ASYCUDA

THE SIGMAT SYSTEM

THE ASYCUDA JOURNEY IN WEST AFRICA

Facilitating Cross-Border Transit Trade

UNITED NATIONS
UNCTAD

A fruitful relationship, nurtured since the early 1980s, between the ECOWAS Commission and UNCTAD has culminated in the implementation of the ECOWAS Regional Transit System that is transforming cross-border trade in West Africa.

FOREWORD

For several decades, customs administrations have sought to use the latest available technology to track goods in transit and combat fraud. For example, in the early 1990s, Côte d'Ivoire customs would send transit declarations to Burkina Faso customs by fax so that they could ensure the correct arrival of goods at their destination.

For 25 years, the Economic Community of West African States (ECOWAS) tried to set up an automated transit management system, notably through what is known as the "ALISA" project, finally achieving success with the implementation of the SIGMAT system.

Since February 2019, Burkina Faso customs has received transit data electronically and in real time from Côte d'Ivoire customs, meaning that the same transit declaration is available to both customs offices, whereas before the data would have had to be re-entered at the border. In effect, the transit declaration issued upon departure in Abidjan accompanies the goods and is used upon arrival at the destination when local customs take charge of the goods. This development is an important simplification of the transit procedure which makes it easier to track goods, increase transparency, fight fraud, and reduce transit times for goods.

This report, "The SIGMAT System - The ASYCUDA Journey in West Africa: Facilitating Cross-Border Transit Trade", describes the various stages and initiatives of this journey which has enabled the implementation of the SIGMAT system today.

This success was possible, firstly, thanks to the drive of Côte d'Ivoire which, with the help of European Union funding, organized meetings with other countries, namely Burkina Faso, Mali, and Senegal, to work on the implementation of an electronic regional transit system. Led by the World Customs Organization (WCO), in collaboration with the United Nations Conference on Trade and Development (UNCTAD) and Japan International Cooperation Agency (JICA), the country teams were able to establish the functional and technical specifications of the SIGMAT system. Then, with the support of donors such as the World Bank and the German Agency for International Cooperation (GIZ), ECOWAS and UNCTAD developed the interconnected system for the management of goods in transit (SIGMAT).

There is, however, a long way to go before this venture can be considered a complete success. The SIGMAT system still needs to be extended to other ECOWAS countries and other African regions, such as the Economic and Monetary Community of Central Africa (CEMAC), the Economic Community of Central African States (ECCAS), and the Common Market for Eastern and Southern Africa (COMESA). It will also be necessary to ensure that procedures are well applied and SIGMAT functionalities are used correctly. Work also needs to be undertaken to automate manual and complex non-customs procedures which increase the time it takes for goods to be processed at the border. Finally, we must work to improve the implementation and digitization of transit guarantee management to ensure payment of duties.

Just over forty years ago, the collaboration between ECOWAS and UNCTAD led to the creation of the ASYCUDA programme. Today, this collaboration has led to the SIGMAT system itself. It is my hope that with full deployment, SIGMAT could soon be showcased as a best practice in transit trade to the rest of the world.

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ABBREVIATIONS

ALISA	ECOWAS customs interconnection project
ASYCUDA	Automated System for Customs Data
ASYCUDA++	ASYCUDA's Customs Management System - Version 3
ASYCUDAWorld	ASYCUDA's Customs Management System - Version 4
CCC	ECOWAS Community Computer Centre
CEMAC	Economic and Monetary Community of Central Africa
COMESA	Common Market for Eastern and Southern Africa
ECCAS	Economic Community of Central African States
ECOWAS	Economic Community of West African States
GIZ	German Agency for International Cooperation
ISRT	Interstate Road Transport Scheme
ITSD	Information Technology Services Directorate
JICA	Japan International Cooperation Agency
JMS	Java Message Service
MoU	Memorandum of Understanding
PACIR	Programme d'Appui au Commerce et à l'Intégration Régionale
RECs	Regional Economic Communities
SIGMAT	Interconnected System for the Management of Transit Goods
UNCTAD	United Nations Conference on Trade and Development
USAID	United States Agency for International Development
Y2K	Y2K bug
WCO	World Customs Organization
XML	Extensible Markup Language

1. BACKGROUND

The Economic Community of West African States (ECOWAS) is a 15-member regional group with a mandate of promoting economic integration in all fields of activity of the constituting countries (industry, transport, telecommunications, energy, agriculture, natural resources, commerce, monetary and financial issues, social as well as cultural matters). Considered one of the pillars of the African Economic Community, ECOWAS was set up to foster the ideal of collective self-sufficiency for its member states. ECOWAS is essentially a single trading bloc that is moving towards a common market for West Africa.

Figure 1. Map Showing ECOWAS Member States
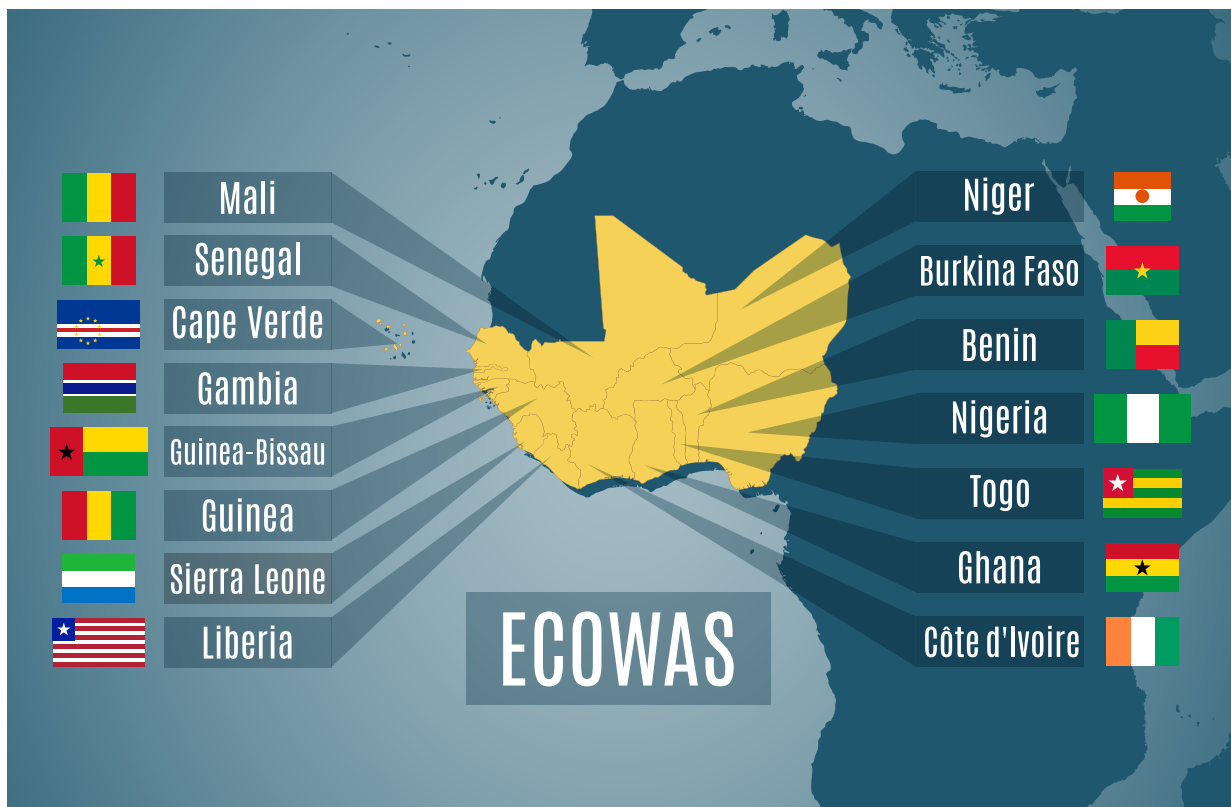
In a bid to realize the common market dream for West African States, the ECOWAS Commission (hereinafter the Commission) is gradually introducing regional protocols, instruments and mechanisms. Among these are the ECOWAS Common External Tariff, implemented in 2015 and the Automated Regional Customs Transit System launched in March 2019 under the French acronym, SIGMAT (*Interconnected System for the Management of Transit Goods*).

