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WASTE MANAGEMENT TECHNOLOGIES IN REGIONS, GEORGIA

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WMTR
Waste Management Technologies in Regions

WASTE MANAGEMENT TECHNOLOGIES IN REGIONS, GEORGIA

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ACRONYMS AND ABBREVIATIONS

4Rs	Reduce, reuse, repurpose (or recover), recycle
Adjara AR	Autonomous Region of Adjara
APA	Agency of Protected Areas
CENN	Caucasus Environmental NGO Network
CH⁴	Methane
CO²	Carbon dioxide
EA	Environmental Assessment
EBRD	European Bank for Reconstruction and Development
EC-LEDS	Enhancing Capacity for Low Emission Development Strategies
EHS	Environmental health and safety
EIA	Environmental impact assessment
EPR	Extended producer's responsibility
EU	European Union
GEL	Georgian Lari
GHG	Greenhouse gas
GIS	Geographic information system
GMA	Georgia Microfinance Association
GoG	Government of Georgia
ICMA	International City/County Management Association
IKA	In-Kind Activity Agreement
ISWM	Integrated solid waste management
ISWMPG	Integrated Solid Waste Management Plan Development Guideline
KfW	German Development Bank
LFG	Landfill gas
MoENRP	Ministry of Environment and Natural Resource Protection
MWMP	Municipal Waste Management Plan
NGO	Non-governmental organization
PEST	Political, economic, social and technological
PSA	Public service announcement
SCG	Stakeholder Consultative Group
SFG	Sustainable Forest Governance in Georgia
SIDA	Swedish International Development Cooperation Agency
SWMCG	Solid Waste Management Company of Georgia
SWOT	Strengths, weaknesses, opportunities, threats
USAID	United States Agency for International Development
WMTR	Waste Management Technologies in Regions
WMA	Waste Management Association

EXECUTIVE SUMMARY

The Waste Management Technologies in Regions Program (WMTR) was a four-year, USAID-funded program launched on March 18, 2014. The International City/County Management Association (ICMA) and ICMA partner Caucasus Environmental NGO Network (CENN) implemented the program with initial support from the Institute for Sustainable Communities.

The WMTR team delivered technical assistance that combined the local and international expertise of ICMA and ICMA's local partner CENN. ICMA's long-term and short-term experts assisted in improving local practices through strategic partnerships among the central government, local governments, non-governmental organizations (NGOs), community-based organizations (CBOs), private businesses, and potential investors, and through direct support to municipalities. ICMA also worked closely with CENN to build the capacity of CENN's staff and successfully transitioned program management to CENN as of March 16, 2017.

WMTR supported waste management system development and recycling/composting in two regions of Georgia—Kakheti and the Autonomous Republic of Adjara (Adjara AR). The solutions developed for these two regions are replicable in other regions as well. WMTR also worked at the central government level to develop the legal framework for waste management in the country. The legal framework includes the by-laws on municipal waste, landfills and incinerators, the Integrated Solid Waste Management Plan Development Guideline (ISWMPG) for municipalities in Georgia, and the general methodology for waste tariff calculation and a cost recovery system. Program activities promoted greenhouse gas (GHG) mitigation and sequestration by developing the waste management sector. WMTR activities focused on improving waste collection and recycling systems, building capacity in private sector-led recycling, designing and implementing an effective waste management strategy and tariff policy, and carrying out related communication and outreach initiatives.

This Final Report covers the entire program period (March 18, 2014, to March 17, 2018). Following is a summary of key accomplishments and results that WMTR achieved in the four program components. The “Activities and Accomplishments” section of the main report describes these and other program activities in more detail.

- **By-Law – Rules of Collection and Treatment of Municipal Waste**

The WMTR team, in collaboration with the Ministry of the Environment and Natural Resource Protection (MoENRP), international and national experts, developed technical regulations “Rules of Collection and Treatment of Municipal Waste”, in accordance with article 16, part 5, of Georgia’s Waste Management Code. On April 1, 2016, the Prime Minister of Georgia, Giorgi Kvirikashvili, approved the technical regulation with Government of Georgia Resolution No. 159.

- **By-Law – Construction, Operation, Closure, and After-Care of Landfills**

The WMTR team, in collaboration with MoENRP, developed a technical regulation on the construction, operation, closure, and after-care of landfills. The regulation was prepared in accordance with article 49 (paragraphs 1 and 8) of Georgia’s Waste Management Code and approved by the Prime Minister of Georgia on August 11, 2015, with Government of Georgia Resolution No. 421.



WMTR contributed to this objective and these results of the USAID's monitoring and evaluation framework.

- **By-Law – the Design, Construction, and Operation of Incinerators**

The WMTR team, in collaboration with MoENRP and international and national experts, developed the Technical Regulation on the Design, Construction, and Operation of Incinerators. Drafting of this regulation was a requirement of article 49 of Georgia's Waste Management Code. This technical regulation aims to prevent or minimize the negative environmental impact of waste combustion by incinerators and co-incinerators.

- **Integrated Solid Waste Management Plan Development Guideline for Municipalities**

The WMTR team, in collaboration with MoENRP, developed an ISWMPG for municipalities in Georgia. According to article 13(1) of Georgia's Waste Management Code, enacted on January 15, 2015, each municipality shall adopt a five years plan for the management of the municipal waste produced within its territory. The guideline that the WMTR team developed served as the basis for drafting these Municipal Waste Management Plans (MWMPs).

- **General Methodology for Waste Tariff Calculation and a Cost Recovery System**

The WMTR team developed a general methodology for establishing a waste management tariff and a cost recovery system in Georgia. The development of such methodology is a requirement of the Waste Management Strategy and Action Plan, approved by the Prime Minister of Georgia Giorgi Kvirikashvili on April 1, 2016. The WMTR team developed the relevant report along with an Excel-based waste tariff calculation tool. The report provides a general guideline for determining waste tariffs in accordance with modern requirements and proposes a cost recovery system that will ensure the sustainability of solid waste management systems at the municipal level.

- **Cost-Benefit Analysis of Waste Management Strategies for Adjara AR and Kakheti Region**

The WMTR team conducted a cost-benefit analysis for waste management investments in Georgia to ensure the effectiveness of the country's waste management system. The report includes an economic evaluation of alternative strategies for the Adjara AR and Kakheti Region in light of the evolving waste management system. The evaluation informed policymakers about the economic potential of alternative waste management strategies, and highlighted system integration issues and stakeholder impacts. It also suggested a strategy for mobilizing international support for financing recycling and composting alternatives that reduce methane (CH₄) and carbon dioxide (CO₂) emissions, providing global benefits. The analysis considers a number of waste management options. It evaluates the costs and benefits of waste disposal at landfills, operation of landfill-based material recovery facilities, composting systems, and source separation and recycling programs.

- **Waste Management Guideline for the Agency of Protected Areas (APA)**

The Waste Management Strategy and Action Plan approved by the GoG in March 2016 requires the development of a Protected Areas Waste Management Guideline. Therefore, the WMTR team, in close cooperation with MOENRP's APA, developed this guideline. The guideline applies to all categories of protected areas in Georgia and provides information on the waste management principles in these areas in accordance with international standards. It defines sound practices and standards that will help ensure proper management of waste originating from protected areas.

- **Development of Municipal Waste Management Plans for Municipalities in Kakheti Region and Adjara AR**

The WMTR team, in cooperation with local governments of all municipalities and self-governing cities in Kakheti region and Adjara AR, developed MWMPs based on the ISWMPG that the WMTR team also developed. The local governments submitted these plans to the MoENRP for its concurrence. The development of such plans is required by Georgia's Waste Management Code. According to article 13(1) of this law, each municipality shall adopt a plan for the management of municipal waste produced within its territory for a period of five years.

- **Measurement of GHG Emissions in Ambient Air around Landfills**

The WMTR program purchased and transferred a TDL-500 Portable Gas Analyzer Equipment to the Solid Waste Management Company of Georgia (SWMCG). This equipment enables the SWMCG to

measure GHG emissions in the ambient air around landfills and assess the landfills' negative impacts on the environment. The company is currently using this equipment to better plan the reduction of GHG emissions from existing landfills. It continuously monitors the ambient air emissions around existing and new landfills built in accordance with European Union (EU) requirements.

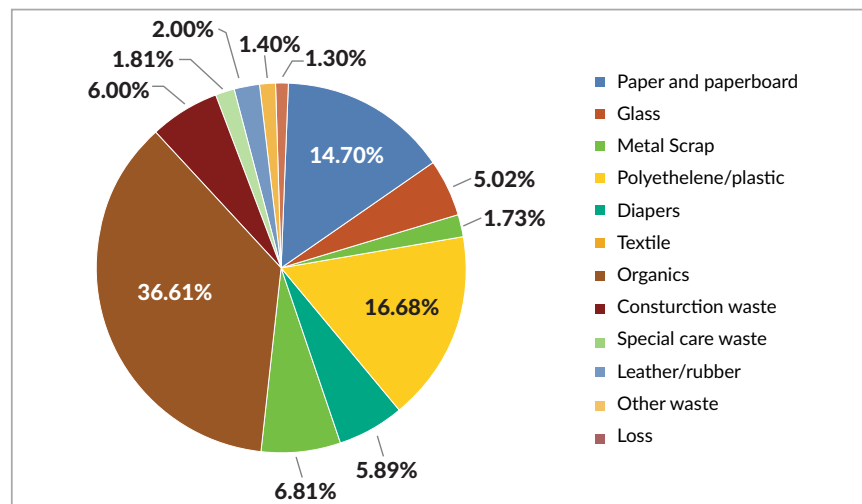
- **Calculation of GHG Emission Reduction Resulting from WMTR Activities**

In order to track methane emission changes based on WMTR activities, the team conducted a methane emission inventory and forecasted the reduction through 2030. The projected greenhouse gas emissions reduced or avoided through 2030 from adopted laws, policies, regulations, or technologies supported by the WMTR program will amount to 2,327 010 tone CO₂.

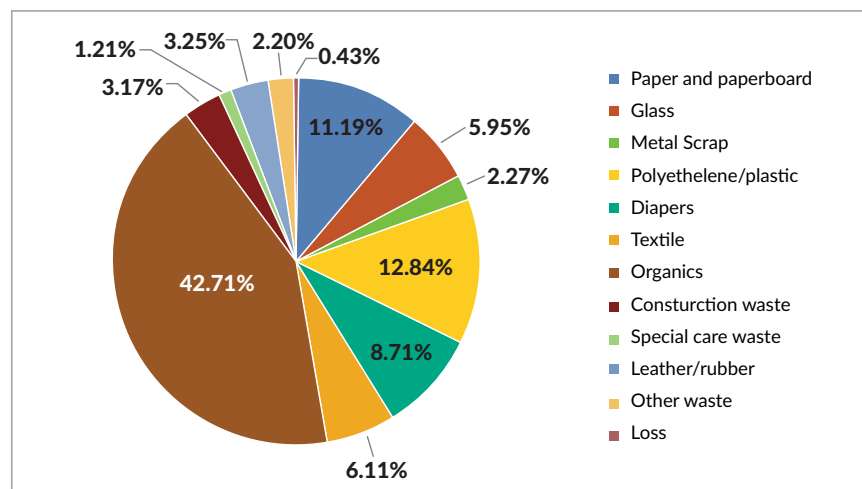
- **Seasonal Study of the Composition of Solid Municipal Waste in Adjara AR and Kakheti Region**

To determine the technical and economic efficiency of waste recovery and recycling programs, WMTR assessed the current amount of recyclables present in the municipal waste streams. Because waste types and volumes vary seasonally, the WMTR team carried out a seasonal morphological study of waste composition in the Batumi and Telavi landfills. The seasonal study covered all four seasons from July 2015 until April 2016.

Mean Annual Percentage of Municipal Waste



Adjara Region



Kakheti Region

- **Closure of Gurjaani Landfill**

The WMTR team, in collaboration with international and national experts, in line with the requirements of national legislation, international best practices and EU directives, developed the Gurjaani Landfill closure plan. The SWMCG communicated the plan to MoENRP, which consented to the landfill's closure. The SWMCG allocated money in the 2016 budget, and in July 2016 closed the Gurjaani landfill in accordance with WMTR's closure plan.

- **Closure of Illegal Dumpsite in Beshumi, Khulo Municipality**

The WMTR team developed a closure plan for the Beshumi illegal dumpsite and the local government closed it. The dumpsite occupied around 780 m²; it was not fenced and was surrounded by unique forest area that needed special attention and treatment.

- **Cleanup of Illegal Dumpsites in Adjara AR and Kakheti Region**

The WMTR team, in cooperation with local governments in Adjara AR and Kakheti region, cleaned up multiple illegal dumpsites. The cleaned areas were repurposed by planting trees. The program installed signs with a slogan that discouraged further polluting the environment. The table below presents the cleared dumpsites and the number of planted trees.

Region	Village(s)	Area	Afforestation
Kakheti Region, Akhmeta Municipality	Duisi, Dumasturi, Jokolo, Khaltsani	3.5 ha	500 trees
Kakheti Region, Telavi Municipality	Akura, Busheti, Shalauri, Tsinandali, Kurdgelauri, Artana, Karajala	5.5 ha	220 trees
Adjara Region, Kobuleti Municipality	Tsetskhlauri	0.02 ha	80 trees
Adjara Region, Khulo Municipality	Leghva, Dekanashvilebi	0.05 ha	
Total		9.07 ha	800 trees

- **Waste Management Association (WMA)**

The WMTR team supported waste management, recycling and aggregating companies in Georgia in creating and strengthening a Waste Management Association (WMA). The mission of the association is to lobby and advocate for developing a business-friendly recycling environment. In June 2015 the WMA was officially registered in the National Agency of Public Registry. In December 2015 the association made changes that improved its management system by distributing responsibilities among the members and the board. WMA also increased the effectiveness of its functioning and supported institutional strengthening by creating a new executive body.

- **Market Research on Recycling Plastic, Glass, Paper, and Aluminum**

The WMTR team assessed the market for plastic, glass, paper, and aluminum waste in Georgia and developed an assessment report. Recycling market research showed that most of the waste currently goes to landfills, and there is considerable potential in the country for the development of a waste recycling industry that would bring both economic and environmental benefits. The research also found that there would be significant benefits in channeling reusable material through recycling. The report helps the GoG making informed decisions, attracting investors and businesses and introducing waste separation schemes in the country for further recycling.

- **Introduction of a Waste Separation Scheme at Goodwill Hypermarket and Tbilisi Marriott hotel**

The WMTR program introduced the country's first public waste separation schemes in Goodwill Hypermarket and the Tbilisi Marriott Hotel. Customers of Goodwill Hypermarket can separate paper, plastic (bottles and bags), and aluminum cans, while Tbilisi Marriott Hotel provides the opportunity to separate paper and glass. The private waste collection company Supta Samkaro Ltd is collecting separately collected waste from both institutions for further recycling.

- **Introduction of a Waste Separation System in Five Villages of Telavi Municipality – Tsinandali, Kvemo Khodasheni, Akura, Vanta, and Busheti**

The WMTR team, in cooperation with the local government, placed 87 bins throughout all five villages to establish waste separation practices and expand the waste collection coverage area. Of the 87 bins, 42 are for separated collection of plastic and paper. The bins for separated collection are located in public places (e.g., close to shops, markets, schools, kindergartens). A private company collects the separated waste from the local government's storage space and exports or recycles it. The pilot project demonstrated the benefits of integrated solid waste management (ISWM) practices via the provision of technical assistance and co-financing support. It raised the awareness of local governmental structures and the public at large.

