Roads Department of Georgia
Vision - Roads and Highways

Tbilisi, Georgia – 4 April 2023

Vision - Roads and Highways - Georgia

Development of transit potential of country

- Middle Corridor
- Black Sea-Caspian Sea Transport Corridor
- Lapis Lazuli Route
- Persian Gulf-Black Sea transport route

The East -West Highway is a strategic project in the Government's effort of transforming Georgia into a transport and logistics hub for trade between Central Asia and the Far East on the one hand, and Turkey and Europe on the other.

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Implementation of major infrastructure projects

Railway Modernization

Baku-Tbilisi-Kars

East-West Highway

Development of logistic Infrastructure

Expansion of Batumi Airport

Expansion of Kutaisi Airport

Vision - Roads and Highways - Georgia

Implementation of major infrastructure projects

Anaklia Deep Sea Port

Expansion of Poti Seaport

Urea terminal in Batumi

Project of PACE terminal

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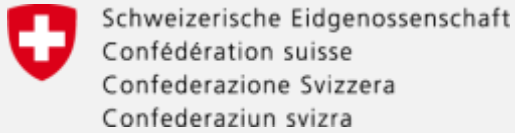
Development Partners of Ministry and Regional Development and Infrastructure: INTERNATIONAL FINANCIAL INSTITUTIONS



Vision - Roads and Highways - Georgia

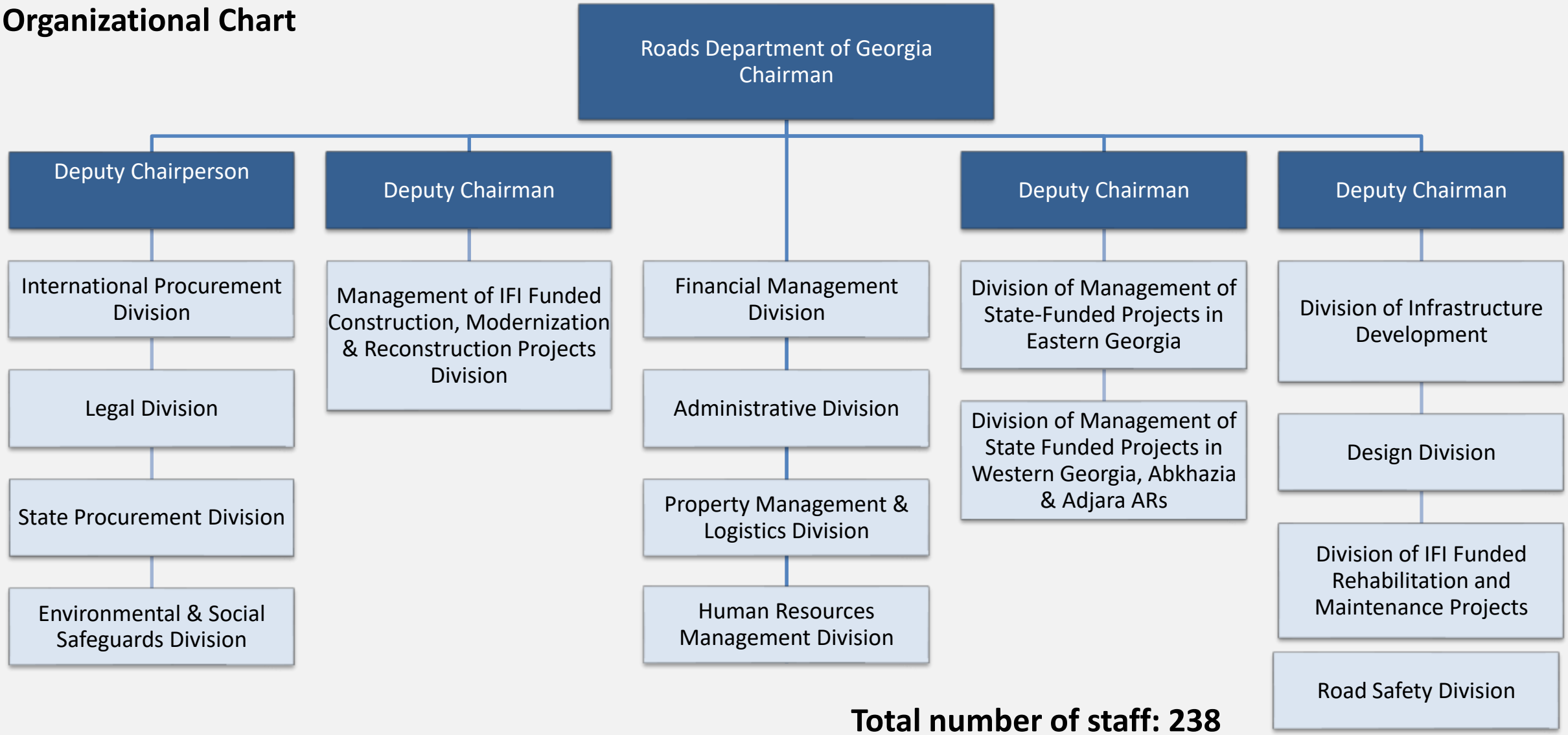
Roads Department of Georgia
Priorities and Main Directions:

- Gradual integration with the EU road standards
- Ensure the safe road infrastructure
- Rational planning of the road infrastructure
- Development of improved road management system
- Improvement of monitoring functions
- Ensure competitive environment in the sector
- Environmental protection
- Improvement of social and resettlement policy
- Ensure transparency of the activities and public awareness

- Construction of the Highways
- Construction and rehabilitation of international roads
- Construction of secondary roads, rehabilitation – periodic repair;
- Construction and rehabilitation of structures
- Maintenance and operation of roads
- Working on prospective road infrastructure projects
- Ensuring riverbank and seashore protection activities

Vision - Roads and Highways - Georgia

Organizational Chart



Total number of staff: 238

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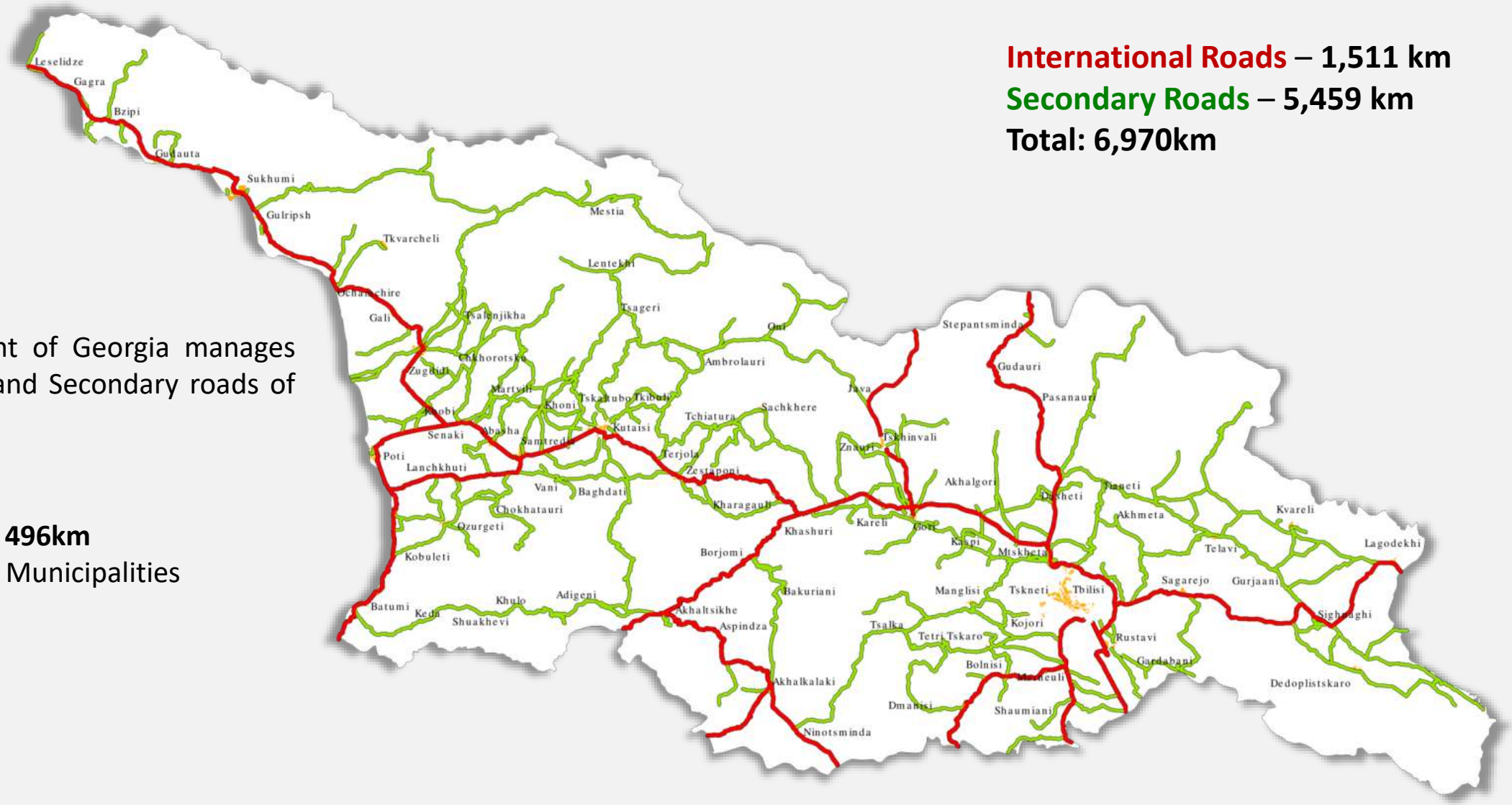
TEN-T Comprehensive/Core Road Network

Vision - Roads and Highways - Georgia

Georgia TEN-T Comprehensive/Core Road Network

Vision - Roads and Highways - Georgia

Road Network



International Roads – **1,511 km**
Secondary Roads – **5,459 km**
Total: 6,970km

Roads department of Georgia manages all International and Secondary roads of Georgia.

