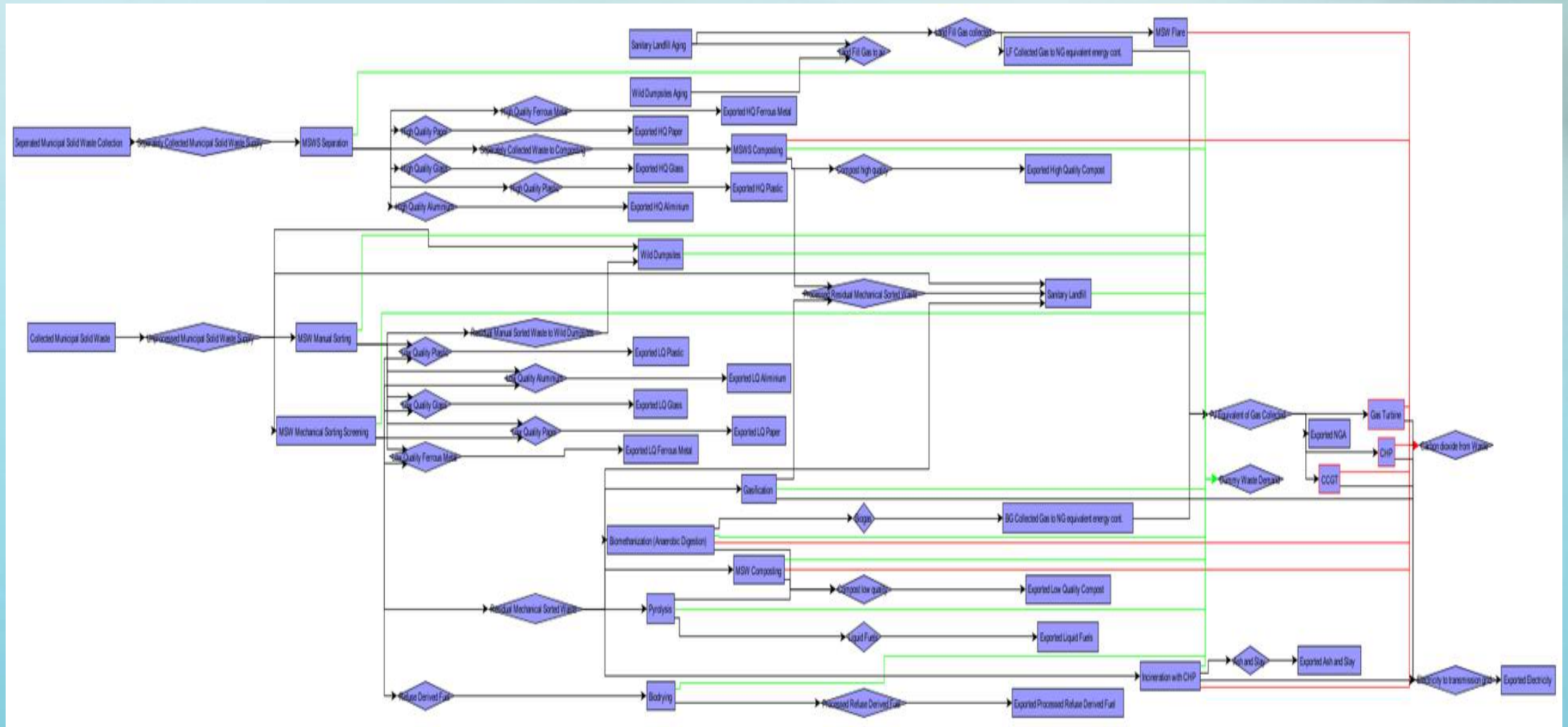
Selected actions:

- *Utilization of methane by LFG to energy facilities and biological recovery facilities,*
- *Increasing materials recycling rate.*

