

Chapter 4 CURRENT STATUS OF INTERNATIONAL CORRIDORS

4.1 UEMOA Road Development Plan

4.1.1 PACITR

In 2001 UEMOA adopted an action plan, the Community Roads of UEMOA Infrastructure and Transport Action programme (PACITR), for infrastructure and road transportation for “harmonization of strategies related to transportation in each country and infrastructure development through an integrated programme in the community.” Major roads in the UEMOA Zone are developed according to this action plan.

In PACITR, the UEMOA Community road network is defined as follows:



Source: UEMOA

Figure 4-1 UEMOA Community Road Network

Table 4-1 List of UEMOA Community Roads

Code	Length (km)	Route
CU1	1,897	Dakar – Bissau – Abidjan – Lomé – Cotonou – Porto Novo – Igolo – Nigeria Border
CU2 a	4,158	Dakar (Kaolack) – Tambacounda – Kidira – Kayes – Nicoro – Bamako – Sikasso – Bobo Dioulasso – Ouagadougou – Niamey – Zinder – N’guiguimi – Tchad Border
CU2 b	788	Tambacounda – Kedougou – Saraya – Kenieba – Kita – Bamako
CU3 a	975	Algeria Border – Assamaka – Agadez – Zinder – Magaria – Nigeria Border
CU3b	605	Algeria Border – Tin Zaouten – Kidal – Gao
CU4	65	Mauritania Border – Niore of Sahel
CU5	1,754	Guinea Border (Kouremale) – Bamako – Ségou – Mopti – Gao – Tillabéry – Niamey
CU6	991	Boubouni – Odienné – Man – San Pédro
CU7a	760	Abdjan – Bouaké – Ferké – Ouangolodougou – Zegoua – Sikasso (CU2a)
CU7b	205	Ouangolodougou – Bobo Dioulasso
CU8	140	Ghana Border – Pô – Ouagadougou
CU9	800	Lomé – Atakpamé – Kara – Sinkansé – Tenkodougou – Koupéla
CU10	709	Cotonou – Dassa – Save – ParakouN’Dali – Kandi – Malanville – Gaya – Dosso
CU11	296	Tamabounda Guinée Border – Kandika – Bafata – Bambadinka
CU12	355	Bobo Dioulasso – Dédougou – Tougan – Ouahigouya
CU13	473	Ouagadougou – Ouahigouya – Koro – Mopti (CU5)
CU14	550	Ouagadougou – Dori – Téra – Farié – Namaro – Niamey
CU15	342	Kantchiari (CU2a) – Diapaga – Ganikoara – Kandi – Segbana – Nigeria
CU16	829	Niamey – Filingué – Tahoua – Agadez
CU17	116	Tahoua – Dabnou – Tsernaoua (CU2a)
CU18	993	Guinee Border(Sirana) – Odienné – Ferké – Tehini – Bouna – Ghana Border(Bouna) – Kara – Ouaké – Djougou – Affon – Dali – Tchicandou – Nigeria Border
CU19a	200	Guessabo – Yamoussoukro
CU19b	306	Bouaké – N’Bahiakro – Daoukro – Agnibilékrou – Ghana Border
CU19c	216	Ghana Border – Atakpame – Doumé – Tchetti – Savalou – Logozohe – Glazoué
CU19d	60	CU10 – Save – Oke Owo – Nigeria Border
CU20	486	Parakou – Djougou – Natitingou – Porga – Tindangou – Fada Ngourma
CU21	277	(CU18) – Boundiali – Tengrea – Kolondieba – Zantiébougou (CU2a)
CU22	324	Pâ (CU2a) – Dano – Cote d’IvoireBorder – Doropo – Bouna
CU23	82	CU9 – Dapaong – Korbongou – Ponio – Kompienga – Tindangou (CU20)
CU24	328	Ghana Border – Palimé – Nosté – Kétou – Illara – Nigeria Border
CU25	380	Sakonisé (CU2a) – Koudougou – Dédougou – Noua – Djibasso – Bénéna – San (CU5)
CU26	180	Ouagadougou – Léo – Ghana Border
CU27	293	Bobo Dioulasso – Fô – Koutiala – Bla (CU5)