Local Roads – 17, 496km
Managed by local Municipalities

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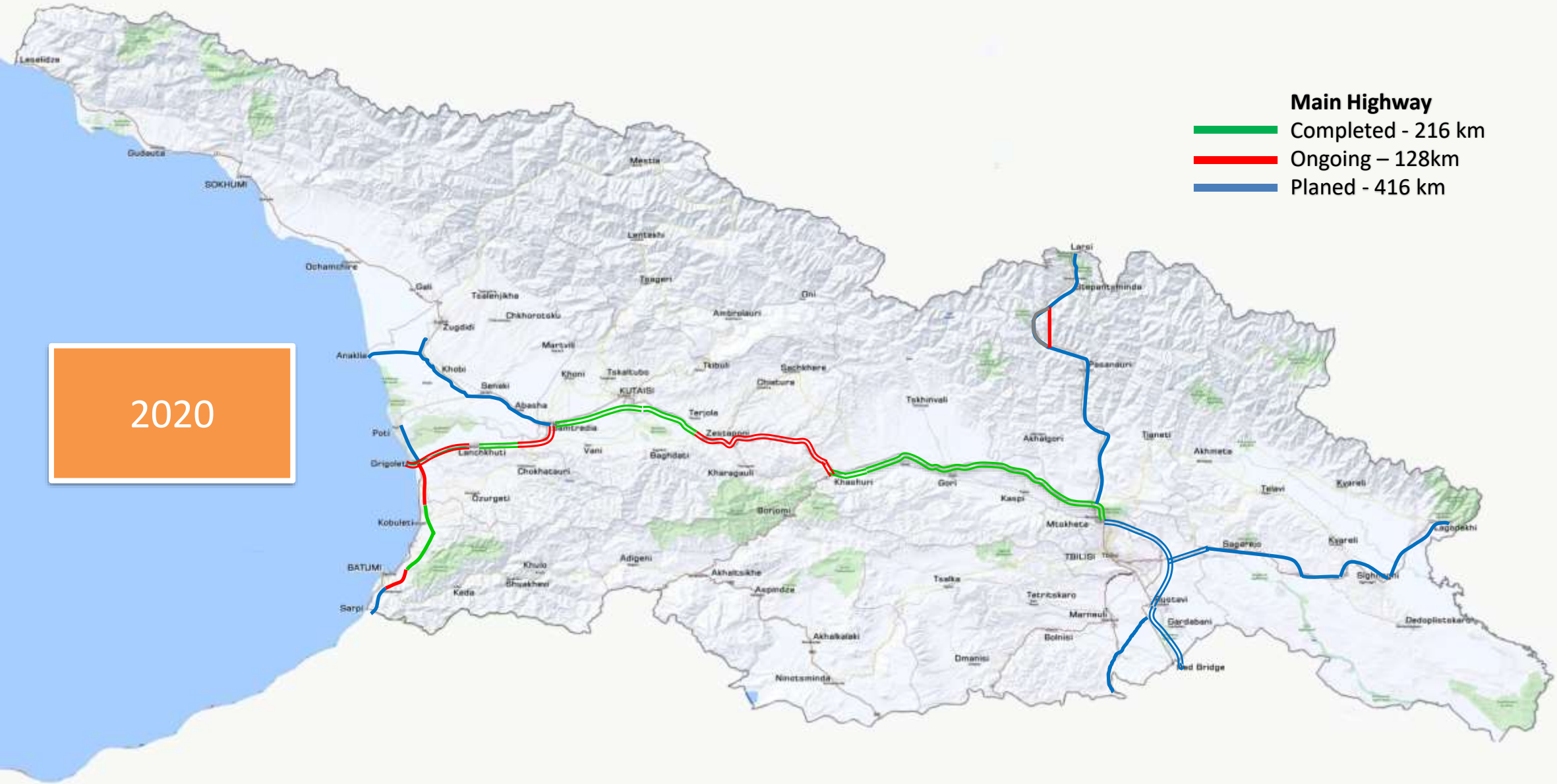

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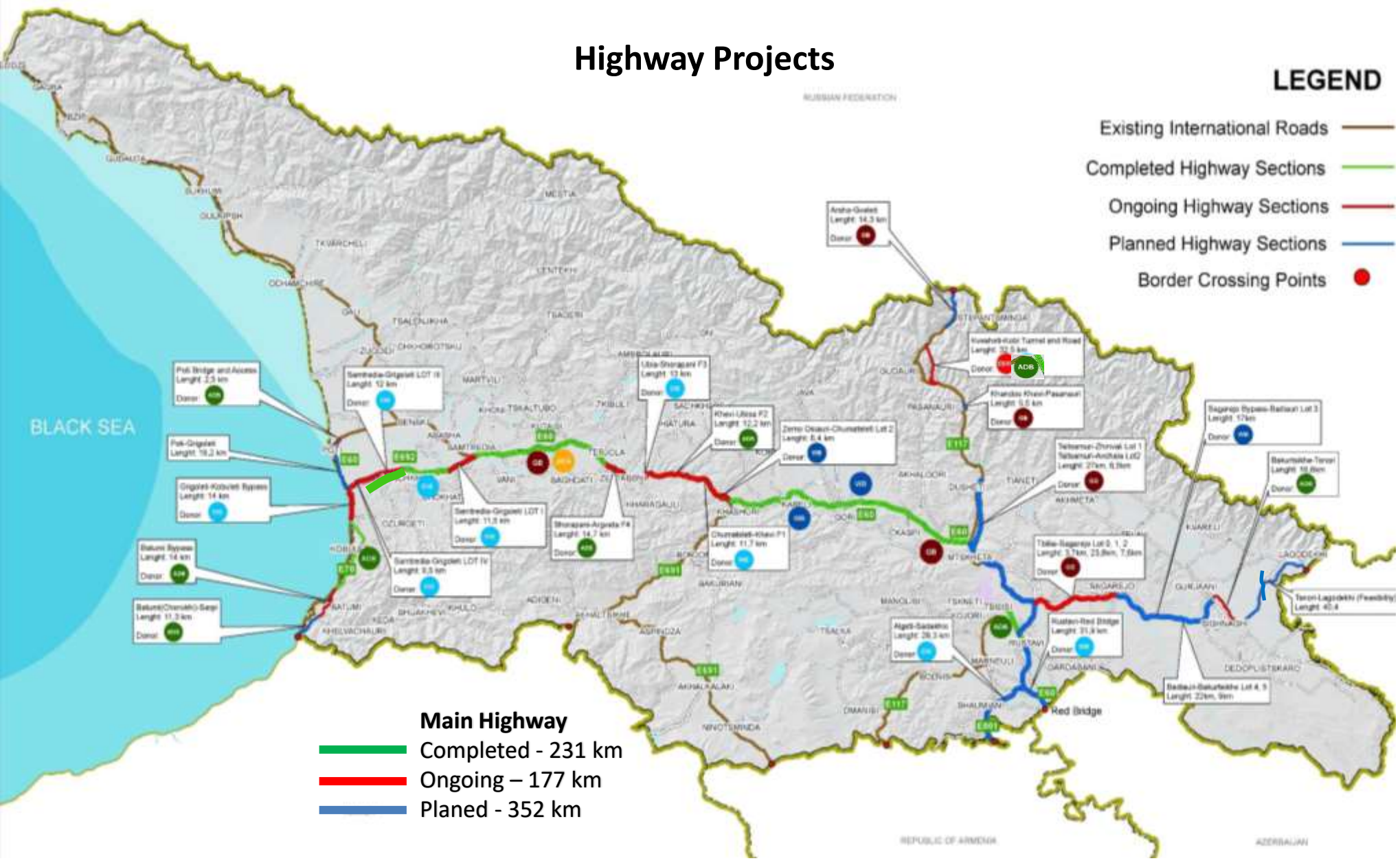

2022

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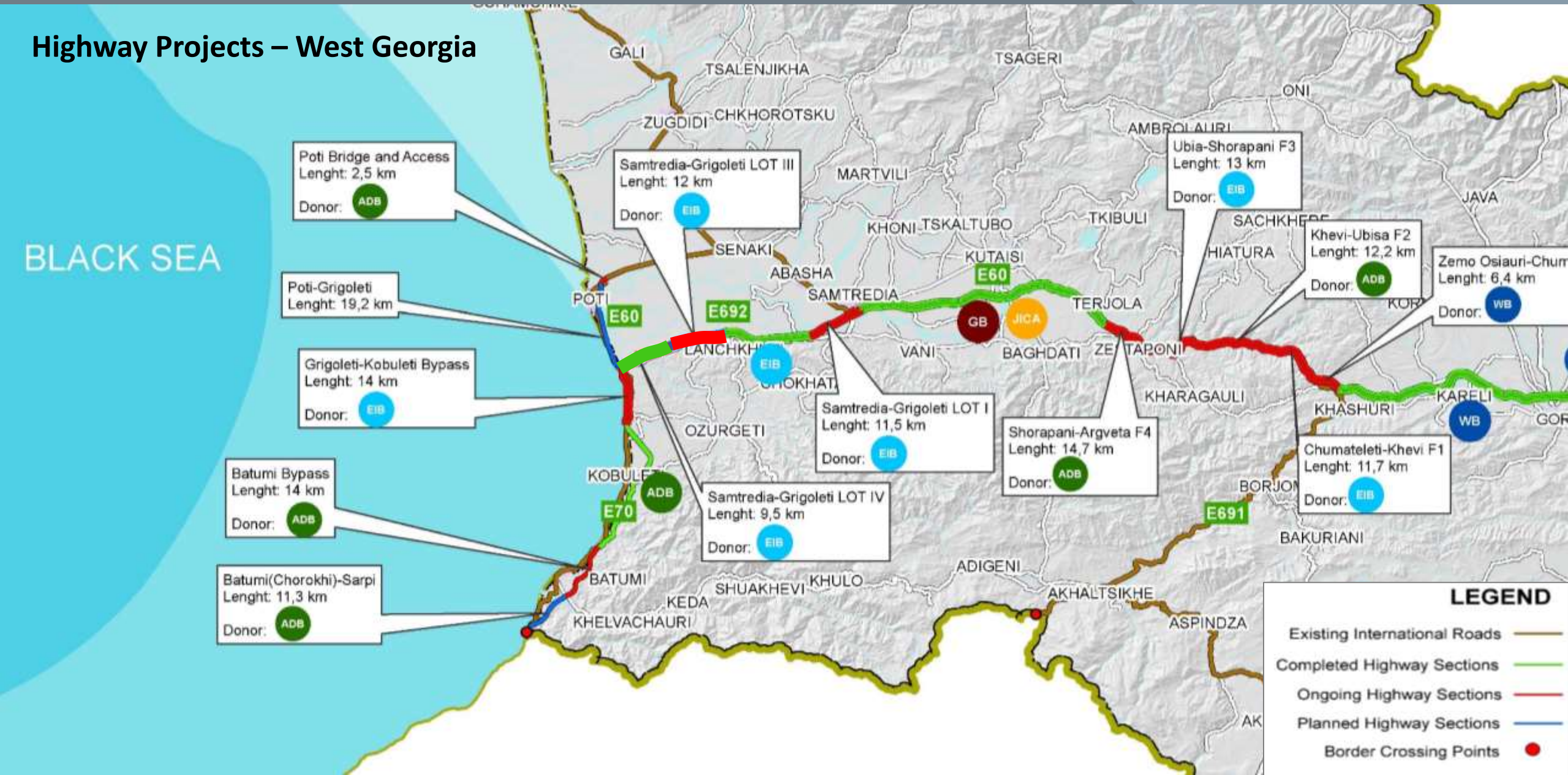
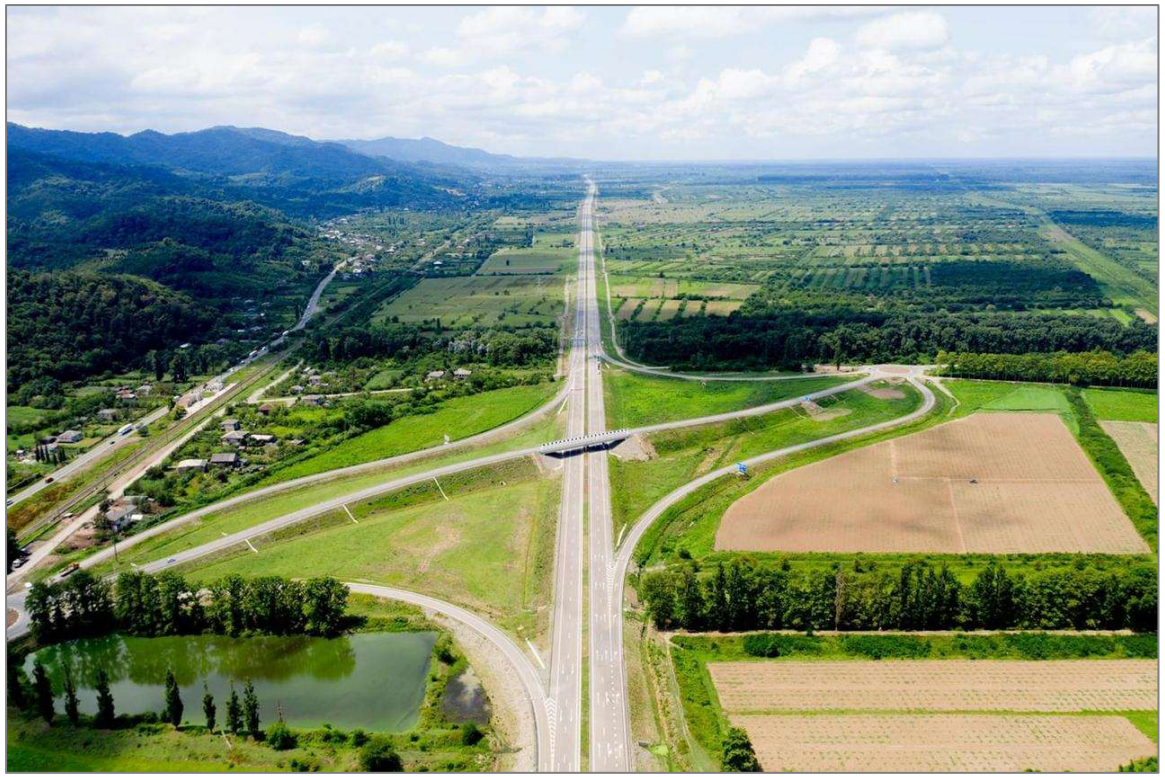
Highway Projects – West Georgia