Sectoral TIMES modelling structure, materials/energy flows

- 43 processes
- 34 variables
- Source separated and mix municipal waste
- Biomethanization, compost, bio-drying (ATY production), gasification, pyrolysis, incineration, sanitary landfill
- Electricity generation, by-products, recycled materials
- Lowest cost option within the framework of current legislation and strategic objectives

Sektörel TIMES modelleme yapısı, materyaller/enerji akışları



Overview of current state of Waste Sector in base year - 2015

- Total amount of municipal solid waste collected (t): **30,896,809**
- Population having access to MSW collection service: **72,349,397**
- Total amount of packaging waste collected (t): **2,530,664**
- Total amount of municipal packaging waste collected (t): **1,614,563**
- GHG emissions generated from waste sector is 16.9 Mt CO₂-eq., which is 3.6% of the total GHG emissions (88 % is from CH₄).
- Waste sector is responsible from 28.8% of total CH₄ emissions.
- Solid Waste Disposal: 73.8 %, Wastewater Discharge and Treatment: 26.1 %

Overview of current state of Waste Sector in base year - 2015

- LFG or biogas to energy capacity: 200 MWe / 1.5 million MWh
- Total biological treatment capacity: 1.5 million tonnes
- Sanitary Landfill: 83

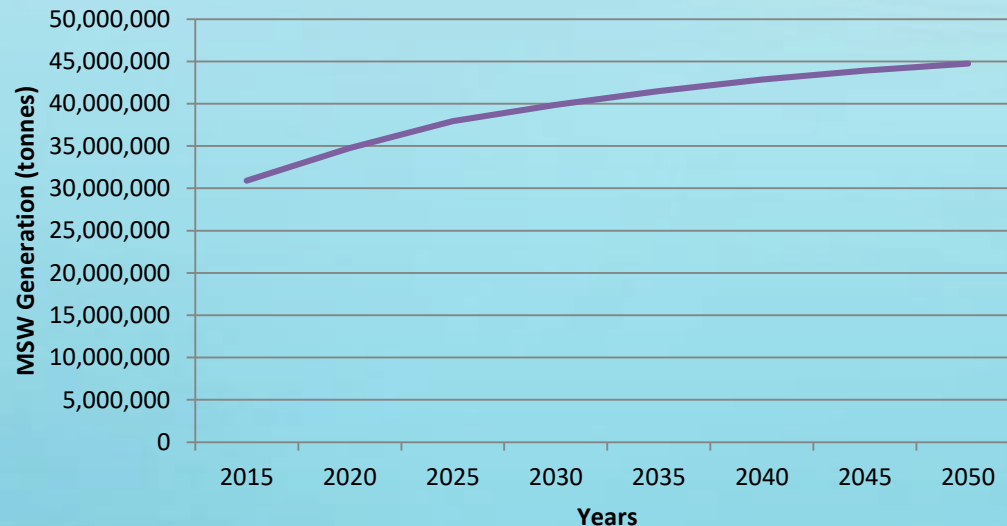
İller	Kompost (ton/yıl)	Biyometanizasyon (ton/yıl)	MBT (Kompost) (ton/yıl)	MBT (Biyometanizasyon) (ton/yıl)	MBT (Biyokurutma) (ton/yıl)
Adana	-	-	-	268.800	-
Amasya	5.000	-	-	-	-
Ankara	-	-	-	448.000	-
Aydın	5.000	-	-	-	-
Balıkesir	5.000	-	-	-	-
Çanakkale	5.000	-	-	-	-
Denizli	5.000	-	-	-	-
İstanbul	-	-	160.000	-	560.000
Kocaeli	--	9.600	-	-	-
Kütahya	5.000	-	-	-	-
Samsun	-	-	-	48.000	-
Sakarya		9.600			

Overview of current state of Waste Sector in base year - 2015

Waste Management	%
MSW sent to Landfills	57.1
MSW sent to Dump Sites	29.2
HQ Municipal Packaging Waste sent to Material Recycling	5
LQ recyclable MSW sent to Material Recycling	4
MSW sent to Bio-methanization	2.4
MSW sent to Composting	0.6
MSW sent to Bio-drying	1.7

