



Transport Session | Smarter Mobility in Practice: Digital Solutions for Smarter, Safer, and Greener Transport

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Transport Specialist, World Bank, Tanzania



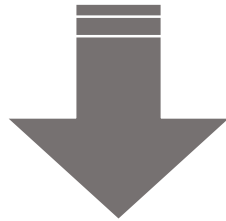
SECOND TANZANIA INTERMODAL AND RAIL DEVELOPMENT PROJECT (TIRP-2)

Korea Green Innovation Days (KGID)

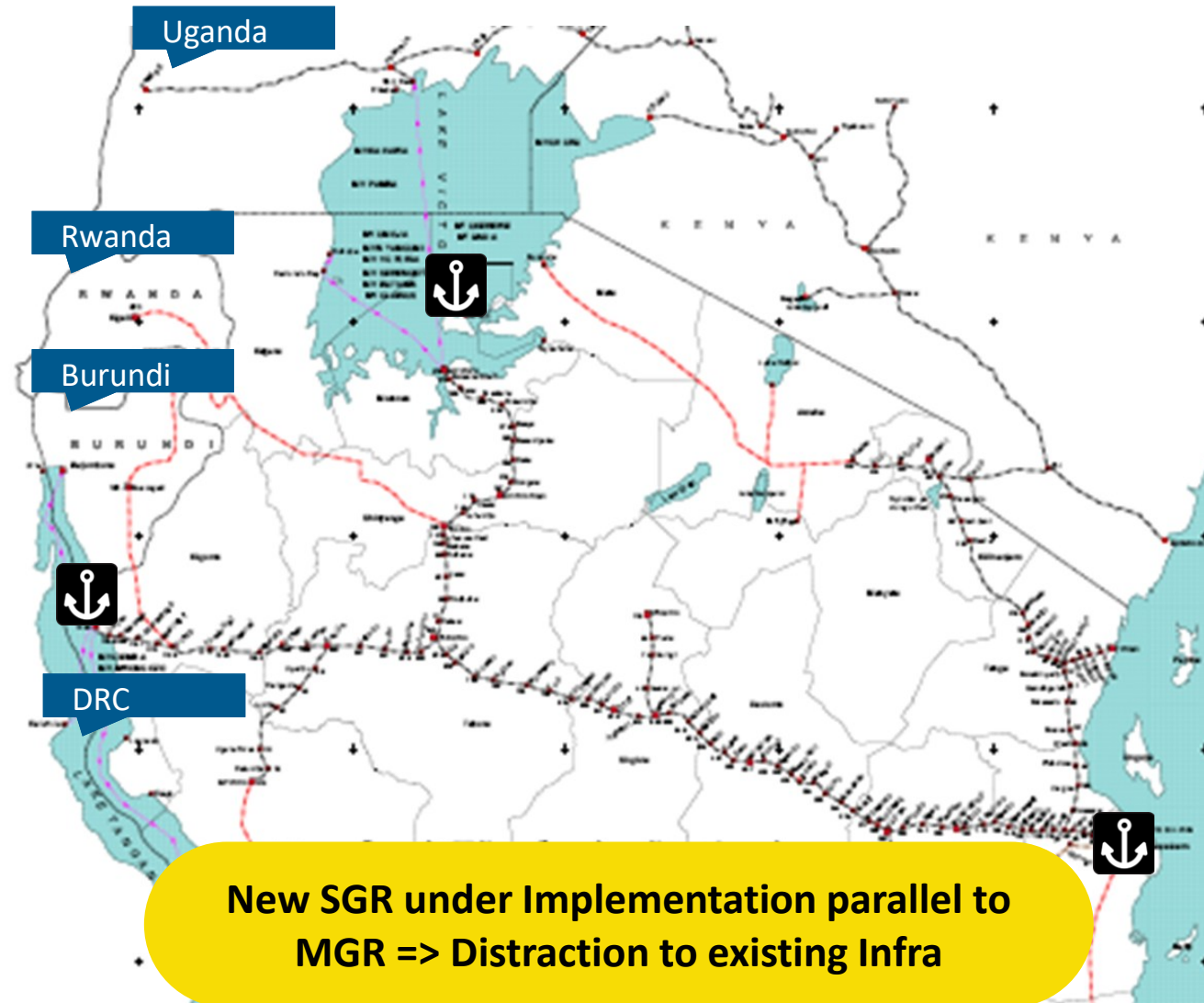
May 6-8, 2026, Sejong, South Korea

Strategically located Port but challenging Railway

- Poor MGR Infrastructure quality
- Poor Train operation standards
- Poor intermodal integration
- Poor safety records
- Flooding



- Unreliable services
- Unpredictable services
- Marginal Modal share (2%)





Tanzania Intermodal & Rail Development Project (2014 – 2022)

Achieved

Rehabilitated 607.75 km of rail track and 377 bridges

Developed Open Access Regulations

Designed 3 Intermodal Terminals

Track Data collection system

Pending areas

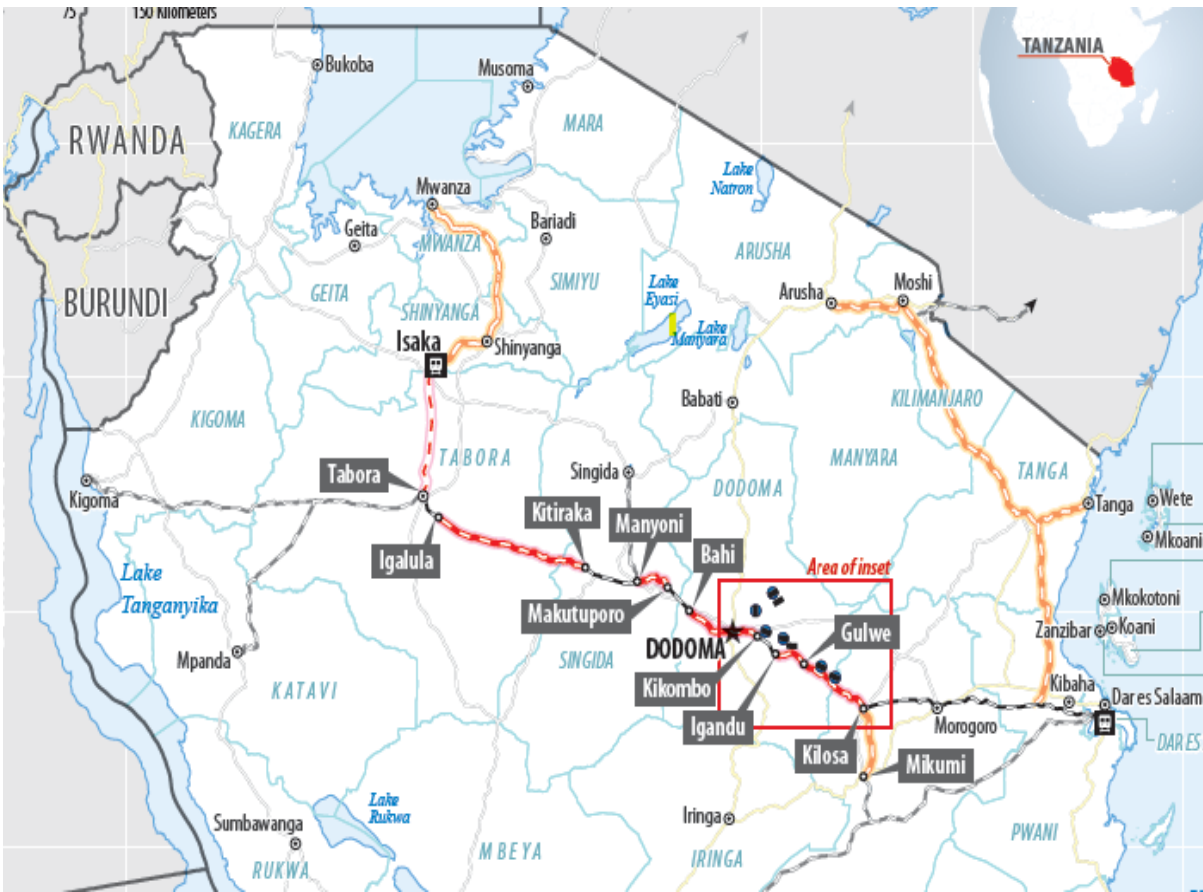
- Flood Prone section not addressed = Govt prioritized budgeting for SGR