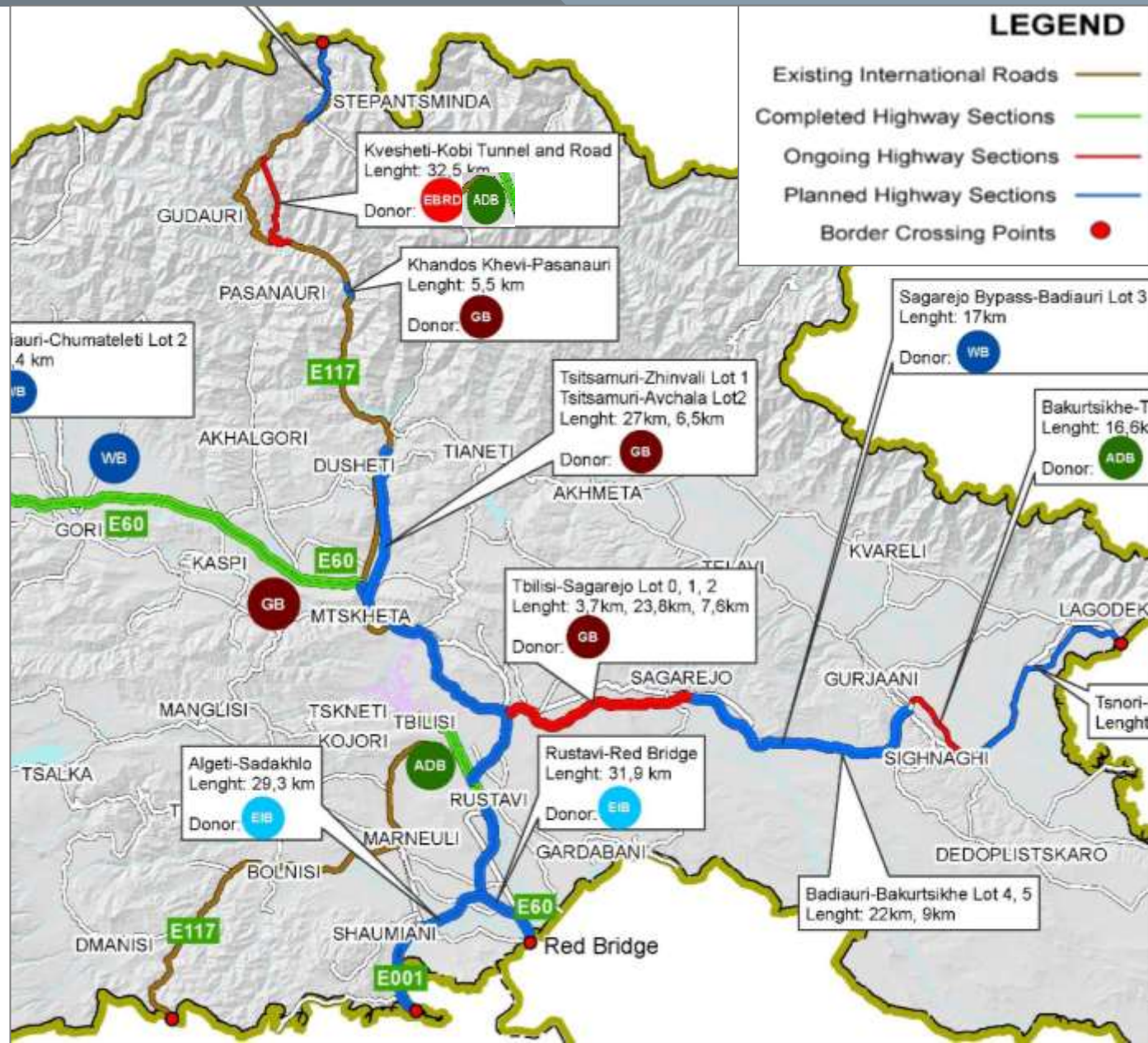


Vision - Roads and Highways - Georgia

Highway Projects – East Georgia

By 2024 – All major and critical sections of EW Highway will be in operation





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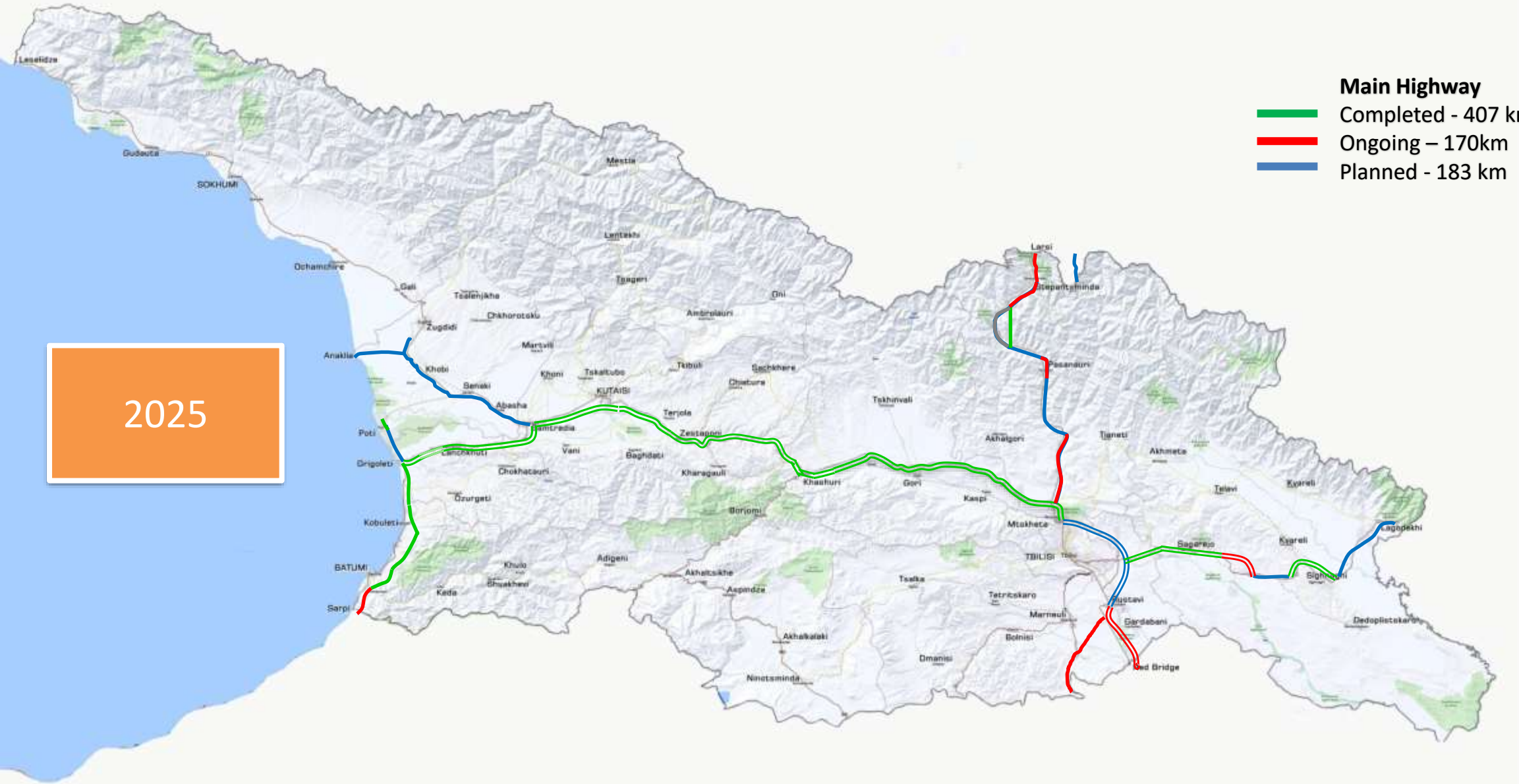

