



KfW



Project financed by KfW, EU NIF and Government of Georgia



Project implemented by consortium leaders ERM and PEM Consult



Builder and Operator of landfill

## Dear Readers



Giorgi Shukhoshvili,  
Director of the Solid Waste Management Company of Georgia

*The Solid Waste Management Company of Georgia (SWMCG) was established in 2012 through the Ministry of Regional Development and Infrastructure. From 2013 on SWMCG has taken over 53*

*formerly municipal landfills all over Georgia (except City of Tbilisi and Adjara Autonomous Republic) and is administering them. We have rehabilitated during the 3 year period from 2013 to 2016 about 28 unregulated municipal landfills and we have closed in an ordered manner 13 landfills. With the investment of 23 mio GEL (about 9.5 mio Euro) we have improved the quality of live of thousands of citizens that were formerly suffering from smoke, smell and waste blown by the wind from unregulated landfills and dumpsites. We have reduced the negative impacts of landfills on environment and nature considerably, in some cases completely.*

*During the coming years we will continue with rehabilitations and closings of landfills but we will also step forward in improving the waste sector by constructing new, modern landfills compliant with EU standards that will replace in time most of the currently existing landfills*

*and dumpsites.*

*The new landfill close to Kutaisi will be the first out of nine planned regional landfills. This landfill together with a system of five transfer stations will serve all 16 municipalities in the regions Imereti and Racha Lechkhumi and Kvemo Svaneti and eventually a population of about 700 000 citizens.*

*We present you in this first newsletter all important technical and financial details about the new landfill. This landfill will be constructed fully conform European standards and it will be a model and blueprint for all other regional landfills that we will construct in the coming years.*

*We as a company do our best to make this the beginning of a new era in waste management. We are very confident and we believe that we have very good national and international technical support for keeping high standards. But besides the technical support we also need strong support and collaboration with all municipalities and last but not least, acceptance and support from the citizens, who are in fact our main clients and beneficiaries.*

*Please read carefully this newsletter - it may help you to get some new ideas about waste and waste management.*

## Project Newsletter #1

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## Waste and waste management in Georgia - cleaning up the past and laying a new ground for the future

Waste is a very critical subject, wherever and whenever - everybody creates waste, nobody wants waste. Everybody complains about waste, nobody can completely avoid waste. Waste is an unpleasant, unwanted but unavoidable issue in modern societies.

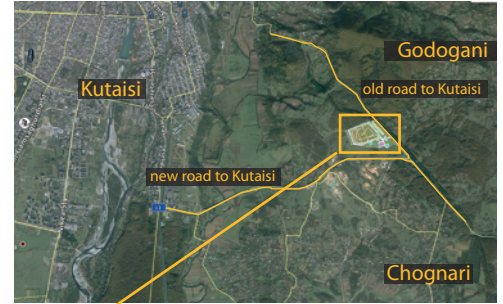
Western societies have built up sophisticated systems of separation, collection and recycling of waste. These systems were built up during decades. Many countries in transition, like Georgia, are starting only now building up modern

waste management systems and have to clean up the former unregulated landfills and illegal dumpsites. This is the main task of the Solid Waste Management Company of Georgia: clean up, rehabilitate, close where necessary and build up step by step a new, modern system following the regional approach, that was successfully implemented in many countries. The new Kutaisi landfill is the first important step in this direction.