The overarching vision of the Commission is to achieve *an ECOWAS of peoples* that resonates with ECOWAS citizens. Thus, ECOWAS is gradually moving away from being seen as an organization of member States by introducing mechanisms that progressively emphasize the generality of the populace so that the *borderless and oneness agenda* is achieved in a sustained, passionate manner. The aim is the creation of an ECOWAS where citizens, goods and services circulate freely within its borders and foster peace, trade, cooperation and accelerated development.

Many other programmes, projects and activities have been executed with some still underway to realize the ECOWAS common market.

1.1. ECOWAS and the ASYCUDA Journey

The association of the Commission with trade automation and facilitation began in the early 1980s when the Commission approached the United Nations Development Programme (UNDP) to request technical assistance to develop software that could measure trade exchanges among its member States.

The request was in support of the ECOWAS free trade area.

The task of developing the software was picked up by the United Nations Conference on Trade and Development (UNCTAD). The outcome was the production and implementation in the early 1980s of the Automated System for Customs Data (ASYCUDA), which was installed on desktops as standalone systems in customs offices in several ECOWAS member States.

Consequently, the Commission established ECOWAS' own computer centre, the ECOWAS Community Computer Centre (CCC), which had among other mandates, to manage the implementation of the ASYCUDA system in its member States and to prepare statistics on intra-regional trade to assist the Commission with necessary data to settle compensation payments resulting from the implementation of intra-community trade protocols.

Once established, the CCC managed ASYCUDA systems within the ECOWAS member States in collaboration with the ASYCUDA project office in UNCTAD by organizing, training and encouraging customs administrations to embrace and adopt the computerization of their goods clearance procedures.

The CCC had to rise to the Y2K bug challenge in 1999. In collaboration with the ASYCUDA programme team, the CCC organized member States around the Y2K solution for ASYCUDA. The CCC equipped and deployed technical teams to resolve the Y2K bug on all ASYCUDA systems in user member States within the region.

Over time, the ASYCUDA system evolved into networked systems in the customs offices. Version one (desktop-based) progressed to version two (using a local area network version) then to version three (called ASYCUDA++, running on a wide area network) and then to the current fourth iteration (ASYCUDAWorld, which is web based).

Through the entire evolutionary process, the CCC has collaborated and maintained close contact with UNCTAD in the area of customs and trade automation through technical assistance and training provided to ASYCUDA user member States.

1.2. The ISRT and the Advent of the SIGMAT Project

In 1999, responding to a USAID statement of work (SOW) request, the Commission began the journey towards SIGMAT, the automated regional customs transit interconnection network. The CCC developed a concept note detailing the need for an intra-regional trade data and information network to facilitate trade within the region that would also serve as a channel to collect, organize data and compile statistics on trade occurring within the region and for trade with third countries. This led to the creation of the USAID funded ALISA project.

ECOWAS has long sought to resolve its ailing and dysfunctional Interstate Road Transport Scheme (ISRT), implemented under the ECOWAS free trade area protocols.

In principle, the free trade area guarantees the free movement of people, goods and services within ECOWAS' borders. However, the practical implementation of the agreement has been interpreted differently by ECOWAS member States.

While the free movement of people had attained some success, traders encountered difficulties when moving goods across borders in the region. Issues such as axle weight limits, differing vehicle standards, inspection requirements and customs procedure requirements, that all conflict with the letter and spirit of the ISRT protocols.

Issues included:

- Mandatory customs escorts for vehicles in transit
- Multiple payments for transit logbooks which are meant to only be issued at the origin
- Tariff and non-tariff barriers relating to e.g.: quantity and quota restrictions; and multiple unofficial fee payments at customs and other security check points on the transit corridors stemming from corruption perpetrated by customs officers and other security agencies

In order to curb transit fraud, some member States' customs administrations used satellite tracking of hauled goods on transit corridors. Unfortunately, in some cases, hauliers found ways to remove the installed tracking devices and re-installed them on different vehicles to complete the journey while the goods themselves were diverted.

Again, combining the various tracking systems in the different member States across the region onto a single online platform would have been a herculean and unwieldly task.

Moreover, the chambers of commerce that insured such goods, did so per country where transit goods passed and were in general unable to settle bills pertaining to loss or damaged goods when any incidents occurred.

To improve the interstate road transit process, in 2000 the Commission launched the ALISA transit trade interconnection project which uses computer systems to provide forward information to customs administrations in destination countries and also to those member States whose customs jurisdiction the goods will pass through.

Numerous technical sessions were held with customs transit administrators and customs information technology professionals from across the region to define the concept and the technology approach for the proposed ALISA network. Those meetings were later expanded to include banks, haulage operators, customs house agents, port authorities and the region's chambers of commerce organizations.

After many consultative regional experts' meetings, the ECOWAS' supervising ministers of customs administrations mandated the Commission to implement the software solution for the regional customs transit network in November 2011 in Ouagadougou, Burkina Faso.

That same month, ALISA regional automated customs transit manual was approved at a regional experts' meeting and adopted by the regional meeting of directors general of customs administrations who constituted the ALISA project steering committee.