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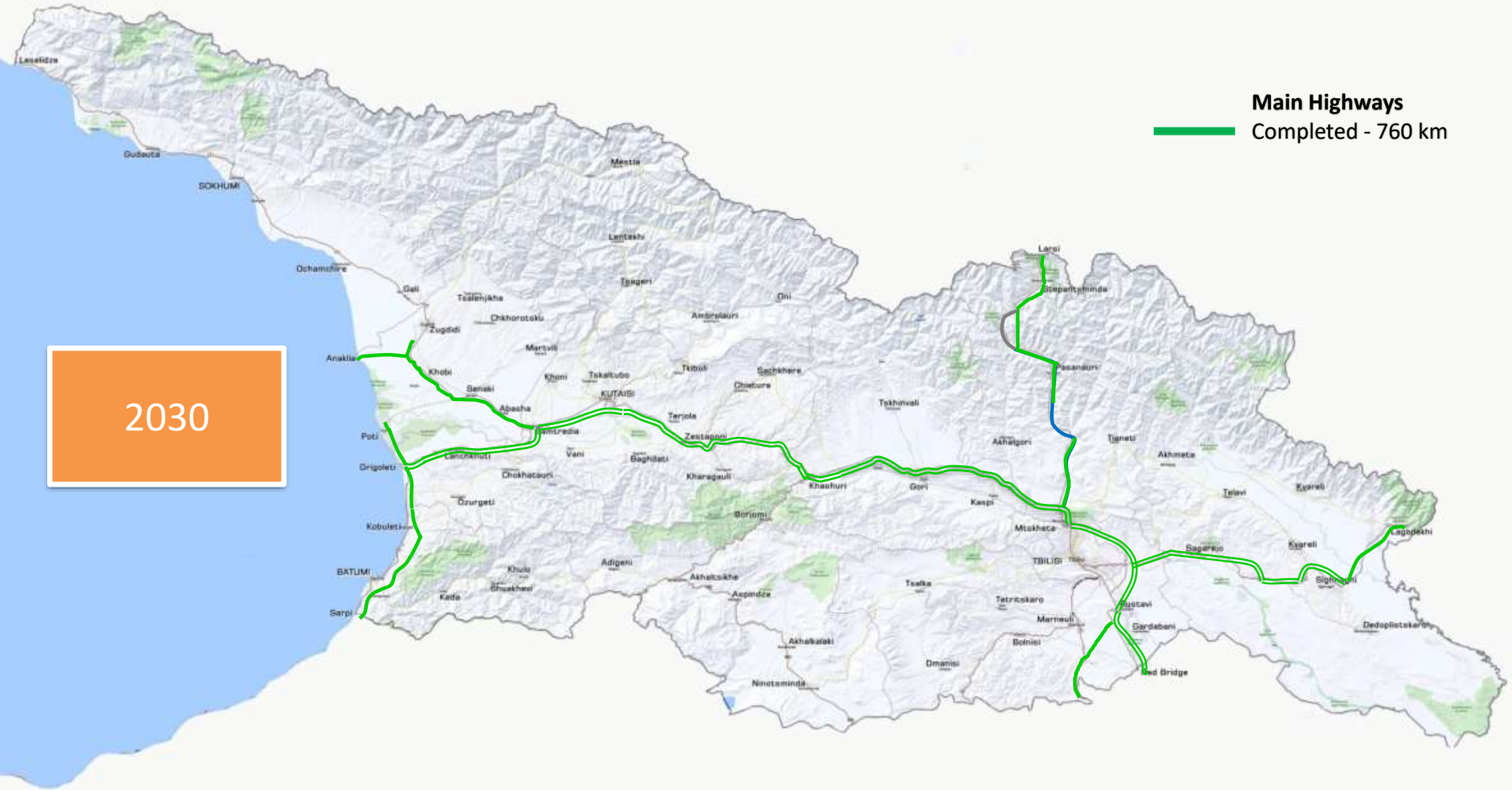
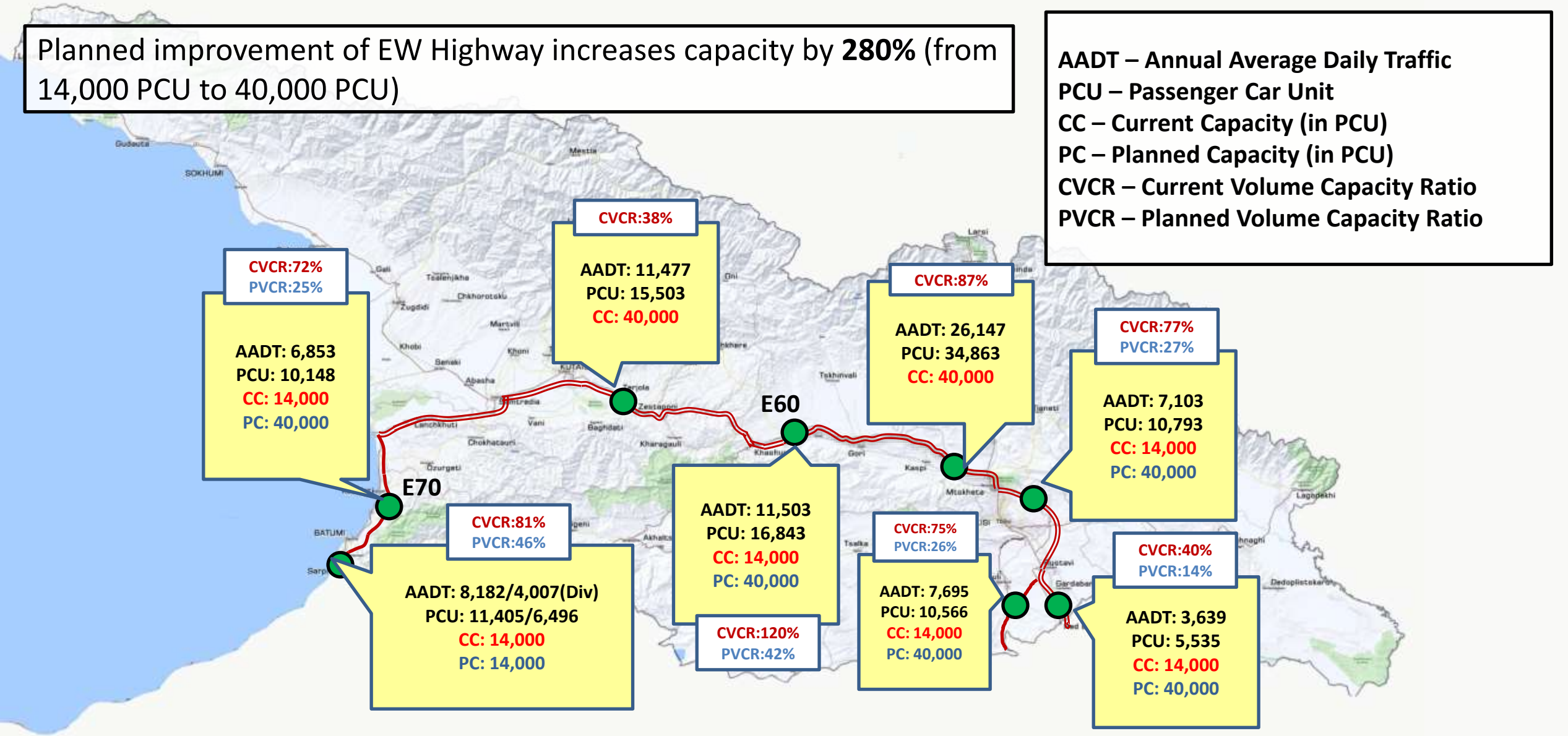


Vision - Roads and Highways - Georgia

Planned improvement of EW Highway increases capacity by **280%** (from 14,000 PCU to 40,000 PCU)

AADT – Annual Average Daily Traffic
PCU – Passenger Car Unit
CC – Current Capacity (in PCU)
PC – Planned Capacity (in PCU)
CVCR – Current Volume Capacity Ratio
PVCR – Planned Volume Capacity Ratio



Vision - Roads and Highways - Georgia

Project Rikoti Pass Budget: 955 mln. USD

Most challenging project on EWH highway is construction of Rikoti Pass, a mountain section dividing Georgia into its eastern and western parts. A total of 51.6 km of new 4 lane highway is being built over the Rikoti Pass, with construction works divided into four sub-sections and are financed by WB, ADB and EIB.

Vision - Roads and Highways - Georgia

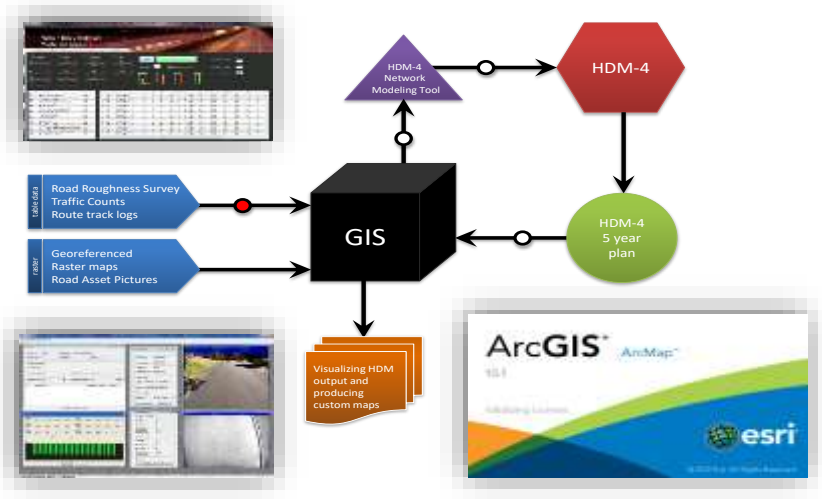
Project Rikoti Pass Budget: 955 mln. USD

Construction works involves arrangement of 4 lane highway, complex engineering structures covering 97 bridges (PSC and Steel and Concrete composite bridges, variable from 33 m to 1360 m) and 51 tunnels (Variable from 50 m to 1800 m).

Vision - Roads and Highways - Georgia

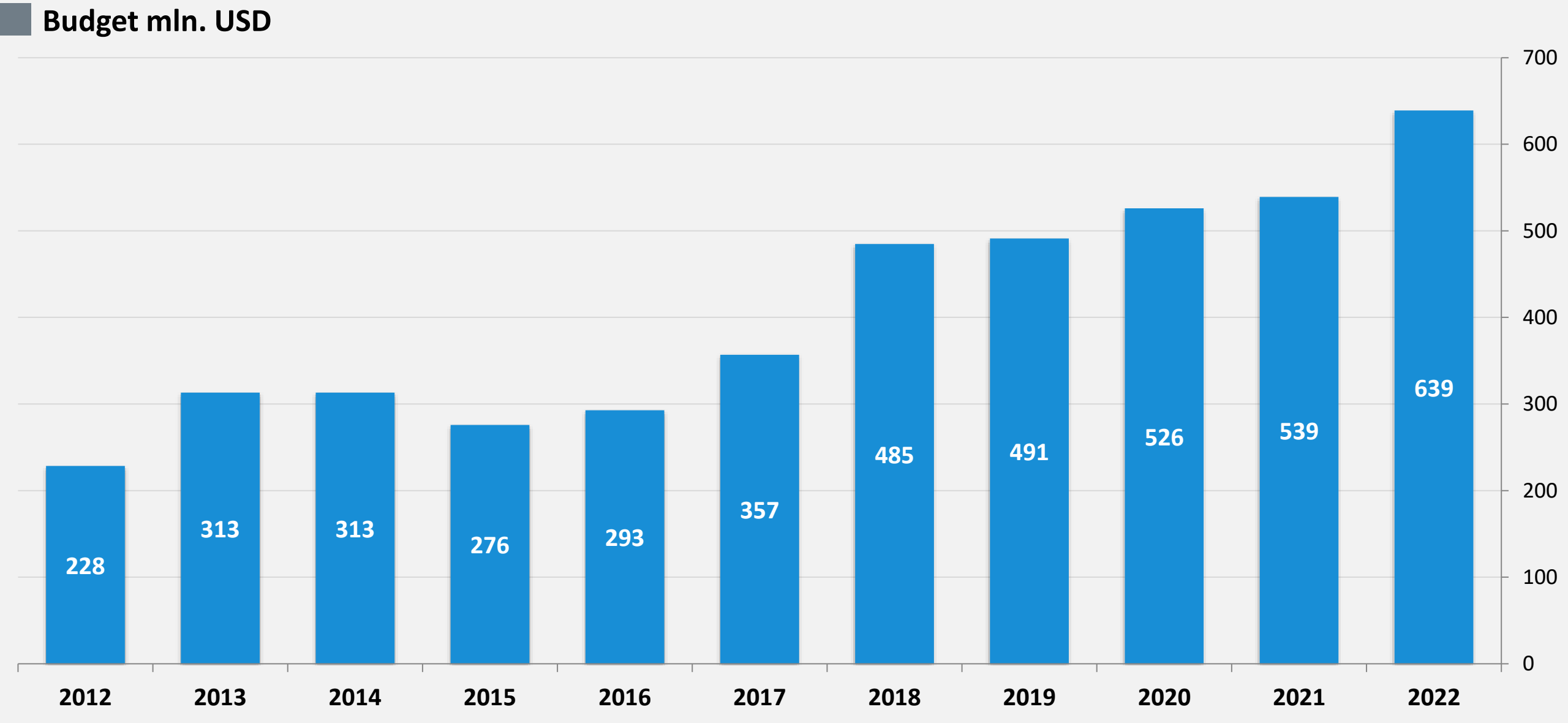
RAM - 10 Year Plan

- In addition to Highway Development, RD's 10 year plan considers regional development to address social needs
- Stakeholder communication and data on priority indicators are key inputs for planning
- Development of long-term plan is supported by RAMS