# The new regional landfill for Imereti and Racha Lechkhumi / Kvemo Svaneti regions

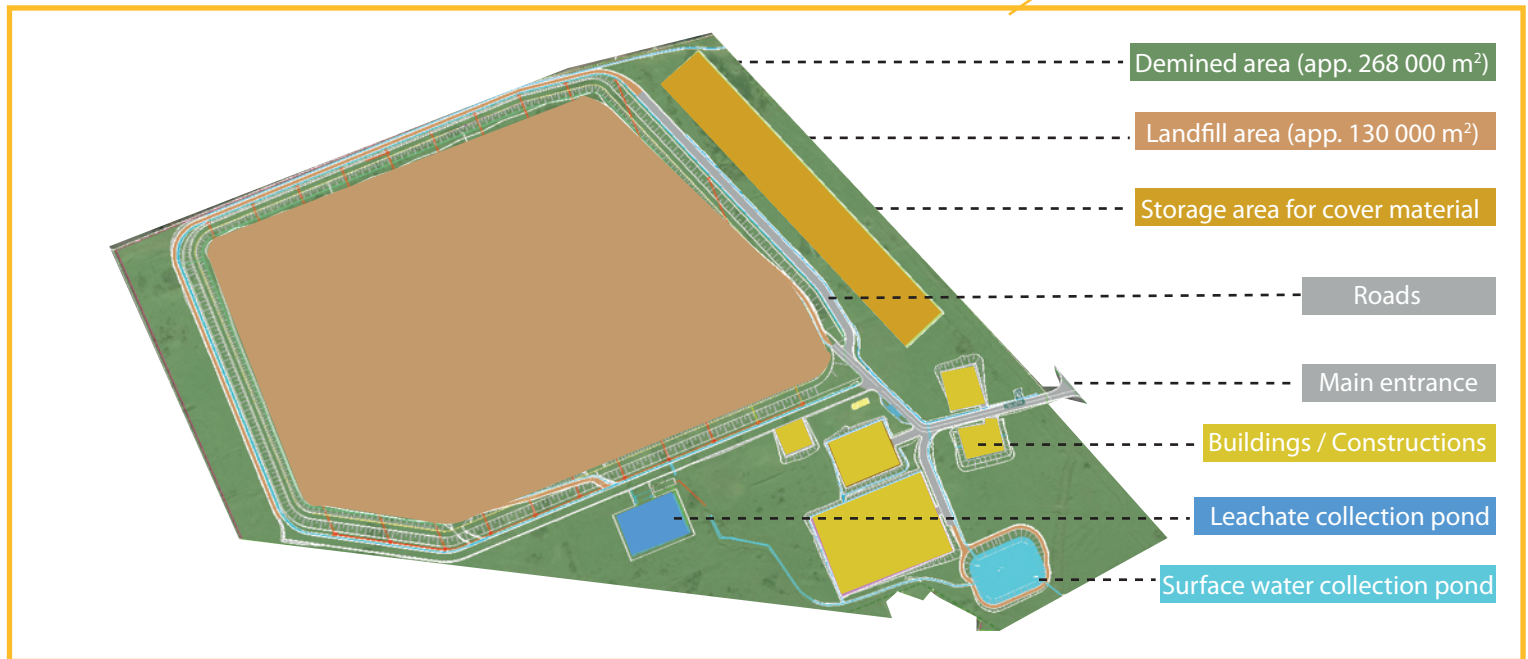
The project "Integrated Solid Waste Management System Kutaisi" foresees the construction of a new regional landfill and the closure of the Nikea landfill in Kutaisi during the period of 2014-2018. The new landfill will serve the Imereti and the Racha-Lechkhumi / Kvemo Svaneti regions.

The new regional landfill will be constructed conform EU standards. It will serve a total population of about 700 000 citizens until its planned closure in the year 2034. Implementation has started mid 2015. Total investment: 26 mio Euro.