Source: UEMOA

Table 4-2 Road Development Plans

	Basic plan	Targets	Contents
1	Development of international road infrastructure	<ul style="list-style-type: none"> • Standardization of periodic maintenance programme for inter-member road network • Standardization of paved road levels • Development of missing links in the member states. 	<ul style="list-style-type: none"> • Priority 1 : Paving of the roads connecting the capitals of the member states, development of missing links, improvement of road service • Priority 2 : Periodic maintenance and improvement of roads connecting intra-community cities, including the alternative road connecting the capitals. • Priority 3 : Interconnecting roads in the ECOWAS countries and extension of road networks in the member states.
2	Improvement of secondary roads near borders and branches	<ul style="list-style-type: none"> • Road development to contribute to poverty reduction in local villages 	<ul style="list-style-type: none"> • Perform pilot projects in five border areas subject to finance by the Fonds d'aide à l'intégration régionale (FAIR 1). The project selection criteria are based on (1) socioeconomic factors, (2) residents' participation, (3) environmental protection, and (4) regional integration.
3	Develop an information system for roads, transportation and traffic safety, and performance indicators.	<ul style="list-style-type: none"> • Development of information systems in each country to meet the demand. • Information transmission to be performed by the UEMOA Secretariat and each country. 	<ul style="list-style-type: none"> • Building systems for collecting, processing and managing information on road networks in each country. • Building technical and monetary systems for monitoring and evaluation of maintenance works. • Updating legal systems pertaining to road transportation and infrastructure. • System management shall be performed by the secretariat of UEMOA; links inserted in the home page of UEMOA. Information covered by 3 road infrastructure items, road transportation conditions and traffic safety on the UEMOA home page
4	International road transportation and transit facilitation	<ul style="list-style-type: none"> • Enhancement of competitiveness in the economy in UEMOA zone by smooth trading and removal of non-tariff barriers. • Reduction of transportation costs. 	<ul style="list-style-type: none"> • Removal of special permissions and checkpoints (refrain from setting 2 or more checkpoints in each corridor in the future). • Each country to implement policing vehicles in order to use standard vehicles in international transportation. • Obligate vehicles used to ship products to carry customs seal. • Promote freedom of international transportation and transit in each country. • Develop provisions for smooth transportation and smooth inspection escorting to the borders. The escort shall be removed in the future.
5	Traffic safety	<ul style="list-style-type: none"> • Standardization of transportation/traffic systems. • Promote traffic safety measures in member countries. 	<ul style="list-style-type: none"> • Prepare common road maps and promote traffic safety policies in each country. • Based on the response of each country, provide an UEMOA action plan. Collect traffic accident statistics, implement traffic safety training programme, etc.

Source: UEMOA

(1) Progress of Development

In 2010, evaluation of PACITR implementation was completed. As of 2001, it was planned to improve a total road length of 12,817 km. As of 2010, only 52 % of this target, or a total road length of 6,721 km had been improved. A breakdown of Plan 1 progress (Road Development Plan) showed 62 % for Priority 1; 49 % for Priority 2, and 58 % for Priority 3.

Table 4-3 Progress of road development under PACITR (as of 2010)

	Plan (km)	Done (km)	Actual rate	Implementation by other projects	Total (Km)
Maintenance of paved roads	2,640	952	36 %	409	1,361
Road rehabilitation	4,843	2,743	57 %	652	3,395
Paving	4,811	3,026	63 %	708	3,734
Special programme for Guin-	523	0	0	0	0
Total	12,817	6,721	52 %	1,769	8,490

Source: UEMOA

The improvement of secondary roads near borders and branches in Plan 2 has not progressed well due to a shortage of funds and difficulty in selecting the subject roads. The development of an information system in Plan 3 is underway now; the work did not start until 2007. Concerning policing of overloading, the UEMOA Summit meeting in 2005 adopted a “Provision concerning standards regulating size, weight, and axle load, and management procedures for large trucks running in the UEMOA zone.” This provision went into effect in 2007. However, the provision has not been enforced well up to now. Concerning international road transportation and the smoothing of transit in Plan 4, the Committee for Smoothing Transportation in Each Country, the Committee for Monitoring Abnormalities (Overloading, etc.) on Arterial Roads, and the Committee for Monitoring the Removal of Non-tariff Barriers were set up and construction of a One Stop Border Post (OSBP) was completed. However, the removal of non-tariff barriers, smoothing of international transportation and transit, and transportation cost reductions have not been achieved and remain current issues. Concerning traffic safety measures in Plan 5, a UEMOA provision was adopted in 2009. It had not been made effective and enforced as of 2011.

In addition, the UEMOA headquarters has conducted a survey for developing the intra-community road network of each member country, taking advantage of Regional Integration Assistance Funds (FAIR). In 2009, a survey was conducted of road rehabilitation equivalent to 2,210km, using a budget of 6.3 billion CFA.

It was expected that PACITR would be implemented between 2001 and 2011. Extending the plan to 2016 due to low implementation rate is now being considered.

(2) Priority Projects

UEMOA had discussions with the African Development Bank according to PACITR and selected four corridors to be developed as priority projects in 2004.

