



MINING the  
EUROPEAN  
ANTHROPOSPHERE

WG 2 “Resources in landfills” meeting  
Tallinn, Estonia,  
9-11 August, 2017



# Waste and Landfill Management in Georgia

Presented by Prof. Tsitino Turkadze



Akaki Tsereteli State University

# About Georgia

**Capital city:** TBILISI

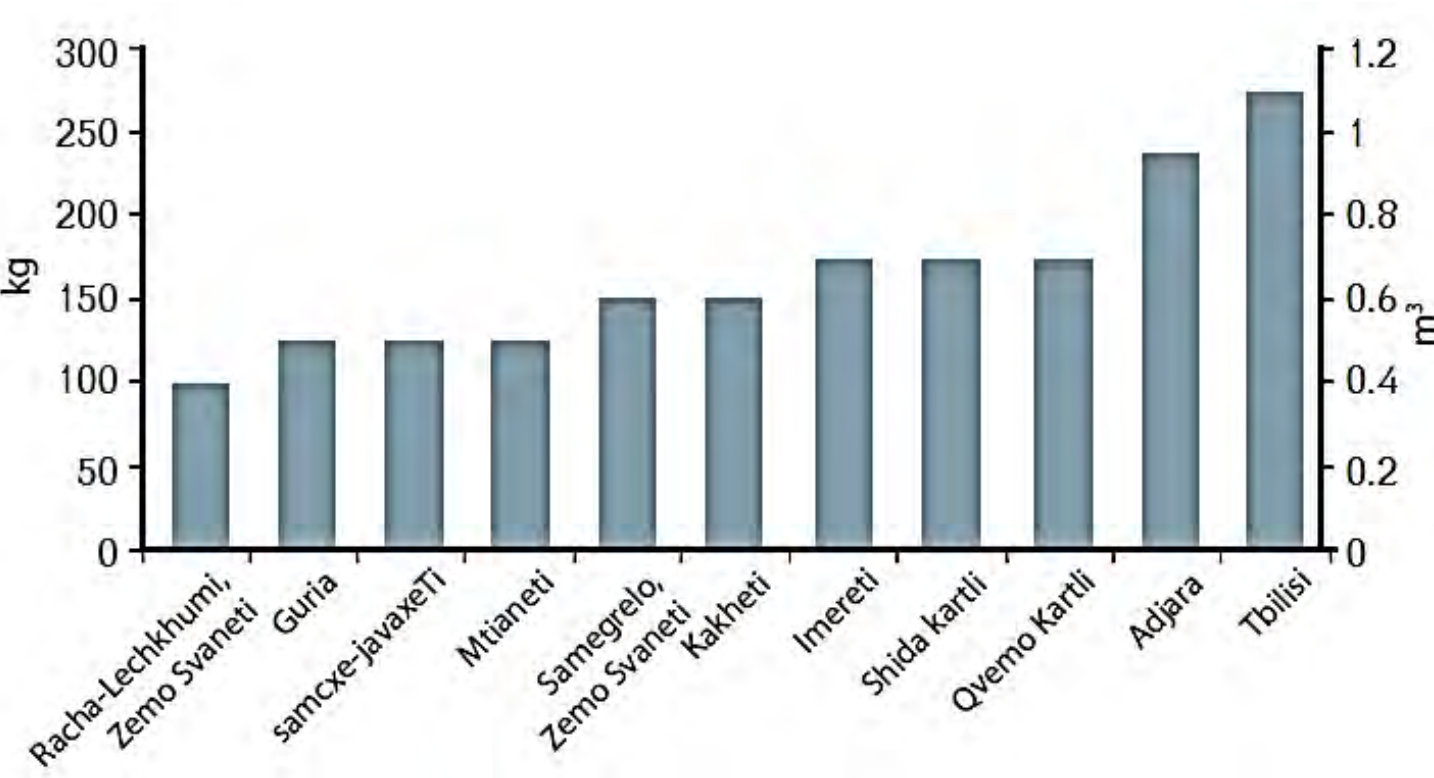
**Total area:** 69,700 km<sup>2</sup>

**Population:** 3 720 400 (2016)  
in Tbilisi 1 175 000

- After Georgia gained its independence (1991), the country declared the approximation with the European Union and finally joining it as its key priority.
- Little over half (53.1 per cent) of the Georgian population lives in towns. The capital and largest city is Tbilisi (population 1,175,000 in 2014). The other main cities are Kutaisi (pop. 197,000) and Batumi (pop. 161,200).