Future assumptions for sectoral baseline projection – MSW Generation Trends

- MSW generation: estimated based on population numbers and a generation rate of waste per capita in kg/cap./year
- Population: TurkStat 2050 projection: 104 749 423
- 1.17 kg/cap./day (latest data from TurkStat). GDP impact can not be calculated.
- MSW generation in 2050: 44 733 241 tonnes

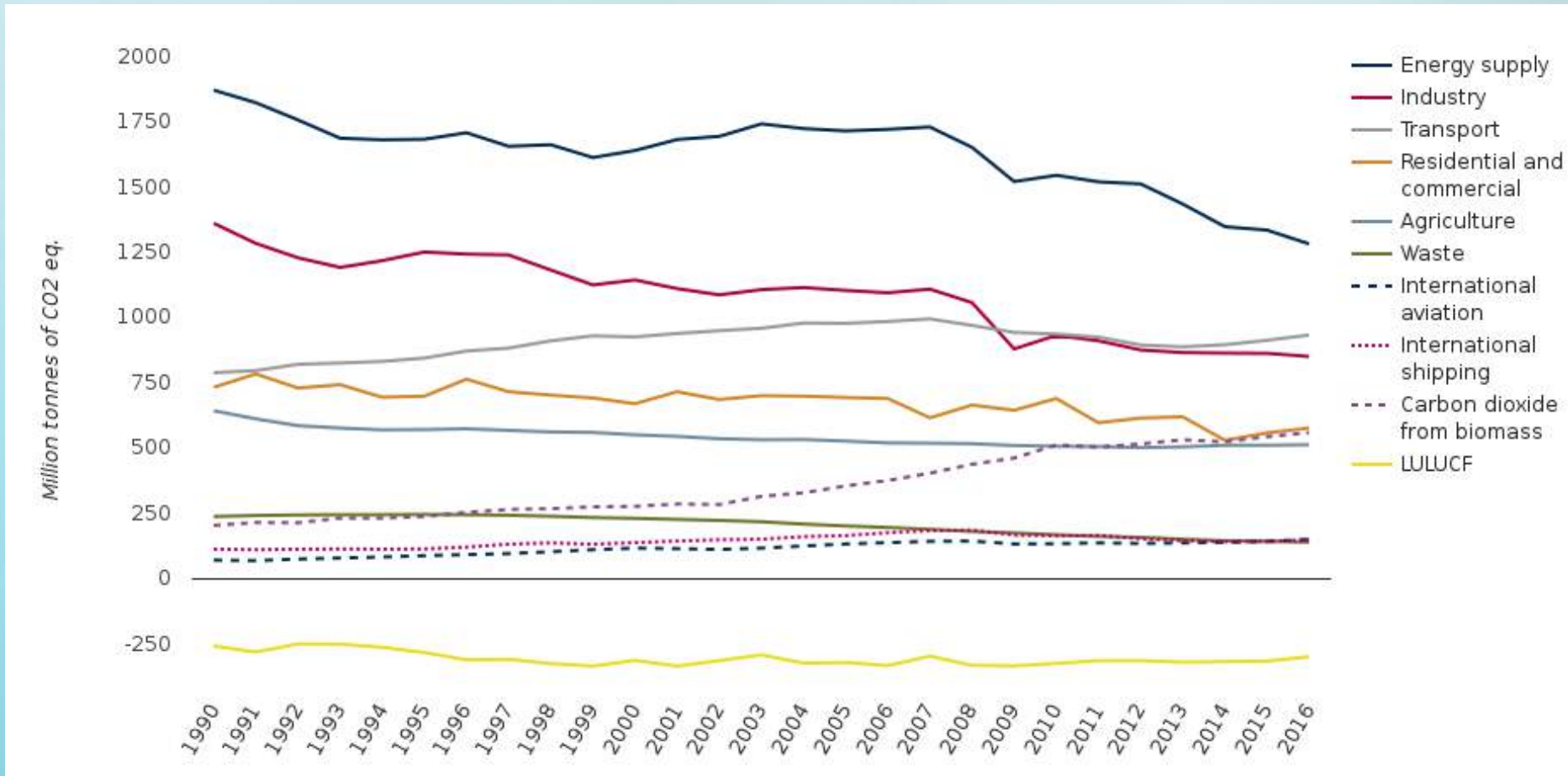


Future assumptions for sectoral baseline projection – Emission Factors

Waste Management	Organic Waste to Sanitary Landfill with %55 methane capture	Organic Waste to Dump Site without methane capture	AD	Compost	Incineration
Emission Factor (tCO _{2-eq} /t managed)	0.54	0.74	0.05	0.115	0.327

Type of recyclables	(A) GHG emissions from recycling (kg of CO _{2-eq} /tonne of recyclables)	(B) Avoided GHG emissions from equivalent amount of materials production from virgin process (kg of CO _{2-eq} /tonne of recyclables)	(C) Avoided GHG emissions from landfilling (kg of CO _{2-eq} /tonne of recyclables)	(D) Net GHG emissions (D) = (A)-(B)-(C) (kg of CO _{2-eq} /tonne of recyclables)
Paper	1,266	971	2,383	-2,088
Plastic	2,148	1,899	0	249
Aluminium	393	12,486	0	-12,093
Steel	1,102	2,949	0	-1,847
Glass	569	1,024	0	-454

Future assumptions for sectoral baseline projection - GHG emissions by sector in the EU-28



GHG emissions by sector in the EU-28, 1990-2016