- Intermodal terminals not implemented due to budget deficit (overruns and exchange losses)

- Rail Rehabilitation length reduced due to further deterioration of rail resulting from continuing operations

- Railway Act changed impacting open-access reforms

Overview/Key Project Information



Project Name:	Second Tanzania Intermodal and Rail Development Project (P176682)
Financing Amount:	US\$200 million
Financing Instrument:	Investment Project Financing (IPF)
Responsible Sector Ministry:	Ministry of Transport and Ministry of Agriculture
Implementing Agencies:	Tanzania Railways Corporation (TRC) and the National Irrigation Commission (NIRC)
Project Development Objective	To improve safety, climate resilience and operational efficiency of the railway along the Dar es Salaam to Isaka segment in Tanzania.
Program Period:	5 years
Effectiveness Date:	August 8, 2025
TTLs:	Yonas Mchomvu; Ernest Ruzindara
Geographic Targeting:	Tanzania

TIRP-2: Follow on to address pending areas

Project Development Objective

To improve safety, climate resilience and operational efficiency of the railway along the Dar es Salaam to Isaka segment in Tanzania

World Bank Financing: US\$200m

Signed: Mar 28, 2025

Effective: Aug 8, 2025

Component A - Strengthening of railway infrastructure and support of transport studies

Component B - Strengthening Climate Resilience of Kilosa-Gulwe-Igandu section

Component C - Operational and Institutional support

Component D - Contingent Emergency Response



Reliable and Safe MGR Infrastructure; Reduced Railway closure due to flooding from 120 to 10 days;
At least ONE Private OA Freight Operator; Increase of Rail Modal share

Component A: Strengthening of Rail

Strengthening of Dar – Tabora (257 km and bridges)

Rehabilitation of climate resilient rail track (84 km) along the flood prone section

Rehabilitation of Tabora-Isaka railway line (130 km and bridges)

Improvement of intermodal terminals

Support of key transport studies



Component B: Strengthening Climate Resilience of Kilosa – Gulwe Flood prone section



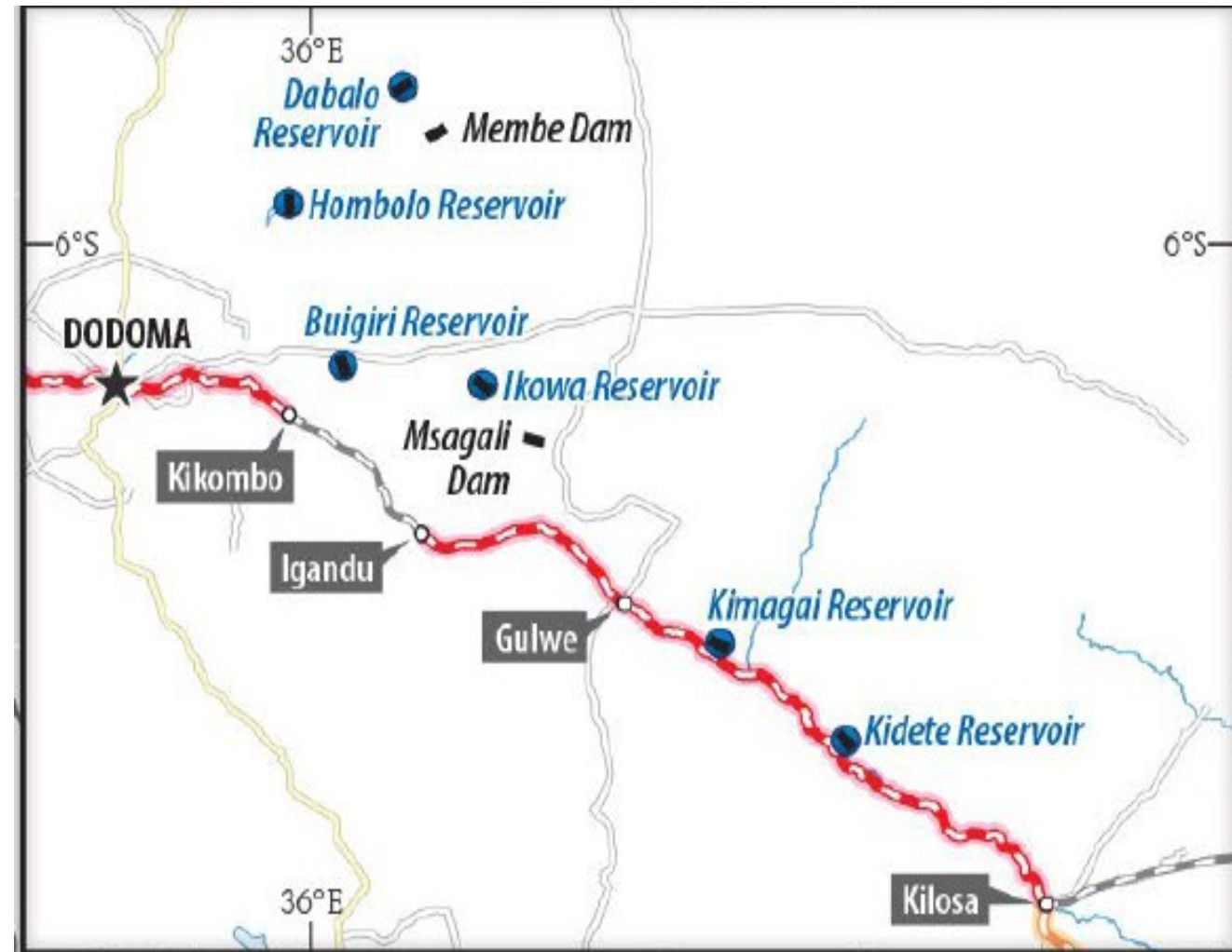
Multi-sectoral collaboration with Agriculture and Water GPs