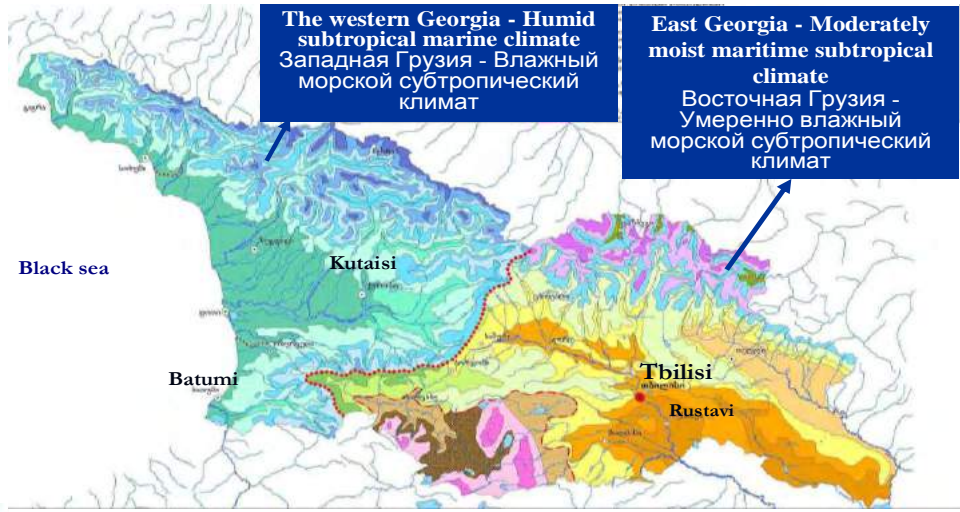


# MSW generation and treatment



Annual per capita production of municipal waste in regions of Georgia. Assessment, 2007

## Climatic Map of Georgia



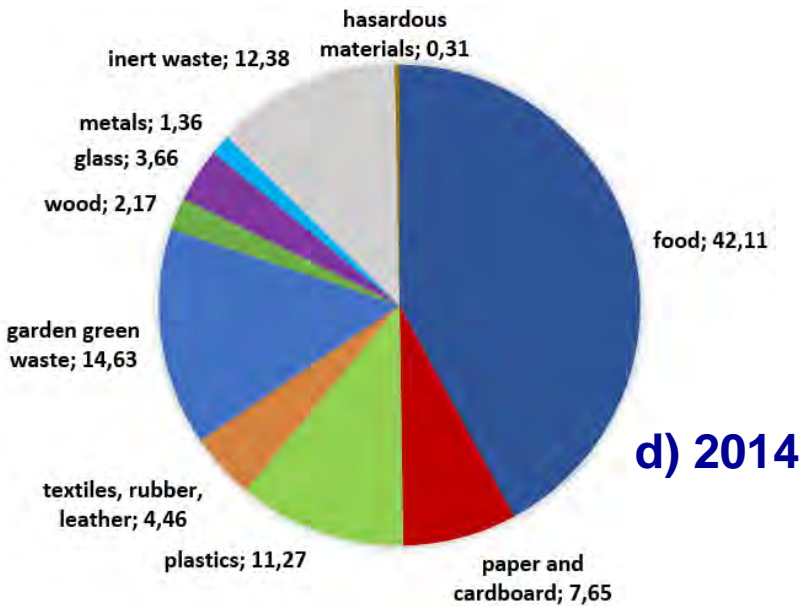
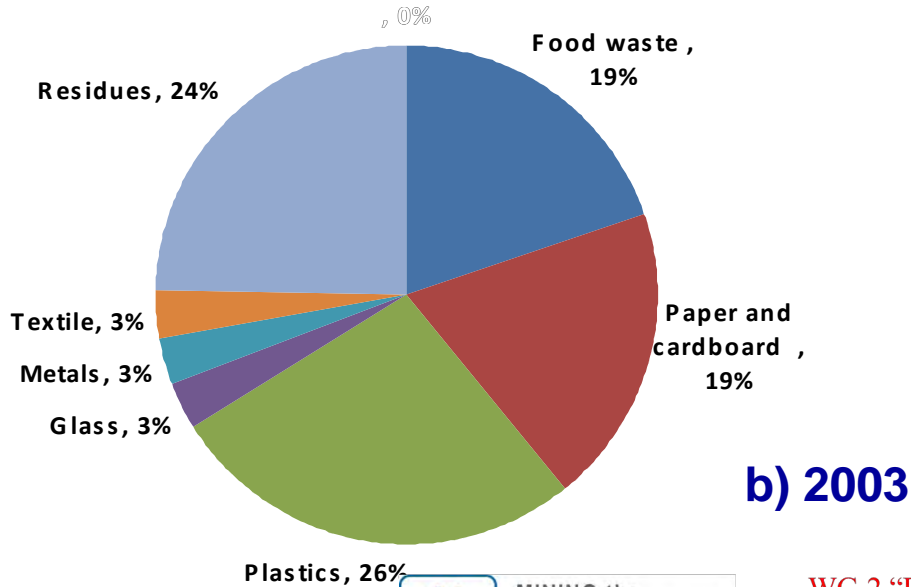
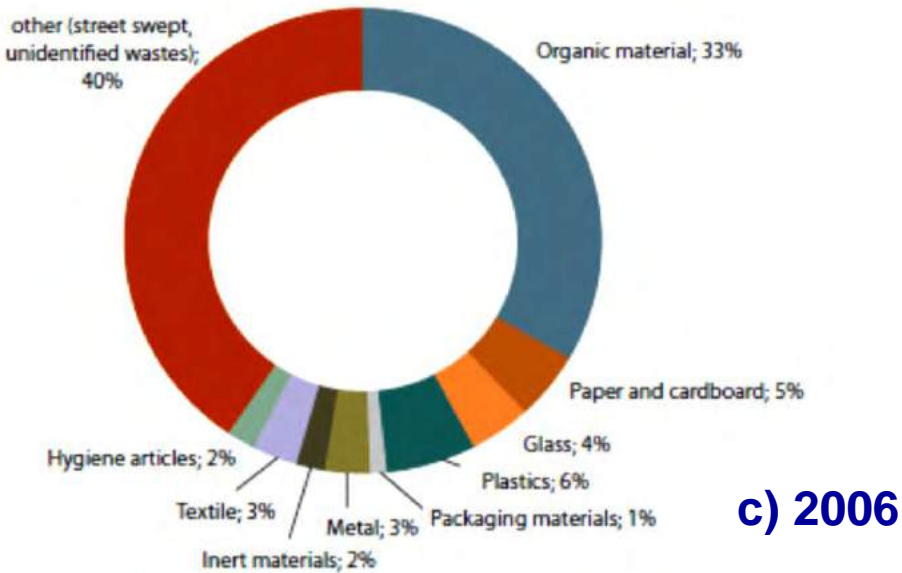
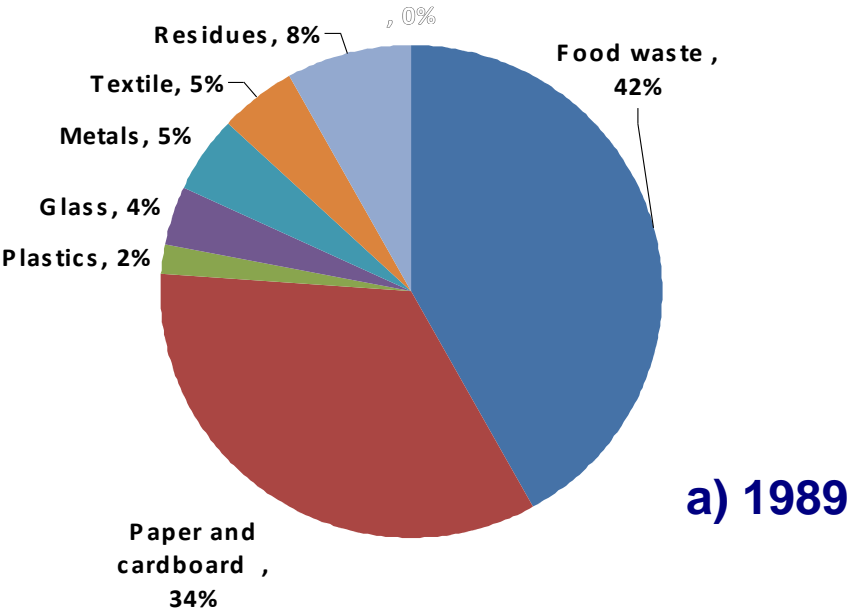
Eastern Georgia has a transitional climate from humid subtropical to continental, influenced both by dry, Central Asian/Caspian air masses from the east and humid air masses from the west. The penetration of humid air masses from the Black Sea is often blocked by the **Meskheta** mountains that separate the eastern and western parts of the nation. Annual precipitation of western Georgia and ranges from 400–1,600 mm. The wettest periods generally occur during spring and autumn while winter and summer are the driest. Much of eastern Georgia experiences hot summers (especially in the lowlands) and cold winters. As in the western parts of the nation, elevation plays an important role in the climate. Conditions above 1,500 meters (4,921 ft) are considerably colder than in the lowlands. At 2,000 meters (6,562 ft) frequently experience frost even during the summer months.



