



SSATP  
Working Paper

# TOWARD A DATA-DRIVEN UNDERSTANDING OF TRADE AND TRANSPORT CORRIDORS

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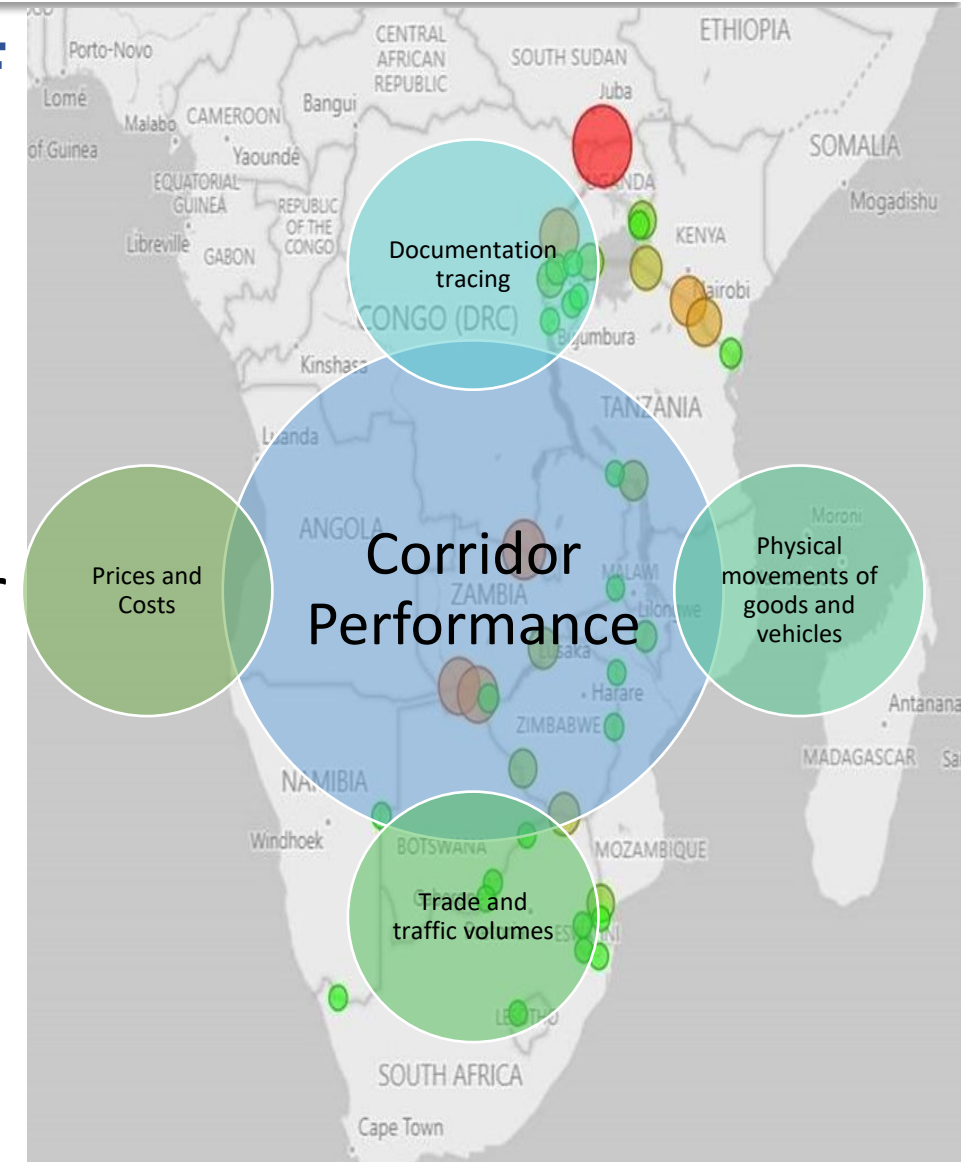
An Assessment of the Potential of the Existing Transport  
Corridor Monitoring Systems to Foster Policy Dialogue and to  
Strengthen Corridor Management Institutions in Africa