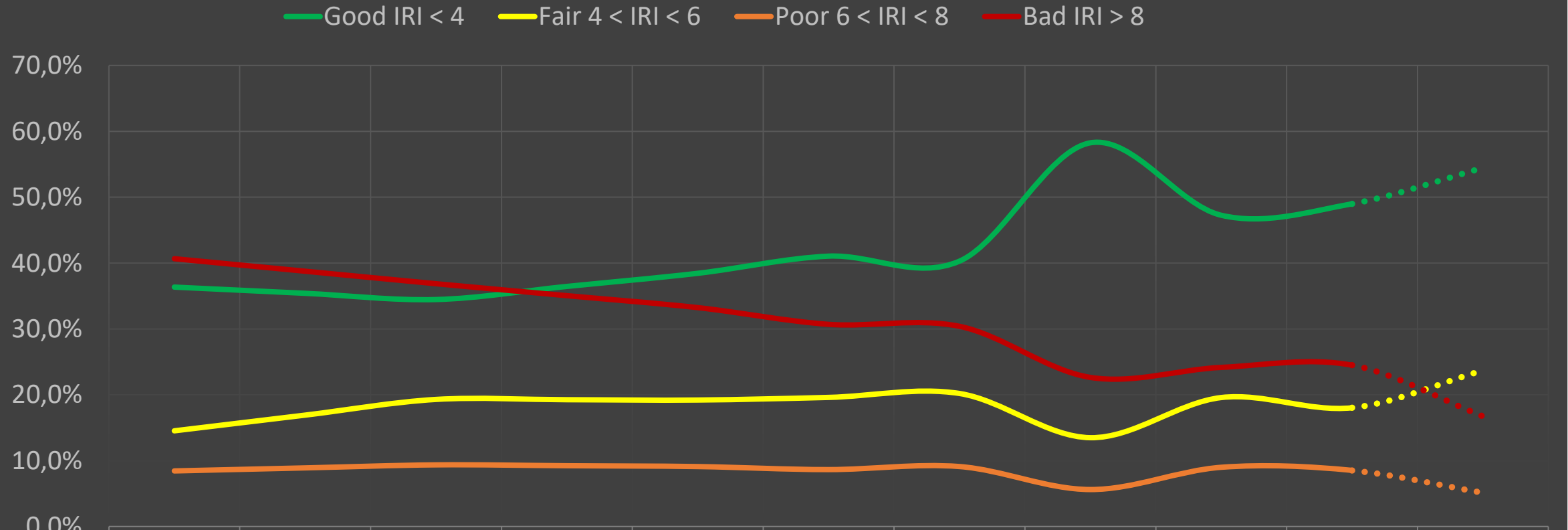
Key Indicators

Vision - Roads and Highways - Georgia



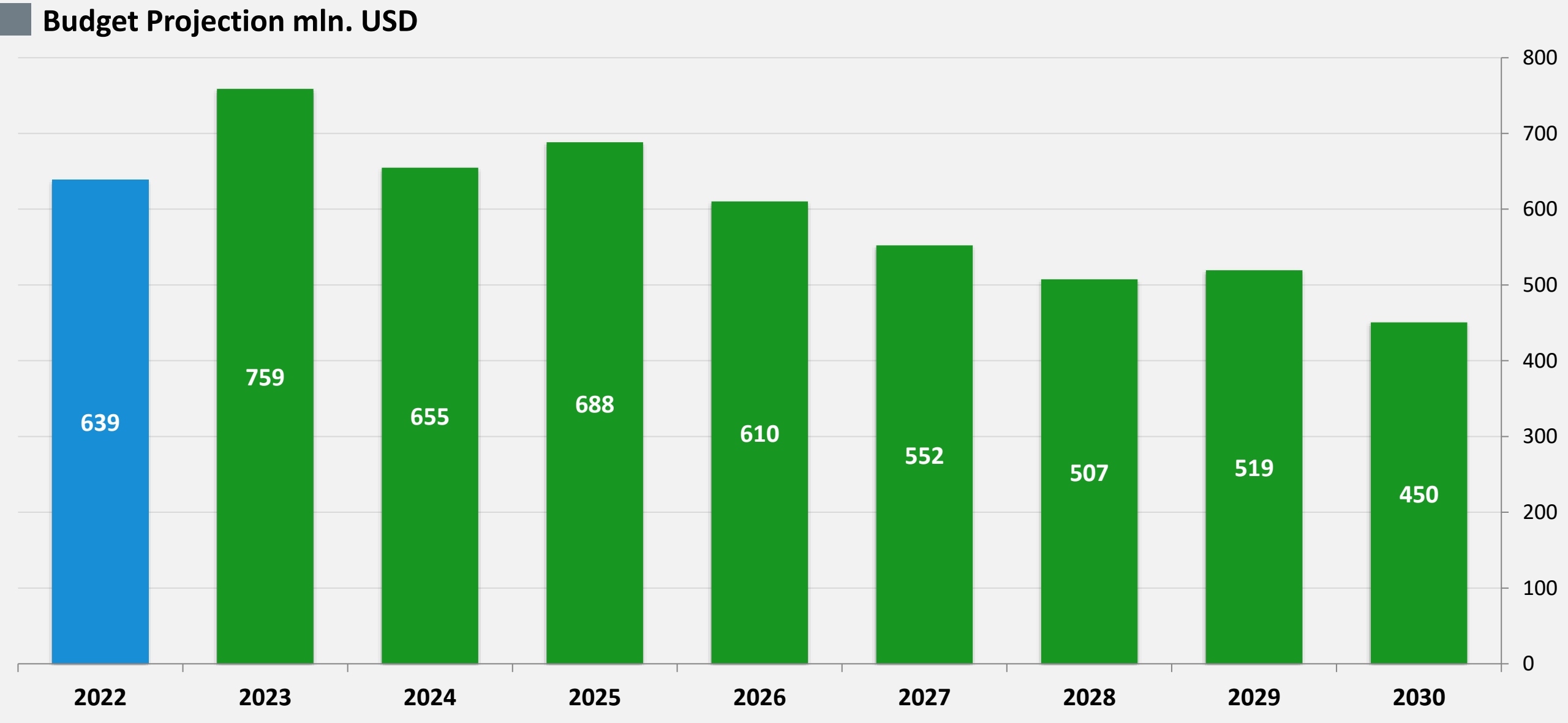
Vision - Roads and Highways - Georgia

Secondary Road Network Condition

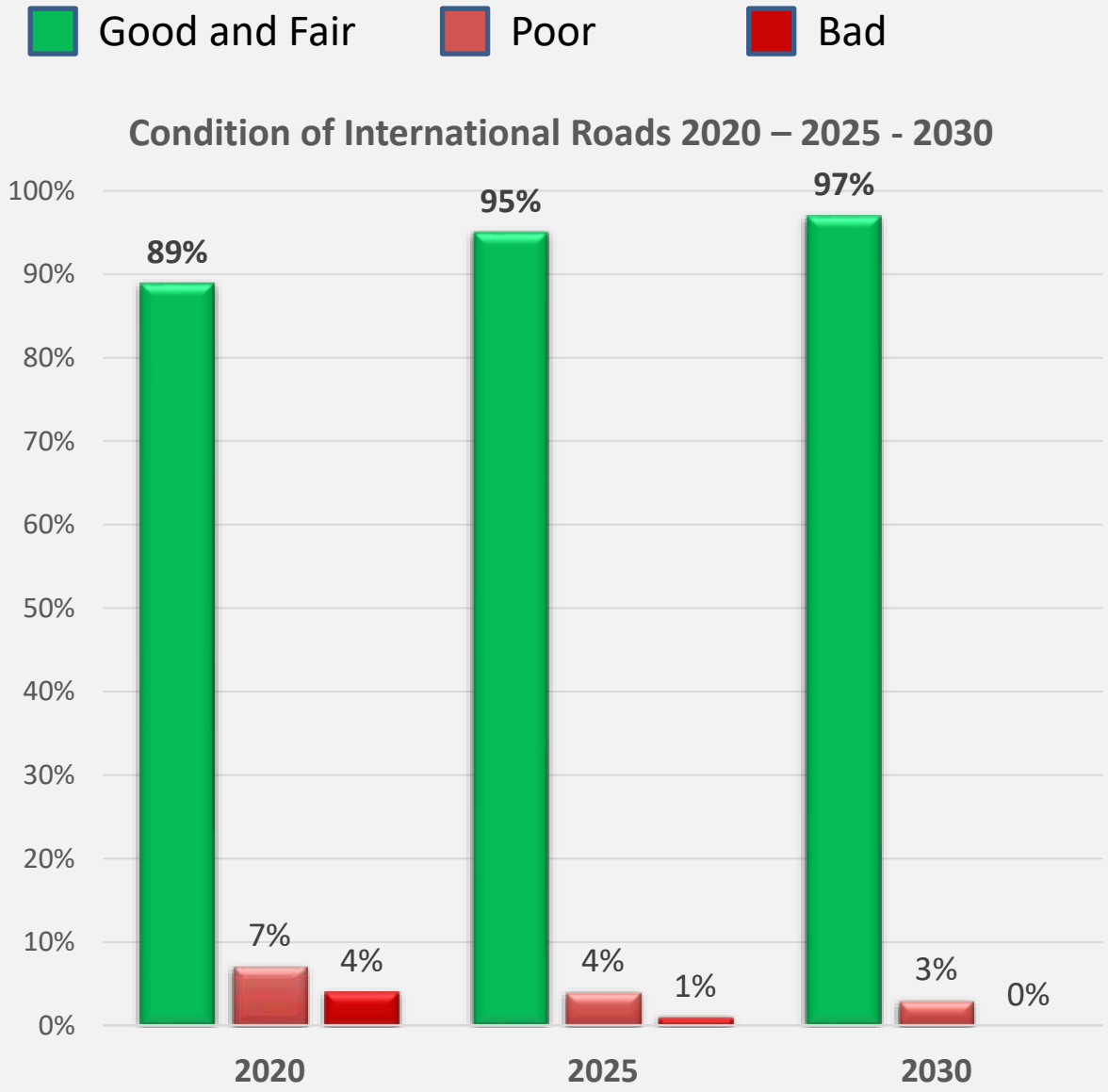


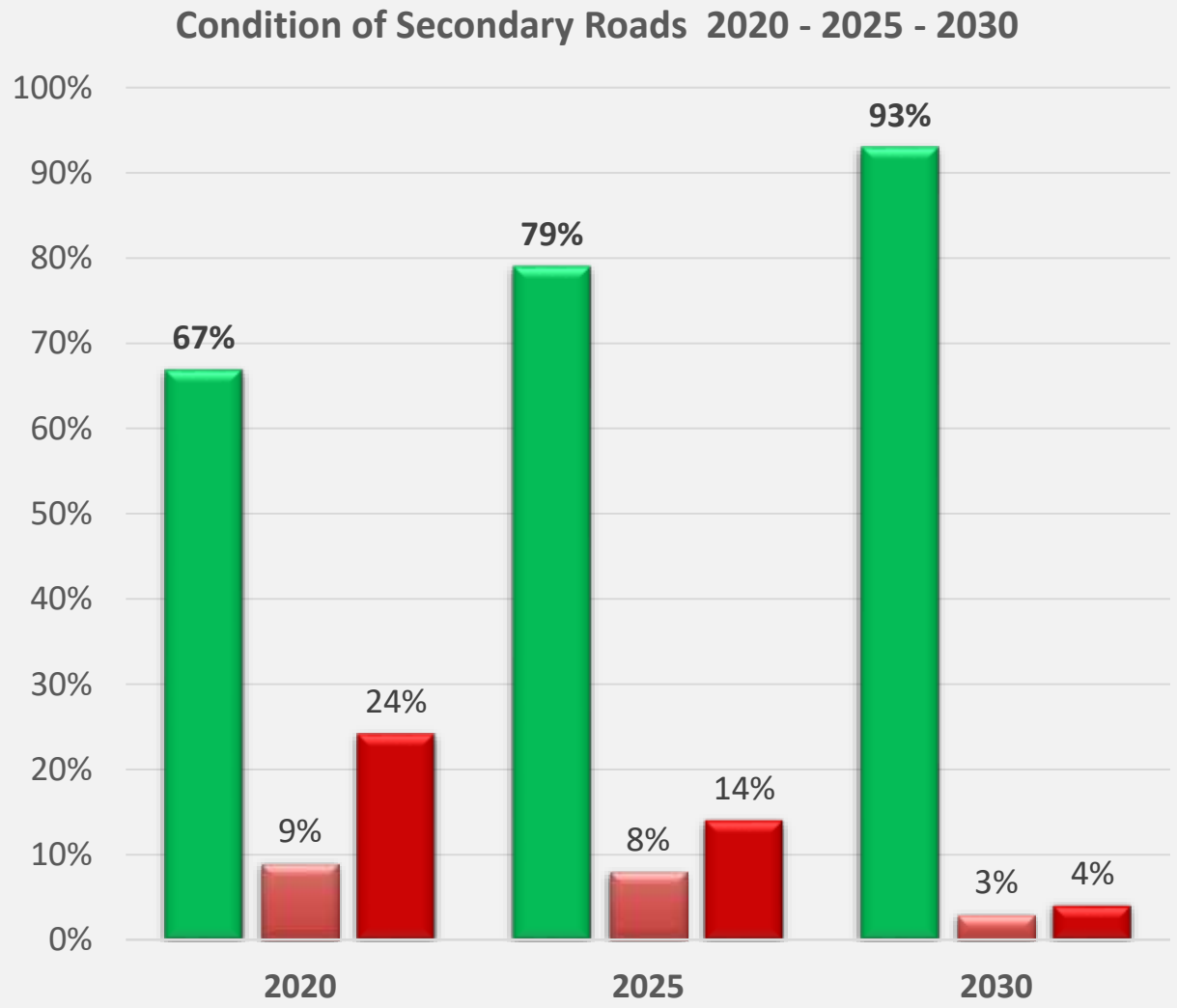
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Good IRI < 4	36,4%	35,4%	34,5%	36,5%	38,5%	41,1%	40,3%	58,3%	47,3%	49,0%	54,5%
Fair 4 < IRI < 6	14,5%	16,9%	19,3%	19,3%	19,2%	19,6%	20,2%	13,5%	19,6%	18,0%	23,7%
Poor 6 < IRI < 8	8,4%	8,9%	9,4%	9,2%	9,1%	8,6%	9,1%	5,6%	9,0%	8,5%	5,1%
Bad IRI > 8	40,7%	38,8%	36,9%	35,1%	33,2%	30,7%	30,4%	22,6%	24,2%	24,5%	16,7%

Vision - Roads and Highways - Georgia

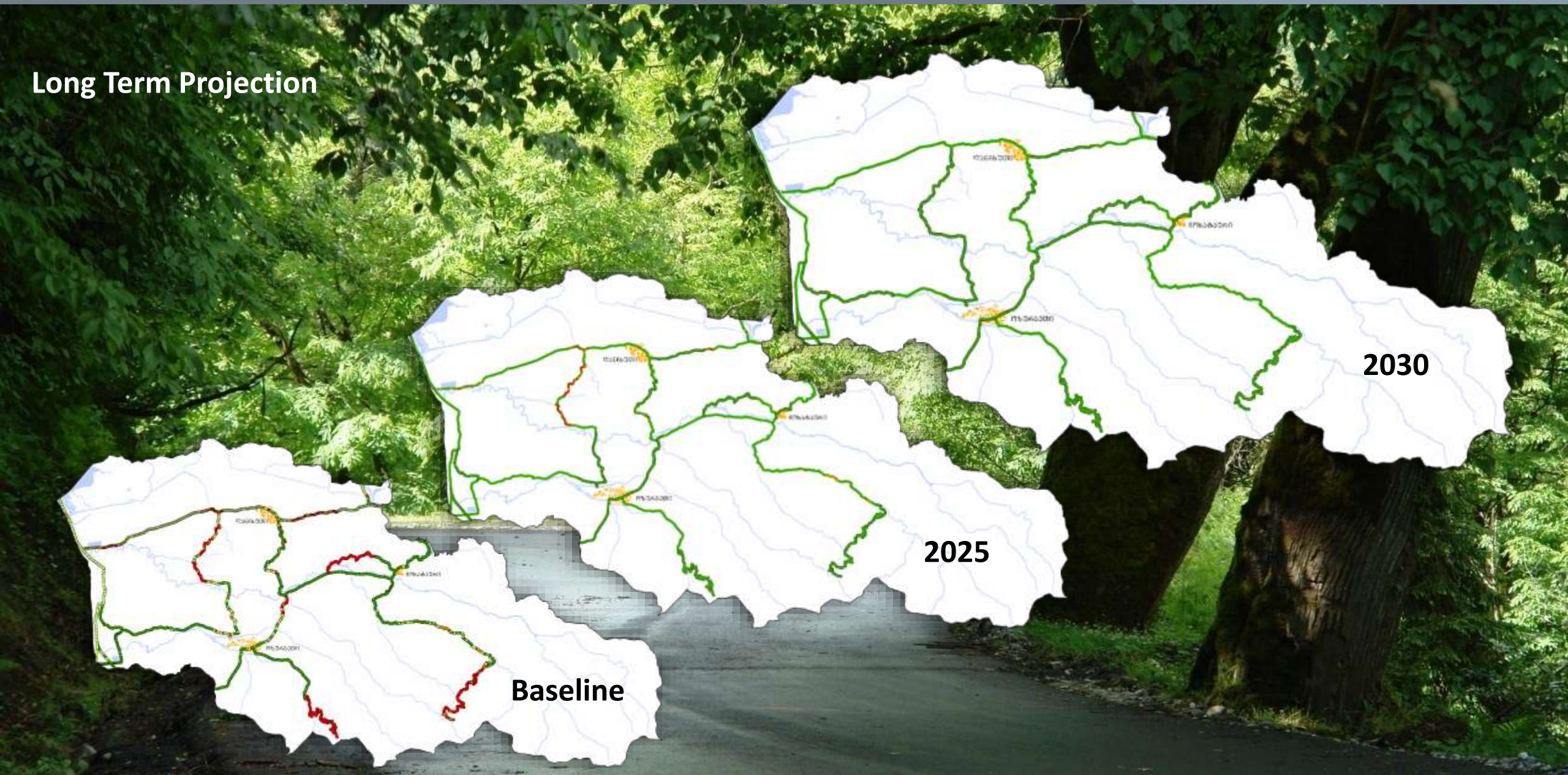


Vision - Roads and Highways - Georgia





Vision - Roads and Highways - Georgia



Vision - Roads and Highways - Georgia

KPIs

	1. Infrastructure	2020	2025	2030
1.1	E60/E70 Cumulative construction length	216	324	430
1.2	E60/E70 Red Bridge – Sarpi Travel Time*	6 hour	5 hour	4 hour