Annual production of municipal waste in Georgia by regions. Assessment, 2007

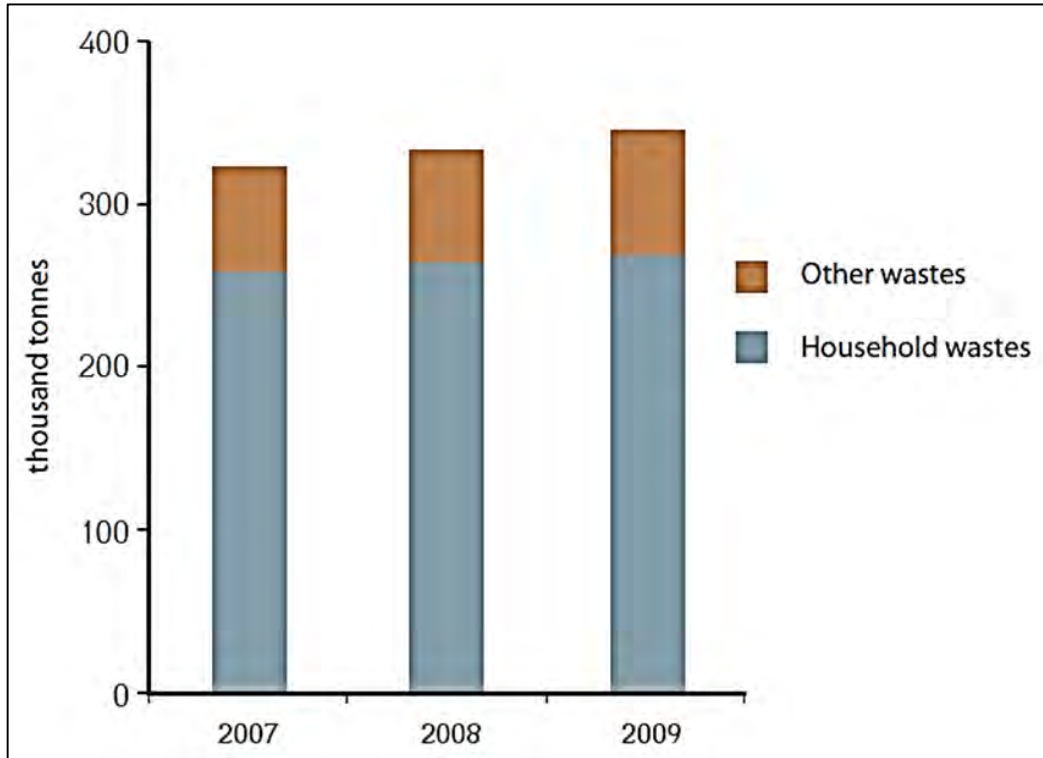


# Composition of municipal waste in Tbilisi



Source:  
a, b, c) -Tbilisi Waste Management Concept, 2006, GTZ, Infrastruktur&Umwelt.  
d) - National waste management plan, 2014.