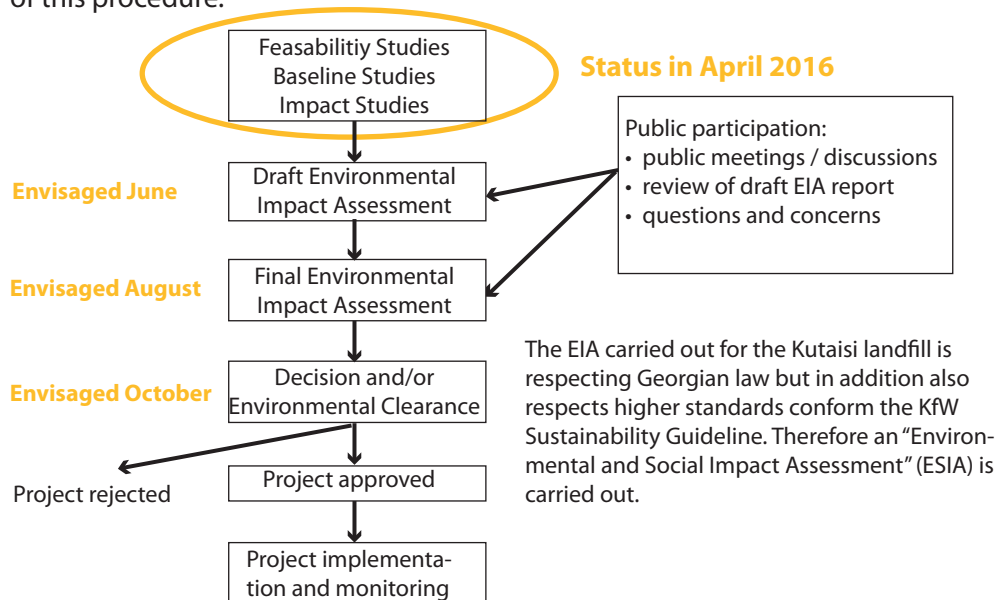
Google Maps screenshot

## Position and plan of the new landfill

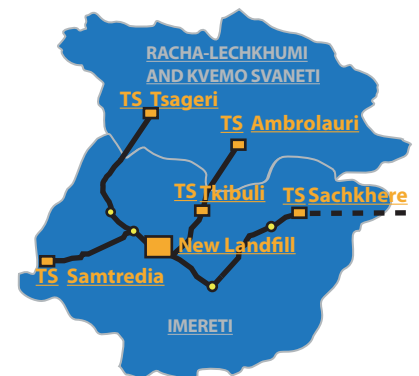


## Status of project implementation

The project is at the moment in the phase of preparing the Environmental Impact Assessment (EIA) which is regulated by the "Law of Georgia on Environmental Impact Permits". Citizens can review the EIA report, ask questions and formulate problems from their point of view. The diagram below resumes the essential steps of this procedure.



## One central landfill and five Transfer Stations (TS)



A system of 5 transfer stations (TS) will assure efficient transport of waste from all municipalities of the regions Imereti and Racha-Lechkhumi and Kvemo Svaneti to the new sanitary landfill. Small trucks deliver waste to the transfer stations from where regularly big trucks with trailers transport the waste to the new sanitary landfill.

# The new regional landfill - who is doing what?

## Construction and operation

### Solid Waste Management Company of Georgia / Ministry of Infrastructure and Regional Development



The solid waste management company of Georgia is the beneficiary. The company has since 2013 in property and operation 53 former municipal landfills in Georgia. The mandate for the future is, to construct and operate up to 9 regional landfills and to close down all former municipal landfills. The landfill for Imereti and Racha Lechkhumi/Kvemo Svaneti is the FIRST regional landfill that will be constructed.



- Beneficiary of the project
- Contracting consulting companies
- Contracting construction companies
- Supervision of construction works
- Final approval and reception of construction
- Owner and operator of the new landfill

## Technical assistance

### The Implementation Consultant (IC)



The consulting company ERM (Environmental Resources Management). Delivers consulting services for **planning, tendering and supervising** the construction of the new sanitary landfill and the transfer stations including the long distance transport equipment.

- Design of the sanitary landfill
- ESIA study (Environmental and Social Impact Assessment)
- Prepare tender dossiers for construction works and equipment and supporting tender procedures
- Supervise construction works

### The Accompanying Measures Consultant (AMC).



The **Accompanying Measures Consultant (AMC)**. This component is implemented by the German consultancy company PEM Consult and delivers training and consulting services to support and improve the organisational and institutional capacities of the Solid Waste Management Company

- Support and improve organisation and management
- Support and improve financial management and technical competences
- Strengthen PR, communication and public awareness activities.