Restoration of six flood control reservoirs/dams within Kinyasungwe catchment area



Support a sustainable water-use program for agriculture, water supply, fisheries, and livestock; and conduct feasibility studies, detailed designs, and dam O&M manuals for the dams



Flood impacts
on SGR line



A flood-
destroyed
MGR railway
track



Buigiri
sedimented
dam

Component C: Operational and Institutional Support

Operationalization of open-access train operations



Development of Electronic Train Warrant system



Development of an asset management system for TRC



Institutional safety support, including updating of Safety Management System (SMS) and operational manual



Addressing of the identified barriers to women's participation in the railways sub-sector



Project Management support

Korea Green Growth Trust Fund (KGGTF)

GRANT

Development of ITS-led Tanzania Railway system for strengthening climate resilient infrastructure based on GIS



Allocation: 600,000 USD



Activity 1: Study of the topography of the Tanzania Central Railway and analysis of flood hazards at the catchment area



Activity 2: Integration of the GIS-based ITS in line with flood hazard mapping and risk assessment.



Activity 3: Knowledge exchange

Project Partners and Stakeholders



DONOR



**KOREA
GREENGROWTH
TRUST FUND**



COUNTERPARTS

Ministry of Transport

Ministry of Water

Ministry of Agriculture

Tanzania Railways Corporation (TRC)

National Irrigation Commission (NIRC)

Wami Ruvu Basin Water Board (WRBWB)



CONSULTANTS

TARUTIUM Global Consulting

Witek Engineering and
Technology Consulting



THE WORLD BANK



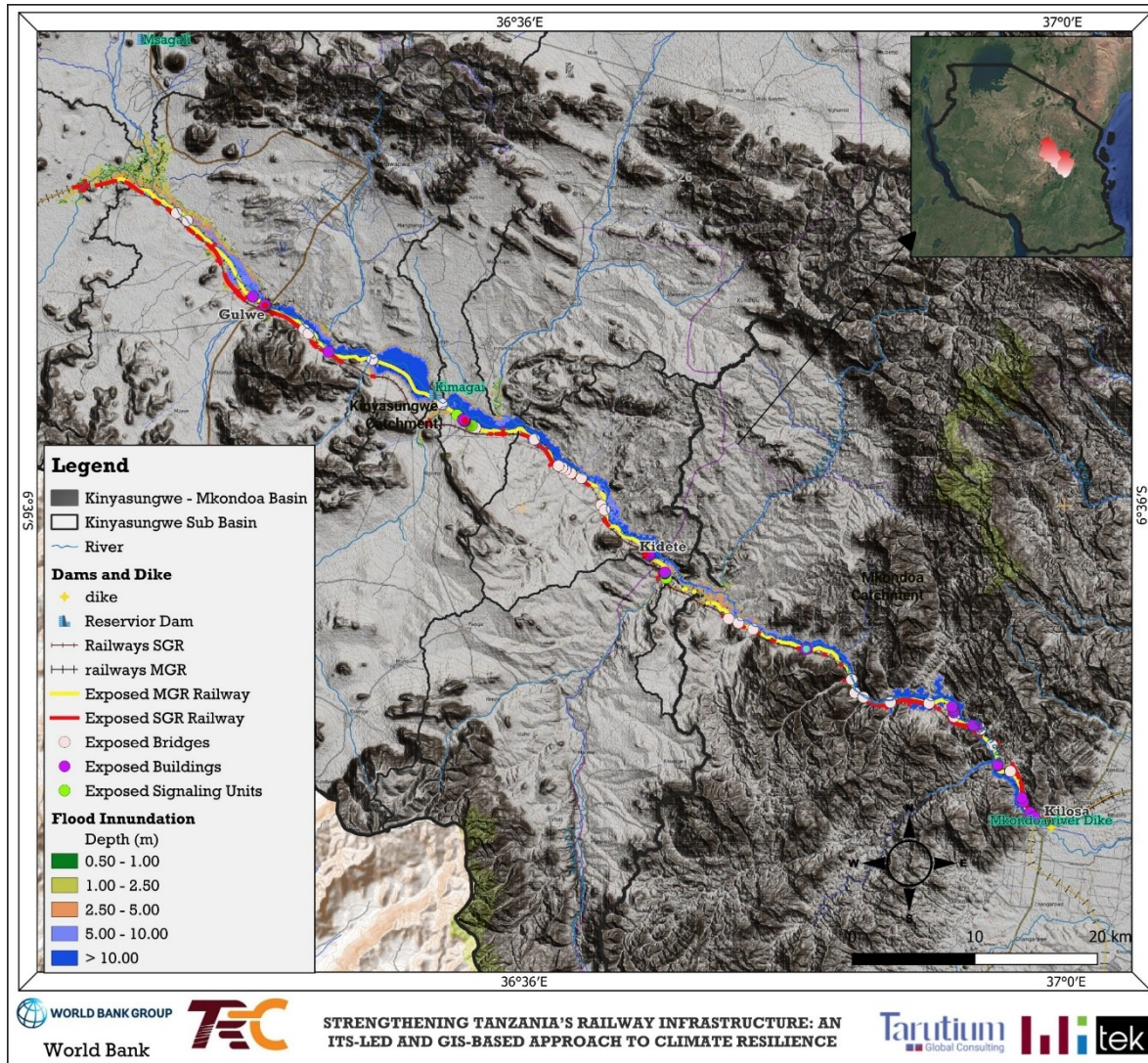
**THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF TRANSPORT**