- **Introduction of a Waste Separation Scheme in the Self-Governing City of Telavi**

The WMTR team together with the local government introduced a waste separation system in Telavi City. The program installed 36 waste separation bins (18 for paper and 18 for plastic waste) on Alazani Avenue, where about 25 percent of the city's residents live.

- **Introduction of a Waste Separation System in Institutions**

The WMTR team supported the efforts of different institutions in Georgia to establish waste separation systems. The program facilitated these institutions' cooperation with a recycling company, which installed bins and is collecting separated paper waste from public and private institutions in Tbilisi and Adjara AR.

- **Grant to Support GHG Mitigation, Energy Efficient Technologies, and Source Separation Programs**

The WMTR team supported Zugo Ltd, a plastic bag recycling company located in Batumi, Adjara AR, in upgrading its equipment and increasing its production capacity. At the beginning of 2017, the WMTR team purchased a JQ-FB1000 PC ABA Film Blowing Machine and a JQ-ZD600 Single Line T Shirt Bag Making Machine and delivered the equipment to Zugo Ltd. In addition, engineers trained the staff at Zugo Ltd in the operation of this equipment.

- **Demonstration of a Composting Scheme in Kachreti College**

The WMTR team helped AISI Vocational College in Kachreti to introduce a composting scheme and install a composting bin. The team conducted relevant training for college staff. AISI college covers more than 12 ha of land. Equipped with modern technologies, the college offers programs such as veterinary science, culinary arts, woodworking, electrical engineering, tourism, plastering, and beekeeping.

- **Eco-Hub at Telavi University**

The WMTR team supported Telavi University students in creating an Eco-Hub/Co-Working space at their university. This eco-hub demonstrates the 4Rs (reduce, reuse, repurpose, recycle) concept and it provides a comfortable environment for students to work together, plan environmental projects, and organize open lectures and information meetings. The space is important for like-minded people to find each other, share experience and learn from one another, support each other in planning and implementing environmental projects, and motivate the youth of the region to spend their time effectively.

- **Waste Separation and Recycling Electronic Game for Children**

The WMTR team developed the separation and recycling e-game. The game aims to raise awareness among children aged 6 and above on waste separation and recycling issues. It consists of several stages where the child is asked to clean a room, park, or picnic area and place waste in pre-determined waste bins.

ACTIVITIES AND ACCOMPLISHMENTS

Component 1: Waste Collection and Recycling Systems

Stakeholder Consultative Group

At the beginning of the Program WMTR established a Stakeholder Consultative Group (SCG) serving as an advisory board for the program components. The SCG was an important instrument for effective cooperation between stakeholders and the WMTR team. It ensured consideration of the interests and needs of all stakeholder groups in waste management-related issues. The group consisted of representatives from different state organizations at the local and central levels, as well as international organizations and NGOs. Of the 23 participants in the first SCG meeting, 12 were women. WMTR held six SCG meetings during the program period. The meeting participants discussed ways to facilitate cooperation and avoid duplication of activities, regulatory documents such as the technical regulation on landfills, success stories such as the waste separation programs initiative in Telavi Municipality and the city of Telavi, and policy documents developed by the WMTR team such as the *General Methodology for Establishing Tariffs and a Cost Recovery System in Georgia*



SCG members discuss project results, ongoing activities, and future plans. Tbilisi, May 19, 2016.

By-Laws on Municipal Waste, Landfills, and Incinerators

By-Law on Rules of Collection and Treatment of Municipal Waste in Accordance with the Waste Management Code

The WMTR team, with the support of international and national experts and in close cooperation with MoENRP, developed the by-law, Rules of Collection and Treatment of Municipal Waste, in accordance with article 16, part 5, of Georgia's Waste Management Code. This by-law established the following procedures, measures, and criteria:

- Procedures and requirements for providing obligatory, effective collection services to all municipal waste generators in a municipality. The purpose is to minimize environmental impacts related to effects on local surface water, groundwater, soil, and air (including global environmental effects through mitigation of climate change-related emissions) and on risks to human health.
- Measures aimed at minimizing litter throughout a municipality as well as eliminating possible nuisance conditions such as noise, odors, or other adverse effects.
- Measures aimed at reducing the overall impacts of resource use and improving the efficiency of such use through recovery and recycling initiatives.
- Measures, procedures, and requirements for treating all municipal waste prior to landfill disposal in accordance with article 21, part 6, of the Waste Management Code.
- Minimum technical criteria that waste treatment facilities should meet during provision of services.

On April 1, 2016, the Prime Minister of Georgia, Giorgi Kvirikashvili, approved the technical regulation with Government of Georgia Resolution No. 159.

By-law on the Construction, Operation, Closure, and After-Care of Landfills in Accordance with the Waste Management Code

The WMTR program, with the support of international and national experts and in close cooperation with MoENRP, developed a by-law on the construction, operation, closure, and after-care of landfills. The prime minister of Georgia approved the by-law on August 11, 2015, with GoG Resolution No. 421. This by-law supersedes GoG Resolution No. 416 of December 31, 2013.

WMTR prepared the by-law in accordance with the requirements of article 49 (paragraphs 1 and 8) of Georgia's Waste Management Code. The by-law aims to prevent or minimize the negative impacts of landfills on the environment, especially on water, groundwater, soil, and air, by establishing strict operational and technical requirements. Such negative impacts include climate change-related emissions and accompanying risks to human health. The requirements apply during the entire life cycle of a landfill from its inception to the end of its post-closure after-care period.

The requirements in the by-law include:

- Technical rules, regulations, and criteria for landfill design, construction, operation, maintenance, and post-closure care
- Special requirements for existing landfills
- Waste acceptance criteria and procedures and safety assessment for underground storage of waste.

In accordance with Section VI of this Technical Regulation, within six months after its enactment, existing landfills that were in use prior to the adoption of the Technical Regulation and do not comply with the Law of Georgia on Environmental Impact Permit, have to submit conditioning plans to the MoENRP for bringing the landfills into compliance with the requirements specified in the by-law.

By-Law on the Design, Construction, and Operation of Incinerators

In February 2017, the WMTR team developed a *Technical Regulation on the Design, Construction, and Operation of Incinerators*, as required by article 49 of the Waste Management Code. This technical regulation aims to prevent or minimize the negative environmental impact of waste combustion by incinerators and co-incinerators.

The by-law covers:

- General provisions for the design, construction and operation of incinerators
- Rules and requirements for obtaining a permit for activity
- Rules and procedures for acceptance of waste
- Exploitation and maintenance of incinerator enterprises including operation modes, exceptions, technical requirements, supporting facilities and abnormal procedures
- Management of waste water as well as emissions and enterprise waste in the atmospheric air
- Control and monitoring plans and systems including reporting for air pollutants measurements and pollution measurements in waste waters

At the beginning of WMTR Phase II, MoENRP submitted the technical regulation to the government for approval.

Region-Specific Integrated Solid Waste Management Strategies and Action Plans

Integrated Solid Waste Management Plan Development Guideline for Municipalities in Georgia

The WMTR program, in collaboration with MoENRP and international and local experts, developed an ISWMPG for municipalities in Georgia. According to article 13 (1) of Georgia's Waste Management Code, enacted on January 15, 2015, each municipality shall adopt a plan for the management of the municipal waste produced within its territory for a period of five years. The guideline that the WMTR team developed served as the basis for drafting these Municipal Waste Management Plans.

The ISWMPG was developed in accordance with the general content provided in the Waste Management Code. The guideline describes the steps that municipalities should take for the development, implementation, and monitoring of the MWMPs, and outlines the content of these plans. The guideline includes chapters on:

- Preparing the development of a municipal waste management plan
- Determining and assessing existing conditions
- Evaluating options and making decisions
- Developing and adopting the municipal waste management plan
- Implementing the plan
- Operating, monitoring, and sustaining the plan's results;

MoENRP approved the guideline, and the WMTR team communicated it to SCG members and to local governments through workshops and roundtables. This guideline gave municipalities a unified document that served as the basis for developing their MWMPs.

Seasonal Study of the Morphological Composition of Solid Municipal Waste in Adjara AR and Kakheti Region

From July 2015 until April 2016, the WMTR team carried out a seasonal morphological study of waste composition in the Batumi and Telavi landfills. The study covered all four seasons because waste types and volumes vary by season. The WMTR team assessed the amount of recyclables present in the municipal waste streams to determine the technical and economic efficiency of waste recovery and recycling programs in Georgia.

The team studied morphological waste composition over a seven-day period each season. Each day, the team collected, manually sorted, and analyzed 100 kg samples of waste. The teams placed each type of waste into a specifically designed container and weighed it. The process was photographed, and study data were entered into summary forms. The team prepared seasonal reports based on the data collected.



The team collects, sorts, and analyzes waste for the composition study at Batumi landfill, Adjara AR.



The team collects, sorts, and analyzes waste for the composition study at Telavi landfill, Kakheti Region.

The study results serve as the basis for planning appropriate waste separation and recycling processes in the regions. The study concluded that organic matter is the biggest component of waste. Therefore, the establishment of composting systems or use of organic waste in biogas digesters to create fuel would have a significant impact on reducing the amount of waste that ends up in the landfills.

Municipal Waste Management Plans for Municipalities in Kakheti and Adjara AR

The WMTR team supported 15 municipalities and self-governing cities in the target regions in developing final versions of their Municipal Waste Management Plans. The development of such plans is required by article 13(1) of Georgia's Waste Management Code, enacted on January 15, 2015. Local governments communicated the MWMPs to MoENRP for its concurrence.

Local governments held public hearings in all municipalities to communicate the MWMPs with a broader group of stakeholders and beneficiaries. Activities surrounding final public hearings and implementation were transferred to CENN under WMTR Phase II, and the local councils of all 14 local governments approved the MWMPs by the end of 2017. The MWMPs developed by municipalities with the support of the WMTR team will contribute to the overall success of the Waste Management Code in establishing an environmentally sound and cost-effective waste management system throughout Georgia.

Presentation at the Intergovernmental Council Meeting

In December 2016 the WMTR team made a presentation at the first meeting of the Intergovernmental Council on effective implementation of the National Waste Management Strategy and Action Plan. The council, formed by MoENRP, unites various GoG institutions involved in waste management. The WMTR team presented the program's main achievements in terms of the National Waste Management Strategy, action plan implementation, and support of various governmental institutions in implementing requirements of the strategy and action plan.



WMTR makes a presentation on program achievements in waste management at the first meeting of the Intergovernmental Council, December 2016.

Waste Management Guideline for the Agency of Protected Areas (APA)

The Waste Management Strategy and Action Plan that the government approved in March 2016 requires the development of a Waste Management Guideline for Protected Areas. Addressing the requirement, WMTR team, in close cooperation with the MoENRP's APA, developed the guideline. The guideline applies to all categories of protected areas in Georgia and provides information on the principles of waste management in protected areas in accordance with international standards. It defines sound practices and standards to help ensure that APA, together with the respective local governments, will properly manage waste originating from the protected areas. The document introduces the zero-waste principle and includes information on the guideline legal basis; visitor waste generation characteristics; baseline practices; impact of nearby land uses; recycling; composting; coordination with municipal waste collection and disposal programs; waste management design and operational decisions for individual protected areas; and effective public communication and outreach.

Partial Grants to Assist Target Municipalities of Kakheti Region and Adjara AR

Introduction of a Waste Separation System in Target Villages of Telavi Municipality

According to the National Waste Management Strategy, all municipalities in Georgia should start separating waste by 2019. Introducing this modern approach requires specific knowledge and expertise from central and local governments, as well as behavioral changes in the local population. Small-scale pilot projects help test different models of waste separation to identify the type of separation that will be the most suitable for Georgian local context.

For this purpose, the WMTR team implemented a pilot project in five villages of Telavi Municipality—Tsinandali, Kvemo Khodasheni, Akura, Vanta, and Busheti. The pilot project demonstrated the benefits of ISWM practices via the provision of technical assistance and co-financing support as well as raised awareness in local governmental structures and the wider public.

In fiscal year 2016, the WMTR team placed 87 waste bins in the pilot villages, including 42 bins for separated collection of plastic and paper waste. The waste is collected separately (plastic and paper waste) and then stored in a warehouse allocated by the local government. The recycling company collects plastic and paper from the warehouse and then recycles it.



The waste bins are located at shops, near public schools, and in the center of the five pilot villages of Telavi Municipality.

The WMTR team's collaboration with the local government encouraged the sustainability of the pilot project and promoted local capacity building. In addition, WMTR communicated daily with students and other citizens from the five pilot villages to foster waste separation behavior. WMTR conducted training events and awareness-raising campaigns in these villages, reported under Component 4. All these efforts led to successful implementation of the pilot project and citizen enthusiasm about involvement in the waste separation process.



Waste separation bins in the self-governing city of Telavi

Introduction of Waste Separation Scheme in the Self-Governing City of Telavi

In March 2017, with WMTR assistance and support, the self-governing city of Telavi introduced a pilot waste separation scheme. The WMTR team together with the local government installed 36 waste separation bins on Alazani Avenue, where about 25 percent of the city's residents (approximately 154,100 people) live. Of these 36 bins, 18 are for paper and 18 for plastic collection. A sign on each bin indicates which type of waste should be thrown into the bin. The local government allocated a separate truck to serve the bins for separated waste collection and space to store all separated waste before removal by the recycling company.

Introduction of a Waste Separation System in Institutions

The WMTR team supported the efforts of different institutions in Georgia to establish waste separation systems. The program facilitated these institutions' cooperation with TissuePaper Ltd. As a result of this cooperation, TissuePaper Ltd installed bins and is collecting separated paper waste from the following institutions:

Institutions in Tbilisi	Institutions in Adjara AR
Civitas Georgica	Ministry of Finance and Economy
Caucasian House	Department of Tourism
Danish Refugee Council	Ministry of Education, Culture, and Sport
Heinrich-Böll Foundation	Agency of Environmental Protection and Natural Resources
Prospero book store	Ministry of Agriculture
Georgian Institute of Public Affairs	
Georgian Post	

Training on Composting at AISI Vocational College in Kachreti

In February 2016, the WMTR team held a training event on composting and the development of a waste separation and recycling system at AISI College in Kachreti Village of Kakheti Region. AISI College covers over 12 ha of land. Equipped with modern technologies, the college offers various programs, such as veterinary science, culinary arts, woodworking, electrical engineering, tourism, plastering, and beekeeping. AISI College already has the necessary infrastructure to start composting and implementing a waste separation scheme. The training covered basic information on soil, its structure, ingredients, and problems; composting and its processes as well as steps on defining the best organic fertilizer for soil.



Training participants at Kachreti College learn how to design and take care of a composting bin, February 25-26, 2016, Kachreti Village, Kakheti Region.



AISI College constructs a composting box using secondhand woodpiles, March 11, 2016.

The WMTR team explained to the training participants the environmental impact of composting and the composting process. The participants learned how to design a composting bin, what should and should not be put in, what ingredients are harmful, and how to take care of the bin. Relevant staff at the college received instructions on how to construct the composting bin, taking into consideration the amount of waste generated at the college.

On March 11, 2016, following the training, AISI College constructed a composting box using secondhand woodpiles, and WMTR provided separated waste collection bins to introduce a separated waste collection system.



On September 13 and 14, 2016, the WMTR team replicated the project by holding similar training events to assist Adjara AR in developing composting practices in Keda and Shuakhevi municipalities. Municipal employees and Gamgebeli staff together with trustees, farmers, and various organizations participated in the events. Both

training events hosted approximately 70 people. The audience expressed an interest in the topic and showed readiness to install a demonstration box in their yards.