## Financing

### German-Georgian Cooperation, KfW



Within the bilateral German-Georgian Cooperation Programme, the KfW provides a € 20 mio loan to the Georgian State.



### EU Neighbourhood Investment Fund



The EU provides through its Neighbourhood Investment Fund a € 2 mio grant for financing the technical assistance for implementing the project.

### Government of Georgia



The Government of Georgia contributes with € 4 mio to the total costs of € 26 mio.

## Beneficiaries

16 municipalities of the regions Imereti and Racha-Lechkhumi and Kvemo Svaneti - about 700 000 citizens



Kutaisi



Ambrolauri



Lentekhi



Oni



Sachkhere



Samtredia



Chiatura



Terjola



Tsalkubdo



Zestafonis



Tsageri



Kharagauli



Khoni



Bagdati



Vani



Tskibuli

# Does a modern landfill pollute groundwater?

## NO! Why?

The landfill is like a bath tube, absolutely impermeable with controlled outflow. The outflowing leachate is collected in a sealed, impermeable

basin and is then cleaned through a highly efficient cleaning technology called 'reverse osmosis'. The cleaned water complies with German discharge regulations. Reverse Osmosis is the

best available technology and state of the art.



Shape & Compact the landfill basin

The ground for the landfill is excavated and heavily compacted and 2 clay layers build the base of the sealing system. Exact inclination towards defined points assures flow of leachate to the collection points.



Complete coverage of the landfill basin with foil

Impermeable foil (technical term: "HDPE Geomembrane") is covering completely the ground basin of the landfill



Weld & Check

Experienced and skilled workers weld the foil pieces together to one single piece. All welding seams are checked and proofed with air pressure.



Protective membrane & 50 cm gravel layer

A highly protective white foil (technically: 'Geotextile') is covering the impermeable Geomembrane and is then covered with a 50 cm strata of gravel. This assures leachate flowing to the drain and collection pipes.



Leachate drain pipes under gravel in sand bed

These drain and collection pipes are put in sandbed and then covered with gravel. Leachate flows to the outflow point through natural gravity.



Leachate outflow pipe carefully welded into foil

The outflow connection pipes are tightly welded into the impermeable foil. They are the outflow of the 'big bath tube'.

## Cleaning of leachate through "Reverse Osmosis"



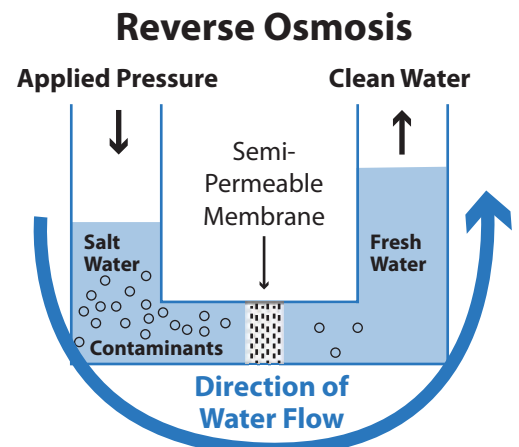
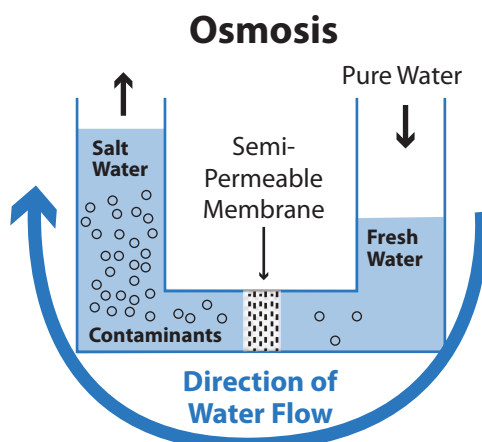
Completely sealed leachate pond