1.3	International Roads in Good Condition % (IRI<6)	89%	95%	97%
1.4	Secondary Roads in Good Condition %	67%	79%	93%*
1.5	Routine Maintenance Cost (mln. GEL)	85.0	140.0	170.0

* Remaining 7% Gravel Roads

KPIs

	2. Safety	2020	2025	2030
2.1	iRAP Cumulative length	500	1500	2500
2.2	Number of accredited road safety auditors in RD Safety Division	4	5	6
	3. RAMS			
3.1	Implementation of Weight In Motion system – Pilot Project		x	
3.2	Detailed Road Asset Inventory			x
3.3	Integration of Drone technology in RAM		x	
3.4	Implementation of Macro and Microscopic Traffic Modelling software solution		x	
3.5	Development of web portal for Road Permits		x	
	4. Legislative			
4.1	New Road Law		x	
4.2	Georgian Standards and Norms			x

Road Asset Management Systems - Georgia

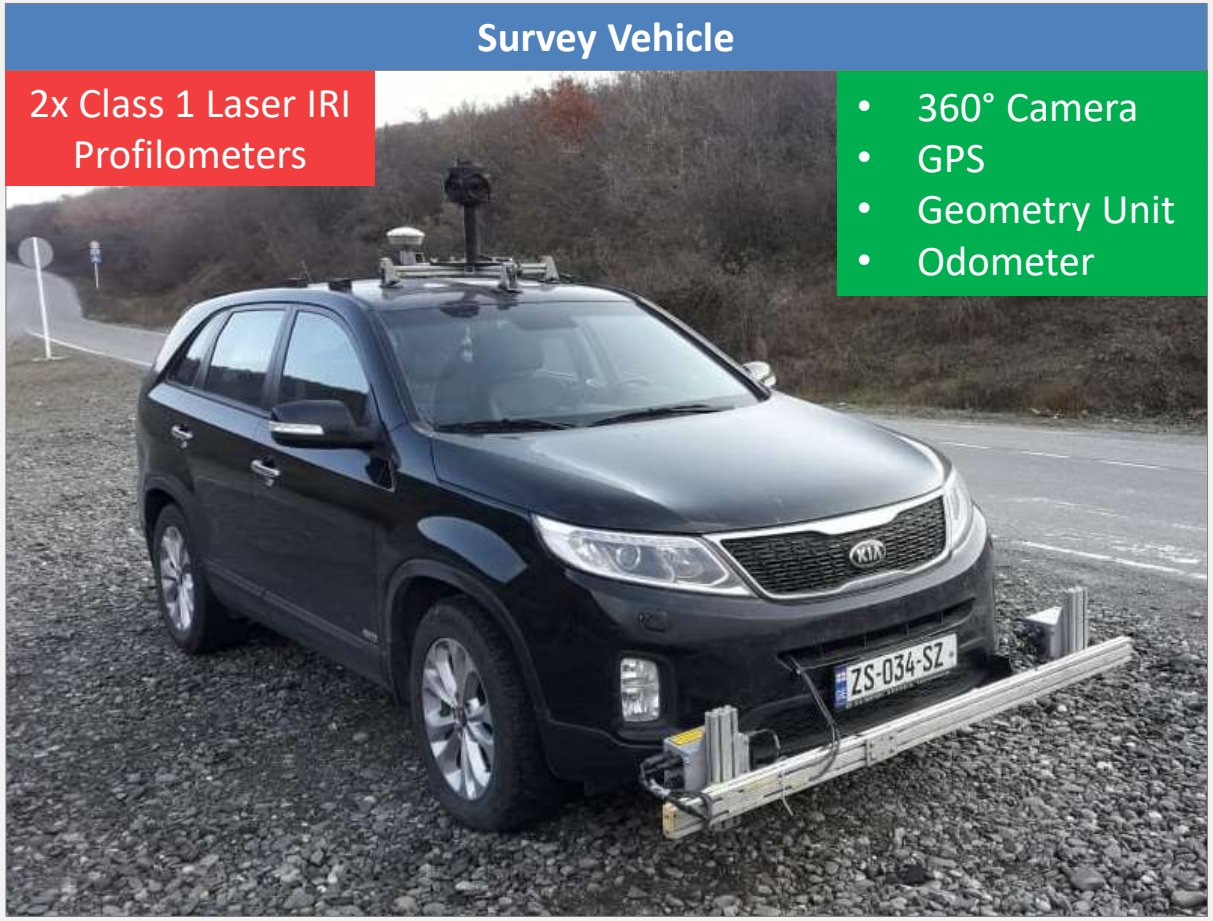
Data Collection Equipment

Survey Vehicle Data

- IRI surveys on all international and secondary roads with
- 360 Degree video logs for iRAP coding and visual assessment
- Road Geometry, GPS data, Odometer chainage data.