Development of Landfill Remediation/Closure Plans and Dumpsite Cleanup in Kakheti Region and Adjara AR

Closure of Gurjaani Landfill

Gurjaani landfill was located in the municipality of Gurjaani along the Gurjaani-Jabukiani-Lagodekhi road. The Soviet-era landfill did not comply with modern standards. There is little information on the total quantity of solid waste delivered to the site during its operation. In addition, waste delivered to the landfill was regularly burned. The landfill operated until 2000 and was located on a swamp surrounded by agricultural land, presenting an obvious threat to public health and the environment.



The Soviet-era Gurjaani landfill operated until 2000 and was located on a swamp surrounded by agricultural land.

In May 2015, the WMTR team signed a memorandum of understanding with the SWMCG to develop the Gurjaani landfill closure plan and later close the landfill according to the plan. The WMTR team developed the Gurjaani Landfill closure plan for the SWMCG in accordance with the requirements of national legislation, international best practices, and EU directives. The SWMCG communicated this plan to MoENRP, which gave its consent for the closure of the landfill.

The SWMCG allocated money in the 2016 budget and closed the landfill. In accordance with international standards, the landfill's surface was graded, while the remaining waste was covered with clay soil. Waste from Gurjaani now goes to the Telavi and Dedoplistskaro landfills.

On September 21, 2015, the WMTR team together with the SWMCG visited the former landfill in Gurjaani to assess the situation onsite and approve the closure works.





On September 21, 2015, the WMTR team together with the SWMCG visited the former landfill in Gurjaani to assess the situation onsite and approve the closure works.

Development of an Environmental Assessment Report and the Telavi Landfill Compliance, Closure, and After-Care Plan

In March 2017, the WMTR team developed an Environmental Assessment (EA) Report for the *Telavi Landfill Compliance, Closure, and After-Care Plan*. The landfill covers approximately 5.6 ha and it is situated near the City of Telavi, in the vicinity of Gulgula village, which is part of Telavi Municipality. Closure of Telavi landfill requires several activities aimed at minimizing potential adverse impacts on the environment and human health that could be associated with the waste presently disposed at the landfill. The purpose of the EA report was to prevent and mitigate the negative impacts on the natural and social environment during closure and closure after-care activities of Telavi landfill. The report described baseline environmental and social conditions, the environmental and socioeconomic impact assessment, an environmental action plan, direct and indirect social impacts, and an environmental and social monitoring program.

In addition, The WMTR team has also developed a draft Telavi Compliance, Closure, and Closure After-care Plan. The intent of this plan is to present the design basis for the eventual closure of the site and the recommendations ensuring the compliance of the landfill with Georgian legislation requirements. In addition, the plan specifies suggestions for minimizing the Telavi site's environmental and other impacts during ongoing operations until the new regional landfill is developed. After the landfill closure, a transfer station will be located in the landfill yard where waste generated in Telavi Municipality will be temporarily stored and transferred to the new regional landfill.

Closure of Illegal Dumpsites

In January and February 2017, the WMTR team in cooperation with Telavi Municipality cleaned up five illegal dumpsites in three villages: Shalauri, Tsinandali, and Kurdgelauri. Waste removed from the dumpsites, which amounted to 326.8 m³, was transported to the official landfill in Telavi. The local government has assumed responsibility for maintaining the cleared areas and avoiding further littering. The cleared area amounts to 2.6 ha.

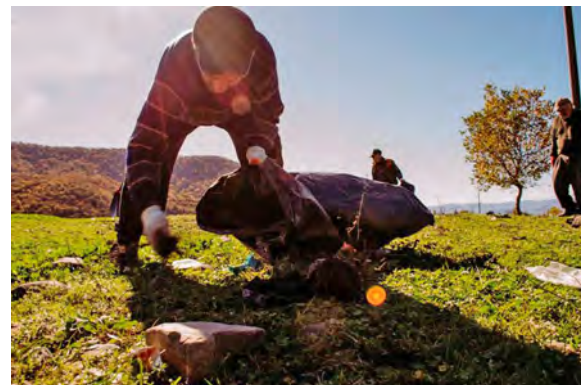




On October 23, 2016, the WMTR team closed an illegal dumpsite in Beshumi, Khulo Municipality, in close cooperation with the regional and local governments, as well as with the Sustainable Forest Governance in Georgia (SFG) program funded by the Austrian Development Cooperation. To meet international standards, the WMTR team developed a closure plan for Beshumi dumpsite. More than 400 tonnes of waste was removed from the site (.07 ha) and transported to an official landfill located 67 km from Beshumi. The Solid Waste Management Company agreed not to charge Khulo Municipality the landfill gate fee for the disposal of the waste.

Because of WMTR's efforts, the dumpsite no longer presents a threat to public health and the environment. In addition, the WMTR team developed an information banner with photos of the dumpsite before and after closure. Leveraging more resources and to prevent future littering at the site, the SFG program developed a recreational forest development plan for the site.

The WMTR team in cooperation with the local government and the SFG program, also cleaned up and repurposed illegal dumpsites in the villages of Karajala and Artana in Telavi Municipality. In both villages, a





team of students actively participated in the tree planting. In October 2016, an area of 0.7 ha of the illegal dumpsite located near the river basin in the village of Artana was cleaned up, and 130 trees were planted (pomegranate, linden, ash, Georgian oak, walnut, and maple trees). The activity repurposed the area of a former dumpsite to avoid further littering. In November 2016, WMTR implemented a similar activity in the village of Karajala in Telavi Municipality. The WMTR team together with the local government and SFG planted approximately a half hectare of land with nine trees. The trees were planted along the existing fence.



Students plant trees at a former dumpsite in the village of Karajala, Telavi Municipality.

Measurement and Calculation of GHG Emissions around Landfills

Measurement of GHG Emissions around Landfills

In March 2016 USAID officials and the WMTR team visited Rustavi landfill to transfer GHG emissions measuring equipment to the Solid Waste Management Company of Georgia. For the first time in the country, the TDL-500 Portable Gas Analyzer enabled the SWMCG to measure GHG emissions in the ambient air around landfills and assess the negative impacts of landfills on the environment. The company is currently using the equipment to better plan the reduction of GHG emissions from existing landfills and to continuously monitor these emissions in accordance with EU requirements.

At the event, WMTR and the SWMCG pledged to cooperate to evaluate GHG emissions in ambient air around landfills across Georgia, and develop mitigation measures to reduce their negative impacts on the environment. The WMTR team provided practical training to SWMCG staff on the use of the emission measurement equipment, on the calculation methodology and provided SWMCG with special software for calculating GHG emissions.

WMTR assessed available GHG calculation models and selected the Central-Eastern European LFG model (referred to as LANDGEM) developed in 2014 for the Global Methane Initiative. The LANDGEM model was developed specifically for climatic conditions consistent with those of the target regions in



Top row: In March 2016 USAID officials and the WMTR team visited the Rustavi landfill to transfer the portable equipment to SWMCG.



USAID Mission Director, Douglas H. Ball, and SWMCG Director, Giorgi Shukhoshvili, participated in demonstrating a GHG measurement at the Rustavi landfill.

Georgia. The selected model enables users to enter site-specific data and recognizes varying decomposition rates for organic components of the municipal waste stream, which ties in directly to the model's ability to use the site-specific waste composition data that WMTR generated in each region.

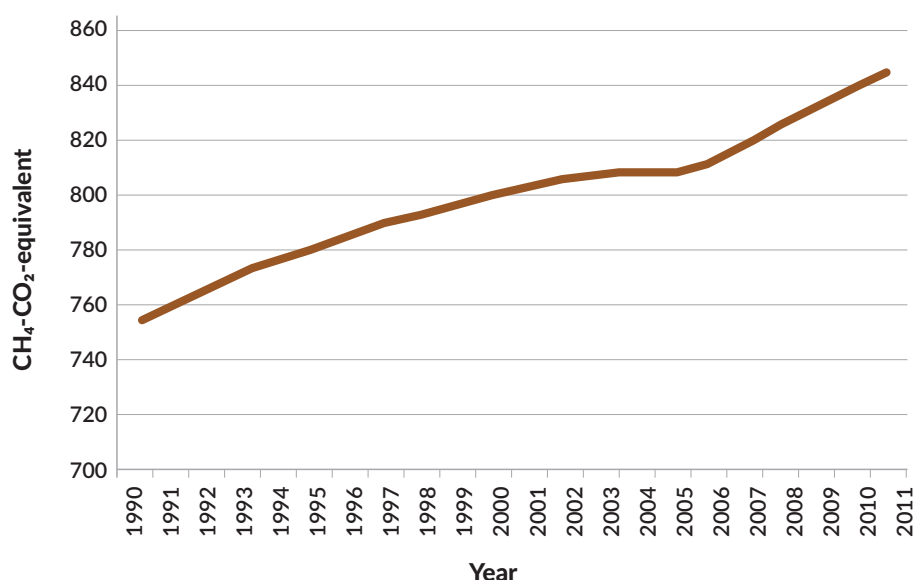
SWMCG used the selected model to assess conditions at the target disposal sites in each region (seven in Kakheti and two in Adjara). SWMCG calculated that target disposal sites were collectively generating approximately 43,334 tonnes of CO₂ (converted from landfill gas amounts) annually in the baseline year, which was 2015. This included 8,317 tonnes generated at the Telavi landfill and 27,302 generated at the Batumi landfill. The GHG generation baseline determined through the application of the LANDGEM model indicated that only two landfills (Telavi and Batumi) within the target regions were good candidates for a potential installation of active gas collection and treatment systems.

Calculation of GHG Emission Reduction Resulting from WMTR Activities

Georgia's phased improvement of municipal solid waste management will result in a change in GHG emissions from the waste sector. WMTR has undertaken many activities to improve municipal solid waste management and thus reduce GHG emissions. The results that the WMTR team incorporated into this calculation of GHG emissions are the implementation of the Guidelines for Municipal Waste Management Plan Development and the Technical Regulations of Landfill Construction, Operation, Closure and After-Care; the cleanup of illegal dumpsites in the municipality of Akhmeta; and the closure of the Gurjaani landfill.

The first-hand decomposition effect (Level 2) was applied to calculate methane emissions from landfills for both Georgia's Third National Communication to the United Nations Framework Convention on Climate Change (which serves as the baseline) and for the current state and methane emission changes as a result of phased implementation of WMTR activities and documents (the projections).

Baseline (2013). The baseline conditions for the calculation are taken from the GoG's 2013 *Report on GHG Inventory for 2006-2011*, issued as part of Georgia's Third National Communication. The GHG inventory for the solid waste sector incorporated activity data; characteristics of the waste generation and disposal processes (such as amount of waste generated per capita); and emission factors (methane correction factor, fraction of degradable organic carbon dissimilated, methane share of landfill gas, and oxidation coefficient). The figure shows the emissions trend for the solid waste sector from 1990 to 2011.



The figure shows higher increase in methane emissions since 2006, which is mostly caused by the increase in the country's living standards and changes in the waste management system. Mitigating activities include the improvement of the waste collection system, closure of old landfills, and activation of the new sanitary landfill in Tbilisi. Despite the activities to date, the negative environmental impact of the landfills is gradually increasing.

Projections to 2030. The data for 2009-2014 show that the amount of waste per capita in Tbilisi increases by approximately 2.5 percent per year on average. The WMTR team forecasted the amount of solid waste generation in Georgia for 2015-2030 based on these data. Consistently with the Third National Communication, the population forecast for 2015-2030 assumes a 0.5 percent increase per year. Methane emissions in 2011 amounted to 40.26 grams (equivalent to 845.46 grams of CH₄-CO₂) per capita. This amount would be expected to increase to 61.12 grams (equivalent to 1,283.57 grams of CH₄-CO₂) per capita by 2030 if landfills continued to function as usual.

Results of Inventory and Forecast. Based on the actions described in the National Waste Management Plan (2016-2020) and the National Strategy (2016-2030), the WMTR team conducted a methane emission inventory and forecast through 2030. The purpose was to track methane emission changes based on WMTR activities.

Calculations were made based on the following implementation activities and prepared documents:

- Development of the Technical Regulations on Landfill Construction, Operation, Closure and Aftercare
- Development of the Guidelines for Municipal Waste Management Plan Development
- Development of the Gurjaani Landfill Closure and Aftercare Plan
- Cleanup of illegal dumpsites in the vicinity of the villages of Duisi, Dumasturi and Khalatsn
- Closure of Beshumi illegal dumpsite
- Development of compliance, closure and after-care plan for Telavi landfill
- Development of the Technical Regulation on the Rule of Collection and Treatment of Municipal Waste

The total projected greenhouse gas emissions reduced or avoided through 2030 as a result of adopted laws, policies, regulations and technologies supported by WMTR will amount to 2,327 010 tone CO₂.

Design and Implementation of City-to-City Exchange Programs

In March 2015, the WMTR team launched the city-to-city exchange program to facilitate professional cooperation between two U.S. local governments (Catawba County, North Carolina, and the city of Golden, Colorado) and two Georgian local governments (Telavi City, Kakheti region, and the city of Batumi, Adjara AR). The cooperation focuses on capacity building and technical assistance activities to improve waste management and recycling system practices and to support the development of integrated waste management systems in the selected cities in Georgia.

The city-to-city exchange program is an important component of the WMTR program. It helps local governments participating in the WMTR program enhance their capacity, get practical knowledge about modern approaches and technologies in the waste management sector, and apply it via professional cooperation with their U.S. colleagues.

First Visit of Catawba and Golden Representatives to Telavi and Batumi

Catawba County Manager, Tom Lundy, and the Director of the Utilities & Engineering Department, Barry Edwards visited Telavi City on March 2-6, 2015. The visit included several working sessions with Telavi city's local authorities, as well as site visits to landfills, the waste collection fleet, and the recycling factory in Kakheti region. Before the Telavi visit, the delegation also met with representatives of the SWMCG, which manages all Kakheti region's landfills.



First visit of the Catawba County delegation to Telavi City, March 2015.

The Catawba officials studied the Telavi City waste management system, identifying specific areas and fields in which the county could share expertise, knowledge and best practices. As a result, a draft action plan has been developed for the provision of technical assistance and support to Telavi City to optimize its waste collection system, set up proper tariff calculation and fee collection systems and raise public awareness on modern waste management practice through workshops, seminars and trainings. Subsequently, in a ceremony attended by government officials as well as USAID representative Veronica Lee,

Mr. Lundy; the Mayor of Telavi, Platon Kalmakhelidze; and the WMTR program team signed a memorandum of understanding.

The Director of Public Works of the city of Golden, Dan Hartman, visited Batumi City during March 9-13, 2015. After multiple working sessions with the relevant representatives of Batumi waste management institutions—Batumi City Hall, Batumi waste collection company, a local recycling factory and Batumi landfill—domains for cooperation were identified. In a draft action plan, developed during the visit, it was agreed that Golden will provide assistance in the following areas: support in the development of a separated waste collection scheme on selected streets of Batumi, public awareness raising on waste separation and recycling, and development of optimal contracting terms.



Mr. Hartman, the Batumi First Deputy Mayor Bagrat Manvelidze, and the WMTR Chief of Party Robert Bodo sign a memorandum of cooperation for the city-to-city exchange with Golden, Colorado. Batumi City, March 2015.