'Osmosis' is a universal principle which man learned from nature: plants, animals, and the human body regulate flow and exchange of liquids through so called 'semipermeable membranes'. The principle: high concentration liquid on one side of the membrane (e.g. high concentration of salt) provokes water molecules on the other side of the membrane to pass through the mem-

brane. The 'filter grid' of the membrane is so small that only the very small water molecules can cross the barrier. "Reverse Osmosis" is working the other way: high concentrate (polluted) liquid is pressed with high pressure through filters through which only water can pass - out of 100 litres polluted leachate around 70 litres clean water can result.



Inside view of a reverse osmosis treatment station



# Modern landfills conform EU standards are not like landfills you know from the past

*A landfill in Georgia in the past meant: hectares of uncovered waste, thousands of birds, horrible smell and huge areas around the landfill polluted by plastic and paper dispersed by the*

*wind. Modern landfills built and operated conform EU standards are very different from the old irregular and illegal landfills you know from the past. They are operated in a systematic*

*way and negative impacts on environment are minimized: reduced smell, only a small area of waste visible, few insects and birds, no dispersion of paper and plastic by wind.*

## The 'cell' - the key element of a systematic landfill operation plan

Depositing follows a strict and systematic plan and the cell is the key element of the filling plan. The "cell" is practically the place where waste is discharged from the trucks, piled up with a caterpillar, compacted with a special compactor and then covered with soil. Depending on the amount of waste delivered daily, the cell will be filled up (2 to 3 m high) during a certain period (50 to 100 days) and then covered with a final strata of soil. Then a new cell will be started in direct continuation of the filled up cell.

## Small cell sizes - key to proper landfill operation

Usually the cell is made as small as possible so that the surface with

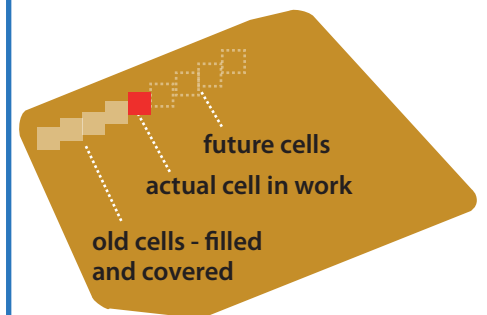


On this picture you see on the right a caterpillar covering the cell with soil and on the left hand a special compactor.

uncovered and exposed waste is as small as possible. The smaller the surface, the less smell, the less birds, the less risk that wind would blow away plastic and paper waste.

## The Cell - the 'working face' of the landfill

**Only where the actual cell is, waste can be seen! All the other area, the previous cells - are safely covered with soil!**



On the total surface of 54,000 square meters of the new landfill, the 'cell' is planned to be maximum 1000 square meters (this means 33 on 33 meters).

# Combined measures to minimize smell, dispersion of paper / plastic and presence of birds

> **Efficient compacting of deposited waste**



**Compacting**

Constant and well planned systematic compacting is a key element of modern landfill operation. This assures a smooth and uniform creation of stable waste layers and thus uniform and controllable conditions all over the landfill.

> **Daily coverage of deposited waste with soil**



**Coverage with soil**

Regular coverage of waste with soil is absolutely essential for reducing any potential disturbance of citizens to a minimum. Nowadays practices have been developed and tested for decades in the western countries.

> **Special nets against dispersing of waste through strong wind**



**Special wind nets**

Georgia is a very windy country. Protection of the area where waste is exposed to wind is needed in order to avoid pollution of the landfill and surrounding areas through paper and plastic waste.