1.3. From ALISA through PACIR to SIGMAT

Whilst the Commission was encountering funding difficulties to implement the ALISA project, in June 2013, the Côte d'Ivoire customs administration took steps to resolve the transit issues. They invited Burkina Faso and Mali to deliberate on the ALISA solution using the ALISA regional automated customs transit manual to carry out the analysis and design of the software and hardware solution for the transit system.

The trio were later joined by Senegal's customs administration. Together, with the assistance of the World Customs Organization (WCO) and the participation of ASYCUDA experts, they determined the technical and functional specifications for the regional transit system using funds obtained from the EU-funded *Programme d'Appui au Commerce et à L'intégration Régionale* (PACIR) assistance project to Côte d'Ivoire.

At the recommendation of the WCO, the Commission adopted the PACIR specifications in 2015 and called a regional experts' meeting to deliberate on it. The experts validated the specifications paving the way for its implementation.

On May 2017, UNCTAD and the Commission signed an assistance project for the sum of $774,050. The Commission then negotiated with UNCTAD to train a selected group of software developers from the member States customs administrations. This selected group would then be used to develop the SIGMAT solution under the supervision and with the assistance of ASYCUDA experts.

A regional plenary meeting of technical experts debated what the regional transit should be called – ALISA, the name given by the Commission or PACIR given by the group that designed the technical and functional specifications.

The name SIGMAT (pronounced sigma – Σ, to mean bringing together) proposed by the Senegal customs administration, an acronym representing in the French language, Système Interconnecté de Gestion des Marchandises en Transit, which translated into English means Interconnected System for the Management of Goods in Transit, was adopted during the launching of the SIGMAT system on 11 March 2019 in Abidjan.

1.4. SIGMAT Project Goals

The goals set out for the SIGMAT project by the Commission were the following:

- The implementation of an automated solution to replace the unworkable Interstate Road Transport Scheme (ISRT)
- The elimination of repetitive manual clearance procedures for transit goods at every customs border post along transit routes
- The elimination of delays in the supply chain that result from the repetitive clearance procedures at border crossings
- The elimination of untraceable bulk-breaking by truckers and transit operators across the region impacting negatively on national customs revenue
- The elimination/reduction of revenue leakage resulting from counterfeit and fraudulent transit declarations by importers
- The elimination/reduction in security challenges resulting from bulk-breaking in cases where goods offloaded could impair the security of a member State in the region
- The promotion of transparent and unimpeded intra-regional trade procedures across the region
- The facilitated exchange of customs, security data and information across the regional network
- The provision of vital forward information for faster goods clearance; and fraud detection and prevention
- An interconnected region across all the customs transit corridors to facilitate trade and goods transport
- Properly insured transit goods by regional guarantors that provide insurance to regional transit operators

These goals were to permit the elimination of bottlenecks to intra-regional trade and ensure that traders could at any point in time:

- Import their goods into any port of any member State in the region by taking advantage of the ECOWAS Common External Tariff (already applicable in all member States)
- Decide whilst their goods are on a particular transit corridor to officially request diversion of the cargo to another destination on a different transit corridor
- To achieve these without any impediments or delays

1.5. The SIGMAT Development Team

From September to December 2017, 11 potential candidates from member States customs administrations were trained specifically on the software development aspects of the SIGMAT in Lomé.

The CCC organized two training sessions each lasting three weeks in its Lomé centre for the 11 developers selected from the customs administrations of Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Guinea, Mali, Nigeria and Togo. The training focused on the open-source

tools JMS, ActiveMQ and XML – selected by UNCTAD and ECOWAS to avoid future costs with proprietary software.

JMS is a message-oriented Java application programming interface for middleware while ActiveMQ is a message intermediary that implements the JMS specification. XML is a markup language that defines a set of rules, codes or tags for encoding documents in a format that can be read by humans or machine.

The second training session focused on the development of modules for the ASYCUDAWorld customs management system and was conducted by an UNCTAD expert.

In December 2017, It was at the end of the training sessions that the two key developers from the Commission and UNCTAD selected the five developers to undertake the creation of the SIGMAT application together with the UNCTAD software developer.

The team of developers consisted of:

• One UNCTAD ASYCUDA software developer and SIGMAT software project leader
• One CCC software developer
• Five software developers selected from customs administrations in the ECOWAS region (Burkina Faso, Cape Verde, Côte d'Ivoire, Nigeria and Togo)

1.6. The SIGMAT Software Development Process

The development team was supervised by the UNCTAD ASYCUDAWorld expert assisted by the developer from the Commission. The software development task was carried out in two sessions of six weeks each from April to July 2018.

The first of the sessions was devoted to the development of the standard messaging component, including: departure of the transit goods; border crossing; and arrival at the destination. To implement these standard procedures, the following messages were developed:

• EI001: Early arrival notification
• EI050: Advanced transit notification
• EI118: Notification of passage
• EI006: Arrival notification
• EI018: Examination report

The standard procedure involved all operations required to perform a customs transit transaction starting from the departure of the transit goods in the member State of origin to the closure of the transit transaction in another member State of destination, after it has been registered in their customs clearance software system as being under customs control.

In May 2018, the first validation session involving representatives from the Commission, UNCTAD, the PACIR project and the five regional developers, followed the first development session.

Scenarios pertaining to the standard procedure for transit goods departure, passage at a customs border post and arrival including reception of the standard messages were tested.

The second development session, done from June and July 2018, focused on the remaining messages listed below:

• EI002: Data request
• EI003: Rejection of the data request
• EI010: Cancellation notification
• EI901: Confirmation of cancellation
• EI027: Request for additional information
• EI904: Status request
• EI905: Response to the status request

During this session the ASYCUDAWorld customs management system was installed and the SIGMAT desktop module plugged-in to serve as the customs transit procedure environment in order to test the sending, passing and receiving of SIGMAT messages.

At end-July 2018, the second session focused on the validation of the SIGMAT desktop version by experts on community transit from all the 15 member States in the CCC's Centre of Excellence in Lomé. That technical evaluation and validation paved the way for the SIGMAT system to be deployed and launched.

1.7. The SIGMAT Deployment Process

The first two customs administrations to exchange transit information through SIGMAT and undertake transit business were Côte d'Ivoire and Burkina Faso in February 2019. This encouraged other member States to use the SIGMAT system and Togo, Benin and Niger soon followed.

The SIGMAT system was officially launched in March 2019 in Abidjan, Côte d'Ivoire.

It is worth noting that the pace at which the SIGMAT system was delivered was accelerated by a $640,000 World Bank project signed with UNCTAD for the interconnection between Côte d'Ivoire and Burkina Faso.