# Leveraging digital solutions & Regional Integration: Corridor Performance Monitoring Systems

## 2-TOWARDS A DATA DRIVEN UNDERSTANDING OF TRADE AND TRANSPORT CORRIDORS:

- An assessment of the potential of the existing transport corridor monitoring systems to foster policy dialogue and to strengthen corridors management institutions in Africa
- makes a comparative analysis of three corridor performance monitoring systems
  - (a) the corridor transport observatories (CTOs), (b) the Tripartite Transport and Transit Facilitation Programme's Corridor Trip Monitoring System (CTMS), and (c) the Logistics Monitoring System (LMS).
- and asserts their importance for CMIs credibility

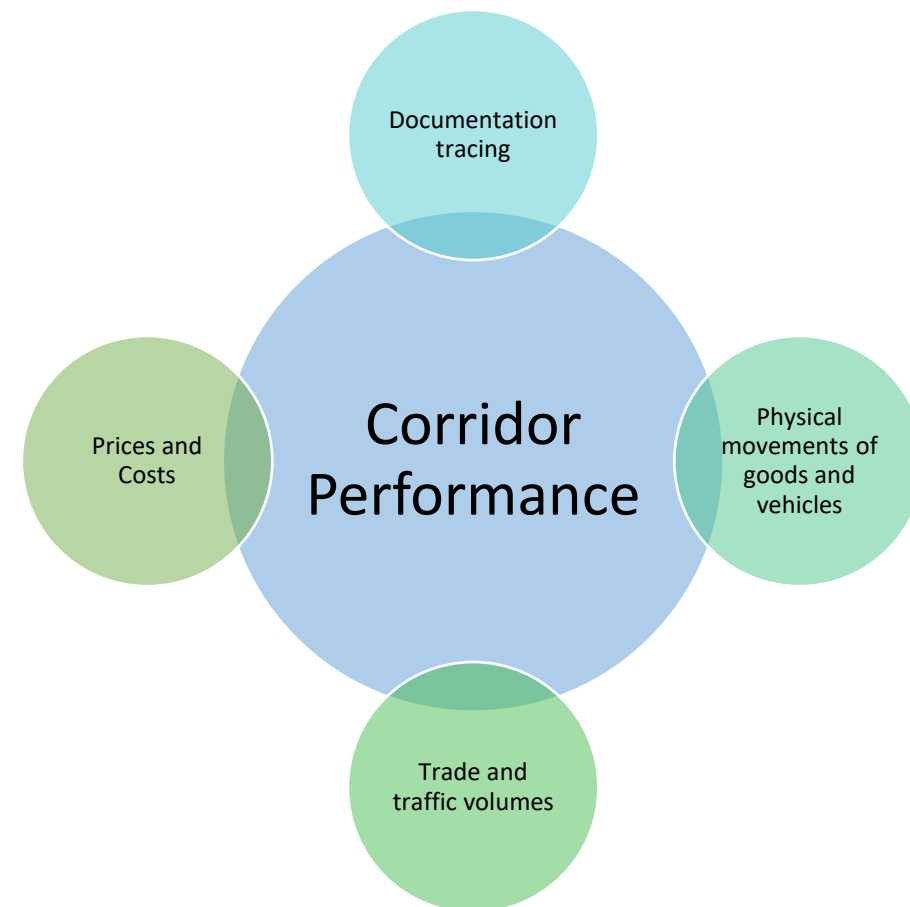


- **The Central Corridor Transport Observatory (CCTO)** was established in 2013 and is housed within the Central Corridor Transit and Transport Facilitation Agency (CCTTFA)- with support from TradeMark Africa and donors. **The Northern Corridor Transport Observatory (NCTO)** is housed by NCTTCA was established in 2011 with initial funding from SSATP and later from TradeMark East Africa.
- **CTOs are built on a set of indicators:** volume of transactions, transit times, cost of services and transport, efficiency and productivity, and emissions.
- **CTOs are able to retrospectively pinpoint congestion,** bottlenecks, and barriers to trade, with analysis of performance data enabling the implementation of improvements to general operations, infrastructure, and processes
- CTOs have also been instrumental in **informing policy and regulatory changes along the corridors** and making improvements in efficiencies within the ports of Dar es Salaam and Mombasa
- **Trade and transport-related nontariff barriers have been reduced** by the ability of the CTOs to provide insight into the various barriers. -The CCTTFA reported improved resolution of issues facing traders on the corridor and over 14 documents/reports published since 2018