Tarutium
Global Consulting

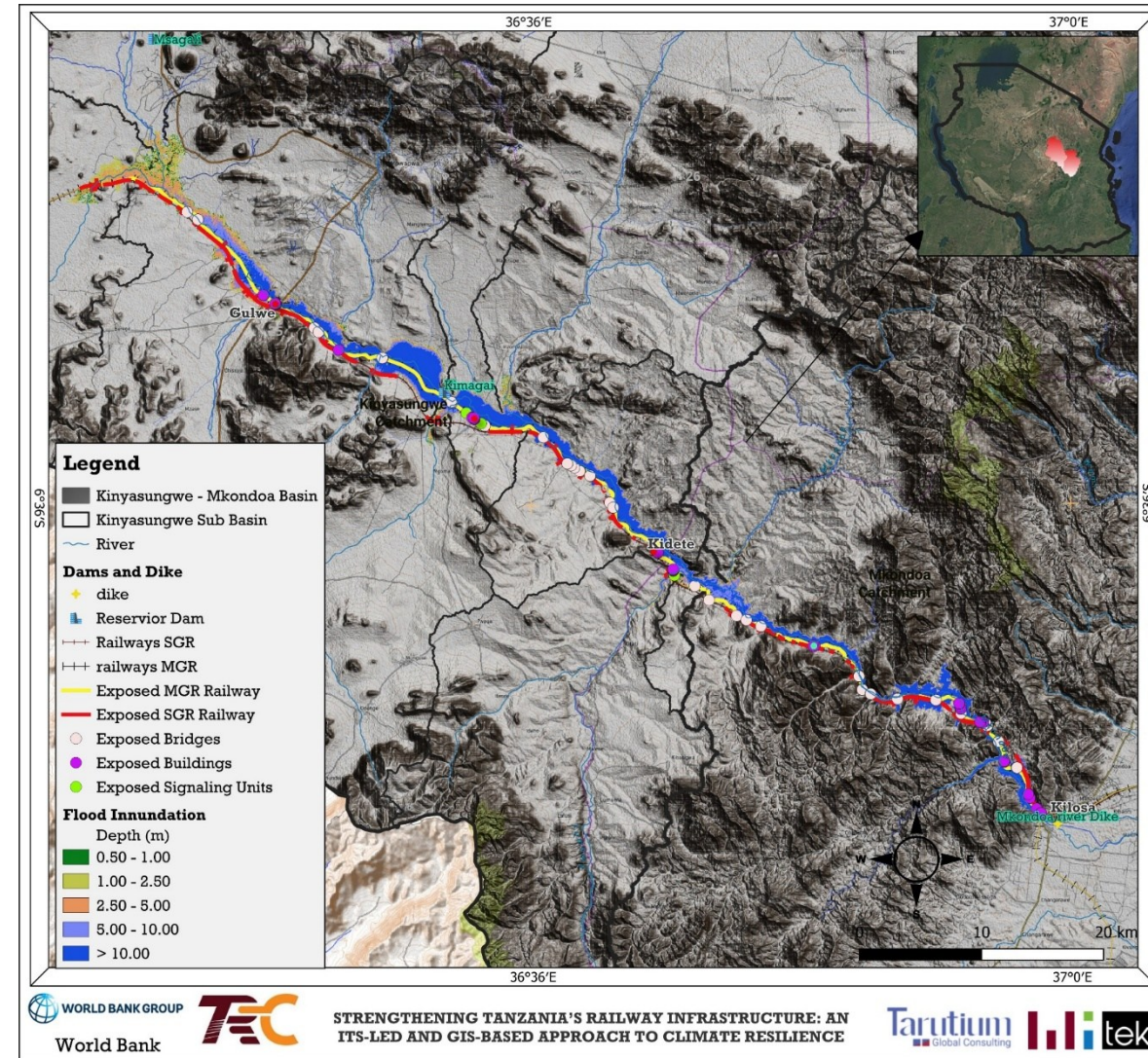


itek
engineering and technology consulting

Flood Inundation along the Railway Network



1 in 5yr Flood



1 in 100yr Flood

Flood Verification and Ground Validation

Field Validation of Flood-Prone Railway Sections

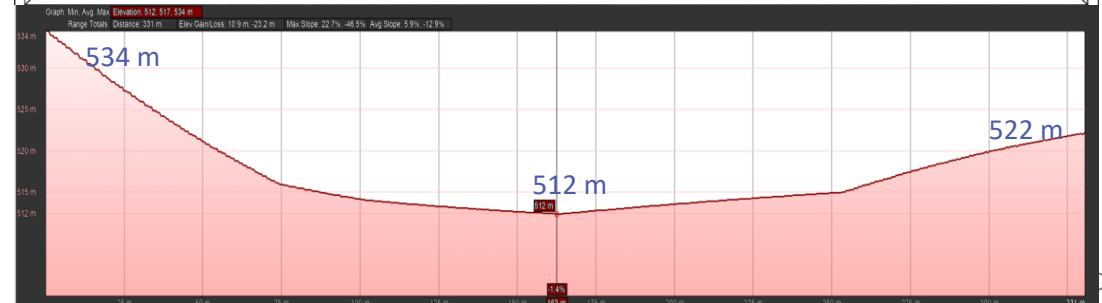
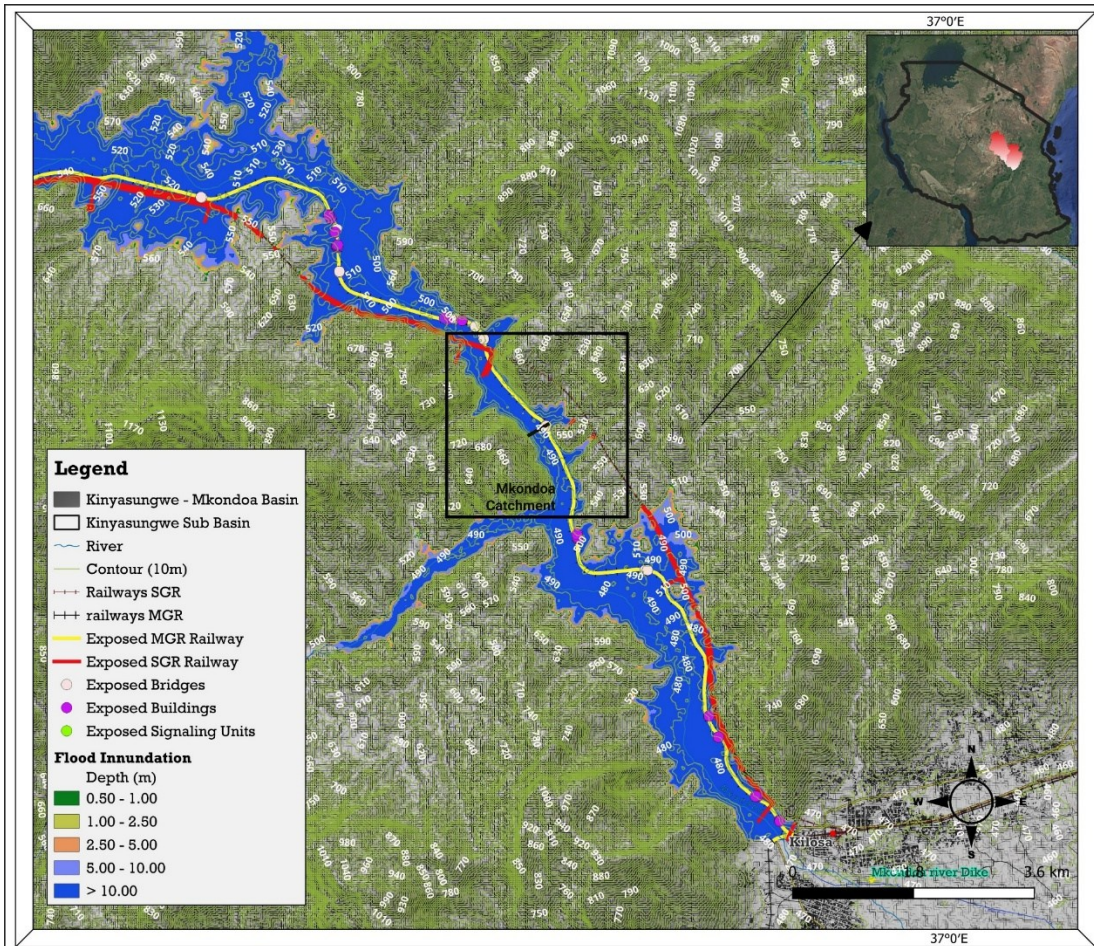
- Targeted flood impact verification survey (March 2026) along the Msagali–Kilosa section of the Central Railway Corridor.
- Validating of model-identified hotspots, assessing actual flood pathways, and documenting the nature and severity of impacts on railway infrastructure.
- Verification by ground inspections, GIS-referenced observations, and drone imagery.