Given that the software development work had already started using the Commission's project funds, UNCTAD applied the World Bank funds to achieve the following in a Côte d'Ivoire to Burkina Faso transit corridor pilot, which became available to all corridors but is yet to be deployed:

• Testing and validation of the SIGMAT software
• Integration of SIGMAT software into ASYCUDAWorld for Burkina Faso and Côte d'Ivoire
• The preparation and validation of SIGMAT user guides
• The organization of training for SIGMAT trainers
• The installation and configuration of the SIGMAT information exchanges modules

- The testing of the pilot SIGMAT deployment in the Burkina Faso and Côte d'Ivoire transit corridor
- Launching of the pilot corridor

This enabled UNCTAD to use the remaining funds under the Commission's project to finalize SIGMAT interconnections between: Togo and Burkina Faso (April 2019); Benin and Niger (June 2019); to prepare Mali and Senegal for their own interconnection; and other project activities jointly executed with the Commission.

UNCTAD's coupling of the Commission's project funds of $774,050 with the World Bank's project funds meant that just six months after completion of the development of the SIGMAT software, five member States (Côte d'Ivoire, Burkina Faso, Togo, Niger and Bénin) were already enrolled and carrying out transit transactions on the SIGMAT system.

The World Bank equally funded the development by UNCTAD of a SIGMAT version for rail transport. Côte d'Ivoire and Burkina Faso have been using the SIGMAT rail version for customs transit operations since June 2021.

Given that interconnection projects which were being implemented by the World Bank and the GIZ in the region were largely based on a specific trade/transit corridor approach, the idea of carrying out a regional project affecting wholesale all transit corridors concurrently was deemed an impossible task and funding partners like the World Bank and GIZ were hesitant to commit to it initially.

Once the SIGMAT system was operationalized between Côte d'Ivoire and Burkina Faso, partners increasingly recognized the project's feasibility and improved partner commitment was realized.

Ghana and Nigeria (who are non-ASYCUDA user countries) have not only expressed interest to use the SIGMAT system but have also completed, in 2022, the required technical training to do so. Sierra Leone will join them for the functional training after which deployment operations will commence in those member States. Nigeria does not engage in transit trade transactions but is interested in the SIGMAT system because of trade with the neighbouring member State, Benin.

Currently the GIZ is assisting Ghana and Nigeria while ECOWAS is assisting Gambia, with the African Development Bank expressing interest and requesting more information on the project.

The five member States connected to the SIGMAT system are using all of the capabilities defined in the initial scope, with the exception of the insurance of transit goods by regional guarantors that is yet to be implemented by the Commission.

All remaining member States are interested in connecting to the SIGMAT system, recognizing that the network increases regional trade competitiveness.

1.8. Current Situation with SIGMAT Development Team and Partners' Support

Of the five software developers working on the SIGMAT development, due to funding constraints, only one is currently employed to work on the project. They are funded by GIZ and based at SIGMAT headquarters. There are indications, however, that the World Bank may fund the recruitment of two more of the retained developers to increase the development team numbers.

The Commission has completed the development of the SIGMAT mobile version with the limited manpower at its disposal.

1.9. Achievements of Goals and Benefits of the SIGMAT system

Achievements of Goals

The deployment of the SIGMAT system in five user countries has led to the realization of the following SIGMAT project goals:

- The SIGMAT system (automated solution) is implemented
- Manual clearance procedures have been eliminated at the border (no need to complete a customs declaration at the border)
- Reduction of delays (as there is no manual clearance procedures at the border)
- Capacity for customs transit offices to control transit movement and bulk-breaking, to identify fake and fraudulent transit declarations through the system
- Increased transparency and unimpeded intra-regional procedures
- Facilitated exchange of customs data, security data and other information between countries
- Provision of vital forward information for faster goods clearance and fraud detection and prevention

But, even if the SIGMAT system is deployed in these five countries, improvements still need to be made to fully achieve all objectives. These enhancements are:

- The SIGMAT system must be deployed in all ECOWAS countries and the Commission must be connected to it as well
- Other manual procedures (not related to the clearance of transit goods) must be simplified or automated to ensure that the reduction in delays will be sufficient
- Customs headquarters of each country must ensure that the SIGMAT system and procedures are properly used and applied at the human level
- The management of guarantee must be included in the SIGMAT system

Benefits for the Commission

The main benefit for the Commission of the SIGMAT system is the facilitation of cross-border transit trade. Real time, intraregional, transit trade data access, is another realizable benefit that will be achieved once regional servers are connected to the network. Those servers, when installed, will enable the Commission to collate and prepare intracommunity trade statistics.

Per the SIGMAT system design, the deployment of the Commission's regional servers provide improved network resilience should communication fail from one point to the other, with the regional node bypassing the connectivity problems.

Pending recruitment, the team to manage the centre's trade information infrastructure will be based at SIGMAT headquarters.

Benefits for Customs Administrations in Member States

Some of the benefits to customs administrations are:

- Reduction or elimination of bulk-breaking of goods to avoid correct payment of duties
- Reduction or elimination of duties payment avoidance through fake transit declaration
- Security to the supply chain and societal security resulting therefrom

Benefits for Economic Operators

Economic operators indicate their satisfaction with the:

- Reduced time for goods delivery between point of origin and destination
- Elimination of multiple customs declarations and associated costs

Among customs administrations and implementers in the Commission, system satisfaction is rated at 95%. The only concern mentioned related to the human-system interface and it is believed that the root of the problem is human rather than system based.

Note: to fully evaluated the impact of the SIGMAT system, ECOWAS, UNCTAD and the World Bank intended to do an evaluation of SIGMAT in all users countries by the beginning of 2023. After this evaluation, a better understanding of the achievements of goals and of the benefits for customs administrations and economics operators will be possible.

1.10. SIGMAT Challenges

Challenges at the Commission

Reorganization of the CCC / Technical Arm of SIGMAT at the Commission

Since 2018 the main SIGMAT technical executing arm in the Commission, the CCC, has been undergoing gradual transformation.

It was renamed the Information Technology Services Directorate (ITSD) after the 2018 reorganization of the Commission, implying a more internal-facing focus than the Community Computer Centre. However, it retained its training centre, the SIGMAT headquarters and was recognized by UNCTAD as a Centre of Excellence and the WCO as the project headquarters for SIGMAT.

The ongoing second phase of restructuring began in 2021 and would benefit from the strengthening of both the ITSD and SIGMAT headquarters to guarantee the functioning and future development of the SIGMAT system. Without this, the SIGMAT system may encounter maintenance problems and even premature termination.