# CTOs: Areas Requiring Strengthening

Stakeholders have highlighted five areas where the CTOs need strengthening:

1. Efficient and timely publication of data
2. Broader engagement with stakeholders and greater awareness and accessibility of the data analysis
3. Options for tailoring analytics to suite sector or audience-specific needs
4. Linking the identification of problem points to implementation of solutions
5. Real-time or near-real-time monitoring of road traffic



# Corridor Trip Monitoring System, CTMS



- **CTMS was developed by the Tripartite Transport and Transit Facilitation Programme (TTTFP)** during COVID-19 to limit the disruption to trade and to ensure the health and safety of cross-border travelers. CTMS is hosted by Namibia and managed by SADC

-The management-level web application is also used to monitor routes used by vehicles and enables alerts should deviations occur – **CTMS is well aligned with the TTTFP objective to reduce corridor transport cost** and provides a basis to **SMART corridors implementation.**

**CTMS allows the digitalization of the road transport logistics supply chain:**

- The Trip Registration Certificate is made available digitally on the driver's smart phone;
- Allows scanning of QR code of electronic travel and cargo documentation scanned by handheld devices at border posts
- Uploads location tracking data, which supports consignment information and vehicle tracking
- CTMS integrates customs management systems and law enforcement for contactless inspection and release of vehicles
- Information exchange should assist in addressing bottlenecks at border posts that contribute to high transport costs

# Implementation of the CTMS



**-Deployment of the CTMS at the border posts and ports of the countries used for the pilot—Botswana, Namibia, Zambia, and Zimbabwe—and for the rollout in Malawi and Mozambique is funded by the German Development Cooperation through GIZ.**

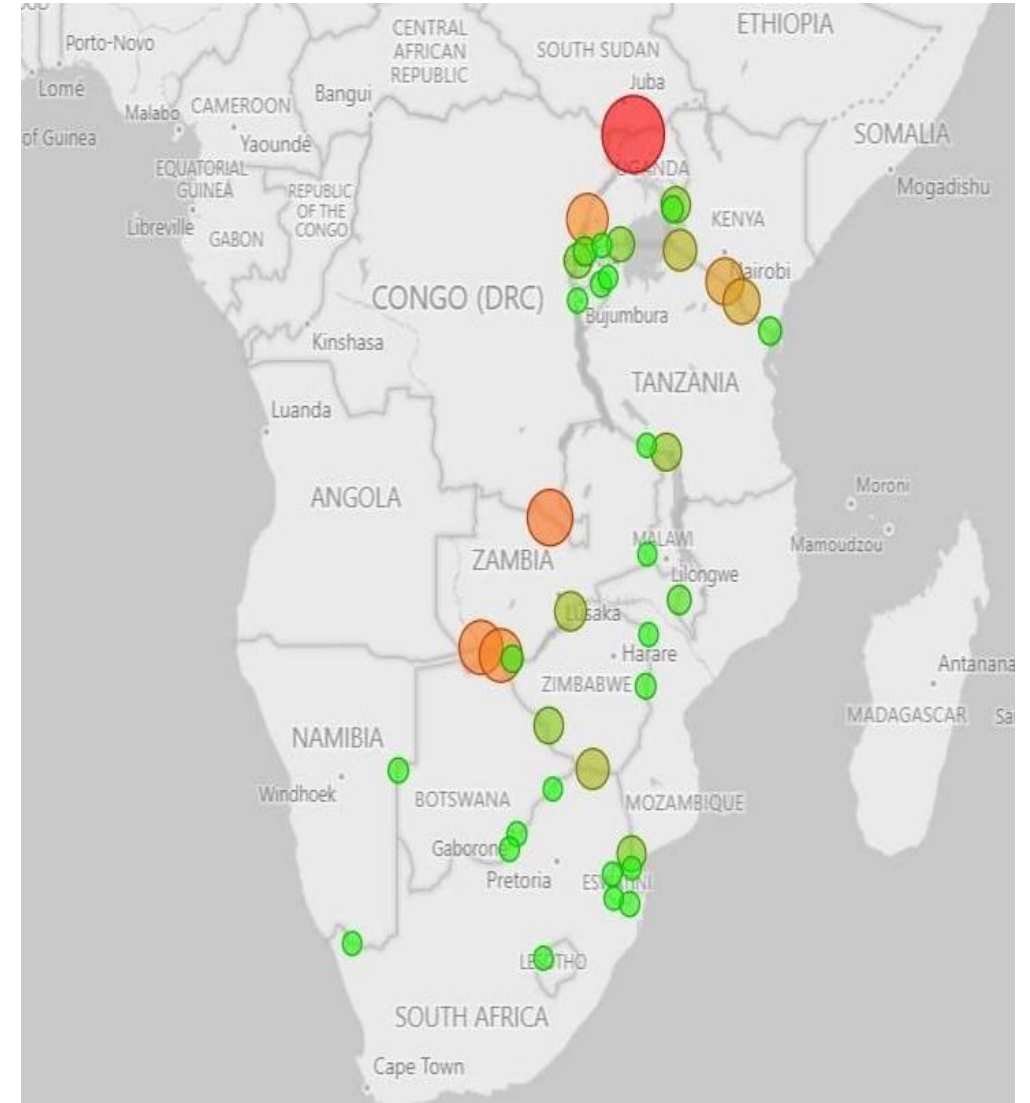
**-Early indications are that data will only be made available to CMIs historically, in which case the dire need for real-time and near-real-time information may prove to be a challenge.**