Table 4-4 UEMOA Priority Projects (2004)

	Name of corridor	Project budget/lender	Progress of construction (As of Oct. 2010)
1	Programme Routier1 (PR 1) Tema-Ouagadougou- Bamako Corridor (Ghana - Burkina Faso= Mali) CU2a-CU8	CFA 147 billion (as of 2003) AfDB, BOAD, EU, IDA, DANIDA, and Governments of Ghana, Burkina Faso and Mali	Paving 1,050 km Constructed 2 OSBPs Enlightened the local residents on environmental issues, AIDS countermeasures and traffic safety.
2	Programme Routier 2 (PR 2) Bamako = Dakar (Mali/Senegal) Southern route(Kita-Saraya-K edougou) CU2b	CFA 156 billion AfDB, BOAD, BID, JICA, and Governments of Mali and Senegal	Kati-Kita 162 km pavement, improvement of Kita-Falémé 259 km and Falémé-Saraya 51 km and construction of 3 bridges Implemented enlightenment on AIDS
3	Programme Routier3 Ouagadougou=Dori =Téra=Niamey (Burkina Faso/ Niger) CU14	CFA 24.9 billion(as of 2006) AfDB, and Governments of Burkina Faso and Niger	Developed 91 km between Dori and Tera; paved 60 km of local road (connected to the corridor)
4	Programme Routier 4 Dakar=Conakry (Labé-Medina-Gounass -Seriba) (Guinea/Senegal) CU11	CFA 114 billion(as of 2007 AfDB, ARAB 2, BOAD, FSD, FKDEA 3, OPEP, BADEA, BID, UEMOA, and Governments of Guinea and Senegal	Paved 385 km (Labé – Medina – Gounass) Improved 89 km among Medina – Gounass – Tambacounda Paved local roads connected to the corridor (190 km)

Source: UEMOA

(3) UEMOA Corridors

UEMOA selected 11 routes as UEMOA Corridors at the UEMOA Summit Meeting in 2009 (Decision N°39/2009/CM/UEMOA). Thereafter Corridor 7 was divided into two routes. Another corridor was subsequently added to connect Tema Port to the landlocked countries. UEMOA Corridors, which are international corridors, have been assigned the highest priority in the UEMOA road plans under PACITR.