External data:

- Accident data for Ministry of Internal Affairs
- Border crossing, transit data from customs
- Population and census data from national statistics office of Georgia
- Information from Municipalities
- Data on healthcare services, education, tourism and agriculture



Road Asset Management Systems - Georgia

Data Collection Equipment

- **Traffic counts** with automated radar equipment - around 300 locations.
- Individual location represents 48H continuous count of vehicle number including speed and length.
- Counts are carried out 3 times per year to account for seasonality.

Data Collection Equipment

Drone equipment

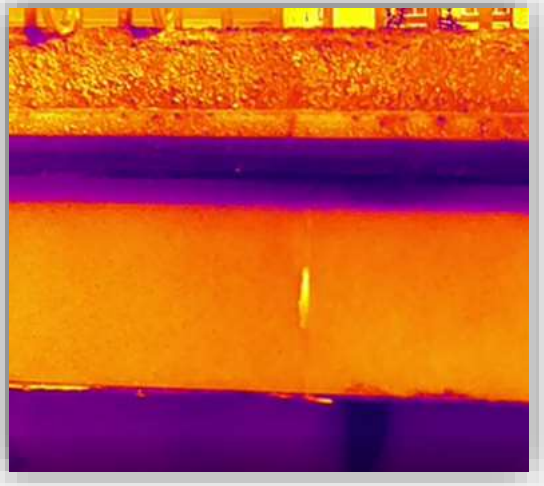
3x**DJI Matrice 300** Enterprise drones equipped with **H20T**
20x Optical zoom camera for bridge inspection and Thermal camera for thermography

PhaseOne Camera for high resolution image processing, mapping and 3D Reconstruction.

Road Asset Management Systems - Georgia

Data Collection Equipment

- Bridge Inspection
- Digital Terrain Mapping
- Monitoring of construction sites
- 3D reconstructions
- Calculation of cut/fill volumes
- Emergency response
- Infrared thermal imaging for crack detection/assessing water ingress



Road Asset Management Systems - Georgia

RAM Systems (Software)

1. ROMDAS Data collection and processing software
Collecting/Processing road GPS data, 360° Video, IRI, Geometry and iRAP Coding

2. ESRI ArcGIS with Spatial Analyst Extension
Map production, GIS Data creation/processing, spatial analysis to generate social indicators on a network scale for example population density per homogeneous road section etc.

3. HDM-4
Preparation of multi-year road program, comparisons of different maintenance alternatives, backlog estimation on network level as well as life cycle cost-benefit analysis of individual projects

4. Network Modelling Tool
Modelling 100m interval road data into homogeneous road network for HDM-4 enabling network level analysis.

5. DJI Terra
Image processing, 3D reconstruction, measurements, etc.

HDM-4
HIGHWAY DEVELOPMENT & MANAGEMENT

ArcGIS

DJI TERRA

romdas

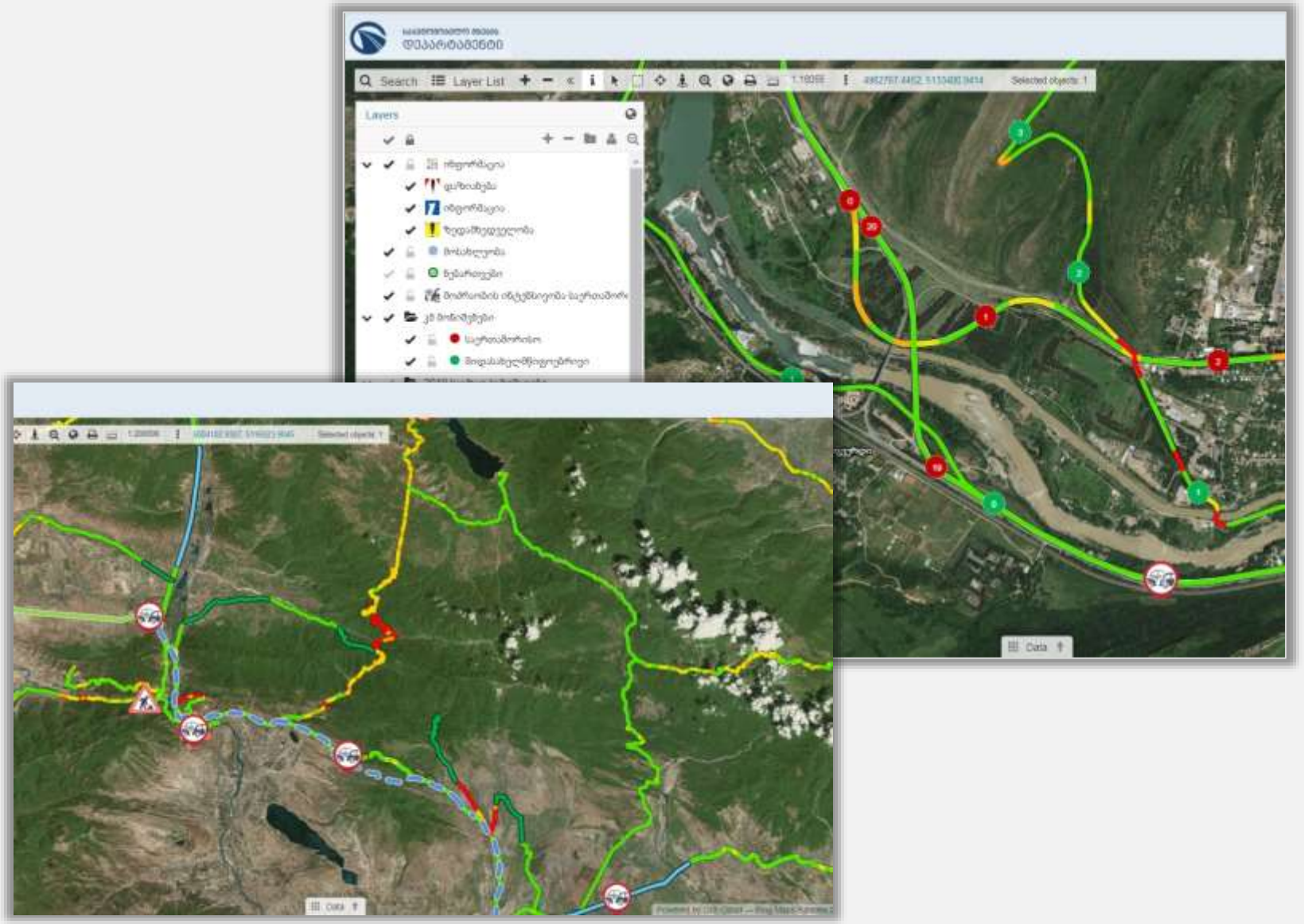
iRAP

Road Asset Management Systems - Georgia

RAM Systems (Software)

6. GISCloud

- Real-Time Mapping
- Field data synchronization
- GIS data sharing and reporting



Demonstration at:
https://app112303.giscloud.com/

RAM Systems (Software)

7. iRAP

The International Road Assessment Program (iRAP) is a registered charity dedicated to saving lives by eliminating high risk roads throughout the world.

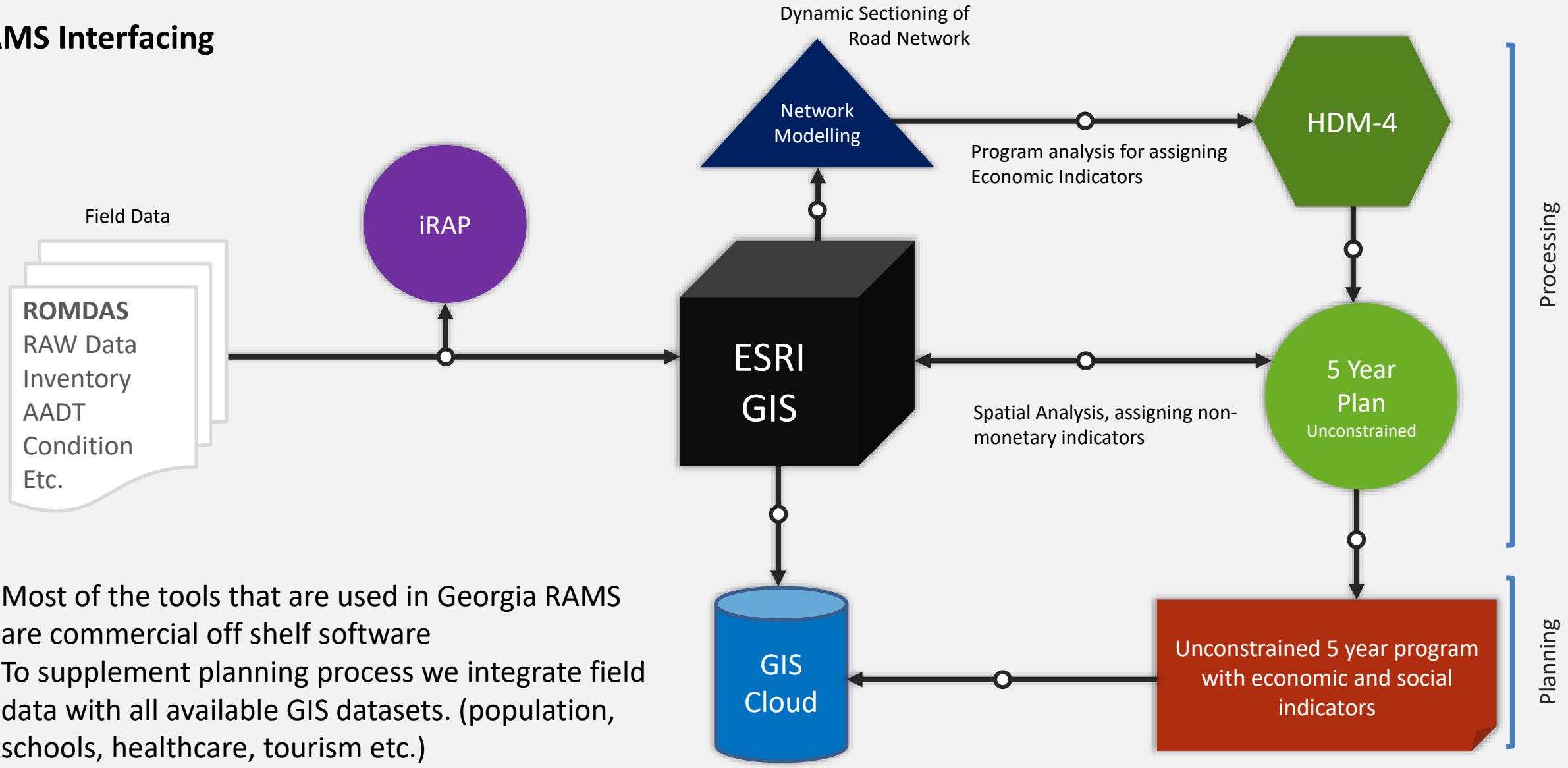
- Inspect high-risk roads and develop Star Ratings, Risk Maps and Safer Roads Investment Plans
- Provide training, technology and support that will build and sustain national, regional and local capability
- Track road safety performance so that funding agencies can assess the benefits of their investments.