Visit of Telavi and Batumi Delegations to Catawba and Golden

The aim of the visits was to increase the knowledge of local governmental representatives from the cities of Telavi and Batumi on proper waste management practices and help them to better plan waste management related activities in their cities. They were introduced to the waste management systems that are in operation in the Catawba County and Denver Metro areas via site visits and discussions with relevant staff members. The visits took place in July and August 2015.

Visit of the Telavi Delegation to Catawba. The Telavi delegation first visited the Catawba County Government Center for a presentation on the county's solid waste services. Later, the delegation observed Catawba's residential curbside collection process and visited the City of Hickory Transfer Station. The officials visited the county's EcoComplex Resource Recovery Facility (Landfill) and Blue Ridge Biofuels. EcoComplex Resource Recovery Facility is a unique solid waste management system that recovers useable products and by-products from a group of private and public partners that work together to use each other's waste products either as a source of energy or as raw materials for the production of their own product.



The Telavi delegation visits Catawba County's Materials Recovery Facility, July 2015.

The delegation also visited the Materials Recovery Facility, which extracts approximately 2,900 tons of saleable commodities per month from the waste stream, about one-third from Catawba County and the rest from neighboring counties.

During the visits members of the delegation learned about the Keep Catawba County Beautiful program, which aims to promote education and responsible behavior regarding littering, recycling, proper solid waste management, and beautification through positive individual and community involvement which will enhance the quality of life for all.

Visit of the Batumi delegation to Golden. The visit began with the staff of Golden's Public Works Department informing the Batumi delegation about Golden's government structure, the mission of the Public Works Department in general, with a focus on waste management issues, and the main programs implemented in the city of Golden related to waste management (e.g., recycling, public educational efforts).

Batumi officials visited the Alpine Waste Sorting Facility. At the facility the visitors were introduced to the waste sorting process, including the types of waste that can be collected and the technological process. Alpine's Altogether Recycling facility was built in 2007 to meet the growing demand for recycling in Colorado. Today, Altogether Recycling is the second largest recycling facility in Colorado, processing more than 6,000 tons of recycling per month.



The Batumi delegation observes the technological process at the Alpine Waste Sorting Facility, August 2015.

The delegation visited the Foothills Landfill and its flaring system for GHG gas collection and the closed Rooney Road Landfills—a sports complex and Fossil Trace Golf Course. They also met with the staff of KRW Consulting Inc. who were responsible for closure of the landfill and city staff who developed its recreational use. The delegation learned about the process for the landfill closure, and its remediation and repurposing for recreational zones. Environmental safety issues were also discussed at the meeting including monitoring of GHG emissions.



At the well for emissions monitoring.



At the environmental standards monitoring system.

During the week Batumi officials visited the Golden's construction materials recycling program and an anaerobic digester facility that processes organic food waste and generates CH₄, which is used for energy generation.

Other activities during the visit included the introduction to Golden's request for proposals for recycling services, proposal evaluation criteria, and service contract documents. The sharing of those practices was particularly interesting for the Batumi delegation, as the city of Batumi was planning to announce an expression of interest for the development of a waste sorting facility.

Second Visit of Catawba and Golden officials to Telavi and Batumi

Following the Action Plan developed during the Telavi officials' visit to the United States, Mr. Lundy and Mr. Edwards visited Telavi City from August 31 to September 5, 2015. During the visit the partners worked on waste collection routing; waste bin placement; human resource utilization; collection methods; tariff calculation and enforcement; vehicle needs and conditions and citizen engagement plans. Catawba officials also shared their expertise on how to improve Telavi tendering processes.



Truck fleet of Telavi Self-Governing City used for waste collection.

Through the efforts of the Catawba County officials, a U.S.-based waste company, Republic Services, has donated to Telavi City a slightly-used large automated waste truck, with a value of about 90,000 USD.



2010 Kenworth Rear Loader Truck.



Garage built for truck storage.

WMTR signed an In-Kind Activity agreement with Telavi city that allowed the transportation of the truck to Georgia. The Georgian local government was responsible for all other preparations necessary for integrating the donated truck into their waste management system, including transporting it from the port to Telavi and building a garage structure to keep it sheltered and to extend its operations life.

During October 18–24, 2015, the Golden delegation visited Batumi for the second time; the delegation held meetings with different stakeholders working on waste management issues in the self-governing city

of Batumi. The aim of the visit was to inform Batumi's officials about the waste separation and recycling programs in Golden and provide recommendations on how to launch this process in Batumi.



The Golden delegation visits a site in Batumi City, October 2015.



The Golden delegation provides recommendations to Batumi's officials on launching waste separation and recycling programs, October 2015.

During the meetings with the representatives of governmental structures and private companies, the Golden delegation reviewed the recycling program in Golden and provided recommendations for Batumi based on the city's situation. The delegation suggested starting from a small pilot program, which will include only one district, and enlarge it after a certain period.

Component 2: Private Sector-Led Recycling

Assessment of the Recycling Market and Introduction of Waste Separation

Recycling Market Research on Plastic, Glass, Paper, and Aluminum

The WMTR team reviewed and analyzed the market for plastic, glass, paper, and aluminum waste in Georgia and developed an assessment report. Recycling market research showed considerable potential in the country for the development of a waste recycling industry that would bring economic and environmental benefits. Most of the waste currently goes to landfills and dumpsites; however, introducing a waste separation system in the country is a requirement of the Waste Management Code and the National Waste Management Strategy and Action Plan. There would be significant benefits in channeling reusable material through recycling. The report also analyzed the opportunities and challenges of introducing a waste separation and recycling system in Georgia. The table below shows the availability of large amounts of plastic, glass, and paper waste in the country.

Waste type	Import 2015 (million USD)	Local production 2015 (million USD)	Market potential 2011-2015 (million USD)	Annual waste potential (thousand tons) ¹
Plastic	189.3	100.9	150-300	26-33
Paper	53.5	28.4	65-81	45-50
Glass	20.2	28.1	45-55	90-100
Aluminum	-	45.3	45-60	-- ²

¹ Assessment based on the analysis of imports and local production. Data from 2015.

² Data not available.

The GoG can use this market research to make informed decisions and attract investors and businesses to introduce waste separation schemes for further recycling.

Assessment of the Waste Recycling Sector in Georgia

Throughout May and June 2016, the WMTR team conducted assessments and updated information on the recycling sector in Georgia. The following data were collected or updated from relevant government agencies:

- List of top 25 commercial waste generators and their locations
- List of top 25 governmental and educational waste generators and their locations
- List of companies engaged in recycling of paper, cardboard, plastic, glass, aluminum, scrap metal, and electronics with their locations and quantity of material processed annually
- Amount and type of recycled material exported from Georgia
- Information about recycling programs that have been tried and were unsuccessful.

Legal Analysis Report to Identify Deficiencies in the Waste Management Sector

In March 2016, the WMTR team developed a legal analysis report to identify deficiencies and corresponding potential legal amendments in the waste management sector to support the development of recycling businesses. The report provides information on:

- Waste ownership and legal aspects for selling waste
- Waste as a product: municipal waste ownership issues, separated collection of waste and storage, privatization of municipal waste, waste as municipal property, and conditional auction
- How to include a waste in the asset list of an enterprise
- Waste transportation and contractual issues

The report provides concrete information to entrepreneurs on how to deal with the issues above. This guidance is invaluable for entrepreneurs dealing with waste separation and recycling and it helps them improve their performance and comply with the national legislation requirements.

Introduction of a Waste Separation Scheme at Goodwill Hypermarket

In May 2016, to initiate public waste separation in Tbilisi, the WMTR team began collaborating with the management of Goodwill Hypermarket to provide waste separation to customers. The hypermarket located in the Didi Digomi district of Tbilisi is now capable of collecting plastic bottles and bags, paper, and aluminum cans. The WMTR team connected Goodwill's management with the waste collection company Supta Samkaro Ltd. Goodwill is currently paying Supta to collect separated waste from the location on a regular basis.



Customers of Goodwill Hypermarket can deposit separated waste that they bring from home.

Supta Samkaro Ltd installed a press in the Hypermarket and constructed a recycling corner, which allows customers to deposit separated waste from various sources. The WMTR program printed project-branded stickers to be displayed on the collection unit.

The team and Goodwill staff developed a communication strategy to advertise this activity to the broader public. An important vehicle of the communication strategy was a social commercial that WMTR and Goodwill jointly prepared. Please follow the link to see the commercial: [link](#).

This was the first public waste separation scheme in Tbilisi, and Goodwill is the first hypermarket chain in Georgia to introduce a green initiative. Since its start, customers of Goodwill and the public at large have had the opportunity to recycle their separated paper, bottles, plastic bags, and aluminum cans. Separately collected waste no longer ends up in landfills; instead, it is transported by the private company, Supta Samkaro, for further recycling.

Launch of a Waste Separation Scheme at Tbilisi Marriott

In August 2016, with WMTR support, Tbilisi Marriott Hotel installed recycling bins to promote waste separation. Before the deployment of the waste separation bins, the WMTR team conducted a training for the staff of the hotel on proper operation of the waste separation system. The hotel currently separates plastic and glass, which are the largest recyclables that it generates during its daily operation. WMTR connected the hotel management with Supta Samkaro Ltd to collect the waste for further recycling.

Tailored Assistance and Training to Recycling Companies

Support to TissuePaper Ltd in Introducing a Quality Management System

TissuePaper Ltd is a paper waste-recycling and toilet paper-producing company. WMTR assessed the company's existing management practices, identified deficiencies, and elaborated recommendations for the necessary improvements that will allow the company to become eligible for an ISO certificate, ISO 9001:2015 quality management system.

Training on Changes to Tax Legislation and Taxation Issues for Waste Recycling Companies

On July 13, 2016, the WMTR team organized a training for recycling companies on changes in tax laws and taxation-related issues. Representatives of 10 waste management companies that recycle and collect paper, plastic, and tires, including members of the Waste Management Association, attended the training.

The training covered the latest changes in Georgian tax laws, including regulations on income tax distribution. Amendments to the Tax Code of Georgia went into effect on January 1st, 2017, and aim to transform the country taxation system. The successful implementation of changes in the Estonian tax system was used as a model. The code amendment will alter the taxation system and practices for all legal entities other than individual entrepreneurs, NGOs, and financial institutions.

Training participants discussed practical cases related to tax legislation, the impact of changes in the revenue service situational manuals, other legislative acts covering taxation legislation, and the operation of the companies in terms of their tax liability.

Support to Neoprint Ltd for Developing an Environmental Impact Assessment (EIA) Report

Neoprint is located in the village of Tserovani, Mtskheta Municipality. The scope of Neoprint's activities includes production of cardboard from waste paper. The company recycles a significant amount of waste paper, around 3,168 tonnes per year (the full capacity of the company is 9,600 tonnes per year).

According to the *Georgian Law on Permit for Impact on the Environment*, Neoprint operation is subject to a mandatory EIA. Consequently, the company requires a permit from the MoENRP based on the EIA. The WMTR team supported Neoprint in developing an EIA report to comply with national legislation and to operate legally. The Neoprint EIA report considers possible impacts on and risks to different components of the physical, biological, and human environment. In December 2015, Neoprint submitted the report to the Permit Department of the MoENRP and a public hearing of the document was held on January 11, 2016. Based on the EIA report, the MoENRP made a positive decision that allowed the company to continue its operation.

Support to Georgian Paper Production Ltd for Developing a Waste Inventory and a Waste Management Plan

According to article 14 of the Waste Management Code of Georgia, legal entities that produce more than 200 tonnes of non-hazardous waste, 1,000 tonnes of inert waste, or any amount of hazardous waste

annually, shall prepare a company waste management plan. In addition, Resolution No. 426 of the Government of Georgia requires companies to prepare a waste inventory document. Georgian Paper Production Ltd produces hazardous waste and it is obliged to prepare these documents.

In September 2016, the WMTR team supported Georgian Paper Production Ltd in developing waste inventory and a waste management plan. The company, located in Tbilisi, recycles paper to produce toilet paper. The waste inventory document specified the type of waste produced by the company, identified the hazard level, and described disposal and recovery operations. Based on the waste inventory document the company developed its waste management plan and specified how it manages waste streams. The waste management plan also assigns responsibility among the company staff for implementation of the plan and identifies contractor companies responsible for waste collection, recovery, and disposal.

In October 2016, the company submitted both documents to the MoENRP, which consequently approved them.

Development of an Extended Producer Responsibility (EPR) system for beverage producers

The National Waste Management code, the National Waste Management Strategy and Action Plan require development of an Extended Producers Responsibility scheme in the country no later than 2019. As a first step, the government and the business sector should agree on the modality of the EPR system the country will introduce.

On July 26, 2016, the WMTR team together with the Embassy of United States in Georgia organized a meeting with large beverage and meat products producers and the Waste Management Association to discuss opportunities to introduce an EPR scheme in Georgia. Representatives from five recycling and five waste-generating companies attended.



Waste management specialist Larry Black introduced the participants to modern approaches in waste management and EPR models used worldwide. Meeting participants discussed the models and approaches applicable in Georgia taking into account local conditions.

At the request of the Deputy Minister of Environment and Natural Resources Protection, the WMTR team developed an EPR Policy Options for Beverage Producers in Georgia. The report proposes a system for the collection and recycling of empty drinks containers, which can also be applied to other waste streams. This system follows the legal regulations and policies in Georgia, which point to the waste hierarchy and to an EPR policy for collection and recycling that includes incentives for a design-for-environment.

The report includes the following information: basic legal framework for to EPR, the concept of EPR policy, the current situation regarding beverage containers in Georgia, basic constituents of an EPR policy for drinks containers, EPR policies for waste beverage containers in Georgia, licensing fees for drinks packages (with some estimates for Georgia based on international experience). The document provides two policy options – Model A and Model B. MoENRP will organize public hearings with private sector representatives and other interested parties to agree on one model that will be acceptable for all stakeholders and proceed to develop a detailed elaboration of the chosen model.

Establishing and Strengthening of the Waste Management Association

Registration of the Waste Management Association in the National Agency of Public Registry

WMTR was instrumental in establishing the Waste Management Association (WMA) in Georgia. The team provided support and assistance in developing the association Charter, which was approved by the National Agency of Public Registry in June 2015. According to the Charter, the WMA has the following mandate:

- Cooperate with national and international projects and donor organizations.
- Develop recommendations aimed at solving waste management issues, as well as at initiating and implementing new waste management approaches.
- Approach relevant government agencies with requests to implement appropriate activities as needed.
- Participate in project design and implementation at the national and international levels.
- Draw up draft laws and approach authorities regarding legislative initiatives in case of conflicting or deficient laws.

The WMA and Other Stakeholders' Meeting with International Waste Management Expert

On April 12, 2016, Mr. Larry Black met with WMA members and other stakeholders from government, NGOs, and the business sector about *Promoting Recycling for a Greening Economy in Georgia*.

Mr. Black introduced the participants to modern approaches in waste management practiced world-wide, focusing on how to make recycling profitable and sustainable. Mr. Black presented existing opportunities in the recycling sector and provided concrete examples of how systems that work in different developed countries could be replicated in Georgia.



International waste management expert Larry Black talks to WMA members about profitable, sustainable recycling systems.

Meeting between WMA and the Head of the Association of Microfinance Organizations in Georgia

In May 2016, WMTR organized a meeting between WMA board members and Archil Bakuradze, head of the Georgia Microfinance Association (GMA). The meeting provided the opportunity for the GMA to share lessons learned from its own institutional strengthening experience. Mr. Bakuradze informed the WMA board members of the challenges the GMA faced during the development process and ways in which they overcame these challenges. Mr. Bakuradze provided several recommendations to the WMA, including creating web and Facebook pages to increase the visibility of the association; developing a code of conduct to increase the efficiency of operation; and decreasing the term of the head of the association to two years. The WMA members found the recommendations very useful and are currently planning implementation.