Table 4-5 List of UEMOA Corridors

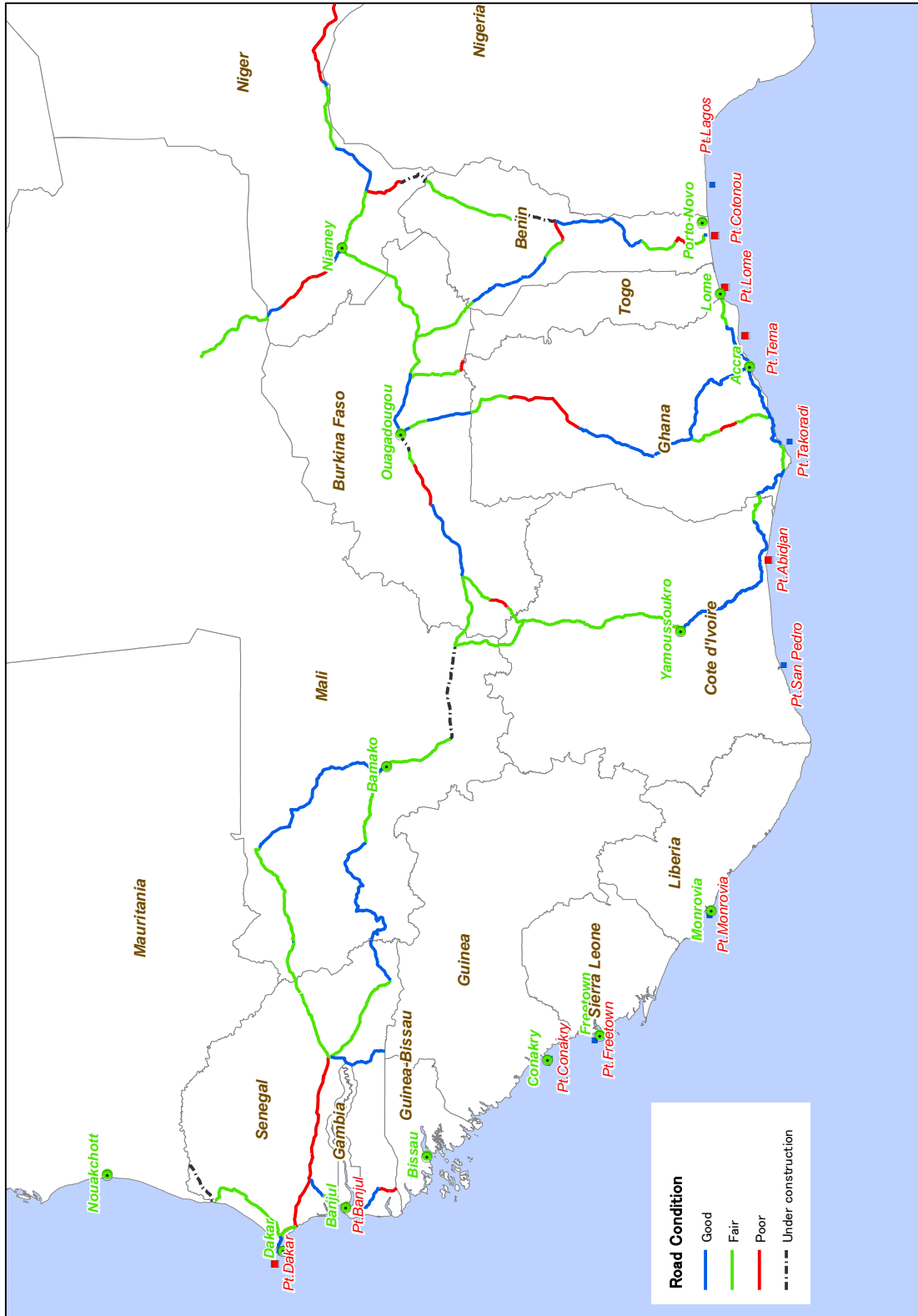
Corridor 1	Abidjan - Yamoussoukro - Ferkéssédougou - La Léraba - Ouagadougou - Kantchari - Makalondi - Niamey
Corridor 2	Abidjan - Yamoussoukuro - Ferkéssédougou - Zegoua - Sikasso - Bougouni - Bamako
Corridor 3	Cotonou - Malanville - Niamey - Gao
Corridor 4	Cotonou - Tindangou - Ouagadougou - Hérémandkono - Bamako
Corridor 5	Lomé - Cinkansé - Koupéla - Kantchari - Makalondi - Niamey - Gao
Corridor 6	Lomé - Cinkansé - Ouagadougou - Hérémandkono - Bamako
Corridor 7-1	Dakar - Kaolack - Tambacounda - Dibouli - Kayes - Bamako - Hérémandkono - Ouagadougou - Katchari - Makalondji - Niamey
Corridor 7-2	Dakar - Kaolack - Tambacounda - Kédougou - Kita - Kati - Bamako - Hérémandkono - Ouagadougou - Katchari - Makalondji - Niamey
Corridor 8	Dakar - M'Pack - Bissau
Corridor 9	Bissau - Pirada - Tambacounda - Kédougou - Kita - Bamako
Corridor 10	San Pedro - Odienné - Bougouni - Bamako
Corridor 11	Abidjan - Bouna - Gaoua - Pa - Ouagadougou - Niamey
Corridor 12	Téma - Kumasi - Tamale - Navrongo - Pô - Ouagadougou - Bobo Dioulasso - Sikasso - Bopugouni - Bamako

Source: UEMOA



Source: UEMOA

Figure 4-2 UEMOA Corridors



Source: JICA Study team based on the hearing survey in each country

Figure 4-3 Road Conditions of JEMOA Corridors (2011)

4.2 Current Situation of UEMOA Corridors

In this section, we summarize the section outline and current status of UEMOA Corridors in the areas subject to this survey. Each corridor in this section is shown as a link between major cities.

Table 4-6 List of Roads between Major Cities

Corridor	Origin Destination	Road length
1 Dakar - Tambacounda - Kayes - Bamako (North) (UC7-1)	Dakar Bamako	1,540km
2 Dakar - Tambacounda - Kita –Kati –Bamako(South) (UC7-2)	Dakar Bamako	1,300km
3 Bamako - Sikasso - Ouagadougou Route (UC1,2,4,6,7,11)	Bamako Ouagadougou	971km
4 Ouagadougou – Niamey (UC1,5,7,11)	Ouagadougou Niamey	420km
5 Niamey – Gao (UC3,5)	Niamey Gao	234km
6 Bamako –San Pedro (UC10)	Bamako San Pedro/Port	985 km
7 Ouagadougou – Bobo Dioulasso – Abidjan (UC1,2)	Ouagadougou Abidjan /Port	1,148 km
8 Ouagadougou –Abidjan(East route) (UC11)	Ouagadougou Abidjan /Port	1,030 km
9 Ouagadougou – Accra (UC12)	Ouagadougou Accra Tema Port	1,040 km
10 Ouagadougou – Lomé (UC5)	Ouagadougou Lomé /Port	948 km
11 Ouagadougou – Cotonou (UC4)	Ouagadougou Cotonou/Port	1,060 km
12 Niamey – Cotonou (UC3)	Niamey Cotonou/Port	1,050km

Note: UC = Code of UEMOA Corridors

Source: JICA Study team

(1) Dakar - Tambacounda - Kayes - Bamako (North)

This Dakar-Bamako axis is part of the most important international corridor connecting the capitals of Mali, Burkina Faso, Niger, Chad and Nigeria according to the NEPAD programme. This route is not only used for trade between Senegal and Mali, it is also important as a transport route from the port of Dakar to Mali.