Absence of a SIGMAT Project Management Body

The Commission does not have a project management team to oversee the implementation of the SIGMAT system in all member States. In the two directorates (customs and ITSD), the Commission pools resources on an ad hoc basis to manage the project.

The steering committee of directors general of customs administrations have not actively managed the project either. Instead, they participate in annual meetings called by the Commission where they are briefed on project progress.

Discussions are underway, however, with the SIGMAT Technical Committee (technical staff of customs administrations in the region), to constitute an oversight organ to supervise the SIGMAT system's maintenance and roll-out to the remaining member States.

Problems Faced by SIGMAT Project Headquarters

The SIGMAT project headquarters is the ECOWAS Centre of Excellence (an arm of the ITSD) located in the ECOWAS Bank for Investment and Development (EBID) building in Lomé. The centre was established by UNCTAD and the Commission in 2012 and adopted by the WCO for the implementation of the SIGMAT system.

It was in the Centre of Excellence that the SIGMAT system was built.

During the 2018 organizational reform of the Commission, both the administrative resources and directorates' services, located in city of Lomé in Togo, were combined. This meant that the centre's dedicated administrative support was removed, making procurement more complicated.

Further, at the time of writing, the centre had no dedicated Internet connection, but relied on using the Internet service of other entities in the same building.

Challenges at Country Level Implementation

The SIGMAT solution is a plug-in for existing customs software, making it appealing to ECOWAS member States' customs administrations.

Factors hampering the project's rapid expansion and advancement are:

- The COVID-19 pandemic that caused the suspension of all project programmes and activities due to lockdowns in all member States
- The inability of some ASYCUDA user member States to find the resources to deploy the ASYCUDAWorld system in customs border offices
- Difficulties of non-ASYCUDA user member States to develop SIGMAT data exchanges and functionalities in their own systems
- Some member States expecting the Commission to cover the cost of equipment, training and deployment
- Guinea–Bissau is yet to find funding to upgrade to ASYCUDAWorld, which would enable connection to the SIGMAT system
- The regional transit trade landscape has changed since end-2018. By moving away from single transit corridor projects and towards the interconnecting of all transit corridors via the SIGMAT system, a new regional deployment approach is being pitched for funders consideration during the next funding cycle
- Uncertainty caused by the COVID-19 pandemic means that it is hard to predict demand for the SIGMAT system project activities, but financial and funding plans should provide for a post COVID-19 increase in demand for SIGMAT deployments and operationalization in more ECOWAS member States

1.11. Proposed Solutions for SIGMAT Advancement and Deployment

The challenges enumerated are not insurmountable. The SIGMAT system has been six years in the making so its benefits, potential and future positive impact on cross-border transit trade in the region might need to be reinforced with leadership at the Commission and member States.

Given its successful implementation in five member States, it is now important to develop dedicated advocacy and communication tools to promote the benefits of SIGMAT as well as build awareness among key decision makers. For instance:

- UNCTAD could produce a short 15-minute documentary on international transit trade in West Africa, based on the experiences of the stakeholders involved, to promote the new robust solution that has replaced the ISRT logbook
- ECOWAS could use the documentary to inform and educate the Commission's top management, which is being changed in March 2022. The documentary could help them to:
  - Understand the versatile tool they have at their disposal to facilitate and accelerate regional economic integration and cooperation via the SIGMAT system
  - Recognize the need to reorganize, strengthen and resource the ITSD, specifically as the technical arm that supports the SIGMAT project
  - Realize the need to approve readily budgeted SIGMAT system activities
- UNCTAD / ECOWAS could use the documentary to educate:
  - Decision makers in each member State not yet operational on the SIGMAT system, as well as the new DGs of customs who may not be aware of the facility, to encourage them to commit to this network

- Development partners, urging them to revise their approach to regional cooperation by supporting the working, live, solution to interstate transit trade that the SIGMAT system provides in lieu of supporting other unproven regional trade projects

- UNCTAD / ECOWAS could organize field trips or study tours to SIGMAT-enabled customs border posts for relevant stakeholders

Every effort must be made to periodically inform stakeholders about developments at the SIGMAT project to raise awareness and motivate their involvement.

1.12. SIGMAT Immediate Future Perspectives

The Commission's SIGMAT Vision for the Immediate Future

Despite the challenges, the Commission is striving to build on achievements to date and is researching ways to implement other facilities on the network, such as:

- A regional guarantee system
- A certificate of origin
- The exchange of security information
- The sharing of other relevant trade information
- A mobile version of SIGMAT to permit the use of mobile equipment on the network

With regards to the regional guarantee system – with payment to be made at origin to cover the transit of goods to destination – the Commission is selecting companies who can provide regional insurance coverage for goods using the transit corridors. The regulatory text for this has already been prepared, awaiting validation by the member States.

SIGMAT Extensions Desired by Member States

Listed below are the additional capabilities that member States would like from the SIGMAT system:

- Deployment of a SIGMAT mobile application
- Inclusion of value and origin of the goods in the information on transit goods exchanged
- A unique identifier for each importer and/or exporter
- Satellite tracking of transit goods on the transit corridors to the level of customs checkpoint passed
- Menu options to print statistical reports
- The management of approvals for ECOWAS manufactured/originated goods

The Commission should:
- Establish a network to which member States can connect when ready
- Launch a SIGMAT project website

- Adopt a unique regional document stipulating the commitment and intended connection of all member States to the SIGMAT system instead of via bilateral agreements, which is the current norm
- Adopt regional texts to regulate regional transit trade
- Mobilize funds for the full realization of the network

1.13. ASYCUDA: The Beautiful Journey

The SIGMAT story cannot end without mention of the fruitful collaboration that has existed between UNCTAD and the Commission since the 1980s. The ECOWAS-UNCTAD relationship has been mutually enriching and beneficial to UNCTAD and ECOWAS member States, particularly when considering UNCTAD as a non-profit, assistance-oriented, organization.

There have been cases where some SIGMAT software development tasks have been carried out solely by the Commission without UNCTAD assistance, especially with regards to the mobile component of the SIGMAT system currently developed and yet to be deployed in member States.

What is certain is that this international collaboration has on one hand sown the seed that ECOWAS needs to realize its common market dream whilst on the other, UNCTAD has seen a value add in the manner in which the ASYCUDA software has become the bedrock for facilitating cross-border transit trade in West Africa.

In a similar vein and as one that has received assistance from UNCTAD and the WCO, the Commission is willing, in collaboration with UNCTAD and the WCO, to assist other Regional Economic Communities (RECs) in Africa to deploy the SIGMAT system should the need arise.