Multiple high- and very high-risk locations were confirmed

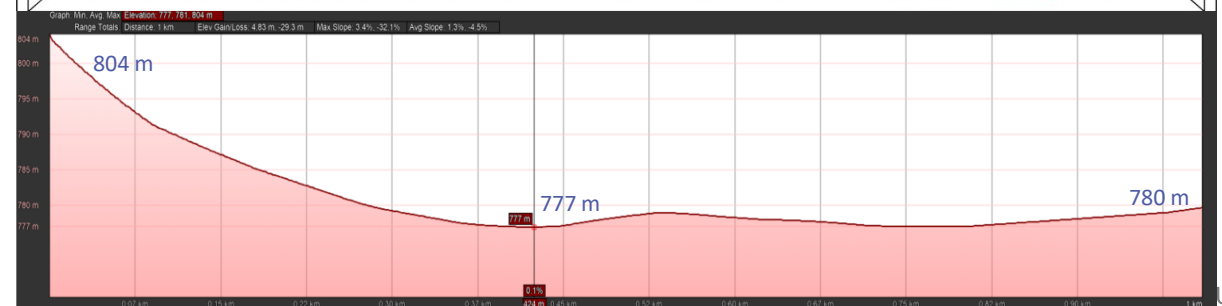
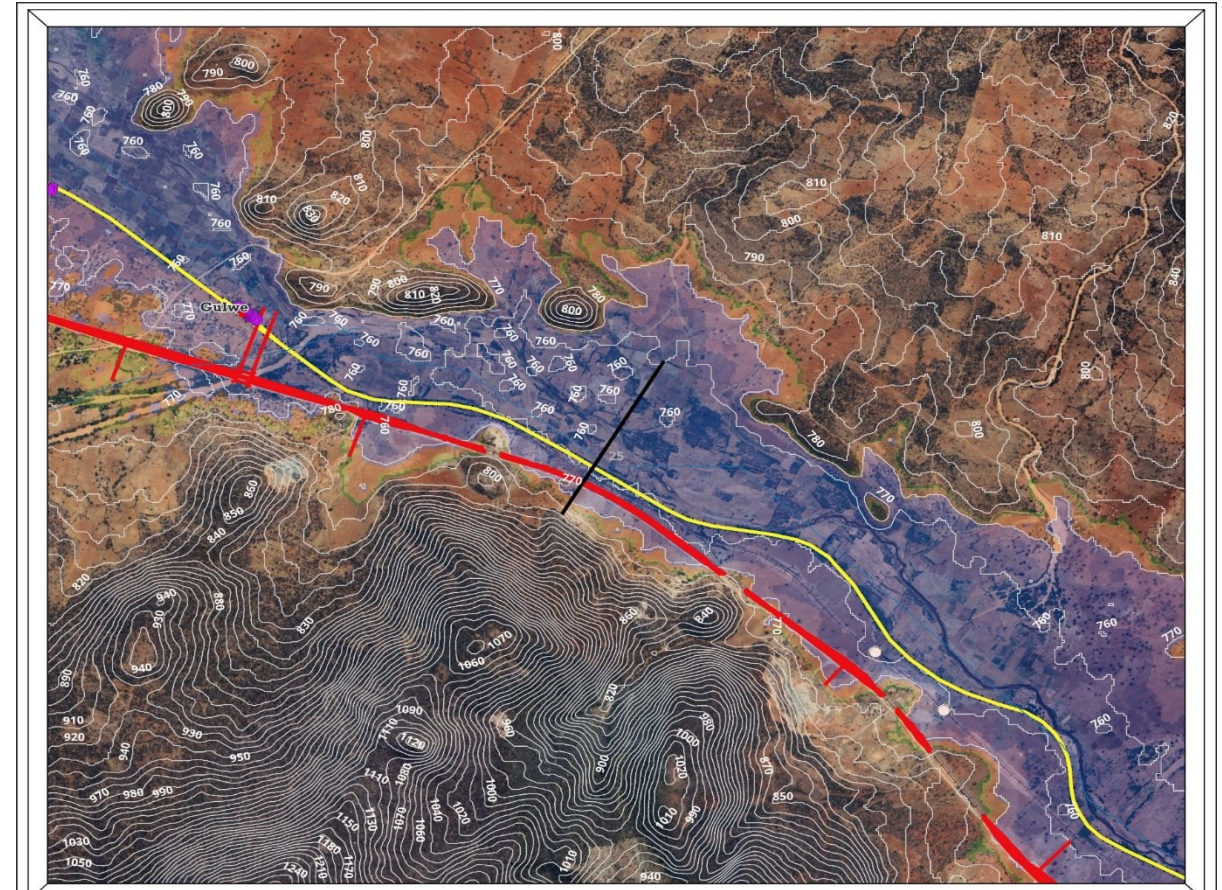
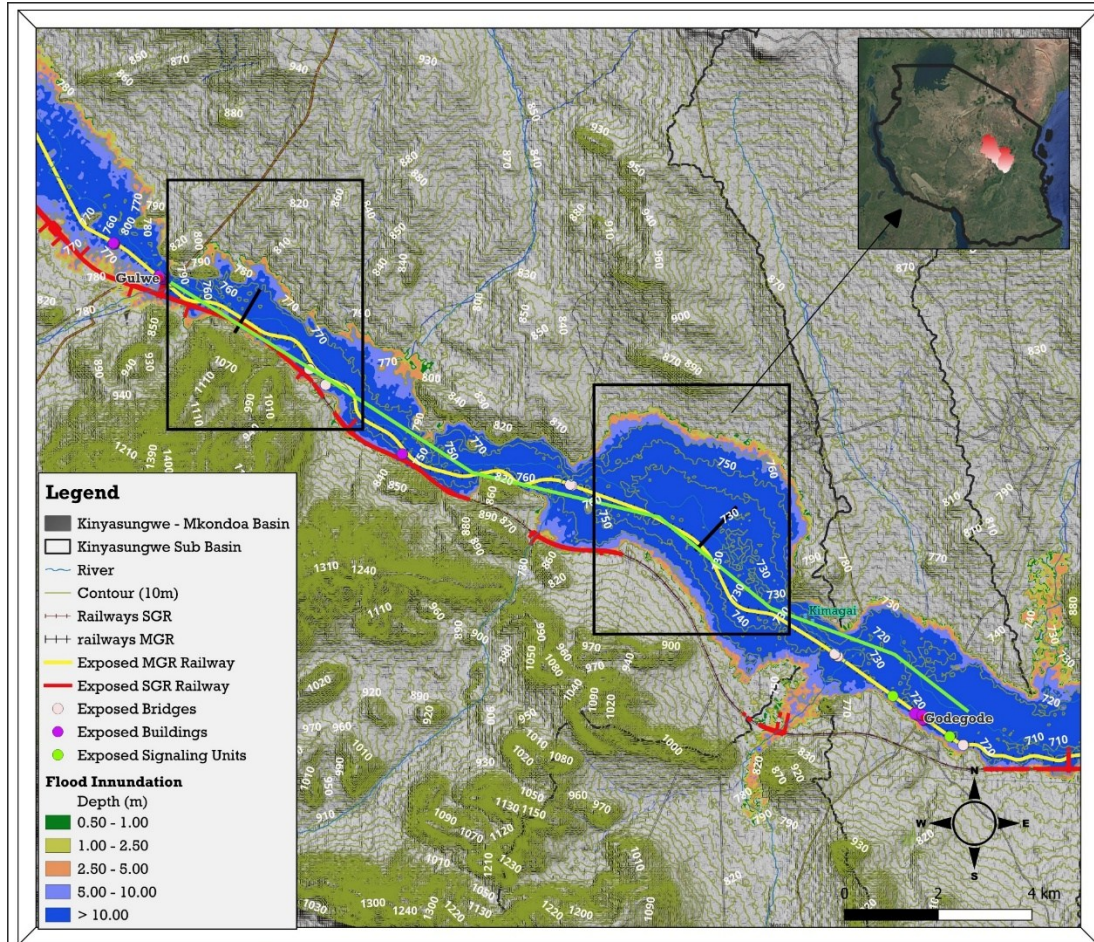
- Several locations identified as vulnerable are subject to recurrent flooding, overtopping, erosion, and drainage failure.
- Critical sections include:
 - Gulwe – prolonged flood inundation and overtopping
 - Mwasu / Kikundi – severe riverbank erosion
 - Mkadage / Mkondoa Bridge area – overtopping and floodplain spread
 - Munisagara – active riverbank erosion and track flooding
 - Msagali and Kidete/Godegode interface zones