This corridor is in the form of a network with branches running north and south toward Bamako in Tambacounda. Road transport from Dakar to Bamako began in 2001, after the construction of the road between Kayes and Bamako.

The Kaorack-Tambacounda-Kidira section was constructed with EU support in 2007 and the Fatick-Kaolack section was rehabilitated with AfDB support in 2009.

Several projects are being implemented to improve current issues existing between Dakar and Bamako, such as heavy traffic, a huge number of control points, and axle loads causing a rapid deterioration of road surfaces. These include the following projects:

- To create weight bridges;
- To construct a Dakar-Diamniadio highway (financed by AfDB);
- To reduce control points (e.g. “BORDERLESS” <http://www.borderlesswa.com/>), etc.

From the institutional and legal viewpoint, other issues exist which are related to the fact that the conventions on road transport and interstate transit, such as ECOWAS and the TRIE (Transit Routier Inter Etats), which were signed by all UEMOA states, have yet to be implemented.

(2) Dakar - Tambacounda - Kita –Kati –Bamako (South)

The Kédougou-Saraya-Kita road construction project is part of the development programme for the Dakar-Bamako south corridor. This project includes rehabilitation of the paved road between Kédougou and Saraya and construction of a new road between Saraya and Kita (Mali). The total length is approximately 371 km, including 112 km in Senegal supported by a group of donors, including the IDB (Islamic Development Bank), AfDB, WADB and JICA.

The project, with the following components, was completed in 2009:

- To rehabilitate the road between Kédougou and Saraya, 61 km (partly financed by JICA);
- To construct a new road between Saraya and Musalaa (border), 51 km;
- To construct the Faleme bridge (JICA grant aid project).

It should be noted that the south corridor has the advantage of being 200 km shorter than the north. The construction work was completed in 2012, but the customs business has not been started, as the corridor is not working.

(3) Bamako - Sikasso - Bobo-Dioulasso - Ouagadougou

This route is an arterial road connecting the Capital of Mali and Bobo-Dioulasso, the second largest city in Burkina Faso, and the Capital of Burkina Faso. It is a route connecting No.1, 2, 4, 6, 7 and 11 of the UEMOA Corridors. Sikasso of Mali, and Bobo-Dioulasso, a city that is a commercial center on the Burkina Faso side, are important traffic points for trade with Cote d'Ivoire.

All routes are paved by asphalt, but the pavement in some sections is badly damaged and requires periodic rehabilitation.

- Bougouni – Kouale (57 km): Under rehabilitation (WADB 6 milliards) by (Chinese construction company)
- Kouale – Pont Bagoé – Sikasso (151 km): under rehabilitation (AfDB 14.9 milliards)
- Bobo Dioulasso – Orodara – Frontiere du Mali (130 km): considering financing for rehabilitation (35 milliards), study completed for IDA funds (2006, 2009)



Good road condition
surroundings of Ouagadougou



Good road condition
near Boromo



Good road condition
In Bobo-Dioulasso



Insufficient width
near Hounde

Source: JICA Study team (29/May/2012)

Photo 4-1 Road condition of Bobo-Dioulasso – Ouagadougou



Source : Ministry of infrastructure in Burkina Faso

Photo 4-2 Road condition of Bobo Dioulasso – Orodara – Frontiere du Mali

(4) Ouagadougou – Niamey

This route is an arterial road connecting the Capital of Burkina Faso and the Capital of Niger. It links UEMOA Corridors 1, 4, 5, 7 and 11. It functions as an access road from Ouagadougou and Niamey to the coastal countries and seaports.

All routes are two-lane asphalt roads, but the pavement is badly damaged in some sections, and they require periodic rehabilitation.

The border customs are in Kantchari of Burkina Faso and Torodi which is about 50km to the direction of Niamey from the border of Niger.



Good road condition



Good road condition

Source: JICA Study team

Photo 4-3 Road condition of Ouagadougou – Niamey

(5) Niamey – Gao

The Niger capital Niamey and Gao, a city in northern Mali are connected by this route, which links UEMOA Corridors 3, 5 and 11.