Future assumptions for sectoral baseline projection – Policies

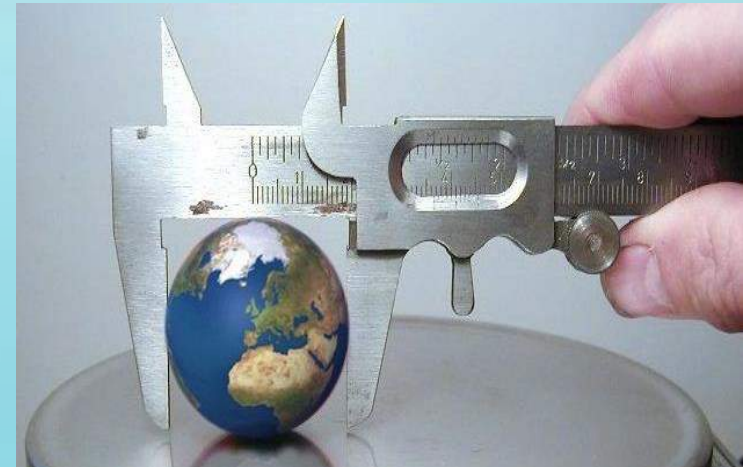
- **Regulative instruments**
 - National Waste Management and Action Plan (2016 – 2023)
 - Zero Waste
 - Biodegradable / Food waste diversion
 - Separate collection (organics / recyclables)
 - Waste hierarchy
- **Economic Instruments**
 - Extended producer responsibility (EPR)
 - Landfill tax
 - Subsidies and incentives such as YEKDEM
 - Grants or low cost loans

Future assumptions for sectoral baseline projection – Policies

- Voluntary Agreements
 - Environmental footprints
- Information Instruments
 - Climate impact inventory of waste sector
- R&D
 - Landfill gas flaring for small, old or closed landfills
- Implementation of new technologies, practices
 - Thermal treatment
- Public Procurement
 - Procurement of recyclable or biodegradable products

Key assumptions for sectoral baseline scenario projections

- Main data source: TurkStat and MoEU especially NWMAP.
- Literature: Word Bank, UNEP, IPCC Guidelines, ISWA Papers, EEA, Research papers, relevant reports by consultancy companies.
- Expert opinions for data gaps and consolidating available data.
- More data is needed for further assessment. Good management requires good data.





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Thank you for your attention!

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