High Flood Location – near Kilosa



High Flood Location – near Godegode

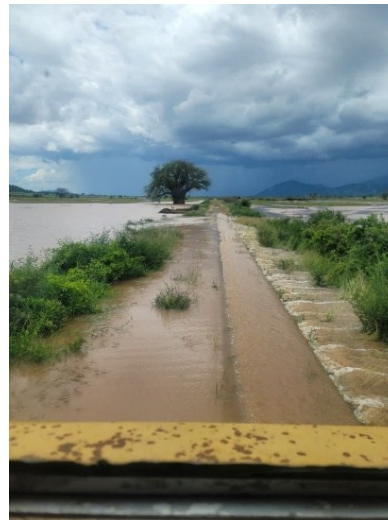


Cont..

Key Flood Mechanisms

The field validation confirmed that flood impacts along the corridor are not caused by a single process, but by a combination of:

- **River overflow and floodplain inundation**
- **Backwater effects at tributary confluences**
- **Sediment deposition and culvert blockage**
- **Riverbank erosion and lateral channel migration**
- **Drainage interactions between SGR and MGR systems**



ITS – Current Systems & Operational Practices

Meter Gauge Railway (MGR)

- Track condition monitoring and disruption verification are undertaken through manual inspections and station-level reporting
- Communication along the corridor relies primarily on radio communication, with no aerial cable systems and limited fiber connectivity.
- No dedicated ITS or centralized digital monitoring system is currently in place.
- During disruption events such as flooding, the current system depends on field-based verification, which can delay situational awareness and response.
- No automated hazard-triggered alert or early warning mechanism is currently operational for flood-related disruptions

Standard Gauge Railway (SGR)

The current track monitoring and verification is undertaken through ERTMS Level 2 system, which is being tested and onboarding

- Communication and signaling is primarily through SDH and fiber optic networks.
- Radio communication is through GSM-R
- A dedicated ITS, Operation and Command Center (OCC) including the radio block center. The OCC gets warning for disruptions in the tracks, but the flooding and other natural hazard-related impacts need to be captured more robustly.

Dashboard



Tanzania Railway

ITS-led and GIS-Based Climate Resilient Central Railway System

Tanzania's railway network is a critical backbone for national development, regional integration, and sustainable mobility. As climate variability and extreme weather events increasingly threaten transport infrastructure, strengthening the resilience of railway systems has become both an economic and environmental imperative.

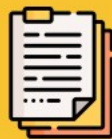
This web portal presents key data, analyses, tools, and insights generated under the project **"Strengthening Tanzania's Railway Infrastructure: An ITS-Led and GIS-Based Approach to Climate Resilience"** implemented with the support of the **World Bank** and the **Korea Green Growth Trust Fund (KGGTF)**. The platform serves as a centralized, interactive knowledge hub to support evidence-based planning, decision-making, and long-term resilience of Tanzania's railway assets.

The portal consolidates geospatial, infrastructure, climate, and operational data across Tanzania's major railway systems including the Meter Gauge Railway (MGR), Cape Gauge Railway (TAZARA), and the developing Standard Gauge Railway (SGR). Using Geographic Information Systems (GIS) and Intelligent Transport Systems (ITS) frameworks, the portal enables users to visualize vulnerabilities, assess climate risks, and identify priority interventions along railway corridors.



Dataset

Contains base layers and reported incidents, providing foundational information and real-time updates for threat detection and response.



Document

A centralized repository for critical reports, guidelines, and procedural documents to support decision-making.