The pavement condition is good for about 50km from Niamey, but the pavement between Gotheye and Ayorou (140 km) is bad and undergoing rehabilitation work.

(6) Bamako -San Pedro

Running north to south in the western part of Cote d'Ivoire, this corridor connects Bamako and the port of San Pedro and 10 of the UEMOA Corridors.

Asphalt pavement has been completed between San Pedro and Odiénné (676 km), but it is reported to be badly damaged. A survey is being considered to prepare for rehabilitation. However, development is in progress from Odiénné to the border of Mali, and no F/S has been considered. It is thought that this route is of low priority.

(7) Ouagadougou – Bobo Dioulasso – Abidjan

With a length of 1,148 km, the Ouagadougou – Bobo Dioulasso – Abidjan corridor connects both of the main Burkina Faso cities to the Ivorian port of Abidjan. It provides the advantage of an alternative transport mode: road and rail over the entire routing. It connects to 1, 2 and 11 of UEMOA Corridors.

The road routes are asphalted from end to end, and its condition is deemed average overall. However, some sections are severely degraded, particularly the Ivorian section.

1) Road Conditions in Burkina Faso

The section in Bobo Dioulasso-Bamfora-Niangoloko (Border City) is asphalted, but it has potholes in some parts, and proper operation and maintenance is an issue. The road width is not sufficient for large trucks to pass each other. When passing, they have to run on the shoulders, which become damaged early. Also, the section between Ouagadougou and Bobo Dioulasso is as described in the report on the Bamako-Ouagadougou route.

2) Road Conditions in Cote d'Ivoire

All sections are asphalted but improvement and appropriate operation and maintenance are needed. The section between Abidjan and Pakobo is developed as an expressway (*l'Autoroute du Nord*) and the extended section to the capital Yamoussoukro is under construction.

- Yamoussoukro – Bouake – Ouangolougou (383 km): Improvement completed, F/S (UEMOA funds), construction (funding undecided).
- Yamoussoukro – Bouake (96 km): Plan to extend expressway, F/S (UEMOA funds)

The regional conventions notwithstanding, traffic on the routes suffers from multiple bottlenecks linked to encumbrances, multiple checkpoints and the practice of bribery. Investigations about the corridor conducted by USAID show that the number of checkpoints remains high, up to “One (01) checkpoint every thirty (30) km.” There are about 40 checkpoints along the route.

The dilapidated state of the railroad leads to limited operating speed and significant slow-downs. The operation is handled by a private company, SITARAIL, under a concession contract with the two states of Burkina Faso and Cote d’Ivoire.



North motorway
In Abidjan



North motorway
surroundings of Abidjan

Source : JICA Study team(24/Apr/2012)

Photo 4-4 Highway of Nordno (Abidjan)



Occurrence of Pothole



Occurrence of breakdown car

Source : JICA Study team(29/May/2012)

Photo 4-5 Road condition of Bamfora – Niangoloko



Bobo Dioulasso Station



Railroad near Banfora

Source :JICA Study team(24/Apr/2012)

Photo 4-6 Railroad condition

(8) Ouagadougou –Abidjan(East route)

This route runs north-south in the eastern part of Cote d'Ivoire. It is expected to be the fastest connection between Ouagadougou and Abidjan. It connects to 11 of the UEMOA Corridors.

In Cote d'Ivoire, pavement has been completed between Abidjan and Bouna but its operation and maintenance is an issue. Supported with WADB funds, a F/S has been completed on the section between Bouna and the border with Burkina Faso. As of Nov. 2011, they are looking for loans.

Construction on the Burkina Faso side is slow and it is expected that a considerable amount of time will be required to open the route.

(9) Ouagadougou – Accra(Port of Tema)

Extending over a 1040 km network, this route connects the capital of Ouagadougou to the port of Tema in Ghana. It serves as the main road from Burkina Faso to Ghana and Port Tema for transit freight. The route is asphalted from end to end, and its condition varies from average to severely degraded depending on the section. It connects to 1, 4, 5, 7 and 11 of the UEMOA Corridors.

(10) Ouagadougou – Lomé (Port of Lomé)

This route extends over a 948 km network, connecting the capital Ouagadougou to the port of Lomé. The route is asphalted from end to end, and its condition varies from average to severely degraded depending on the section. For example, the condition between Bittou and Cinkansé is very poor. Traffic conditions along the entire corridor are deemed average overall. It is a route connecting 5 and 11 of the UEMOA Corridors.

This is a main route for transit freight in Burkina Faso, and improvement is awaited as a F/S and construction have been completed with funds of UEMOA and AfDB.