# The Solid Waste Management Company of Georgia (SWMCG)

- Established on April 24, 2012 under the Ministry of Regional Development and Infrastructure
- The government holds 100 % shares of the company
- Since 2013, the company owns and operates 53 former municipal landfills
- The company has a total of 272 staff (68 in the head office Tbilisi and 204 in regional offices)
- The company is responsible for solid waste management with respect to landfills in Georgia, excluding the city of Tbilisi and the Adjara region

## Our mission - create a nationwide system of regional landfills

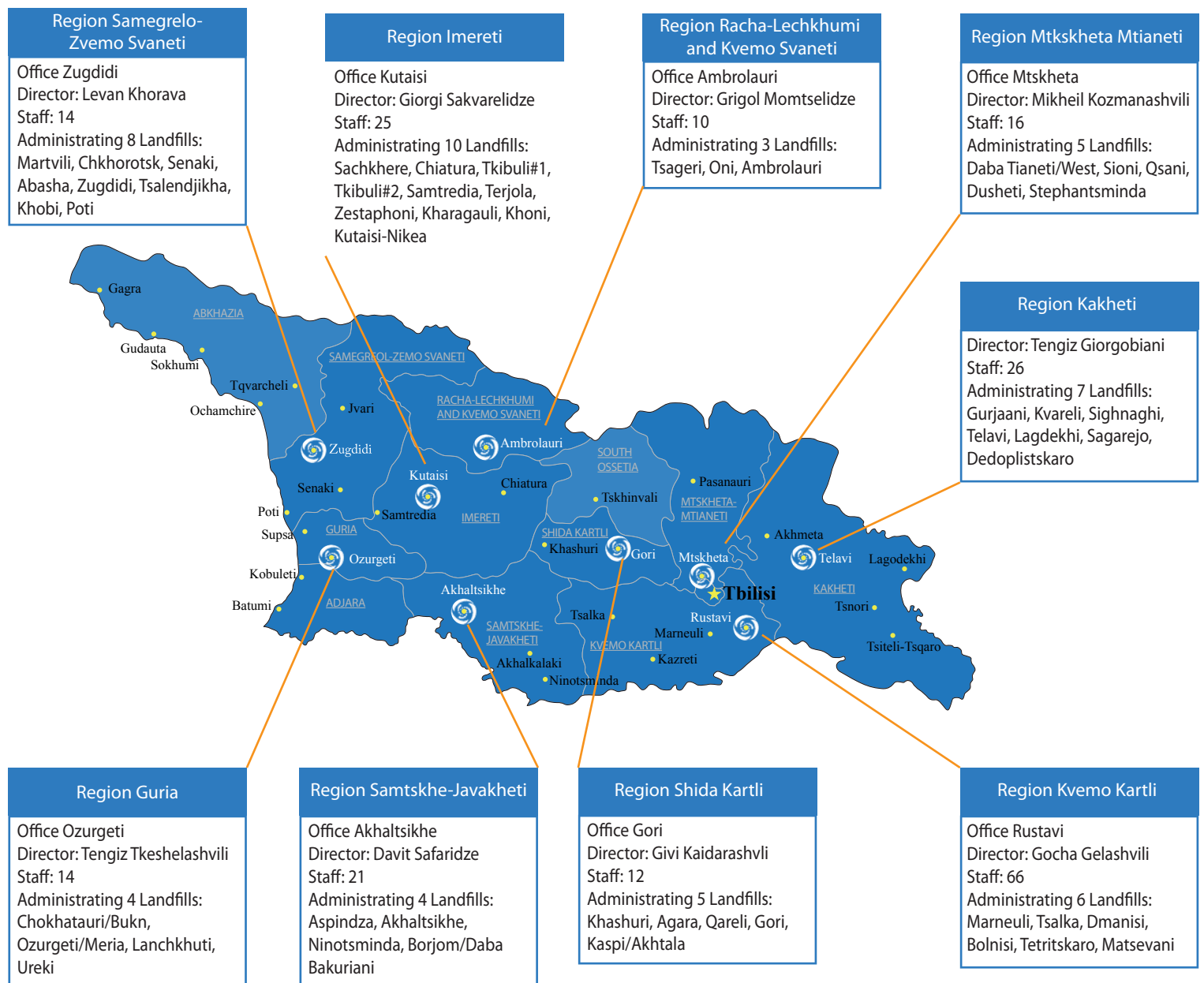
Our mission is to manage the transition from an unregulated system of solid waste disposal towards a system of regional landfills in compliance with European standards serving whole Georgia. This long term transition process with several phases lasts at least 10 to 15 years and demands the following key activities to be implemented in parallel:

- Rehabilitating existing landfills to the measure needed until new regional landfills enter in function

- Closing down existing landfills that are no more needed
- Constructing new regional landfills including transfer systems and waste recovery facilities
- Assuring involvement of all regional stakeholders for operating the new systems
- Raising awareness for involving citizens in waste separation and recycling

## SWMCG has 9 Regional Offices

*The 9 regional offices have employed in total 204 staff. They are administrated by the Regional Management Department in the central office supported by two regional coordinators Gabriel Kvirikashvili (West) based in Kutaisi and Alexander Grdzlishvili (East) based in Rustavi.*



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



*“Clean country - our job”*

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

## Masterplan for rehabilitation and/or closing of 53 landfills

Systematic rehabilitation or closing of all landfills operated by our company has high priority. To date, 28 out of 53 landfills under our administration have been rehabilitated and about 13 have been closed. The rehabilitated landfills will assure controlled waste disposal until a complete network of modern EU standard regional landfill has been constructed and is operational.

The rehabilitation and closing scheme follows a master plan that takes into consideration several factors of waste sector development such as:

- expected waste quantity
- rehabilitation and extension of existing landfills
- construction of new landfills

### Operation of rehabilitated landfills

The 204 regional staff of our company are operating the 53 landfills under our administration on day to day basis.

They are also responsible for regularly visiting and monitoring closed landfills.

### Construction of new landfills

Construction of new landfills and systems of connected transfer stations will assure in future a fully integrated solid waste management system in Georgia. Corresponding systems for waste separation and recycling will be implemented for fully complying with the European Waste Directive starting from 2019 on.