**-However, as the implementation of the CTMS is in its initial stages, and the countries within which the CTMS has been piloted do not all have operational CMIs, it is still too early to determine the value, impact, and availability of the CTMS data for CMIs.**

**-Sustainability:** EU funded the development of the CTMS, a viable, self-sustaining institutional model for the management and governance of the CTMS was to be decided by May 2023. A public-private partnership is being considered for the joint management and operation of the CTMS, as are other options

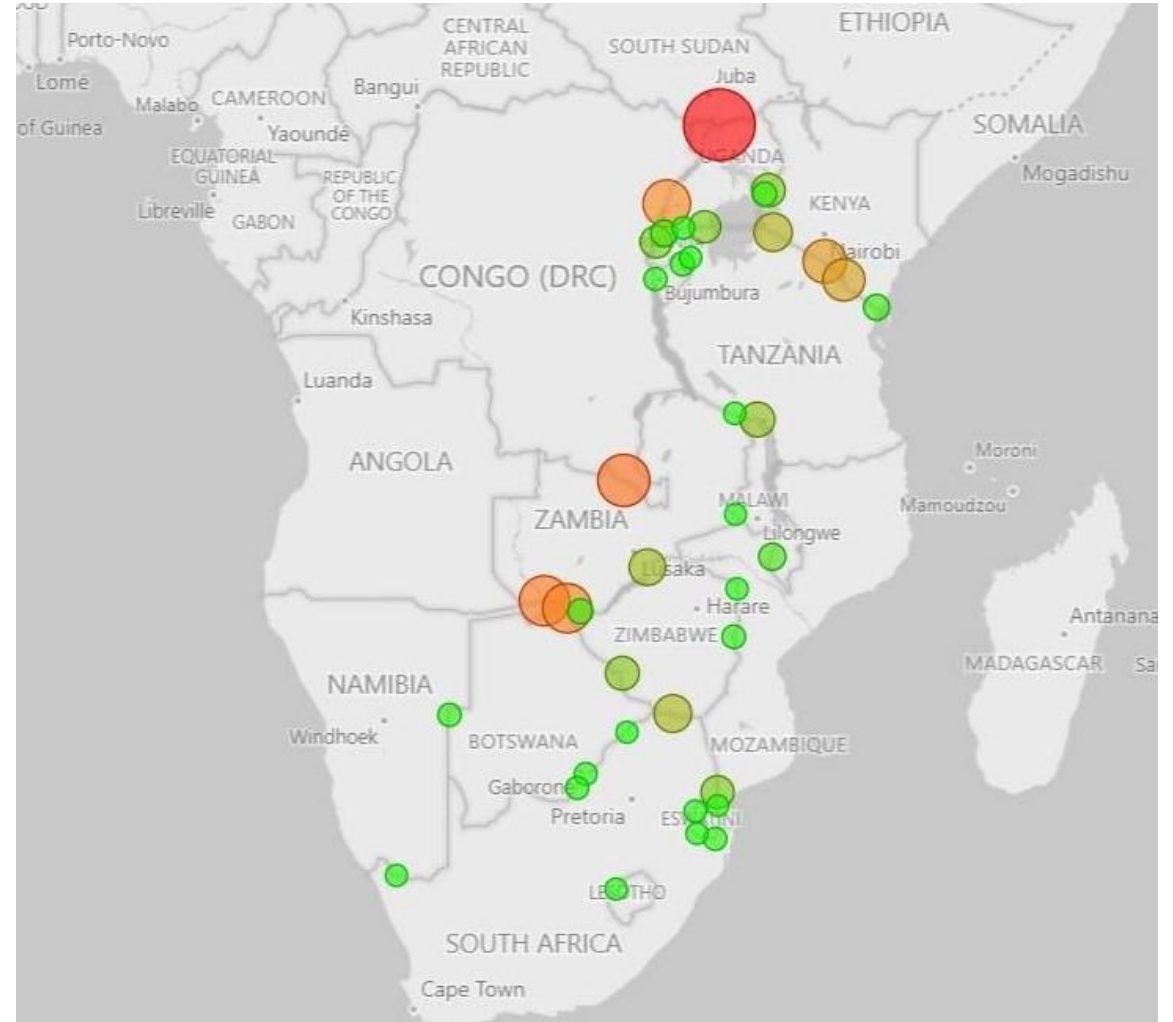
# Logistics Monitoring System, LMS

- **LMS is a custom-developed reporting platform** commissioned by the USAID, SSATP and the World Bank, that extracts and transforms large datasets of commercial vehicle GPS data into consistent, reliable and significant corridor performance insights monthly- with Crickmay as technical solution provider
- **LMS relies on positioning data** from a truck fleet close to 100,000 units deployed on routes spanning from South Africa to South Sudan, covering 20 countries and 42 borders and routes on all major Eastern and Southern Africa corridors.



# Using the LMS data: what it can do ...

- Two primary targets:
  - Border crossing as choke points on the corridors
  - Trip time along main corridors (extended to wider cover through OD reporting)
  - Trip time monitoring extended inside ports
- Multiple descriptors for the performance measurement:
  - Median, percentiles (top 5, bottom 5)
  - Frequency distributions
  - Arrival patterns for choke points
  - Speed and idle time on corridor legs