# MSW generation

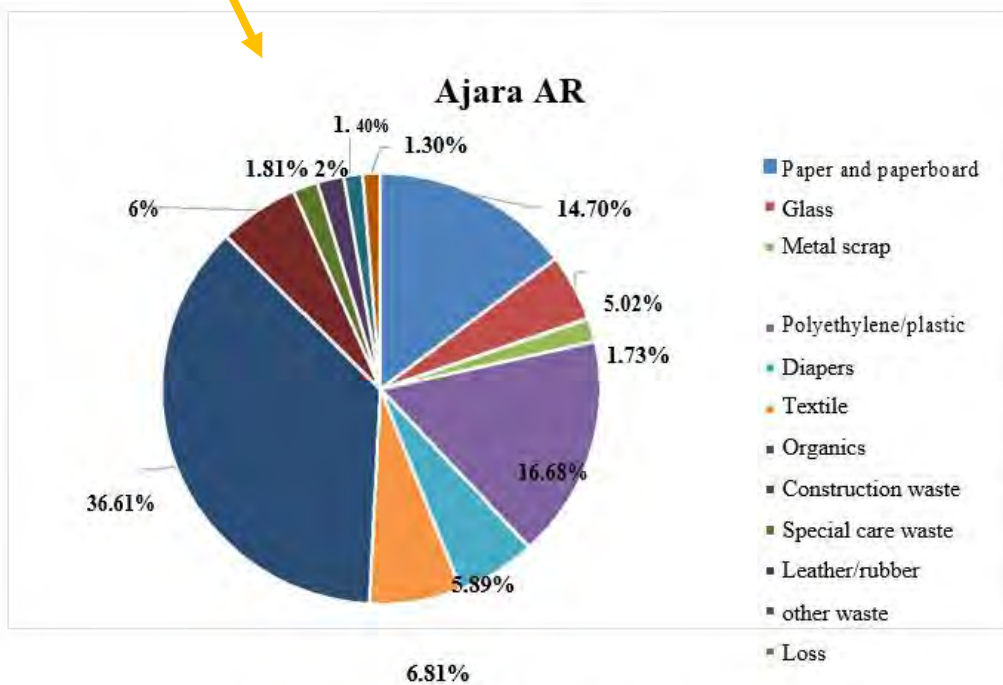


Annual generation of municipal waste in Tbilisi, 2007-2009



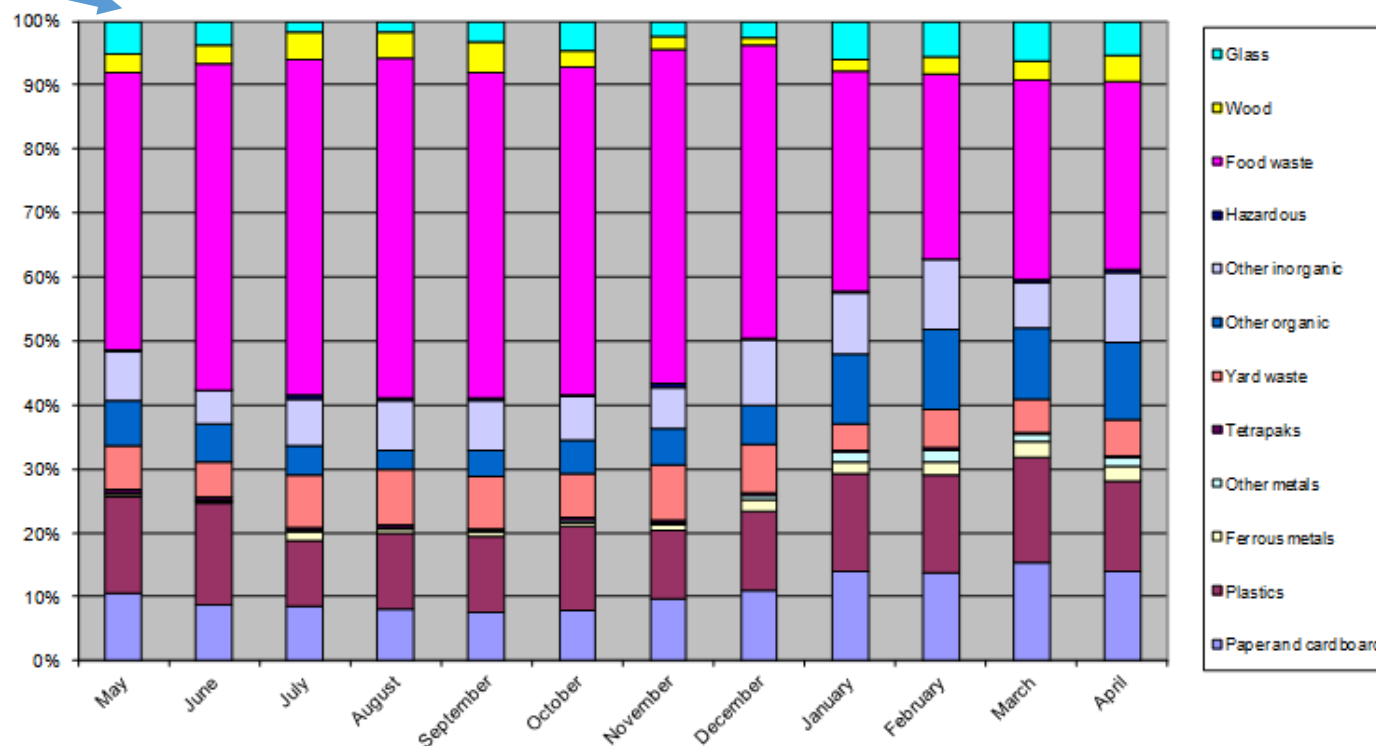
Waste Amount by Months in 2011-2013 (Tbilisi)