## Before



Akhaltsikhe 2013 - waste widely disposed, fires and smell

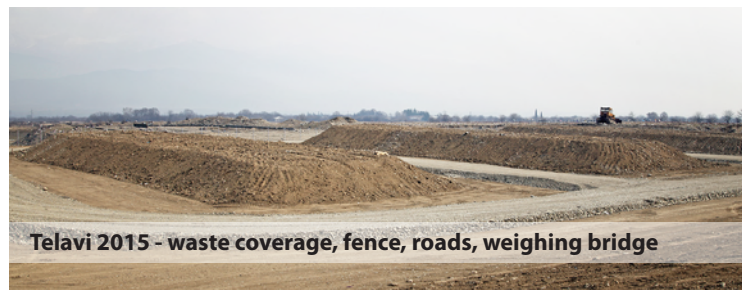
## After



Akhaltsikhe 2015 - regulated landfill



Telavi 2013 - catastrophic situation



Telavi 2015 - waste coverage, fence, roads, weighing bridge

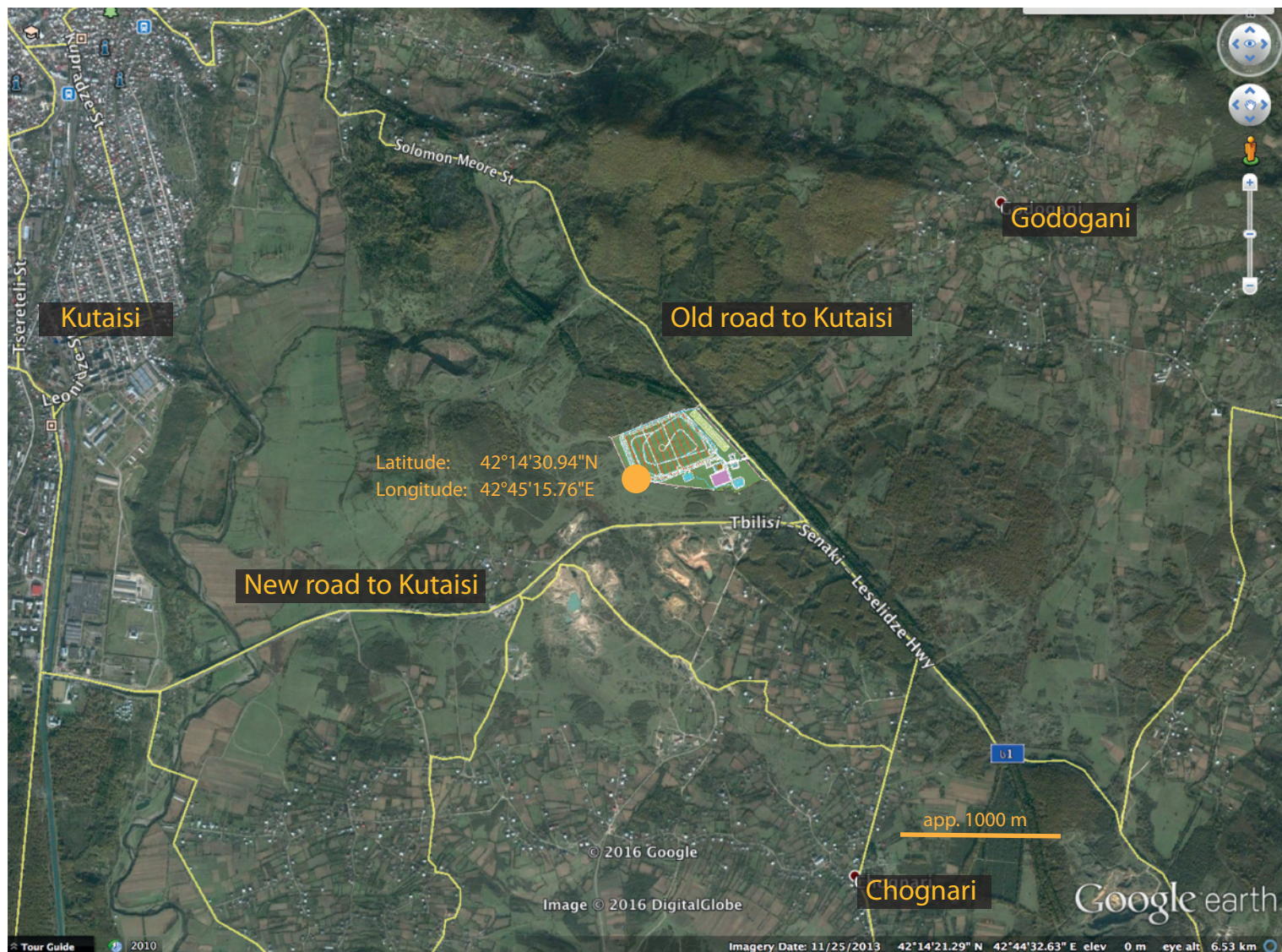


Kutaisi 2013 - massive Rioni river pollution



Kutaisi 2015 - 500 m river bank fortification, regulated landfill

## The new regional landfill Kutaisi - planned position and dimension



## Some key measures to protect environment and reduce negative impacts of the new regional landfill Kutaisi

- > To protect the groundwater (and run off water), the landfill gets a bottom layer of clay and a thick geomembrane (in effect a special plastic) to block water. All this water will be collected via a drainsystem and a special waste water treatment system will clean it.
- > To avoid wind blown waste and bad smells, the waste will be put in the landfill following a filling plan where in a regular, almost daily basis, the waste is covered by soil. This will also limit the presence of vermin.
- > A landfill does not look nice, no matter what measures are taken for the operation. Therefore a green bufferzone can be created: high trees and shrubs in a 10 – 15 meter wide "belt" around the landfill.