2. COUNTRY SPECIFIC SIGMAT DEPLOYMENT

Given the impact of COVID-19, health situation, it has not yet been possible to carry out an evaluation of the implementation of the SIGMAT system in the five user countries. This evaluation is to be carried out as part of a project signed with the World Bank. The assessment missions should take place by the end of the March 2023. The results of these assessments will be incorporated into a future revised version of this document.

2.1. Benin Customs Administration and SIGMAT

The Republic of Benin is one of the coastal member States in the ECOWAS region. It is located between Nigeria on the east, Togo on the West and Burkina Faso and Niger in the north. It is one of the five member States currently using the SIGMAT system. Below is a map of the Republic of Benin showing the town of Malanville in the north-east where the customs clearance office on the Cotonou–Niamey road corridor is located

Benin has been using a computerized customs clearance system since the 1980s. Currently, nearly all the country's customs clearance offices are computerized.

Benin's journey towards SIGMAT began with the ALISA customs interconnection project that was initiated by the Commission. Their customs transit procedure experts and information technology professionals participated in the regional brainstorming sessions that defined the project scope, prepared and validated the corresponding project documents and helped establish the project management structures i.e. the ALISA technical and steering committees.

Benin acceded to the SIGMAT system in 2019 for the purpose of trade facilitation and is of the opinion that the Commission's ALISA project contributed immensely to the creation of this network.

By invitation of the Commission, in 2015, Benin participated in the regional deliberations conducted on the PACIR functional and technical designs prepared by Burkina Faso, Côte d'Ivoire, Mali and Senegal, which were based on the ALISA manual of automated regional transit procedures.

In order to do this effectively, the administration set up a project management committee (comprising their officers in customs transit procedures, customs law and information technology in 2018) to oversee its accession to the regional automated transit system.

Currently, on the *Cotonou–Malanville–Niamey* transit route with Niger, only the northern border post of Malanville is on the SIGMAT system. Two other border posts have been deployed but are yet to be launched and made operational:

Figure 2. Map of Benin showing the towns of Malanville in the north-east on the Cotonou–Niamey road corridor with the Republic of Niger and Porga in north-west on the Cotonou–Ouagadougou road corridor with the Republic of Burkina Faso

Source: UN Geospatial, 2020.

Hillacondji–Coastal Border Post

Cotonou–Hillacondji–Lome for the southern link with Togo

Porga–Northern Border Post

Cotonou–Porga–Ouagadougou for the northern link with Burkina Faso

Benin custom officers observes that SIGMAT transit operations have contributed to an immense change in the relationship between customs administration and transit trade operators, who openly share their complete satisfaction with the SIGMAT system.

The data interchange facilities on the network have equally engendered intense cooperation and improved the relationship between different customs administrations, especially as they have opportunity regularly to deliberate on and evaluate statistics on data exchanged between themselves.

- However, Benin customs officers would have preferred for the SIGMAT system to be deployed to all member States once ready with a regional network rather than the bilateral connections that are currently used.
- The Commission could have assisted member States to build a cloud infrastructure to better enable exchange of data.

Benin would like to see the introduction of the following among SIGMAT facilities:

- Deployment of a SIGMAT project website
- Deployment of the SIGMAT mobile version
- Establishment of a functional regional network

2.2. Burkina Faso Customs Administration and SIGMAT

The Republic of Burkina Faso shares borders with five ECOWAS member States with whom transit trade is possible: Mali on the north/northwestern frontier; Côte d'Ivoire on the southwestern frontier; Ghana on the southern frontier; Togo and Benin on the southeastern frontier; and Niger on the eastern frontier.

Burkina Faso automated its customs goods clearance operations in 1991. By 2000, as many as 10 customs clearance offices were using ASYCUDA v2.51, including the head office in the capital, Ouagadougou. Today, the country's customs departments are using the latest version of the software, ASYCUDAWorld.

Burkina Faso customs administration first learned about the regional transit trade project in technical meetings organized by the Commission in 2009 where the ALISA regional transit trade interconnection project was explained and discussed to obtain the buy-in of member States.

Those meetings involved haulage operators, external trade statisticians, chambers of commerce, customs transit managers and customs information technology professionals from Burkina Faso.

Burkina Faso is of the view that the ALISA project contributed greatly to the eventual establishment of the SIGMAT system – specifically, the production of the ECOWAS manual of automated transit procedures was the foundation of the work undertaken by the four-country PACIR team that drew the design specifications for the SIGMAT system: Burkina Faso, Côte d'Ivoire, Mali and Senegal.

Their customs transit management and information technology teams participated in the PACIR project study that developed the technical and functional specifications for the PACIR network, that was later adopted by the Commission to implement the SIGMAT system. They also created project management structures – a PACIR project management team and a PACIR project steering committee.

In January 2019, Burkina Faso and Côte d'Ivoire customs administrations signed a memorandum of understanding (MoU) for the implementation of the SIGMAT system to interconnect their customs clearance systems for transit trade.

In February 2019, Burkina Faso customs administration deployed the SIGMAT solution at the customs border post of Niankologo, one of the customs border posts between Côte d'Ivoire and Burkina Faso. Other customs border posts followed suit. The table below shows all the deployed Burkina Faso border posts and their corresponding transit corridors (CI–Côte d'Ivoire; BF–Burkina Faso; NE–Niger; TG–Togo).

Table 1.
SIGMAT Transit Initiated from Neighbouring Countries or Initiated from the Burkina Faso Customs Border Post with Neighbouring Countries

Border Post		Corridor
Niangoloko	Border Burkina–Cote d'Ivoie	CI–BF /CI–BF–NE
Galgouli	Border Burkina–Cote d'Ivoie	BF–NE
Ouessa	Border Burkina–Ghana	BF–NE
Dakola	Border Burkina–Ghana	BF–NE
Koloko	Border Burkina–Mali	BF–TG / BF–NE
Faramana	Border Burkina–Mali	BF–TG / BF–NE
Djibasso	Border Burkina–Mali	BF–NE
Cinkanse	Border Burkina–Togo	TG–BF / TG–NE
Nadiagou	Border Burkina–Benin	BF–CI
Kantchari	Border Burkina–Niger	NE–BF / NE–BF–TG / NE–BF–CI
Thiou	Border Burkina–Mali (closed for security reasons)	

Figure 3. The map of Burkina Faso showing some of the customs border posts with neighbouring countries

Source: UN Geospatial, 2018.

The administration uses all the functionalities provided in the SIGMAT system which has received a satisfaction rating of 80%+ from both the customs administration and the trading community for bringing about faster customs transit procedures processing and contributing to shorter turn-around times for transit goods transport in the region.