# Dashboard LMS May 2021: Border crossing time (Hour)

North South Corridor	Going North	Going South	Crossings
Beitbridge	37.15	17.33	2,291
Chirundu	28.05	18.54	3,135
Kasumbalesa	33.07	44.88	1,957
East Africa Corridors	From Coast	To Coast	Crossings
Busia	7.40	1.62	3,365
Malaba	18.58	2.14	2,963
Nakonde / Tunduma	4.92	9.52	790
Mozambique	From Mozambique	Into Mozambique	Crossings
Forbes / Machipanda	24.70	5.50	2,103
Lebombo / Ressano Garcia	4.65	14.88	7,886
Other South Africa Borders	From SA	Into SA	Crossings
Lavumisa	2.17	1.42	1,926
Martins Drift / Groblersburg	9.88	1.08	834
Maseru / Ladybrand	8.92	1.17	590
Oshoek / Ngwenya	2.28	1.13	976
Tlokweng / Kopfontein	5.27	0.65	1,068

# Route activity – evolving itineraries

- **Case 1: Mombasa Kampala**
  - In 2019, Busia was the preferred border post for over 40% of the trips, due to shorter trip time, 3.85 days compared to 4.6 through Busia
  - In 2020, both borders saw increase in crossing time, but overall traffic decreased, making the Malaba route the fastest one, and 80% of the trucks are using it
- **Case 2: Durban to Lusaka**
  - In 2019, the direct route through Beitbridge was congested, with long trip times, close to 11 days. Trucking companies often preferred the indirect route through Botswana, longer but faster, with a median of 9 days
  - In 2020, with less traffic on the roads, the Beitbridge route takes now a median of 7 days and the Botswana route is no longer used
- **Case 3: Harare**
  - The two main accesses to the sea for Harare are Durban and Beira. The traffic on the Durban route dropped by 60% while the Beira route increased by 145%