Map

Interactive mapping tools to visualize threat data and monitor affected areas for enhanced situational awareness.



Dashboard

A user-friendly interface displaying key metrics, alerts, and trends to help stakeholders make informed, timely decisions.

All resources

Filter

86 Resources found

Add Resource

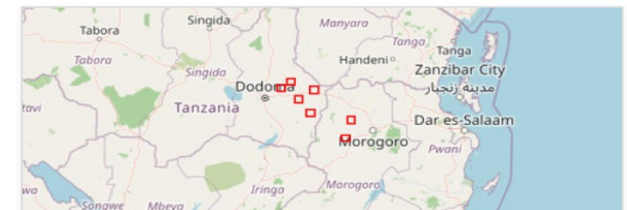


Order by

Datasets

Filter 45 Resources found

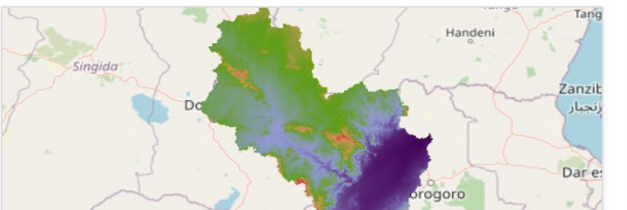
New Order by



Suitable Locations
admin



Velocity 1 in 2 year
admin



DEM
admin



Flood Depth | 100 year Return Period
admin



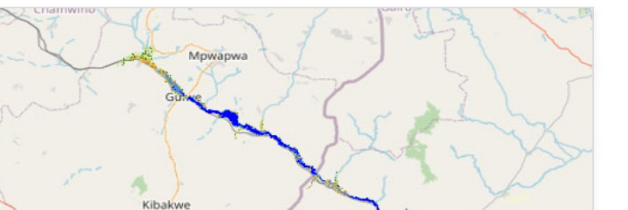
Flood Depth | 50 year Return Period
admin




Flood Depth | 20 year Return Period
admin




Flood Depth | 10 year Return Period
admin



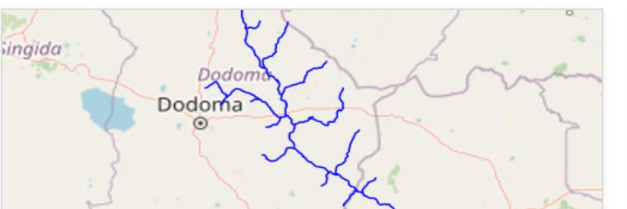
Flood Depth | 5 year Return Period
admin




Flood | 2 year Return Period
admin



Sub Basin Boundary
admin



Reach
admin



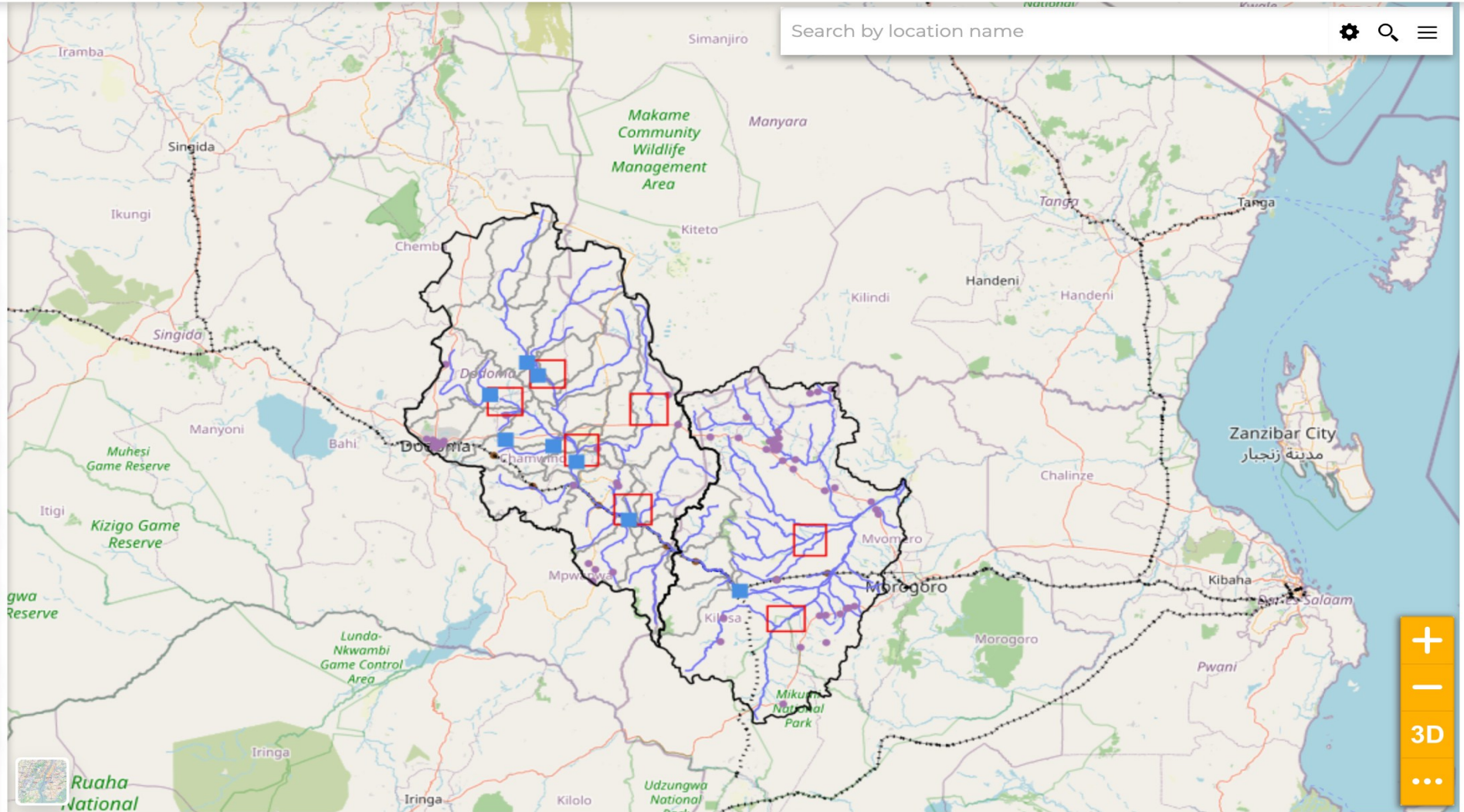
basin Boundary
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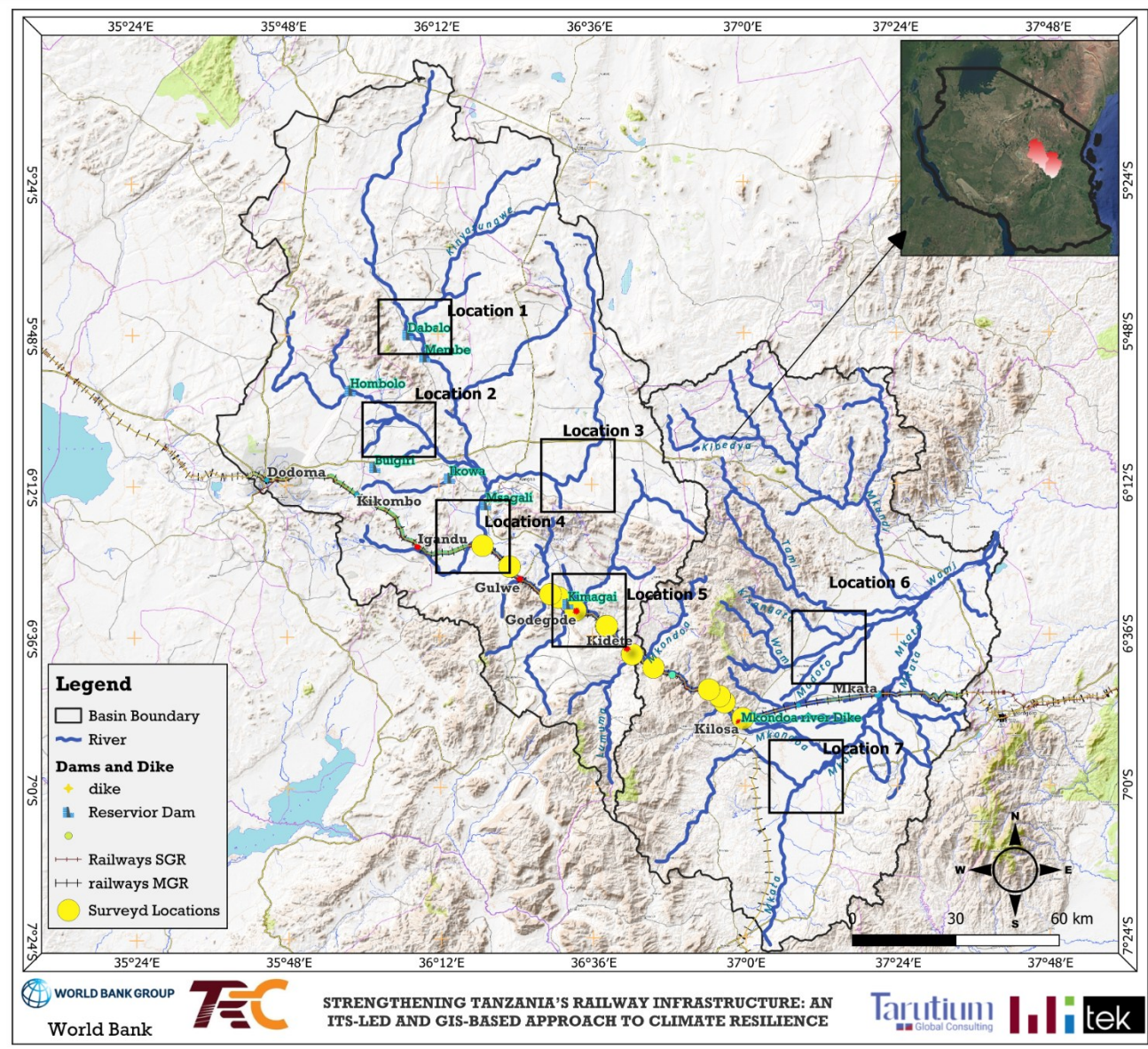
Filter layers