In addition to current achievements, Burkina Faso customs administration hopes that:

- SIGMAT system functionalities will include satellite tracking of transit goods on transit corridors
- ECOWAS produces texts to regulate the automated regional transit trade
- ECOWAS mobilizes funds to enable the full realization of the SIGMAT system

2.3. Côte d'Ivoire Customs Administration and SIGMAT

In an effort to modernize, increase efficiency and capitalize upon growth in international trade, Côte d'Ivoire customs administration started using ASYCUDAWorld in June 2005.

Joining the other ASYCUDA-user customs administrations in the West African region, facilitated their involvement and participation in the trade automation projects of the Commission. These are projects aimed at promoting the region's trade integration activities through automation with specific immediate focus on the implementation of the regional customs transit interconnection network and the ultimate goal of a single automated customs clearance system.

The customs administration considers that the Commission's ALISA project was beneficial to their PACIR transit interconnection project in that through its efforts to collaborate with the other member States in transit automation, it paid specific attention to the ECOWAS' ALISA manual of automated transit procedures, which was adopted by ECOWAS finance ministers in November 2011 as the sole reference document.

The adoption of that manual was the outcome of 11 years of deliberation and consultation by the Commission with member States' experts, customs directors general and ministers of finance.

The interstate collaboration that occurred between Côte d'Ivoire and the other three member States of Burkina Faso, Mali and Senegal stemmed from an economic partnership agreement reached with the European Union, an integral part of which specified a financing agreement for a Programme of Assistance to Trade and Regional Integration (in French, PACIR – *Programme d'Appui au Commerce et l'Integration Regionale*) for Côte d'Ivoire with Mali and Burkina Faso. It is within this context that a project was initiated to interconnect the customs clearance systems of the three countries.

The countries opted for the solution to interconnect their customs systems while supporting trade security and facilitation, without neglecting issues related to the constantly changing trade environment.

The Côte d'Ivoire administration obtained significant technical assistance from the WCO for the leadership of the PACIR project. They organized meetings, saw to the establishment of project teams in the two other administrations and handled communication with financial and technical partners including inviting the Commission whenever those meetings assumed a regional nature.

The directors general of the three customs administrations adopted the technical and functional specifications for the interconnection platform in March 2015 in a joint meeting in Abidjan. The WCO encouraged the three administrations, who had then been joined by Senegal, to collaborate with the Commission to quickly deliver the project.

Among the organizations and countries invited by the PACIR member States to contribute to the search for a network solution to the project were: the World Bank; UNCTAD; the Commission; the WCO; Niger; Burkina Faso; Togo; Benin; Mali; and Senegal.

The PACIR team requested each customs administration to describe its transit procedure, based on which the functional and technical designs were drawn.

As managers of the PACIR project, Côte d'Ivoire customs administration had to provide guidance, explain the technical choices made and work for the adoption of the WCO data model in the PACIR data structures.

Figure 4. Map of Côte d'Ivoire showing Ouangolodougou and neighbouring member States –
Mali and Burkina Faso to the north; Ghana to the east and Liberia and Guinea to the west

Source: UN Geospatial, 2020.

Côte d'Ivoire envisages the following benefits to initiating the PACIR project:

• Facilitate and secure international trade
• Enhance the effectiveness and efficiency of transit procedures
• Enhance fraud prevention and detection
• Simplify and secure transit operations
• Enable electronic exchange of transit data
• Improve the business environment for economic operators
• Secure customs revenue
• Combat unfair competition
• Combat fraudulent spillage or bulk-breaking of goods in transit
• Facilitate data reconciliation

According to the Côte d'Ivoire customs administration, the participation of the Commission fast-tracked the delivery of the project as, during a meeting held in July 2017, they involved experts from all of the individual ECOWAS customs administrations when deliberating design solutions proposed by the PACIR team.

By and large, the functional and technical specifications were accepted and decisions taken to implement them, beginning with the development of the software component.

From September to December 2017, two developers from the Côte d'Ivoire customs administration were invited to participate in Lomé at a training programme designed for the selected group of 11 software developers drawn from the region's customs administrations. These were trained and equipped to build the software for the regional customs transit network.

The pilot implementation of the software was conducted between Côte d'Ivoire and Burkina Faso from 11 February 2019 to 11 March 2019 when the regional network was launched under its new name SIGMAT.

The SIGMAT system (road corridor version) went live between Côte d'Ivoire and Burkina Faso in April 2019. That same month, a live SIGMAT connection between Côte d'Ivoire and Niger was established. Deployment of the rail version followed in July 2021.

The Ouangolodougou customs border post in the north of Côte d'Ivoire is the transit clearance office for Côte d'Ivoire transit goods destined for the two member States of Burkina Faso and Niger.

Listed below are the road and rail transit corridors between the three member States:

Road Corridor

• Ouangolodougou (CI)–Niangolodougou (BF)
• Ouangolodougou (CI)–Niangolodougou (BF)–Tahoua (Niger)

Rail Corridor

- Ouangolodougou (CI)−Niangolodougou (BF)

The Côte d'Ivoire customs administration uses all of SIGMAT's functionalities and both customs officers and traders express 80% satisfaction with the system. Everyone is enthused about the speed gained in transit operations.

However, the Côte d'Ivoire customs administration would like to see the following improvements:

- The SIGMAT mobile version being available on the network
- The following extensions to the functionalities:
  - Validation of departure of transit cargo
  - Validation of exit of transit cargo
  - Validation of entry of transit cargo into another customs territory
  - Validation of arrival at destination of transit cargo
  - A regional guarantee system for transit goods
  - Regional texts to regulate transit goods transport and operations

With hindsight, Côte d'Ivoire customs believes that if collaboration with ECOWAS had started earlier, the SIGMAT system would have been deployed quicker. However, they welcome SIGMAT as a significant contribution to the realization of ECOWAS' mandate on regional integration.

2.4. Niger Customs Administration and SIGMAT

Niger has used the ASYCUDA system since the second version of the software was installed in the customs office of Niamey Route in 1987. Niger has used multiple ASYCUDA versions since that date and currently runs the latest, ASYCUDAWorld.

Niger customs officers and officials from related Nigerian governmental and private associations involved in customs transit participated in regional project meetings, with the transit interconnection project being named ALISA.

Subsequently, some ECOWAS member States initiated other transit automation interventions, delaying delivery of the ALISA project. However, Niger was not party to such interventions, e.g. PACIR.

Niger's association with the interconnection project received a boost in 2016 during the regional project task force meetings. Niger customs embraced the project for the following reasons:

- Reduced fraud perpetrated by traders involved in regional transit trade
- Improved security at inter-state road transit operations
- Facilitated trade through eliminating bulk-breaking
- Optimized revenue mobilization

The Niger customs administration set up a project management organ within the administration to coordinate their adoption of the regional transit network solution. It stayed on top of project advancements so that by the time the SIGMAT regional transit network software was ready for deployment in 2019, Niger was able to request that their customs information system be networked with that of Benin's for transit data and information exchange.