Route	Trips Apr 2019	Trips Apr 2020	Median trip time Apr 2019	Median trip time Apr 2020	Traffic change	Trip time change
Durban to Gauteng	12,541	7,038	0.54	0.59	-44%	9%
Durban to Harare via Beitbridge	392	162	5.85	3.88	-59%	-34%
Durban to Lusaka via Beitbridge	86	74	10.58	7.00	-14%	-34%
Durban to Lusaka via Botswana and Vic Falls	100		9.22		-100%	-100%
Harare to Beira via Mutare	531	1,382	1.15	1.34	160%	16%
Harare to Durban via Beitbridge	527	178	3.37	4.04	-66%	20%
Mombasa to Kampala via Busia	325	114	3.85	5.07	-65%	32%
Mombasa to Kampala via Malaba	437	423	4.61	4.89	-3%	6%
Mombasa to Nairobi	4,972	3,086	0.93	1.00	-38%	7%
Beira to Harare via Mutare	642	1,573	2.38	2.12	145%	-11%

# CTOs, CTMS and LMS

- The three systems assessed all provide data collection capabilities, which are essential for enabling CMLs to support their sustainability, from both a financial and a credibility perspective
- **The main value for CMLs is in a system that can collect real-time data and provide an almost immediate analysis** of key elements of the corridor activities on a daily basis
- At present, the abundance of data, versatility, and quickness of the **LMS** puts it at the top of big data analysis in corridors
- **All three systems come at a substantial cost but can be monetized:** The formulation of “products” suited to stakeholder requirements may provide a compelling motive for monetization of these data products,
- **Not short of technical solutions – there is a need for effective CMLs**

# Overview of the Central and Northern Corridors

Main East African Community corridors	Countries	Port	CMI	Corridor performance monitoring mechanism
Central Corridor	Tanzania, Zambia, Rwanda, Burundi, Uganda, eastern Dem. Rep. Congo	Dar Es Salaam	Yes: Central Corridor Transit Facilitation Agency	Yes, CTO
Northern Corridor	Kenya, Uganda, Rwanda, Burundi, eastern Dem. Rep. Congo, South Sudan	Mombasa	Yes: Northern Corridor Transit and Transport Coordination Authority	Yes, CTO

SADC corridors	Countries	Port	CMI	Corridor performance monitoring mechanism
Maputo Corridor	Mozambique, Eswatini, South Africa	Maputo	No (Defunct)	LMS piloted in 2017
North-South Corridor	South Africa, Botswana, Zambia, Zimbabwe, Dem. Rep. Congo, Malawi, Mozambique	Durban (Maputo secondary)	No	No
Walvis Bay Corridor Group (WBCG)	Namibia, Botswana, South Africa	Walvis Bay	Yes	No
Trans Kalahari Corridor	South Africa, Botswana, Namibia	Walvis Bay	Yes	No
Walvis Bay Ndola Lubumbashi development corridor	Namibia, Zambia, Zimbabwe, southern Dem. Rep. Congo	Walvis Bay	(Part of the WBCG)	No (LMS pilot?)
Dar Es Salaam Corridor	Tanzania, Dem. Repub. Congo, Malawi, Zambia	Dar Es Salaam	No (Defunct)	No
Nacala Corridor	Zambia, Malawi, Mozambique	Nacala	No	No
Beira Corridor	Mozambique, Zambia, Zimbabwe, Malawi, southern Dem. Rep. Congo	Beira	No	No
Lobito Corridor	Angola, Zambia, southern Dem. Rep. Congo	Lobito	Yes	No

# Strategy formulation for Corridor Management Institutions (CMI)

- In Eastern and Southern Africa, interventions aiming at improving corridor efficiency are led by dedicated CMI
- **But only 3 out of 9 SADC corridors have a CMI – and there are very few or none in the West and Central Africa corridors**
- SSATP has a long history of supporting CMIs:
  - Building consensus for their establishment
  - Supporting their strategic plans
  - Supporting the development of monitoring instruments, such as corridor transport observatories

## SSATP-DP4 RI Pillar priority activities:

- Assessment of the CMIs effectiveness – Ref SSATP 2008 Working Paper
- Feasibility of establishing CMIs.... and CTOs/LMS in West and Central Africa Corridors
- Logistics platforms digitalization
- Development of a Leaders RI Capacity Building Program