WMA Board Meeting

Institutional strengthening and capacity building of the WMA is very important for developing a business-friendly recycling environment in Georgia. On December 16, 2015, the WMA held its regular board meeting at the offices of the WMTR program. The president and board members of the association, as well as the WMTR team, discussed further development of the association, including changes to the following components of the association's charter:

- Criteria for approving new members and their rights and responsibilities
- A membership fee and payment system
- Creation of a new body in the association with executive functions
- Development of its structure and responsibilities.

WMA has since successfully adopted these changes. These changes have helped the association to improve the management system by distributing responsibilities among the members and the board, as well as increase the effectiveness of functioning and supported institutional strengthening via creating a new executive body.

Presentation of the Georgian Waste Management Association on Green Business Development

On December 4, 2015, the WMTR team supported the WMA in organizing a presentation about the association. Donor organizations, NGOs, government representatives, and the media attended the meeting.

The importance of developing the recycling sector in the country from both environmental protection and economic perspectives was highlighted during the opening speeches made by Veronica Lee, Deputy Director of USAID Economic Growth Office; Alverd Chankseliani, Head of the Waste and Chemical Substances Management Department of the MoENRP; and Giorgi Shukhoshvili, Director of the SWMCG. Participants also called for the association to become a strong intermediary between recycling companies and governmental entities.

Energy Audits of Recycling Companies

During the 2016 and 2017 fiscal years, WMTR program conducted detailed energy, material, and environmental health and safety (EHS) audits for four recycling companies operating in the country. The objective was to develop recommendations for improving their efficiency and performance. WMTR also provided recommendations on mitigating the environmental and health risks and increasing the companies' efficiency by implementing certain activities.

Energy and Environmental Health and Safety (EHS) audit for Zugo Ltd

In February 2016, the WMTR team conducted an Energy and Environmental Health and Safety (EHS) audit for Zugo Ltd, a plastic bag recycling company located in Batumi, Adjara AR. Subsequently, WMTR developed a report based on the assessment's results.

The audit report analyzed the conditions of the building and the company's production line. The report provided two options for the company to save energy. These options required different investments and differ by the potential energy savings.

Engery Audit			
Zugo Ltd		Area: 350m ²	
EE Activities	Invesment (GEL)	Saving	
		(kilowatt hours/year)	(GEL/year)
Option I	74,621	105,094	20,850
Option II	102,874	163,330	32,522

The energy audit exposed the necessity of heat insulation in the building. The table below provides energy information and the resulting monetary savings for the two suggested options.

Energy and Environmental Health and Safety (EHS) Audit for Georgian Paper Production Ltd

In September 2016, the WMTR team conducted an Energy and Environmental Health and Safety (EHS) audit for Georgian Paper Production Ltd. During the energy audit, the WMTR team assessed the technical conditions of the building that was constructed in 2008. WMTR also assessed the energy efficiency of the production line. The report provided information on energy saving activities and investments needed for implementing these activities, as well as potential energy savings.

To improve energy efficiency, the team recommended improving insulation of the building's exterior walls and windows and new insulation of the boiler and main gate to eliminate infiltration. The table below provides information on the energy-saving potential.

Energy-Saving Potential — Energy Audit		
Georgian Paper Production Ltd		Area: 3,478 m ²
Investment (in Georgian Lari, GEL)	Saving	
	(kilowatt hours/year)	(GEL/year)
70,940	1,290,182	195,955

Support for Waste Collection and Processing Companies (Legi Ltd and Sanitari Ltd)

During the 2017 fiscal year, the WMTR team supported two waste collection and processing companies (Legi Ltd and Sanitari Ltd) by evaluating their operations and providing recommendations on extending their operations and increasing revenues.

Legi Ltd collects paper waste and produces ridged cardboard. The company expressed willingness to increase the efficiency of its operation and its amount of collected paper waste for further recycling. The WMTR team assessed the company's current operation and provided concrete recommendations on the equipment that should be upgraded or purchased to make the process more efficient. In addition, WMTR completed a financial assessment of the company and made projections of its financial sustainability and profitability after potentially purchasing upgraded or new equipment.

Similar work was conducted for Sanitari Ltd, a waste processing company that is planning to start producing recycled wooden plastic composite—a hybrid material incorporating the best properties of wood and plastic polymers.

In-Kind Activity Agreement for Zugo Ltd. to increase its productivity and efficiency

The WMTR team developed a grant package for Zugo Ltd to provide a sub-award as an in-kind activity agreement (IKAA) and purchase a JQ-FB1000 PC ABA Film Blowing Machine and a JQ-ZD600 Single Line T-Shirt Bag Making Machine.

Plastic pollution is a major environmental problem at a global and national level. WMTR provided technical assistance to increase Zugo Ltd economic efficiency. The grant contributed to the introduction of modern waste management standards in compliance with newly adopted national legislation and the EU-Georgia Association Agreement environmental requirements.

Supporting and increasing the capacity of the plastic recycling company Zugo Ltd generates significant benefits to the public. Among those:

- Diverting 190 t of plastic bags from landfills over a three years period (degradation of plastic bags takes more than 100 years), thus reducing GHG emissions, saving space at the landfills, and increasing the capacity of landfills to serve for a longer period.

- Saving natural resources by reducing usage of raw materials.
- Supporting local production by substituting imported materials with cheaper local products, thus generating additional benefits for the public through reducing their costs.
- Creating new employment— the company hired three new employees and generated more income for people involved in plastic bag collection process for further recycling.

The total estimated cost of the IKAA was USD 208,504. From this amount, ICMA provided USD 153,037, and Zugo Ltd provided USD 55,467.

The IKAA issued to Zugo Ltd exceeded the expected results, with the company over-fulfilling both production and sales indicators and surpassing its cost-sharing commitment. The IKAA helped Zugo establish a parallel production line for recycled plastic products. The company's existing line was operating at maximum capacity and would have been unable to keep up with both the demand for recycled products and the availability of raw material. Equipment purchased by WMTR under this agreement arrived in March 2017 and was installed in April. After delivery of the equipment, representatives of the manufacture company provided comprehensive training to relevant Zugo staff on the operation of the two machines.

Zugo Ltd committed to collecting 39,000 kg of plastic waste (raw material), producing 4,000 kg of products, and selling 75 percent of its production to consumers. By March 2018, Zugo had collected and utilized 45,216 kg of recyclable material, produced 43,859 kg of reusable plastic bags, and sold all of what was produced.

With the assistance of WMTR, Zugo succeeded in implementing a sustainable waste collection scheme capable of providing enough raw material to meet its production goals.



Extruder/Blowing Machine used to melt plastic pellets into usable film.

Component 3: Waste Management Strategy and Tariff Policy

Tariff and Cost Recovery Assessments in Adjara and Kakheti

The WMTR team conducted a tariff and cost-recovery assessment in Kakheti Region and Adjara AR. A field team administered program-developed questionnaires to stakeholders—government representatives, the private sector, and citizens—in four villages of each municipality of the two regions. The following private sector stakeholders were interviewed: companies responsible for cleaning and collection of waste, recycling companies, and large businesses. The WMTR field team also conducted focus groups in four villages from each target municipality. A total of 32 villages in Kakheti Region and 20 villages in Adjara AR participated in the assessment activities. Village trustees, teachers, doctors, large-scale farmers, local entrepreneurs, representatives of socially vulnerable groups and the population at large participated in the focus groups.

The WMTR team developed a Tariff and Cost Recovery Assessment Report that provided a comprehensive assessment of waste tariffs and cost recovery in Adjara AR and Kakheti Region and focused mainly on municipal waste. The report addresses the legal and institutional framework for the tariff and cost recovery system, reviews the EU-Georgia association agreement, gives an overview of the socio-economic situation in Adjara AR and Kakheti Region, presents international best practices, and analyzes the waste tariff and cost recovery system in the target regions.

The assessment concluded that, while municipalities had typically set a waste management fee for residential as well as for institutional and business waste generators, the fees were not paid or enforced for residential generators in most municipalities. Institutional and business waste generators were paying fees that were significantly lower than the actual cost of the service provided. Many villages were not being served by municipal waste collection systems, and due to the socio-economic situation, residents could

have difficulty paying a fee even if they did receive service. In addition, almost none of the villages had a fee recovery system. Based on the key findings and conclusions, the report provided basic recommendations for the most efficient ways to plan and implement an effective cost recovery system in the Adjara AR and Kakheti Region that complies with the “polluter pays” principle of the newly adopted Georgian Waste Management Code.

Waste Management Tariff Policies

Pilot of Waste Fee-Setting Tool in Telavi Self-Governing City

The Waste Fee-Setting tool used in Catawba County was piloted in the self-governing city of Telavi and was later used as a basis for developing the general methodology for tariff calculation. In September 2015 Telavi city staff entered data into the tool and calculated expenses over a 15-year period. The tool allows to separately track annual expenses for households and businesses. The tool inputs included expenses for trucks, bins, debt service, salaries, taxes, uniforms, replacement parts, fuel, and permits, among other items.

Development of a General Methodology for Tariff Calculation and a Cost Recovery System

In March 2016 the WMTR team developed a general methodology for establishing a waste management tariff and a cost recovery system in Georgia along with an Excel-based Waste Tariff Calculation tool. The general methodology determines waste tariffs in accordance with best practices requirements. The cost recovery system will ensure the sustainability of solid waste management systems at the municipal level. The document provides a methodology for calculating waste tariffs for residents, as well as for commercial and industrial facilities. The development of such methodology is a requirement of the Waste Management Strategy and Action Plan, approved by the GoG on April 1, 2016.

At present, Georgian law requires the application of some, but not all, modern tariff-setting principles. Application of these principles affects the efficiency, equity, and sustainability of the waste management system. The following principles are consistent with international best practices and should be considered in determining tariffs for solid waste services: legal requirements; cost recovery; financial viability; horizontal equity; vertical equity and poverty alleviation; administrative and technical feasibility; “polluter pays”; and transparency.

The methodology also presents revenue and cost accounting standards for waste management; and current legal and regulatory requirements that apply to establishing tariffs. The document recommends changes in current laws related to waste tariffs that are required to make this sector self-sufficient through the recovery of maximum costs associated with the services provided.

Soliciting feedback, the WMTR team provided the document and the tool to all stakeholders in the waste management sector, including government agencies and financial institutions. WMTR incorporated stakeholder comments and distributed an updated version of the methodology. WMTR also presented the document to the WMTR SCG, the Minister of Environment and Natural Resources Protection of Georgia, and the deputy ministers and staff responsible for waste management in the MoENRP.

Support for Calculating Waste Tariffs

The WMTR team supported 15 municipalities and self-governing cities in Kakheti region and Adjara AR in calculating a waste tariff. Calculations were in accordance with the best practices methodology for establishing waste management tariffs and cost recovery system that WMTR had previously developed.

Municipalities and self-governing cities in the project target regions appointed relevant contact people to work with WMTR and calculate a waste tariff for their municipalities. During the first stage, the WMTR team guided the local governments on the background information that had to be collected to make an appropriate calculation. The team provided municipalities and self-governing cities with a questionnaire and requested information on personnel in charge of waste management, vehicles and equipment, consumables, office rent, contractual services, depreciation etc. The collected information was entered into the waste calculation tool, which is an integral part of the methodology. After preparing the initial drafts, the WMTR team arranged working group meetings with the representatives of the 15 municipalities and self-governing cities.

Working group meetings at the Civic Engagement Center in the self-governing city of Telavi, July 6 and 8, 2016. A total of 17 participants attended the meetings on calculating waste tariffs. Participants were relevant staff of the municipalities of Akhmeta, Gurjaani, Kvareli, Sagarejo, and the self-governing city of Telavi, as well as Lagodekhi, Signaghi, and Dedoplistskaro.

During the initial working group meetings in July 2016, all parties agreed that a modern billing system is the best tool to collect waste tariff fees. The WMTR team emphasized that tariff calculation is part of the Municipal Waste Management Plans, which are required by the Waste Management Code of Georgia. As a follow-up to these working meetings, the WMTR team held workshops in all municipalities with the objective of assessing the background data provided by the municipal institutions, explaining how to use this information in the calculation tool, and helping municipal staff calculate the tariff.



Working group meeting at the Civic Engagement Center in the self-governing city of Batumi, July 15, 2016. A total of 12 people attended the meeting on calculating waste tariffs. Participants were relevant staff of the municipalities of Khulo, Khelvachauri, Kobuleti, Keda, Shuakhevi and the self-governing city of Batumi.

Working group meeting at the Civic Engagement Center in the self-governing city of Batumi, July 15, 2016. A total of 12 people attended the meeting on calculating waste tariffs. Participants were relevant staff of the municipalities of Khulo, Khelvachauri, Kobuleti, Keda, Shuakhevi and the self-governing city of Batumi.

In late 2016 the WMTR team organized a second set of working group meetings with municipalities and self-governing cities. The aim of the meetings was to discuss their calculated waste tariffs, clarify certain issues, and make appropriate corrections. After the meetings, the WMTR team made relevant corrections and provided final documents to the municipalities and the self-governing cities.

All local governments in Kakheti region and Adjara AR currently have final versions of their waste tariff calculation policy and have been trained to use the tool, make calculations and adjustments as appropriate. The WMTR team provided follow-on consultations to local governments in the target regions to clarify calculation issues and guide them on introducing the cost recovery system in their municipalities and self-governing cities.

WMTR also held meetings with donor institutions, such as EBRD, the EU Delegation to Georgia, and KfW to agree on collaboration regarding calculating waste tariffs and establishing a cost recovery system in other regions of Georgia. Throughout 2016, the WMTR team continued lobbying Georgia's national government and advocating to formally adopt the General Methodology for Establishing Tariffs and Cost Recovery System in Georgia developed by WMTR.

Component 4: Communication and Outreach

Stakeholder Communication and Outreach Strategy

WMTR's communication activities and resources focused on achieving maximum possible awareness and impact among the target groups. The strategy used a variety of methods to keep stakeholders regularly informed and to increase their knowledge, which helps to ensure sustainability of the program. These methods included varying messages and communication tools according to the target audience; sharing knowledge; using demonstrations to create models for change; actively communicating with and involving media; being gender sensitive; and showcasing the originality of the program, especially the city-to-city partnerships.

WMTR's key messages articulated areas of intervention and program objectives in ways that resonated with its target audiences. The key messages explained the program using an easy-to-understand language. This helped target audiences identify their interests and needs with WMTR, as well as with the 4Rs concept and an integrated waste management system. More specifically, the key messages:

- Improved understanding of the public health threats associated with illegal dumping
- Increased awareness of new and ongoing recycling efforts
- Assisted stakeholders in making the connection between tariffs and consistent municipal waste services
- Enhanced coordination among stakeholders throughout the solid waste life cycle
- Increased participation of civil society groups and other NGOs in solid waste management and recycling activities
- Marketed recycled and composted materials as viable substitutes for components traditionally manufactured from new materials.

WMTR developed a program logo, banner, business cards, and various promotional materials, and designed a Facebook page collaboratively with ICMA CityLinks' communication specialist. WMTR also developed press releases, provided interviews, and monitored the national and local media coverage of roundtables, presentations, and meetings.