# Composition of MSW



Waste composition, Ajara AR, 2015-2016

MSW fractions percentage, Kutaisi, GEO, 2010-2011



MSW fractions percentages in Kutaisi city in 2010-2011 (Georgia)

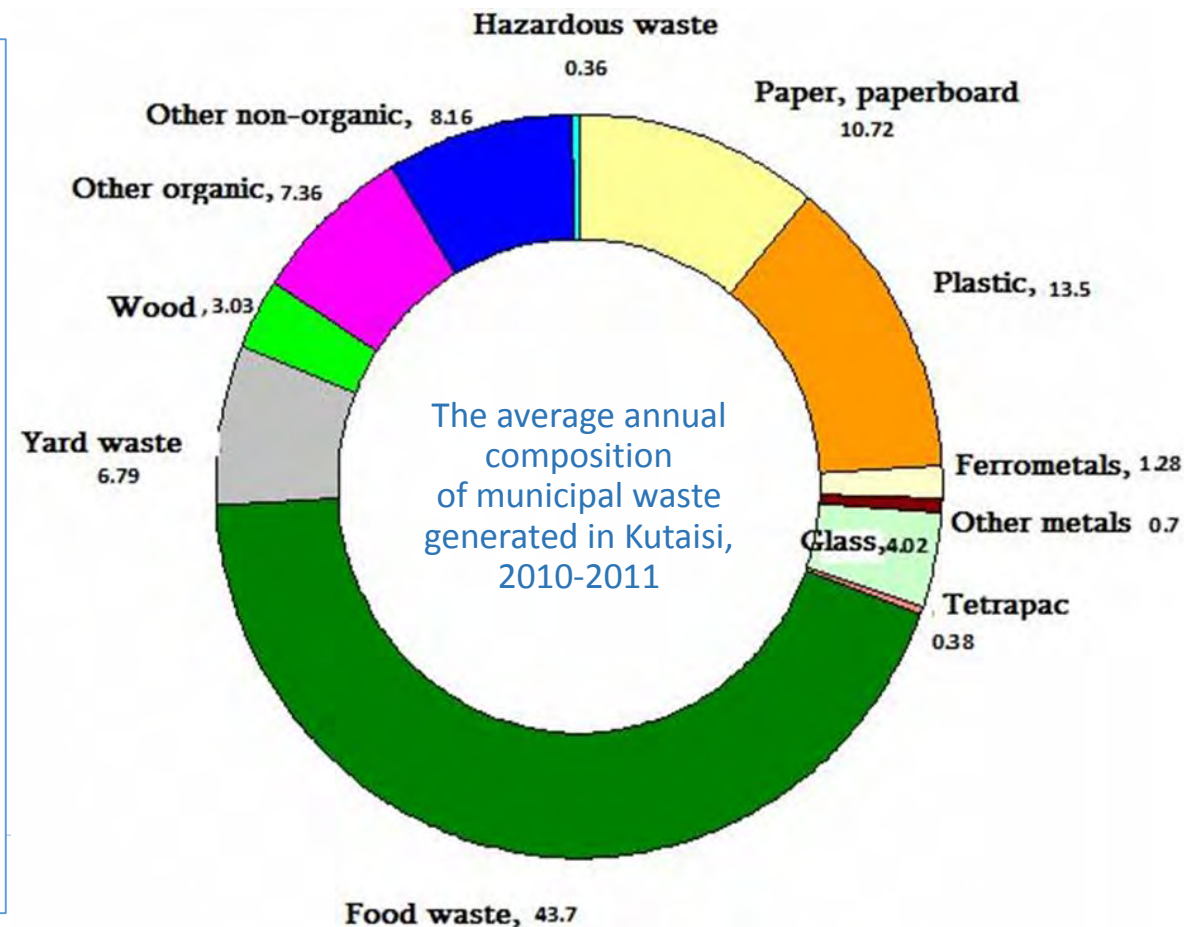
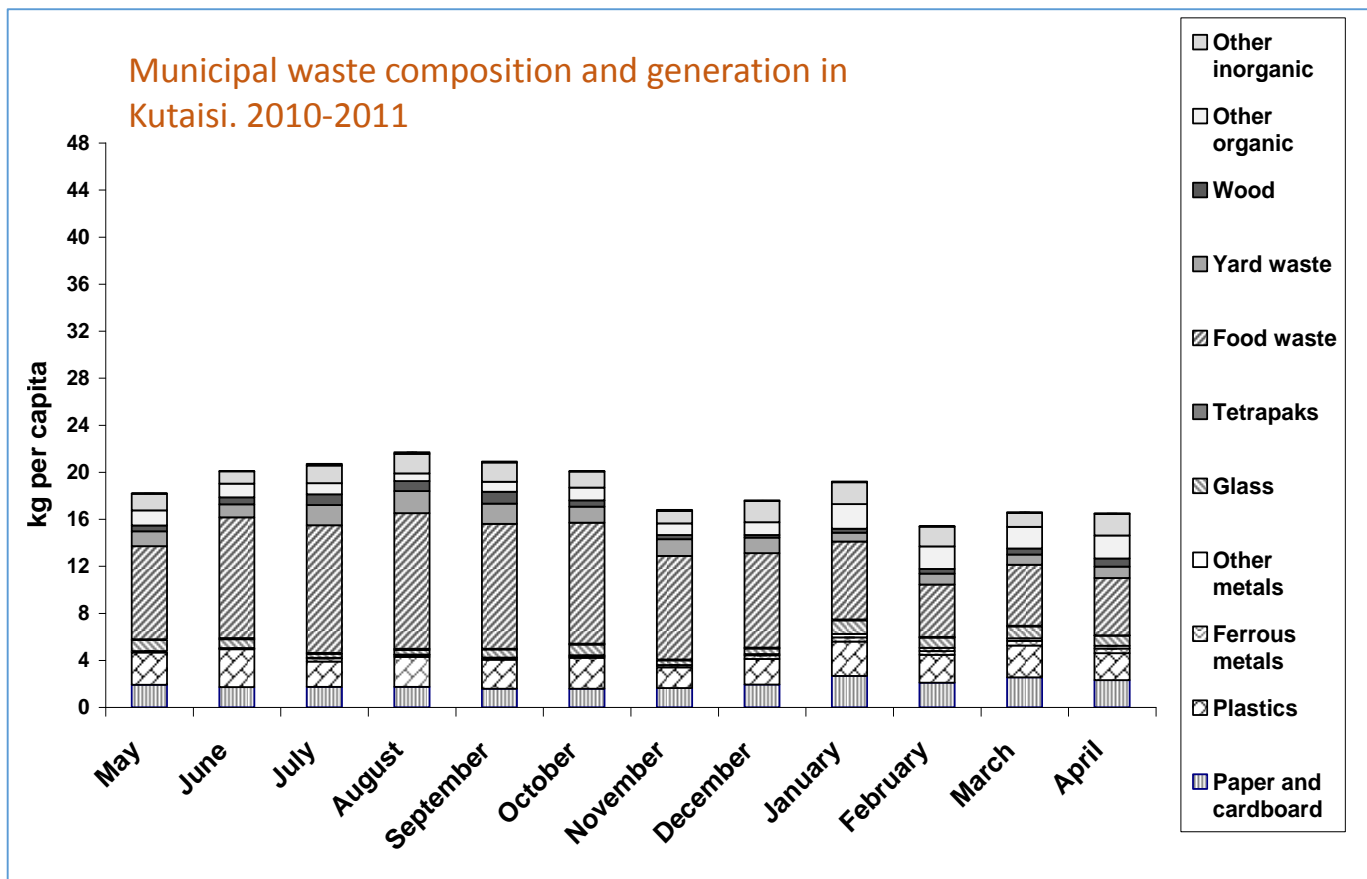