At the border city of Cinkanse, an OSBP was set up for the first time in the UEMOA region in October 2011. However, it is not operating as expected due to organizational issues, and there are problems with integration of information systems.

1) Road Conditions in Burkina Faso

- Koupéla – Bittou – Cinkansé (150 km): Improvement with AfDB funds (grant of \$125.7 million, loan of \$32 million)

2) Road Conditions in Togo

- Cinkansé – Tandjouare (81 km): Rehabilitation and construction (EXIM Bank China)
- Blitta-Sokodé – Kara (155 km) : F/S completed (UEMOA)
- Aledjo – Defale detours: Under construction (EXIM Bank China)
- Aouda – Blitta (48 km) : Rehabilitation and construction (AfDB)
- Blitta – Atakpame (102 km): Rehabilitation. F/S completed (UEMOA), construction (AfDB)
- Togo national sections: F/S for four lanes (UEMOA)



Pavement deterioration due to excessive heavy trucks demand

Source : JICA Study team (18.June.2012)

Photo 4-7 Near the entrance to Sahel Terminal and Lomé suburb

(11) Ouagadougou - Cotonou

This route starts from Fada-Ngourna, Burkina Faso, passes through Parakou of Benin and reaches Cotonou Port. All sections are paved, but the pavement condition of a 70 km section north of Parakou is very bad. This route is mainly used for petroleum fuel transportation. It connects to 4 and 11 of the UEMOA Corridors.

(12) Niamey – Cotonou

This route connects Niamey, the capital of Niger, and the port of Cotonou. It connects to 3 and 11 of the UEMOA Corridors.

As the shortest route between Niamey and Cotonou Port, it has become the most important international corridor for Niger. Many cargo trucks travel to the north of Nigeria, starting from Cotonou and going through Niger. It is an indispensable corridor for trade in the area.

For Benin which stretches north-south, this route is a backbone road, forming the national land.

1) Road Conditions in Benin

Benin roads have no severe grades. They are relatively flat. Damaged road surfaces exist between Allada and Dassa (150 km) in South Benin. It is reported to be under rehabilitation.

2) Road Conditions in Niger

The sections between Niamey and Dosso are in good condition. The section between Dosso and Bella (83 km) is asphalted, but the width is not sufficient for large trucks to pass each other. There are many pot holes and areas with stripped pavement, requiring improvement. F/S (2013) has been conducted supported by EU funds.

In the 72 km section from Bella to the Benin border town, Gaya, improvement work is ongoing with support from AfDB and WADB funds. Currently, asphalt pavement has been totally removed, and driving on an unpaved road is inevitable. The volume of truck traffic is great in the sections in Gaya where border customs clearance is required for transit, and the road is narrow and severely degraded.

Damage to vehicles and freight is unavoidable in such road conditions. The large cargo trucks are old, and breakdowns frequently occur. The investigation team saw 30 or more vehicles under repair on the route at the time of the site survey.

Section 1 : Dosso-Bella section

Length : about 87 km

Status : Narrow width, pot holes, pavement stripping

Plan/Construction: Survey and plan completed by EU (2012). Donor is undecided.

Section 2 : Bella-Gaya (Benin Border) section

Length : about 70 km

Status : unpaved

Plan/Construction: Construction proceeding with co-financing by AfDB and WADB. Construction of some bridge sections has begun. The fund contribution has not reached 100 %.

In a hearing survey conducted by the Ministry of Transportation, the construction of the sections mentioned above was mentioned as a top priority in road development in Niger.



Occurrence of breakdown car

Source : JICA Study team (8/May/2012)



Inadequate road width

Photo 4-8 Road condition of section Dosso – Gaya



Under construction rehabilitation project

Source : JICA Study team (8/May/2012)



Photo 4-9 Road condition of section Bella – Gaya



Pavement deterioration
due to excessive heavy trucks demand



Many high-age trucks

Source : JICA Study team (8/May/2012)

Photo 4-10 Road conditions in Gaya

4.3 Corridor Management Organizations

Management of the corridor is governed by multiple bilateral agreements which encompass the transit modes and processes along the Corridor. These include: (i) a road agreement, (ii) a port agreement, (iii) a rail agreement, (iv) a maritime agreement and (v) a transit agreement.

In addition to these agreements, a certain number of sub-regional conventions are established under a communal regulatory framework. This includes the Convention on the Inter-State Road Transit (ISRT) of ECOWAS, which administers the common international customs procedures in 16 countries and the Convention on the Inter-State Road Transport (TIE) which governs access to the inter-state road network for professional transport operators.

The UEMOA selected corridors, and the established management organizations as outlined below.