Currently, Niger is interconnected with Benin customs (June 2019) for transit trade through the Gaya land border post, with Burkina Faso customs (October 2019), Côte d'Ivoire customs (in July 2021) and Togo customs (October 2019) through the Torodi land border post on the SIGMAT transit network.

The land border posts enrolled on the SIGMAT system and their corresponding regional transit routes are detailed in the table below.

Table 2. Land Border Posts Enrolled on SIGMAT

Border Post	Neighbouring Country	Country of Departure	Country of Destination
Torodi	Burkina Faso	Togo, Côte d'Ivoire, Burkina Faso	Niger
Gaya	Bénin	Bénin	Niger
Konni	Nigéria	Bénin, Togo, Côte d'Ivoire, Burkina Faso	Niger
Dan Issa	Nigéria	Niger	Mali, Burkina Faso, Gambie, Sénégal
Matamèye	Nigéria	Niger	Mali, Burkina Faso, Gambie, Sénégal
Magaria	Nigéria	Niger	Mali, Burkina Faso, Gambie, Sénégal
Ayérou	Mali	Niger, Bénin, Togo	Mali
Nguigmi	Tchad	Niger, Bénin, Togo, Côte d'Ivoire, Burkina Faso	Tchad

Currently, Niger uses the standard SIGMAT modules with the following functionalities: cargo departure, notice of passage of cargo, cargo arrival; and the recovery procedures of status request, request for information, diversion and request for validation of diversion.

The implementation of SIGMAT has helped to improve the relationship between the Niger customs administration and traders involved in cross-border and international trade operations in that it has:

- Facilitated trade across the region by improving regional transit operations
- Reduced the time spent at borders by truckers and traders by no longer unnecessarily repeating manual procedures on goods declarations
- Eliminated bulk-breaking practiced by some traders and truckers between goods departure and arrival times
- Granted opportunity for overall cost reduction at the various levels of customs intervention as well as reduced costs for traders and truckers

Despite the high level of satisfaction of both traders and customs officials, the administration proposes the following functional improvements to SIGMAT:

- Management of transit goods guarantees
- Satellite tracking of transit goods by checkpoint passed
- Importer-exporter unique identifier
- Detailing the value and origin of goods provided on transit documents
- Approvals management of Community manufactured/originated goods

Figure 5. Map of Niger showing some of the border posts on the transit corridors with the neighbouring ECOWAS member States of Benin, Burkina Faso, Mali and Nigeria

Source: UN Geospatial, 2018.

2.5. Togo Customs Administration and SIGMAT

The Republic of Togo is a coastal country that is bordered on the north by the Republic of Burkina Faso, on the East by the Republic of Benin, on the West by the Republic of Ghana and on the south by the Atlantic Ocean. The customs administration of the Republic of Togo is one of the five customs administrations in the ECOWAS region currently using the SIGMAT regional transit network.

When the idea of a regional networked customs transit system was mooted by the Commission in 2000, the Republic of Togo expressed keen interest and participated in the regional meetings organized by the Commission. These included technical meetings involving officers responsible for the management of customs operations and customs operations computerization in all the region's customs administrations to discuss and refine the concepts.

Months later, those meetings were expanded to include officers from the chambers of commerce, customs house agents, associations of transporters and haulage operators, banks, the national statistics offices and ports authorities of coastal countries in the region of all the ECOWAS member States.

Togolese customs officers and officials from related Togolese governmental and private associations involved in customs transit were regular participants in those regional meetings, with some of the regional meetings being held in the Togo capital, Lomé.

The Togo customs administration demonstrated greater commitment to the regional customs transit interconnection project when the Commission adopted the PACIR project as a natural offspring of the ALISA project in 2016 and called the first meeting in the Commission's Centre of Excellence in Lomé to deliberate on and validate the functional and technical specifications for the network which the four PACIR member States had designed.

Togo was the fifth ECOWAS member State to join the PACIR member States and the third country to deploy SIGMAT for customs transit operations.

The Togolese customs administration joined the SIGMAT project to:

• Provide greater security to their inter-state road transit operations
• Reduce transit fraud
• Facilitate trade through the elimination of traders' bulk-breaking practices
• Optimize revenue mobilization

Though their accession to the PACIR project came late, Togo made a significant contribution to the project. Currently, the customs offices responsible for transit in Togo use all the SIGMAT functionalities and report 95% satisfaction with the provisions made available for the automated management of customs transit operations on the network.

This high level of satisfaction is equally expressed by the transit trade operators whose trade practices have been positively impacted by the system, thus contributing significantly to the improvement in working relations between the customs administration and their client base, the transit trade operators, because SIGMAT has:

• Reduced the cost for transit trade operators by removing the time (in days) spent at the borders to redo customs documents for the clearance of transit goods
• Simplified and facilitated the transit trade procedure itself
• Enabled truckers to gain time in days for the delivery of transit goods

Figure 6. Map of the Republic of Togo showing the major international roads/transit corridors with the neighbouring countries of Ghana on the left, Benin on the right and Burkina Faso in the north

Source: UN Geospatial, 2020.

Togo customs administration is of the opinion that the ALISA regional transit interconnection project for customs administrations of ECOWAS member States heralded the SIGMAT project.

In fact, the work that Togo customs carried out by developing software meant to manage transit operations with several countries was shared with the other customs administrations and the SIGMAT software project developers.

One of the staff of the Information Technology department of Togo customs participated in the development of the SIGMAT system solution in its entirety.

In order to establish interconnections with other member States, some of the countries have had to enter into specific agreements and memorandum of understanding. However, Togolese customs officials are of the view that interconnected systems could have been achieved more easily if a regional document that stipulates the commitment of all member States had been signed, removing the requirement for individual member States to enter into separate agreements or sign memorandum with different member States each time they wish to conduct automated transit operations with each other.

Togo is of the opinion that the absence of Ghana, Mali, Senegal and Nigeria in the current network configuration penalizes the countries already on the network since the transit trade corridors in those countries are not operational on SIGMAT, rendering all transit transactions on those corridors inaccessible through the network.

Regarding the improvement of functionalities and provisions made on the network, Togo is of the opinion that a lot more could be realized if the following facilities were available on the network:

• Provision of regional guarantees on goods in transit
• Management of approvals for Community originating goods
• Provision of unique identifier for each exporter and importer
• Provision of information on origin and value of the goods
• Menu options to print statistical reports
• Regional satellite tracking of transit goods even to the level of customs checkpoints by transit corridor