# Waste composition analysis

SWC-ENV-IND

Project “Seasonality of Municipal Waste Generation and Composition and Corresponding Fluctuations of Various Environmental Indicators for Waste Management and Treatment Facilities”. Swiss National Scientific Foundation.

Municipal waste composition and generation in Kutaisi. 2010-2011



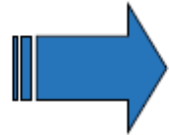
# Waste policy and regulatory frameworks

## Legal framework for waste management – International conventions

### International Conventions signed and ratified by Georgia

- **Basel** – “Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal” (1999)
- **Stockholm** – “Convention on Persistent Organic Pollutants” (POPs) (2007)
- **Aarhus** – “Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters” (2001)
- **EU – Georgia Association Agreement AA** (2014)

### Challenges / next steps

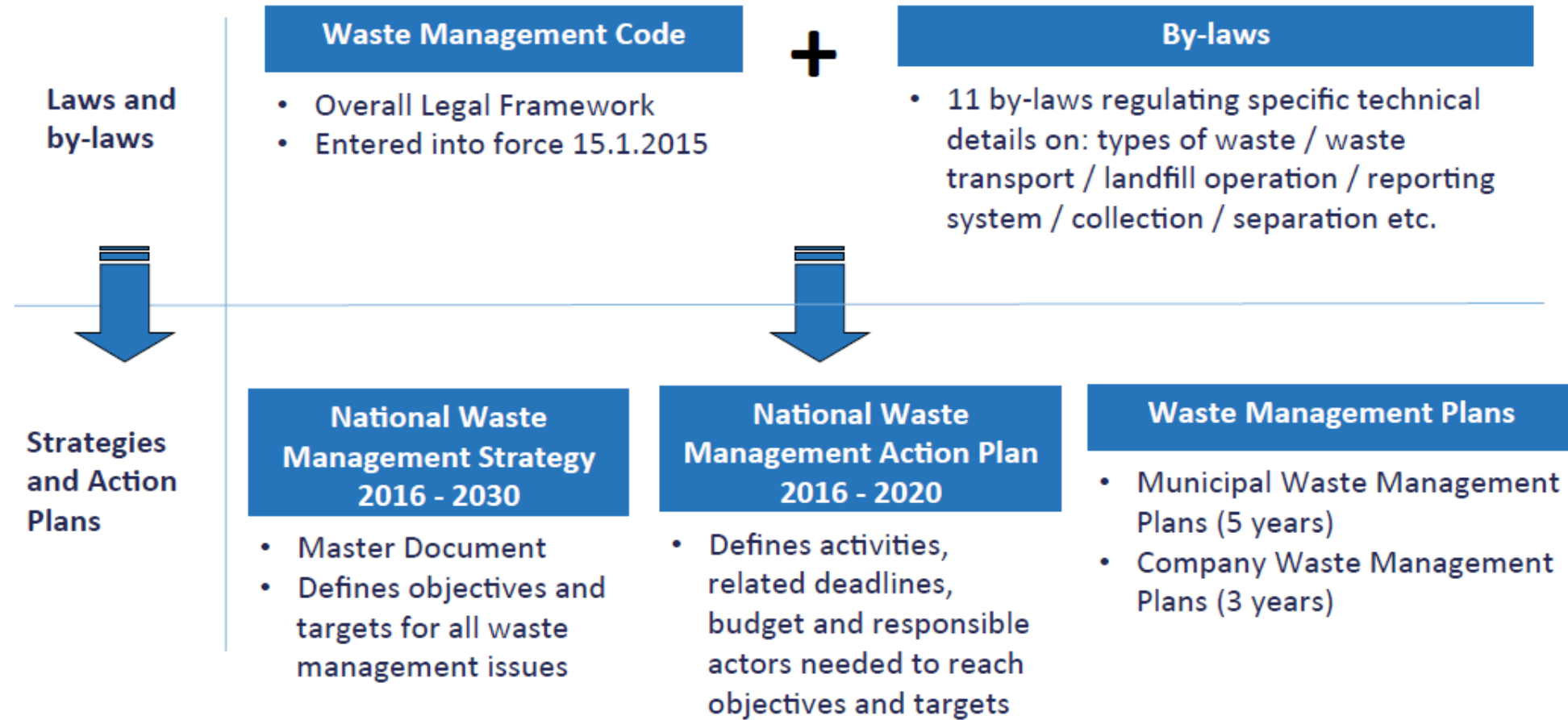


- Need for further **transposition** of EU requirements of the AA and international conventions into the national legislation
- Need for full **implementation** of national and international requirements



# Waste policy and regulatory frameworks

## Legal framework for waste management – national legislation



# Waste policy and regulatory frameworks

## WMS 2016-2030 – 5. PREVENTION, RE-USE , RECYCLING, RECOVERY

### Objective 5. Prevention, re-use, recycling and/or recovery of waste

**Target 5.1** Source separation for paper, glass, metal and plastic established by 2025

**Target 5.2** National minimum targets for the waste to be recycled:

	2020	2025	2030
Paper	30%	50%	80%
Glass	20%	50%	80%
Metal	70%	80%	90%
Plastic	30%	50%	80%

# Waste policy

## Waste M

### ➤ Organic

### Local Mun

#### • Coll

#### • Clea

#### • Tra

### ➤ Georgia

#### • ≤ 3

#### • ≤ 25

**Table 2.5: Waste fees in Tbilisi**

Customer groups	Measurement unit	Fee rate per measurement unit per month	
		lari	€
Private households	per head	2.50	1.12
Museums, libraries	per m <sup>2</sup> of total area	0.03	0.01
Private and public sector offices	per m <sup>2</sup> of total area	0.10	0.04
Cinemas and theatres	per seat	0.41	0.18
Educational institutions	per pupil/student	0.25	0.11
Hotels	per bed	2.15	0.97
Hospitals	per bed	1.45	0.65
Grocery stores	per m <sup>2</sup> of working area	0.95	0.43
Restaurants	per seat	3.00	1.35
Bakeries	per m <sup>2</sup> of working area	0.32	0.14
Agricultural markets	per m <sup>2</sup> of total area	0.37	0.17

Source: Municipality of Tbilisi, Decision No. 7-22 on waste fees in Tbilisi, 23 May 2013.

Note: Selected types of activities.

Exchange rate: €1 = 2.2239 lari (average monthly exchange rate October 2014).