- Dams
- Suitable Locations
- Suitable Locations
- Kinyasungwe and Mkondoa Catchment
- Gray Polygon with Black Outline
- Kinyasungwe Mkondoa Places
- Places
- Kinyasungwe Mkondoa River
- River
- railways
- Railway Line
- Kinyasungwe Mkondoa Railway Stations
- Railway Stations
- subsl
- Sub Bassins
- Flood Depth (m)

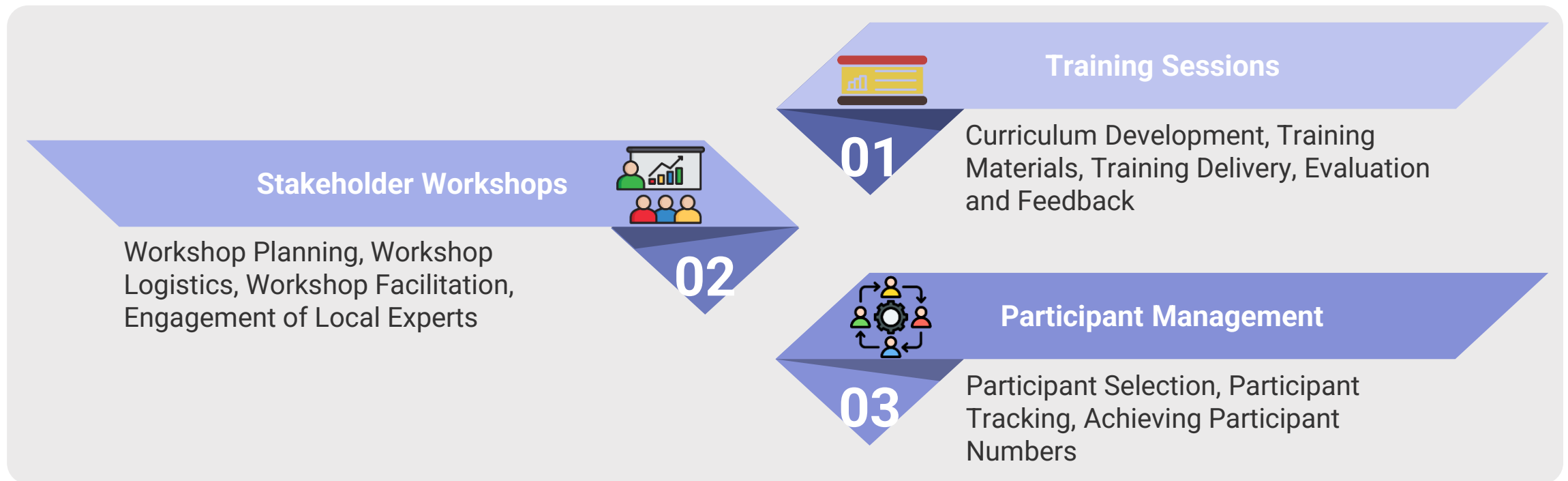
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2
3
4
5



Map navigation controls: + (Zoom In), - (Zoom Out), 3D (Toggle 3D View), and a menu icon (three dots).



Activity 4: Transfer of Tools and Knowledge





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