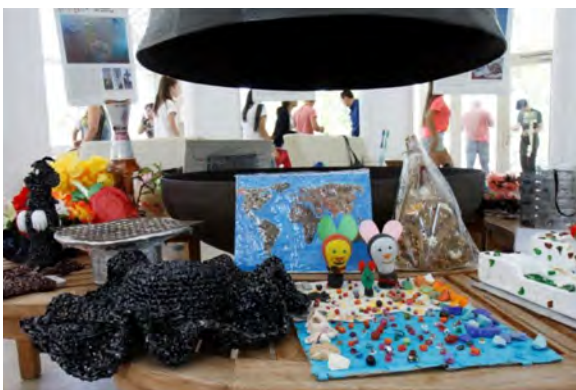
Youth Action Concept

Recognizing youth engagement as a centerpiece of citizen behavior change, WMTR promoted environmental education among students and developed local capacity to solve real-life environmental problems in the target regions. WMTR supported eco-club students becoming active and concerned citizens. This initiative positively impacted students' parents, local communities, local authorities, and other entities. As a result, the 4R concept continues to be promoted at the local level. The gradually expanded scope of the eco-clubs allows spreading knowledge and resources outside the schools; involving parents and other members of the local community to solve real-life problems (in the medium to long term); building capacity of existing and newly established eco-clubs; and institutionalizing the eco-club model within the secondary education system.

Public Awareness Campaign

Recycled Craft Competition

WMTR developed a school competition, Waste to Craft, to promote best waste management and recycling practices among local communities of the target regions, including 37 eco-clubs in the Kakheti region and 15 eco-clubs in the Adjara AR. WMTR contacted approximately 60 schools reaching students ages 15 to 17. Students were asked to create artwork or crafts from recyclable household waste and submit pictures to a panel of judges that included a photographer, an art critic, the CENN executive director, and two WMTR staff members. The judges selected the most original, innovative, and artistic works.



The recycled art exhibition at Lisi Lake, Tbilisi, on August 7, 2014.

Out of 50 entries, the judges selected 27 winners from both regions. Winners participated in the Bulachauri summer eco-camp, and their works were exhibited at the Tbilisi exhibition on August 7, 2014, attended by the Czech Ambassador. In collaboration with the Czech Embassy in Tbilisi, the students and Czech waste/recycling artist Veronika Richterova popularized the idea of integrated solid waste management practices and 4Rs (reduce, reuse, repurpose, recycle) concept.

Summer Eco-Camps

From August 4 to 13, 2014, WMTR held a summer camp dedicated to integrated waste management for schoolchildren from the Kakheti and Adjara regions. In August 2015, 71 winners of the Waste to Craft competition from both regions participated in three summer camps in Bulachauri. During the summer camps, relevant experts conducted seminars on topics such as integrated waste management and 4R principles; waste management issues and regulation mechanisms in Georgia; climate change mitigation and adaptation; integrated natural resource management; energy efficiency; sustainable agriculture; and recreational and environmental value of Georgia's protected areas.



At the end of a 10-day eco-camp with seminars on ISWM, 26 students (17 female and 9 male) received certificates from Tamar Barabadze, the USAID representative, and Robert Bodo, the WMTR Chief of Party. August 2014.

The eco-camps aimed to increase young people's awareness of environmental issues, in particular on sustainable waste management topics. This activity supported behavioral changes among the eco-camp participants and reached a broader audience—their friends, relatives, and community. During the eco-camps, young people received information about the importance of waste management in general, the environmental situation in Georgia, issues in their respective regions/cities/villages, ways to solve these issues, and the students' potential role in this process. Participants took part in team-building exercises to help them deepen their sense of citizenship, especially their environmental protection awareness.

Students unanimously stated that the team-building exercises were interesting and life changing, while the knowledge and experience acquired at the eco-camps gave them the opportunity to share information on environmental issues with their peers.

Youth Summit – Students for a Clean Environment

On September 29-30, 2015, 25 school students from five regions of Georgia—Adjara, Kakheti, Imereti, Samegrelo, and Samtskhe-Javakheti—gathered for a two-day youth summit in Tbilisi. During the summit the students shared their views and experiences regarding waste management problems in their regions and discussed future development possibilities in Georgia. Representatives of the MoENRP, the SWMCG, and the NGO sector also attended the event.



Students share their waste management experiences and ideas at a two-day youth summit in Tbilisi, September 29-30, 2015.

The Youth Summit was an excellent opportunity for young, active, motivated students from different regions of Georgia to develop specific action plans for solving some of the waste management issues in their respective cities; creating a platform for dialogue among themselves, the government, and NGOs; and supporting sustainable partnerships.



Thomas R. Morris, Acting Mission Director of USAID/Caucasus, welcomed the participants of the Youth Summit on the second day. Tbilisi, September 29-30, 2015.

During the event students presented their collective work in four main areas:

- Waste problems on a global scale and specifically in Georgia
- Ways and means to solve these problems
- Youth's role in improving waste management
- The role of governments and other stakeholders.

Participants debated their concrete ideas for improving the waste management sector, such as minimal charges for plastic bags and closer cooperation and communication between the governments and the schools in general. The presentations were followed by an active discussion among students, representatives of government agencies and NGOs on waste management-related topics of interest.

Clean-Up and Environmental Campaigns

Clean-Up Campaign in the Kakheti Region

As a follow-up to the summer camps, participants initiated clean-up activities in the areas around their schools. On October 15, 2014, members organized a clean-up activity around Tsinandali School, Kakheti region. About 31 school students participated in the campaign. On October 31 a clean-up activity was held in the public school of Arboshiki Village, Dedoplistskaro municipality, with the participation of 40 school students.



Students participate in a clean-up activity near their school, October 2014.

Earth Day Celebrations

The WMTR program hosted well-attended Earth Day events in 2015 and 2016. These events were centered on youth involvement, behavioral change, collaborating with other donor-funded programs, and showcasing the work of WMTR.

In April 2015, the WMTR program, together with ECOVISION, MoENRP, Tbilisi City Hall, and SWMCG celebrated Earth Day at Tbilisi Zoo. The main message of the event was the importance of reducing, reusing, repurposing, and recycling waste. The USAID Mission Director in Georgia, Stephen Haykin, welcomed participants to the event and explained how the WMTR program was supporting proper waste management in Georgia. The USAID Mission Director also stressed the importance of the Earth Day celebration and youth involvement in environmental campaigns and activities. Other speakers included Maia Bitadze, the Deputy Minister of Environment and Natural Resources; Irakli Lekvinadze, the Deputy Mayor of Tbilisi; and Ketevan Grigolia from the Ministry of Education and Science.

During the event, winners and participants of the Slogan and Poster on Sustainable Waste Management competition were announced. Other Earth Day activities at the event included an exhibition of posters from the competition, pieces of art made from used materials (a plastic bottle cap panel and a globe), a flash mob, and educational and entertaining activities related to environmental issues. Used toys and books were collected for children's shelters, and 20 types of trees were planted in Tbilisi Zoo. The Earth Day event drew around 100 children and members of the public.



Celebration of the 45th annual Earth Day at Tbilisi Zoo, featuring artwork made from used materials, a flash mob, environmental education, and entertaining activities. April 22, 2015.

In April 2016, the WMTR team, together with the USAID mission to Georgia and the SFG program (funded by the Austrian Development Cooperation), celebrated Earth Day in the village of Jokolo in Pankisi Valley, Kakheti Region. The event featured tree planting, a Do-It-Yourself stand where children used waste to create works of art, and a station where children could play the e-game, Sort and Recycle, developed by WMTR. Telavi Public School #1's Eco-Club facilitated the event and activities.

After the event, USAID Caucasus Mission Director, Douglas H. Ball, Deputy Minister of Environment and Natural Resources Protection of Georgia, Besarion Abashidza, and students of the local school in Jokolo village planted 200 trees. The trees were planted over a 1.5 ha area that was previously an illegal dumpsite. The dumpsite was cleared earlier in the month by WMTR with help from the Jokolo community.



Booklets, Media Materials, Posters, Trainings, and Other Activities to Introduce the Concept and Benefits of Recycling and Encourage People to Recycle

Training on Project Cycle Management for Kakheti and Adjara School Students

On April 7-9, May 9-11, and June 20-22, 2015, WMTR conducted training events on project cycle management for public schools' students in Kakheti Region and in Adjara AR. A total of 47 students, grades 9 to 11, participated in the training events.

School students were introduced to project components and project writing principles during a three-day training events at the Green Center in Bulachauri. "Learning by doing" principle was emphasized during the training and the youth worked in teams of 4-5 people.

The teams brought forward their ideas on raising awareness about waste management in their communities, within a given budget and timeframe, and worked over the three days to shape their ideas into projects. The participants came up with an idea, identified target groups, made up a problem tree and project indicators, thought through alternative solutions to the problems, planned activities, and composed a budget.

The project cycle management training helped public school students in the target regions acquire the skills necessary for the planning and implementing of environmental activities.



1st Training, April 7-9, 2015



2nd Training, May 9-11, 2015



3rd Training, June 20-22, 2015



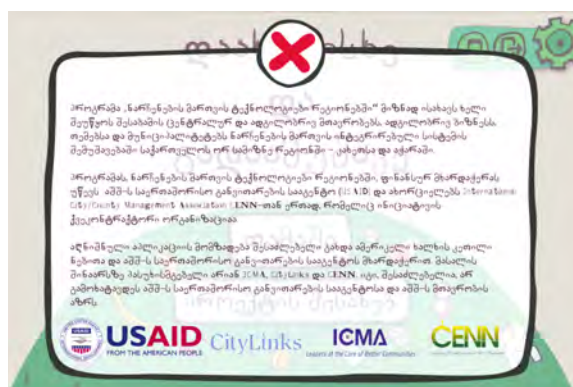
Documentary Film on Integrated Waste Management

The WMTR team closely cooperated with GDS TV, and in collaboration with its GD Pedia show, produced a 42 minute documentary film on integrated waste management, highlighting the importance of waste recycling as well as the Goodwill Recycling Corner initiative. The film covered all aspects of waste management starting from the negative environmental effect and the threat to human health, concluding with the importance of waste reduction and behavioral change.

The documentary film is the first in Georgia that thoroughly covers the entire integrated waste management chain. The film aired on September 10, 2016, and is now available on [YouTube](#). The film serves as an excellent educational material during various awareness-raising seminars.

Electronic Game: Sort and Recycle

In March 2016, the WMTR team created an educational electronic game, *Sort and Recycle*, with the purpose of raising awareness of children aged 6 and above on waste separation and recycling. The game is available on iOS, Android, and Windows.



The *Sort and Recycle* electronic game that the WMTR team created raises children's awareness of waste separation and recycling.

The objective is to produce useful items from waste by sorting it and further recycling it, saving natural resources and the environment. The game consists of several stages:

- The player has to clean a room, park, or picnic area and sort waste by placing waste in pre-determined waste bins.
- After the area is cleaned, an animation starts showing a waste collection vehicle carrying the waste to a recycling facility.
- The player has to produce various products from waste in the recycling facility (e.g., a plastic plate or metal spoon).

On March 22, 2016, the WMTR team held an interactive seminar for 15 second-grade students at the Environmental Information and Education Center. The EIEC team introduced the students to the principles of sustainable waste management and the importance of recycling. At the end of the seminar, the WMTR team demonstrated the Sort and Recycle e-game.

Public Service Announcements

Two public service announcements (PSAs) were developed in fiscal year 2015 and broadcasted on public television:

The first one promotes the 4R principle and the second provides a message to the public on the importance of the tariff system showing the linkage between tariff fee collection and a clean and healthy environment (please follow the [Link](#)).



In fiscal year 2016, the WMTR team developed another PSA to promote the importance of waste reduction, and raise public awareness on the issue. In the PSA, a character from the popular Georgian painting, *Meezove* (yard keeper) by Pirosmiani (the same character that was featured in the previous PSA),



delivers the key message to reduce the amount of waste we dispose of, by avoiding the purchase of single-use items and buying extra products. Public television broadcasted the PSA, which is currently available online on [YouTube](#).

Information Boards in Lagodekhi Protected Areas to Prevent Littering

In June 2016, WMTR and the Agency of Protected Areas (APA) placed 30 information boards along tourist trails in locations with a high rate of littering.



The main character on the boards is an aurochs named Toni, a symbol of Lagodekhi Protected Areas. Toni encourages tourists to care for the environment and not pollute the territory. The slogan “*Leave only footprints, take only pictures!*” urges visitors to pack waste out of the protected area.

Lagodekhi Protected Areas are located in Kakheti Region, in the extreme northeastern part of the southern slopes of the Caucasus, and range in altitude from 590 to 3,500 meters. These protected areas include Lagodekhi Nature Reserve (19,749 ha) and Lagodekhi Managed Reserve (4,702 ha). The area is one of the world’s best-preserved primitive areas, with a diversity of natural landscapes. The managed reserve of Lagodekhi Protected Areas includes five informative tourist trails, namely: Grouse Waterfall, Ninoskhevi Waterfall, Machi Castle, Black Rock Lake, and the Knowledge of Nature trail.

Training for Gori School Students

On October 1, 2016, the WMTR team in cooperation with Droa conducted a one-day training of trainers on integrated waste management topics to students in the city of Gori. Trained school students gained knowledge on international waste management practices used worldwide, as well as national legislation and requirements. These students can now train peers at their schools to raise awareness among youth and introduce behavioral changes.

Green Idea Generator for Students

On February 6-7, 2017 WMTR in collaboration with other projects implemented by CENN organized a two-day workshop on generating green ideas from students from all Georgian regions.

The two-day workshop ([link](#) to video) generated new ideas and initiatives, and supported youth activism in the country. On the first day of the event, young participants came up with multiple ideas. On the second day, mentors evaluated these ideas and selected the best ones. The WMTR team helped young innovators implement their initiatives after their return to their home regions. Among the initiatives launched were:

- Young green journalists will make different videos on environmental subjects in their region and distribute them to the public via their YouTube channel Greenviroment. During the two-day workshop, they had already prepared their introductory video for their future audience – [link](#).



Students gathered at the CENN Green Center in Bulachauri to generate creative green ideas and work with mentors. February 6-7, 2017.

- The Telavi City Flea Market team aims to popularize 4R principles of waste management in a fashionable and worldwide-approved way—via a flea market, which is very popular in Tbilisi and now will be spread to Telavi as well – [link](#).

Sunday School of Eco-Agents in Kakheti Region

The WMTR team supported the Telavi self-governing city School N1 in offering a *Sunday School of Eco-Agents* on waste management topics. Classes consisted of seminars and presentations on integrated waste management topics combined with practical works and field trips.

Students learned how to plan and implement different environmental campaigns and activities. During this month-long program they developed small, community-based projects to support their villages and cities in improving waste management practices.



Sunday School of Eco-Agents in the self-governing city of Telavi, February 2017.

Joint Training Course for Journalists on Waste Management Issues

On December 10–13, 2016, the WMTR team and USAID M-TAG program conducted training courses for journalists in *Integrated Waste Management Practices, Challenges, and Development Perspectives*. The programs trained journalists from different regions of Georgia. The duration of the training course was 24 academic hours.

Goodwill Recycling Corner Campaign

The WMTR team promoted the waste separation system introduced in Goodwill Hypermarket in Didi Digomi under Component 1.

The WMTR team developed a video that describes the waste separation system in Goodwill Hypermarket. The video tells a story about where the waste separated in Goodwill Hypermarket is taken, how it is recycled, and why this is important. The WMTR team distributed the video through social media, receiving 3,217 views. Please follow the link to watch the video – [link](#).