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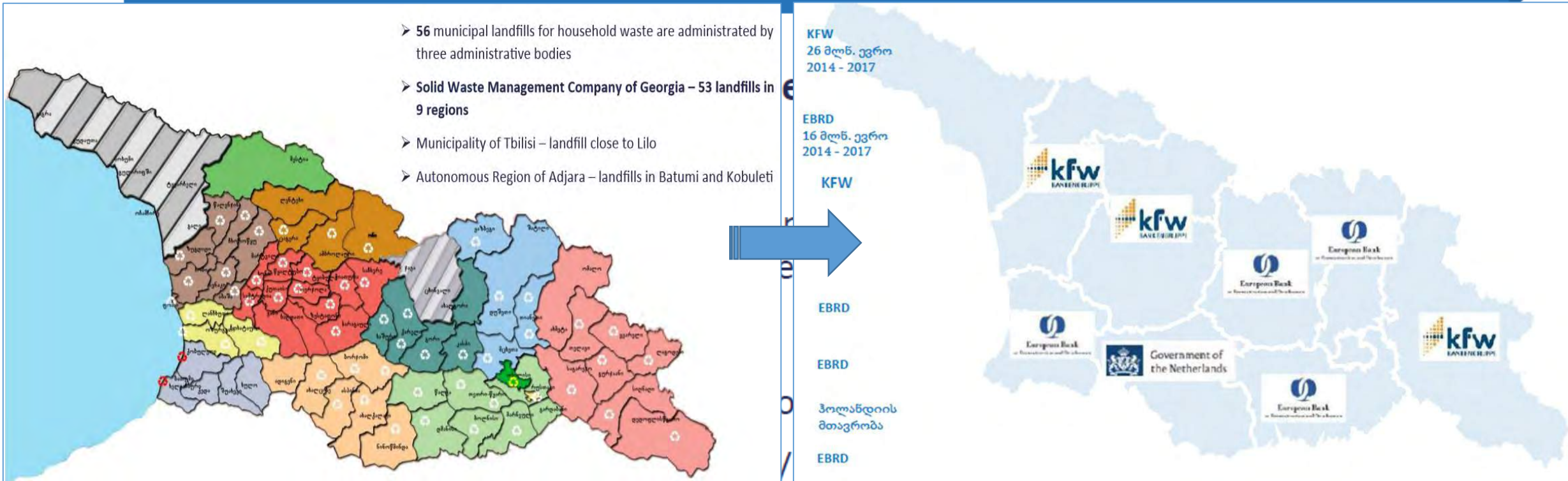
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landfills (Available data)

## WMS 2016-2030 – 4. LANDFILLS



**Target 4.4** Reduce the disposal of biodegradable waste to landfills by 2025

# Solid Waste Management Company - Activities and Achievements 2013 - 2016



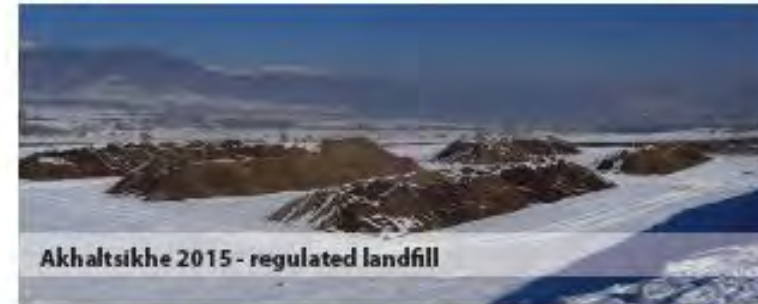
*"Clean country - our job"*

- > 53 landfills under our management
- > 28 landfills rehabilitated (3 further rehabilitations planned)
- > 13 landfills closed (9 further closings planned)
- > Construction of up to 9 new regional landfills in preparation

**Before**



**After**





## landfills (Available data)

### The first sanitary landfill for municipal waste – Rustavi, 2011



- The Rustavi landfill was developed according to EU standards with financing from the EBRD, SIDA and BP.
- Provides disposal capacity for 80,000 m<sup>3</sup> in phase 1. Operation of the landfill started in 2011 and it currently receives 30,000 tons of municipal waste annually.

**Table 5.2: Rustavi landfill balance, 2013, tons**

	tons
MSW received	29 219.7
MSW disposed	27 439.2
Recyclables total	1 780.5
Recyclables sold	388.0
PET bottles	134.3
Cardboard	214.7
Glass bottles	14.1
Metal	3.5
Other	21.5

*Source: Rustavi landfill, 2014.*



# Tbilisi landfill for municipal waste – 2012 (according to EU standards)



- Since 2012, Tbilisi has been served by a new sanitary landfill, which was developed near the village of Norio. The cost of the first phase, which includes landfill infrastructure, roads, buildings, leachate collection/treatment, gas collection/treatment, fencing, gate, weighbridge and first waste disposal cell, was US\$7.85 million (15 million lari).
- The second phase was budgeted at US\$5.47 million. The Tbilisi landfill was developed according to EU standards, including the waste reception area, treatment of leachate by reverse osmosis and landfill gas utilization.
- Subsequent to the operation of this new landfill, two previously used, uncontrolled disposal sites in Gldani and Iagluja were closed and their remediation is being undertaken by SWMCG.

**The total area of the landfill site is 94 ha;**

**The landfill can serve Tbilisi until 2035;**

**In the event that waste is sorted prior to disposal, the landfill could operate until 2055;**

**Tbilisi landfill receives about 1,000 t of municipal waste per day, or 350,000 t/year.**

# Barriers for landfill mining



LTD "SOLID WASTE MANAGEMENT  
COMPANY OF GEORGIA"

## QUESTIONS AND ANSWERS ABOUT WASTE AND WASTE MANAGEMENT



Ministry of Regional Development and  
Infrastructure of Georgia

### 21 For what purposes can the area of former landfills be used after closure?

The possible use of closed landfills depends to a good part on how the landfill originally was planned and operated. For systematically planned and operated landfills respecting high environmental standards there exist potentially more possibilities for post closure use. In western countries former landfills are transformed into parks, golf courts, recreational areas or nature reserve areas. For the formerly unregulated landfills, which were taken over by the Solid Waste Management Company, the possibilities are more limited and post-closure use needs to be decided on a case-to-case basis. Most probably trees will surround the majority of the closed landfills and bushes and the area will be green area.

Solid Waste Management Company of Georgia – Consulting Services for Accompanying Measures



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Great thanks for attention!

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