RAM Systems (Software)

7. iRAP

Road Asset Management Systems - Georgia

RAMS Interfacing



- Most of the tools that are used in Georgia RAMS are commercial off shelf software
- To supplement planning process we integrate field data with all available GIS datasets. (population, schools, healthcare, tourism etc.)

Guidelines for developing Multi-Year plan with RAMS

1. Handbook for the preparation of Multi- Year Rolling Plan for road asset preservation and improvements

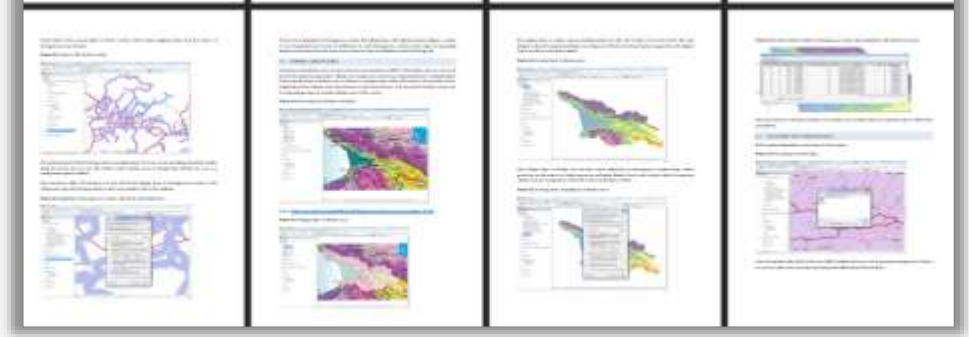
Describes general approach toward multi-year planning. Defines maintenance strategies and applicable economic and social indicators identified based on data availability.

2. Technical handbook for operation of RAMS for data processing and analysis

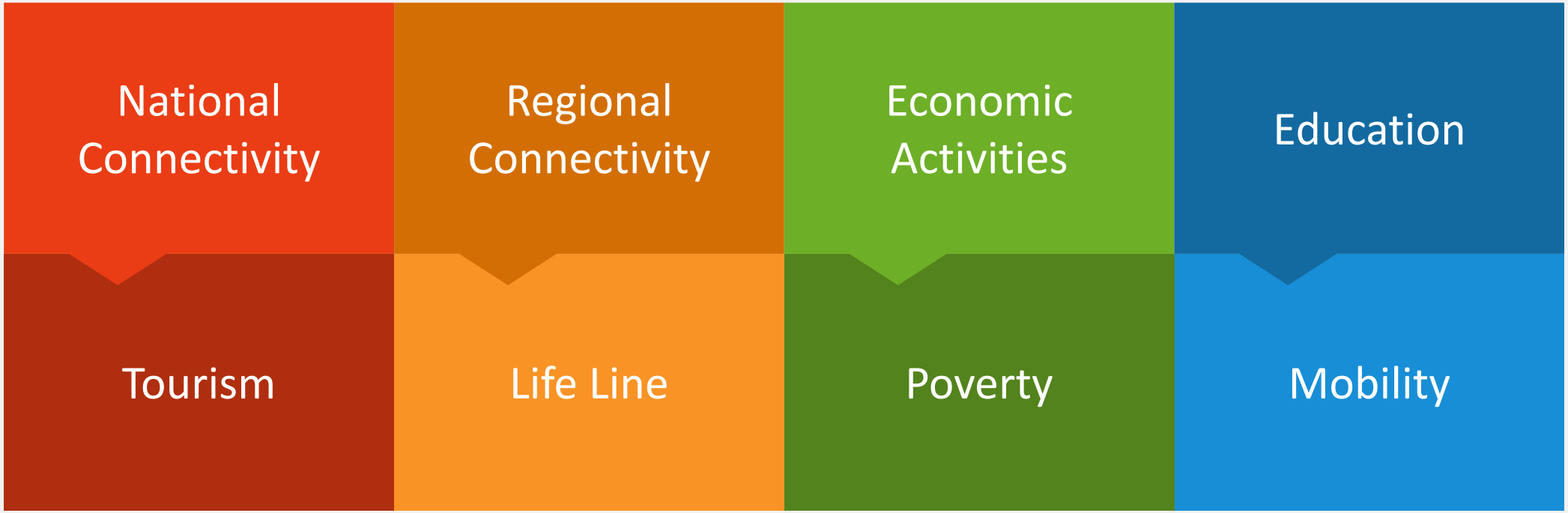
Step by step technical guide for processing RAW network data into country road network model, assignment of social indicators with GIS spatial analysis tool, mapping and visualization etc.

Handbook - 1

Handbook - 2



Socioeconomic Impact Assessment



Indicators constitute a platform for communication with stakeholders and regional representatives regarding priorities and selection of the upcoming road projects.

New initiatives

Overload Control

- Development of draft **Overload Control Strategy** document and action plan aligned with objectives of the pilot project.
- Based on strategy document assist Roads Department of Georgia to finalize WIM requirements for pilot project and prepare **draft TOR for implementation**.
- **Review of proposed WIM site locations** and assistance to RD in the process of viable technology selection and cost estimation.
- Review of initial **WIM system requirements** and recommendations on possible changes where necessary.

Vision - Roads and Highways - Georgia

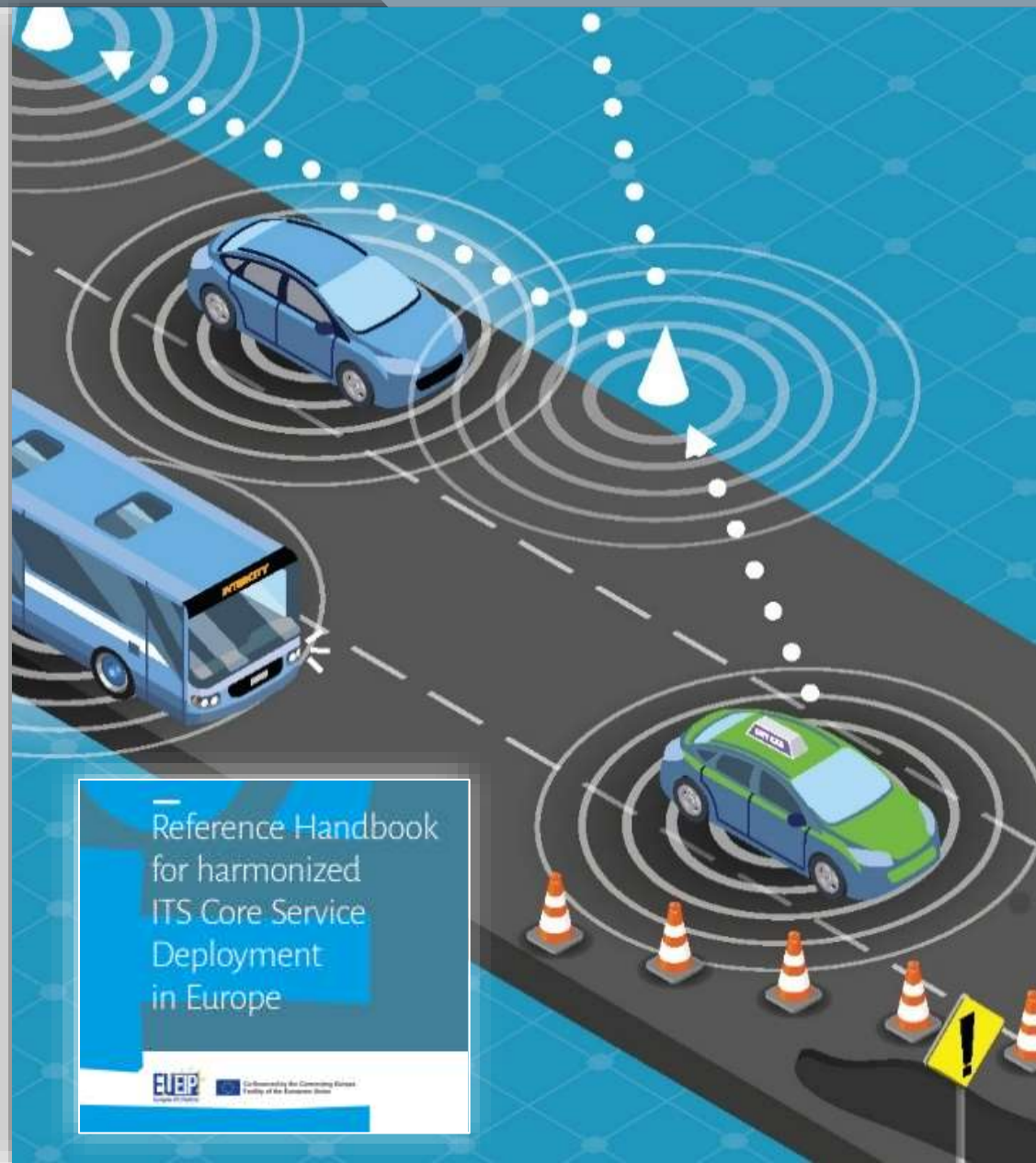
Intelligent Transport System

- With the assistance of WB, RD plans to procure a consultancy services for developing concept design, specifications and bidding documents for deployment of Road Department's National Traffic Control Center (RDNTCC)

- Primary objective of RDNTCC is to integrate all current and planned road ITS infrastructure under centralized management.

- ITS infrastructure under ongoing major construction projects are required to be in compliance with relevant industry standards and regulations, with EU states.

- To assist in the establishment of interoperable and seamless ITS services and to promote the harmonization with the EU standards and specifications in Georgia, the Consultant when developing the specifications and requirements for NHCC shall refer to the documents of the EU policy framework such as the ITS Directive 2010/40/EU, CEN/TC 278, Reference Handbook for harmonized ITS Core Service Deployment in Europe.



Road Asset Management Systems - Georgia

New initiatives

AI & Geospatial Video Data

- Traditionally road pavement condition surveys are performed manually requiring extensive human and financial resources.
- Currently several AI tools are available on the market and some are under development.
- Key benefits Better data for better decisions - data in 10- or 100m resolution can be accurately classified with more than 20 categories of defects and patches to support road asset management at all levels of annual planning cycle.

Road Asset Management Systems - Georgia

New initiatives

AI & Machine Learning

The AiRAP initiative was conceived by iRAP in 2019 to help improve access to, and application of, existing and emerging data sources globally, including advances in artificial intelligence, machine learning, vision systems, LIDAR, telematics and other data sources. AiRAP stands for the ‘accelerated and intelligent’ capture of road safety-related data using automatic, repeatable and scalable methods to support road safety assessment, crash risk mapping, investment prioritization for all road users.

Research Project Ongoing:
https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=5087

Thank you!