Posters promoting the waste separation system introduced in Goodwill Hypermarket, Didi Digomi district of Tbilisi.

WMTR Program Cooperation with Peace Corps

The WMTR team cooperated with other projects and institutions working on waste management sharing experiences, success stories, and lessons learned. On November 5, 2016, the program participated in the Peace Corps-organized Eco-Camp Alumni Conference. The WMTR team participated in the 2016 summer camp as well, and delivered a presentation.

At the conference, the WMTR team presented the program's work and delivered important messages on composting and recycling. The conference took place in Tskneti, where around 40 school students from the entire country and alumni of the G.R.E.E.N Camp 2016 participated in the conference and presented activities that they have implemented in their hometowns.

Green Tech and Innovations Day at Techno Park

In November 2016, the WMTR team together with other CENN projects organized the *Green Tech and Innovations Day at Tech Park*. The aim was to officially launch green technologies developed by the program: the GreenWatch application, the Caucasus Environmental Portal, and the Sort and Recycle e game. The Deputy Minister of Environment and Natural Resources Protection of Georgia and the Mayor of Tbilisi attended the event and made introductory remarks.

Green Your University Competition

On January 4–5, 2017, students of Batumi Shota Rustaveli State University and Telavi Iakob Gogebashvili State University gathered in Tbilisi to participate in the Idea Generator, within the Green Your University Competition. Three groups from each university worked over two days to improve and develop their previously proposed projects, based on which they were selected to participate in the Idea Generator. The goal of each group was to come up with an effective project that would change existing waste management practices, support introduction of integrated waste management, and reduce their universities' environmental footprint.

On January 5, the groups presented their projects to the evaluation committee, which identified three winning project ideas. Among the winners were Batumi University's Green BSEU group; Telavi University's Carpe Eco Diem; and two groups from Batumi University—Deka and Greens. The WMTR team supported a winning group of the Green Your University Competition in implementing their idea to create an Eco-Hub/Co-Working space at Telavi University.

An Infographic on Waste Recycling Potential in Georgia

The WMTR team developed an infographic to visualize the research results on the market for recycling plastic, glass, paper, and aluminum. The infographic, which shows the potential for the development of a

waste recycling industry that would bring economic and environmental benefits, was communicated to stakeholders via social media channels.

Capacity Building of Local Partner Organization

According to the implementation mechanism outlined in the Cooperative Agreement during the Waste Management Technologies in Regions (WMTR) fourth program year, the International City/County Management Association (ICMA) as a prime international recipient retains only a technical advisory function to support the local recipient - Caucasus Environmental NGO Network (CENN), which is responsible for all programmatic activities.



Infographic on waste recycling potential in Georgia.

The transition to a local organization becoming the prime WMTR implementer was outlined and planned in the design phase of the project. During the first three years our approach to management and staffing reflected that premise. CENN's staff members comprised the majority of WMTR personnel and have been an integral part of the overall program's organizational structure and management. ICMA and CENN intentionally staffed the program in this manner to maximize local ownership of the activities and minimize staffing changes to ensure program implementation continuity during the second phase of the project. All component lead managers including the Waste Management Expert, Recycling & Private Sector Engagement Specialist, Revenue Generation and Cost Recovery Specialist and Communications Specialist have been CENN's employees since the beginning of the program. WMTR purposefully transitioned to a local Chief of Party at the beginning of the third implementation year, ensuring that this person was ready to assume leadership over the program before CENN became the prime recipient.

CENN received the official award for WMTR Phase II from USAID and started implementation in March 2017. ICMA and CENN collaborated to ensure a smooth transition between the two phases of the program. Throughout the entire WMTR Phase I, ICMA supported CENN to increase its capacity in human resources management, accounting and finance, contracting, and procurement and ensure its readiness to become a prime recipient of USAID awards.

During the transition process all contracts and agreements with service providers were transferred to CENN. In addition, the entire ICMA inventory was also transferred to CENN.

PROBLEMS AND OBSTACLES ENCOUNTERED

WMTR contended with the following problems and obstacles during program implementation:

1. Miscommunication and lack of coordination among donor agencies working in the waste management sector
2. Lack of communication among state institutions responsible for waste management in Georgia
3. Lack of capacity at the municipal level for addressing waste management issues
4. Lack of financial resources allocated in municipal budgets for waste management
5. Municipalities' lack of expertise and equipment (e.g., trucks, bins) required for waste collection and recycling
6. Lack of accurate data on GHG emissions from the waste management sector to create a baseline and develop short-term and long-term goals for emissions reduction
7. Lack of local expertise in waste management
8. A very limited number of recycling companies with both the capacity and willingness to be potential grant recipients
9. The context of the broader socio-economic situation in the country
10. The public's lack of awareness regarding integrated waste management issues such as waste separation, recycling, and tariff issues.

To address or mitigate the effects of these problems and obstacles, WMTR worked closely with all tiers of government and stakeholders on capacity building and undertook an intensive communication, outreach, and awareness campaign to promote best practices in waste management and recycling systems. In particular:

- (1, 2) Twice a year the WMTR team organized Stakeholder Consultative Group meetings with the involvement of donor organizations, government agencies, and other stakeholders. Such meetings presented a good opportunity for all parties involved in the waste management sector to coordinate their work and improve communication with one another. WMTR met regularly with different projects' teams working on waste management issues in order to coordinate and supplement activities while avoiding duplication.
- (3) The WMTR team supported municipalities in project target regions to develop municipal waste management plans, which helped them to improve their waste management systems and comply with the requirements of national legislation. The WMTR team also organized tailored training for representatives of local government to improve their capacity for addressing waste management issues.
- (4, 5) The WMTR team introduced a waste separation (paper/plastic) system in the self-governing city of Telavi. The program placed 36 waste bins for separated waste collection in one city district. The WMTR team conducted capacity analyses of municipalities in project target regions and provided this information to the different state and financial institutions working on waste management issues. This analysis helped donor institutions to identify the needs of local governments and allocate funds to meet their requirements. The best example is the EBRD-funded EUR 15 million project to support municipalities with waste bins and trucks. Since the situation is similar in all municipalities of Georgia, these results could prove useful for other regions.

Under the city-to-city exchange program, WMTR also supported waste collection and recycling companies in upgrading their technologies through grants to purchase new, modern equipment. The self-governing city of Telavi also received a modern 2010 Kenworth Rear Loader trash truck, with an estimated market value of USD 90,000, from a U.S. company.

- (6) The WMTR team used international expertise to support MoENRP in developing a Technical Regulation on the Design, Construction, and Operation of Incinerators.

The WMTR team transferred the TDL-500 Portable Gas Analyzer to the Solid Waste Management Company of Georgia (SWMCG) and provided practical training to the staff of the company on the use of this equipment. This has enabled the SWMCG to measure GHG emissions in the air around landfills. The WMTR team provided SWMCG with special software for calculation of GHG emissions and provided training on calculation methodology.

- (7) The WMTR team is using international expertise to conduct analyses, develop documents, and solve different issues that Georgia faces in terms of waste management while at the same time building local capacity. For example, the WMTR team supported MoENRP in developing a concept of an EPR scheme for beverage producers. The EPR scheme created a mechanism to provide recyclable materials to recycling companies and create demand for the sector.
- (8) The WMTR team has provided technical support (e.g., tailored training, workshops, seminars, development of business and marketing plans, energy audits) to recycling companies in order to increase their capacity, as well as created a platform for dialogue between the private sector and the government to create a business friendly environment for the waste recycling sector in Georgia.
- (9, 10) The WMTR team issued small grants to two schools in Kakheti Region to support establishing an integrated approach to waste management. The team is also conducting a very intensive awareness raising campaign through competitions, celebrations of environmental days, roundtable meetings, TV programs, Facebook campaigns, and other means to increase the public's awareness of integrated waste management issues.

Near the beginning of the program, WMTR faced additional problems and obstacles that were addressed or mitigated as the program progressed:

- Non-existence of legal regulations (the National Waste Management Code and National Waste Management Strategy had not yet been passed by the Georgian parliament).
- Political environment: The Georgian local self-government election that took place on June 15, 2014, triggered municipal staff turnover in project partner municipalities directly affecting activity planning. More importantly, during the election period, local officials and their supporters focused their attention on the election campaign, and their availability for and willingness to contribute their time to WMTR activities was very limited.
- Lack of readiness of the GoG, waste management and recycling companies, and other stakeholders to meet strict international (EU) standards in collection, transfer, recovery, recycling, and disposal services.
- Lack of accurate data and information related to waste management (e.g., non-existence of waste composition information, amount of collected waste, GHG emissions from landfills).
- Scarcity of local experts on issues related to waste management and recycling.
- Risk of duplicating efforts.

PMP Indicators, Target/Actual Values for Waste Management Technologies in Regions Program (2014-2017)

Indicator	Data Source	Unit	Frequency	Base Line	Target and Actual Values by Year (cumulative)									
					Target Y1	Actual Apr-2014	Actual Oct-2014	Target Y2	Actual Apr-2015	Actual Oct-2015	Target Y3	Actual Apr-2016	Actual Oct-2016	Actual Final Mar-2017
OUTCOME INDICATORS														
Desired Impact: Contribute to reduced GHG emissions and improved natural resource management practices														
1. Number of hectares of biological significance and/or natural resources under improved natural resource management as a result of USG assistance. This is a F-indicator 4.8.1-26.	Remediation plan, implementation, progress reports	Ha	Bi-Annual (April and October)	N/A	0			3,000		113,661	140,000	138,212	139,012	140,053
2 Greenhouse gas (GHG) emissions, estimated in metric tons of CO ₂ equivalent, reduced, sequestered and/or avoided as a result of USG assistance. This is a F-indicator 4.8.-7.	GHG emissions report	Metric tons CO ₂	Bi-Annual (April and October)	See Comments Section	0			0			0			Please see the explanation in the table below
3. Projected greenhouse gas emissions reduced or avoided through 2030 from adopted laws, policies, regulations, or technologies related to sustainable landscapes as supported by USG assistance This is a F-indicator 4.8.2-35	GHG emissions report	Metric tons CO ₂	Bi-Annual (April and October)	See Comments Section	0			0		10,000	550,000	527,010	527,010	2,327,010
4. Number of institutions with improved capacity to address climate change issues as a result of USG assistance. This is a F-indicator 4.8.2-14	WMTR annual reports	Count	Bi-Annual (April and October)	N/A	0			0		2	9	4	17	17

5. Total public and private funds leveraged by USG energy and environmental projects This is a custom indicator	Stakeholder interviews and progress report including commitment letters from the public and private sources	Dollar	Bi-Annual (April and October)	N/A	0			0			10,000,000	16,724,936	16,857,928	16,857,928
6. Number of sub-national government entities that improved their performance to identify and apply appropriate solutions to the three target urban development challenges as a result of USG assistance. This is a custom indicator	WMTR annual reports	Count	Bi-Annual (April and October)	N/A	0			3		3	10	10	16	16
7. Number of replicable solutions developed and tested. This is a custom indicator	WMTR annual reports	Count	Bi-Annual (April and October)	N/A	0			1		2	5	4	6	7
OUTPUT INDICATORS														
Outcome 1: Established waste management system and an improved implementing capacity of the public and private sector;								Outcome 3: Developed waste management strategy and tariff policy with strong public participation						
8. Number of laws, policies, strategies, plans, or regulations addressing climate change (mitigation or adaptation) and/or biodiversity conservation officially proposed, or adopted as a result of USG assistance. This is an adaptation of the F- indicator 4.8.2-28	GoG reports	Count	Bi-Annual (April and October)	N/A	0			3			10	6	21	23
9. Number of remediation plans for illegal landfills developed. This is a custom indicator	WMTR and GoG reports	Count	Bi-Annual (April and October)	N/A	0			1		1	3	2	2	3
10. Number of closed landfills/dumpsites undergoing remediation applying sound waste management practices. This is a custom indicator	WMTR and GoG reports	Count	Bi-Annual (April and October)	N/A	0			3		3	10	9	12	17
11. Number of waste facilities applying sound waste management practices as a result of USG assistance. This is a custom indicator	WMTR and Facilities reports	Count	Bi-Annual (April and October)	N/A	0			1		1	2	2	2	2

12. Number of person hours of training completed as a result of USG assistance. This is a F-indicator	WMTR progress reports	Count	Bi-Annual (April and October)	N/A	500		2,400	2,900	5,155.50	12,447.50	14,000	13,220.50	14,529.50	14,913.50
Outcome 2: Strengthened capacity and efficiency of recycling companies and an improved enabling environment.														
13. Percentage increase in sales of recycled products. ¹ This is a custom indicator	Recycling company reports and interviews	Percent	Bi-Annual (April and October)	See Comments Section	0			10%			40%		100%	Please see the explanation in the table below
14. Percentage increase in recycling materials supplied to and utilized by recycling companies. This is a custom indicator	Recycling company reports and interviews	Percent	Bi-Annual (April and October)	See Comments Section	0			40%			100%		100%	Please see the explanation in the table below
15. Number of recycling products meeting international standards. This is a custom indicator	Recycling company reports and interviews	Count	Bi-Annual (April and October)	N/A	0			0			1			Please see the explanation in the table below
16. Percentage increase in the volume of recycled paper, glass and plastic bottles. This is a custom indicator	Recycling company reports and interviews	Percent	Bi-Annual (April and October)	See Comments Section	0			0			20%		100%	Please see the explanation in the table below
17. Number of facilities applying sound waste management practices. This is a custom indicator	Progress/ HICD report	Count	Bi-Annual (April and October)	N/A	0			1		1	5	3	5	5
Outcome 4: Engaged and informed community in waste management and the 4 R's.														
18. Number of people reporting changes in behavior practices at home or at work. This is a custom indicator	Stakeholder questionnaires focus groups and annual reports	Count	Bi-Annual (April and October)	N/A	0			2,000		2,000	5,000	2,800	5,012	5,012
19. Number of people reached through outreach campaigns. This is a custom indicator	Quarterly reports	Count	Bi-Annual (April and October)	N/A	5,000		71,677	150,000	156,156	269,172	600,000	536,130	984,821	1,037,527

20. Number of Youth educated and involved in sound waste management practices This is a custom indicator	Quarterly reports	Count	Bi-Annual (April and October)	N/A	0			0		1,720	2,500	2,932	4,672	4,695
Outcome 5: Enhanced capacity of local non-profit partner to lead USAID SWM programs.														
21. Percentage of yearly HICD targets achieved by partners and beneficiaries. This is a custom indicator	Annual report	Percent (non-cumulative)	Bi-Annual (April and October)	0	0%			100%		100%	100%	100%	100%	100%

¹ Indicators 13, 14 and 16 are reported through March 2018 and show the increases in Zugo Ltd. production. See the explanation table for the exact figures.

INDICATOR	Cumulative Target	Cumulative Actual	COMMENT
<p>1. Number of hectares of biological significance and/or natural resources under improved natural resource management as a result of USG assistance</p> <p>This is a F-indicator 4.8.1-26</p>	140,000 ha	140,053 ha	<p>In 2017, WMTR together with the local government of Lagodekhi municipality cleared a territory adjacent to the Lagodekhi protected area and Mlokosevich park. A total of 1 ha was cleared.</p> <p>In 2016, WMTR together with the Agency of Protected Areas (APA) of the MoENRP developed a Protected Area Waste Management Guideline. APA communicated the guideline to the different protected areas. As a result, the Mariamjvary Strict Nature Reserve Administration improved its natural resources management. Note: Mariamjvary Strict Nature Reserve total area is around 1,040 ha.</p> <p>In 2016, WMTR developed a closure plan for Beshumi illegal dumpsite (located in a forest area) and closed it in collaboration with the local government and CENN's project, Sustainable Forest Governance. In order to preserve and ensure proper management of the area, the Sustainable Forest Governance project developed a management/recreational plan of the forest and provided it to the regional government for implementation. Note: The total area of the Beshumi illegal dumpsite and the surrounding forest is around 800 ha.</p> <p>In June 2016, WMTR, in cooperation with the APA, placed 30 information boards in Lagodekhi Protected Areas to manage waste in the area by encouraging tourists to abide the principle – "take it in, take it out". Note: The total Lagodekhi Protected Areas are 24,551 ha.</p> <p>In 2015, the WMTR team created a waste collection system in Sviana recreational zone, situated in Stori River Valley in Telavi Municipality. The only road leading to the historic geographic protected areas of Tusheti lies along the valley. The Stori River Valley also serves as a recreational place for both local residents and tourists. Between 4,000 and 5,000 people pass through the valley during the summer period to get to Tusheti Protected Areas.</p> <p>Installation of waste bins has for the first time allowed collection of waste generated in the recreational zone, thus significantly improving the area sanitary conditions. Visitors returning from Tusheti Protected Areas also use the bins, which contributes to significant improvement of the protected areas sanitary situation and creates favorable conditions for tourism. Collection of waste from the newly installed bins has already been arranged with the municipality. Note: The total area of Sviana recreational zone is 1.2 ha. Total area of Tusheti protected area is 113,661 ha.</p>
<p>2. Greenhouse gas (GHG) emissions, estimated in metric tons of CO2 equivalent, reduced, sequestered and/or avoided as a result of USG assistance</p> <p>This is a F-indicator 4.8.-7.</p>		Please see the explanation in the comment column	<p>The project has contributed to disposal area GHG mitigation by developing relevant by-laws and landfill closure plans and gathering baseline information about GHG emissions from landfills. Using the CEE-LFG model WMTR calculated a potential of 43,334 metric tons of CO2 emissions at nine landfills in Adjara AR and Kakheti regions. However, the actual mitigation effects of the project's activities can only be realized once the Government of Georgia takes the required actions to physically implement the processes and facilities that can provide GHG mitigation benefits. In particular, the benefits to be derived from an active landfill gas collection and treatment system can only be realized once a system is implemented and brought into service. For example, if the final closure design for the Telavi landfill stipulates the installation of an active gas management system, WMTR would have contributed to the mitigation process. The actual physical mitigation that will be derived from such a system will only be realized once it is fully implemented, which could be in 2023, when Telavi landfill is projected to be closed and the new regional landfill for Kakheti Region opened.</p> <p>Similarly, the mitigation of effects associated with closure of open dumpsites and the application of a low permeability final cover can only occur once the closure design components have been formally implemented. Accordingly, while the project has significantly enhanced the prospects for these physical activities, it cannot, for the most part, control the schedule for their actual implementation.</p> <p>The GHG generation baseline determined through the application of the CEE-LFG model, indicates that only two landfills (Telavi and Batumi) within the target regions are potential candidates for the installation of active gas collection and treatment systems.</p>

<p>3. Projected greenhouse gas emissions reduced or avoided through 2030 from adopted laws, policies, regulations, or technologies related to sustainable landscapes as supported by USG assistance</p> <p>This is a F-indicator 4.8.2-35</p>	550,000 t CO2	2,327,010 t CO2	<p>In order to track methane emission changes based on WMTR activities, the team conducted a methane emission inventory and forecasted the reduction through 2030. The projected greenhouse gas emissions reduced or avoided through 2030 from adopted laws, policies, regulations, or technologies supported by the WMTR program will amount to 2,327 010 tone CO2.</p>
<p>4. Number of institutions with improved capacity to address climate change issues as a result of USG assistance.</p> <p>This is a F-indicator 4.8.2-14</p>	9	17	<ul style="list-style-type: none"> • <i>Ministry of Environment and Natural Resources Projection of Georgia</i> – Development of technical regulations on the Construction, Operation, Closure and After-Care of Landfills; on Rules of Collection and Treatment of Municipal Waste and on the Design, Construction and Operation of Incinerators • <i>Solid Waste Management Company of Georgia</i> – provision of portable equipment to measure GHG emissions and delivery of relevant trainings • <i>Telavi Municipality</i> – Establishment of Separated Waste Collection system in 5 villages • <i>Telavi self-governing city</i> – development of waste collection optimization scheme • <i>Municipal Waste Management Plans have been developed for fifteen local governing bodies (including Telavi city and municipality)</i>
<p>5. Total public and private funds leveraged by USG energy and environmental projects.</p> <p>This is a custom indicator</p>	10,000,000	16,857,928	<p>310,000 GEL (contribution provided by Telavi Municipality to the pilot project implemented by WMTR)</p> <p>329,998 GEL (cost of closure of the Gurjaani landfill incurred by the SWMCG)</p> <p>246,844 GEL (purchase of software to include GHG measurement data and trainings provided by the Government of the Netherlands to the SWMCG under the grant: Waste Management in Georgia)</p> <p>40,436 GEL (contribution provided by Khulo Municipality and ADA/CENN Sustainable Forestry Project)</p> <p>75,000 GEL (The SWMCG allocated this amount to close the Manglisi landfill based on the Gurjaani landfill closure plan developed by WMTR)</p> <p>367,531 GEL (The SWMCG allocated this amount to close the Tsalka landfill based on the Gurjaani landfill closure plan developed by WMTR)</p> <p>79,627 GEL (The SWMCG allocated this amount to close the Martvili landfill based on the Gurjaani landfill closure plan developed by WMTR)</p> <p>275,500 GEL (The SWMCG allocated this amount to close the Bakuriani landfill based on the Gurjaani landfill closure plan developed by WMTR)</p> <p>15,000,000 EUR – WMTR conducted detailed analyses of the municipal waste management sector and identified key issues hampering the development of the waste management sector, including lack of relevant infrastructure (vehicles, bins, etc). The WMTR program lobbied for resolving this issue at central governmental level and with donor organizations via meetings and discussions. As a result, the EBRD, together with the Ministry of Regional Development and Infrastructure, allocated 15 million EUR to purchase vehicles and bins for different regions in Georgia.</p> <p>124,500 EUR – WMTR cooperated with the <i>Integrated Solid Waste Management (ISWM)</i> Kutaisi project, implemented by PEM Consult in partnership with INTECUS (Germany) and Gamma (Georgia) and funded by the KfW. Within the framework of this cooperation, WMTR provided to ISWM the guideline on Developing Municipal Waste Management Plans and shared experiences and lessons learned in the development of these plans. As a result, based on this guideline, the <i>ISWM</i> project is assisting 16 municipalities in Imereti, Racha-Lechkhumi and Kvemo Svaneti regions in developing their municipal waste management plans. They allocated around EUR 124,500 to implement the relevant activities</p>

<p>6. Number of sub-national government entities that improved their performance to identify and apply appropriate solutions to the three target urban development challenges as a result of USG assistance.</p> <p>This is a custom indicator.</p>	10	16	<p>The following sub-national government entities improved their performance with WMTR support:</p> <ul style="list-style-type: none"> • <i>Telavi Self-governance City</i> – The waste collection system was optimized within the city-to-city exchange program and a waste separation system has been set up; • <i>Telavi Municipality</i> – A separated waste collection system has been set up within the pilot project; • <i>SWMCG</i> – received portable equipment to measure methane emissions at landfills; trained relevant officials on the usage of the equipment; • <i>Municipal Waste Management Plans have been developed for fifteen local governing bodies (including Telavi city and municipality).</i>
<p>7. Number of replicable solutions developed and tested.</p> <p>This is a custom indicator.</p>	5	7	<p>An Integrated Solid Waste Management Plans Development Guideline will be used in all regions of Georgia;</p> <p>A waste fee calculation tool was developed and tested in fifteen Municipalities and self-governing cities of the project target regions. This work could be replicated in all municipalities of Georgia;</p> <p>WMTR has conducted a waste composition study in the project target regions. Based on the developed methodology the study could be replicated in other regions;</p> <p>A waste separation scheme has been tested in 5 villages of Telavi municipality and could be replicated in other villages and self-governing cities of Georgia;</p> <p>A waste separation scheme has been established in <i>Goodwill</i> hypermarket and has been replicated in other commercial institutions in Georgia;</p> <p>A waste separation scheme has been established in <i>Tbilisi Marriot</i> Hotel and could be replicated in other hotels in Georgia</p> <p>An EPR scheme is being developed for beverage producers in Georgia</p>
<p>8. Number of laws, policies, strategies, plans, or regulations addressing climate change (mitigation or adaptation) and/or biodiversity conservation officially proposed, or adopted as a result of USG assistance.</p> <p>This is an adaptation of the F- indicator 4.8.2-28</p>	10	23	<p>The WMTR team developed the following guidelines, by-laws and plans:</p> <ul style="list-style-type: none"> • A Technical Regulation on the Design, Construction and Operation of Incinerators; • Telavi Landfill closure plan (2017); • Municipal Waste Management Plans for fifteen local governing bodies in Adjara AR and Kakheti Region • Protected Areas Waste Management Guideline (2016); • Beshumi illegal landfill closure plan (2016); • Gurjaani landfill closure plan (2016); • Technical regulation on Rules of Collection and Treatment of Municipal Waste (2016); • Technical regulation on the Construction, Operation, Closure and After-Care of Landfills (2015); • Integrated Solid Waste Management Plans Development Guideline (2015)
<p>9. Number of remediation plans for illegal landfills developed.</p> <p>This is a custom indicator.</p>	3	3	<p>The WMTR team developed the following remediation plans:</p> <ul style="list-style-type: none"> • Gurjaani landfill remediation plan • Beshumi illegal landfill closure and remediation plan • Telavi landfill closure and remediation plan

<p>10. Number of closed landfills/dumpsites undergoing remediation applying sound waste management practices.</p> <p>This is a custom indicator.</p>	10	17	<p>The WMTR team closed the following dumpsites:</p> <ul style="list-style-type: none"> • Telavi Municipality – Shalauri (2 dumpsites) (January, 2017), Tsinandali (2 dumpsites) (January-February, 2017) and Kurdgelauri (February, 2017) • Telavi Municipality – Karajala (November, 2016) and Artana (October, 2016) • Beshumi Illegal dumpsite (October, 2016) • Telavi Municipality – Busheti (June, 2016) • Pankisi Valley, Akhmeta Municipality – Jokolo (April, 2016) • Telavi Municipality – Akura (January, 2016) • Kobuleti Municipality – Tsetskhlauri (August, 2015) • Khulo Municipality – Leghva (August, 2015) • Khulo Municipality – Dekanashvilebi (August, 2015) • 3 dumpsites in Akhmeta Municipality – Duisi, Dimasturi, Khalatsani (November 2015)
<p>11. Number of waste facilities applying sound waste management practices as a result of USG assistance.</p> <p>This is a custom indicator.</p>	2	2	<ul style="list-style-type: none"> • The waste collection company in Telavi Municipality is collecting separated waste in 5 pilot villages (Tsinandali, Kmemo Khodasheni, Akura, Vanta and Busheti). • The waste collection company in Telavi City is collecting separated waste from one of the biggest districts of the City.
<p>12. Number of person hours of training completed as a result of USG assistance.</p> <p>This is a F-indicator</p>	14,000	14,913.50	Trainings/seminars for municipal officials, local residents, school teachers, youth, recycling companies etc.
<p>13. Percentage increase in sales of recycled products.</p> <p>This is a custom indicator.</p>	10%	100%	<p>In April 2017, WMTR successfully concluded the In-Kind Activity Agreement (IKAA) issued to Zugo Ltd. The overall goal of the IKAA was to help Zugo Ltd. establish a parallel production line for recycled plastic products, thus increase sales. Before installing the new equipment and establishing the parallel line Zugo Ltd. didn't have any sales of recycled products. The newly purchased equipment was installed in April 2017 and through March 2018 Zugo Ltd. sold 43,859 kg. of reusable plastic bags. The market value of the sold reusable plastic bags is approximately 70,000 USD.</p>
<p>14. Percentage increase in recycling materials supplied to and utilized by recycling companies.</p> <p>This is a custom indicator.</p>	40%	100%	<p>In April 2017, WMTR successfully concluded the In-Kind Activity Agreement (IKAA) issued to Zugo Ltd. The overall goal of the IKAA was to help Zugo Ltd. establish a parallel production line for recycled plastic products, which will allow an increase in the recycling materials supplied to and utilized by the company. The new line allowed Zugo Ltd. to accept and utilize 45,216 kg of polyethylene waste through March 2018.</p>
<p>15. Number of recycling products meeting international standards.</p> <p>This is a custom indicator.</p>	1	See comment	<p>WMTR supported TissuePaper Ltd - Paper waste recycling and hygiene paper producing company - to introduce a quality management system in the company. The Program assessed existing management practices, identified deficiencies and elaborated recommendations of what should be improved and how, in order for TissuePaper Ltd to be eligible for an ISO certificate - ISO 9001:2015 quality management system.</p>

16. Percentage increase in the volume of recycled paper, glass and plastic bottles. This is a custom indicator.	20%	100%	In April 2017, WMTR successfully concluded the In-Kind Activity Agreement (IKAA) issued to Zugo Ltd. The overall goal of the IKAA was to help Zugo Ltd. establish a parallel production line, which will allow an increase in the volume of recycled products. With the new production line Zugo Ltd. recycled 43,859.52 kg of polyethylene through March 2018.
17. Number of facilities applying sound waste management practices. This is a custom indicator.	5	5	<ul style="list-style-type: none"> • WMTR supported Zugo Ltd.'s in the process of obtaining an Environmental permit. The company has received the permit; • Based on the EIA report, Neoprint Ltd. received a positive decision from the MoENRP that allowed the company to continue operation; • Georgian Paper Production Ltd. has been supported in the development of a waste chapter for their EIA report and energy audit report; • Goodwill hypermarket started collecting separated waste for further recycling • Tbilisi Marriot hotel hypermarket started collecting separated waste for further recycling
18. Number of people reporting changes in behavior practices at home or at work. This is a custom indicator.	5,000	5,012	<p>About 5,012 people have changed their behavior due to the waste separation schemes introduced in different locations:</p> <ul style="list-style-type: none"> • 800 students of AISI Collage in Kachreti village, where a composting box and waste separation bins were placed (2016) • 2,197 residents — 28% of the total population of 5 villages of Telavi Municipality (Tsinandali, Kvemo Khodasheni, Busheti, Vanta, Akura) — where waste separation bins for plastic and paper waste were placed in the framework of the Telavi pilot project • 15 staff members of the Marriott Hotel, where a waste separation scheme has been introduced at the Hotel's restaurant • The WMTR team conducted a survey to assess the effectiveness of the awareness-raising component of the WMTR program. Based on the results, about 2,000 people have changed their behavior due to additionally provided waste management related information (2015).
19. Number of people reached through outreach campaigns. This is a custom indicator.	600,000	1,037,527	Social Media campaigns, articles, Youtube, etc.
20. Number of Youth educated and involved in sound waste management practices. This is a custom indicator.	2,500	4,695	School competitions, trainings/seminars.
21. Percentage of yearly HICD targets achieved by partners and beneficiaries. This is a custom indicator.	100%	100%	CENN has increased its capacity to implement US government funded projects.



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