Table 4-7 Corridor Management Organizations

	Tasks	Composition/Funds
Policy Committee	<ul style="list-style-type: none"> • Adoption of steering committee programmes and approval of activities reports. • Activity report submitted to related governments once a year. <p>Decisions on sources of funds and adoption of budgets of the corridor steering committee.</p>	<ul style="list-style-type: none"> • Ministers of Transportation of the Corridor Countries
Steering Committee	<ul style="list-style-type: none"> • Implementation of PACITR and other intra-community programmes in each corridor. <p>More detailed tasks are listed below.</p> <ul style="list-style-type: none"> • Analyze disturbances against smooth traffic and take necessary measures. • Monitor implementation of provisions aiming at smoothing corridor transportation and transit. • Implement impact assessment for smoothing corridor traffic. • Collection and communication of information for smoothing corridor traffic/transit. • Instruction and enlightenment of users on decisions pertaining to the corridors. • Measures for compliance (by users) with rules pertaining to smoothing corridor traffic. 	<ul style="list-style-type: none"> • Eight representatives from each corridor country (four from government, and four from private sector). • The funds are sourced from contributions of each corridor country, private sector as committee members, private firms relating to the corridors, and finance from donors.

Source : JICA Study team based on information from UEMOA

4.4 Current Status of Railroads

In the UEMOA region, railroads with a total length of over 3,000km have been developed. Since these railroad facilities are in a very poor condition due to deterioration, they are not unable to fully function. The following is the current status and major issues of their transport capacity, which was found through interview surveys with local governments and Railroad companies.

4.4.1 Current Status of Development

(1) Only bilateral networks can be found

Currently, Railroads that function as international corridors include the Dakar-Bamako railroad (TRANSRAIL) and the Abidjan-Ouagadougou railroad (SITARAIL). Although railroads are in place in each of Togo, Benin and Ghana, they are used for domestic transport needs and do not function as an international logistic mode.

(2) Deteriorated rail tracks and systems

Rail tracks are vulnerable and at the same time wide in variety. The tracks were laid down as early as the 1920s to the 1970s and about 50 to 90 years have already passed. Railroad structures have aged significantly and are not in a condition to meet transport needs fully.

Their transport capacity is vulnerable because of deteriorated train cars and the poor capacity of freight cars. In addition, it is difficult to procure spare parts when any malfunction occurs, which results in a deteriorated capacity in operating rate. Inefficiency is also caused by the fact it is difficult to standardize locomotive engines and freight cars that are wide in variety. Transport needs are not met because freights are kept waiting at the ports of Dakar or Abidjan where freight cars are scarce.

(3) Low-speed traveling and frequent derailment

Because of deteriorated rail tracks, enough traveling speed is not gathered and derailment occurs frequently, which means only a very low level of service is offered.

In the section between Dakar and Bamako, an average traveling speed of less than 20 km/h can only be gained. In some sections, where there is a deteriorated bridge for example, the speed limit is established at 10 km/h. The average traveling speed along the Abidjan-Ouagadougou section is over 30 km/h, which is a better than that of the Dakar-Bamako section. The former, however, operates using a single track, which causes a concern because freights are kept waiting for their turn to be transported. There are also safety issues, for example, more than 100 derailment accidents occur annually (along the Dakar-Bamako section).

Table 4-8 List of Major Railroads in Operation

Section	Total length	Operator	Operational status
Dakar - Bamako (Senegal-Mali)	1286 km(Total) -644 km(SG) -642 km(ML)	TRANSRAIL	(Freight) 1 train/day *Target: 2 trains/day (Passenger) 3 trains/week
Abidjan-Ouagadougou-Kaya (Cote d'Ivoire-BurkinaFaso)	1260 km(Total) -638 km(CI) -622 km(BF)	SITARAIL	(Freight) 1 train/day *Target: 4 trains/day (Passenger) 3 trains/week *No operation between Ouaga- dougou and Kaya
Lomé – Blitta (Togo)	276km (Only domestically in Togo)	Togo Rail (Only for freight)	Railroad exclusive for phosphate rock transport
Cotonou – Parakou (Benin)	438km (Only domestically in Benin)	OCBN (Only for freight)	3 trains/week
Total	3260 km		

Source: Based on the railroad strategy of UEMOA and the result of an interview survey.

4.4.2 Vision for Development

Under UEMOA, the railroad development strategy (*Etude pour l'elaboration d'une strategie de developement du transport ferroviaire dans l'espace UEMOA*) has been in place so that rail-road development can be enhanced. In the strategy, the need for new rail tracks is indicated as shown in the following table. Future plans call for a network connecting the capitals of each country. Development utilizing private funds is sought, but achieving this in a short period is considered difficult because of lack of profitability.

Table 4-9 Development Plan of Railroad

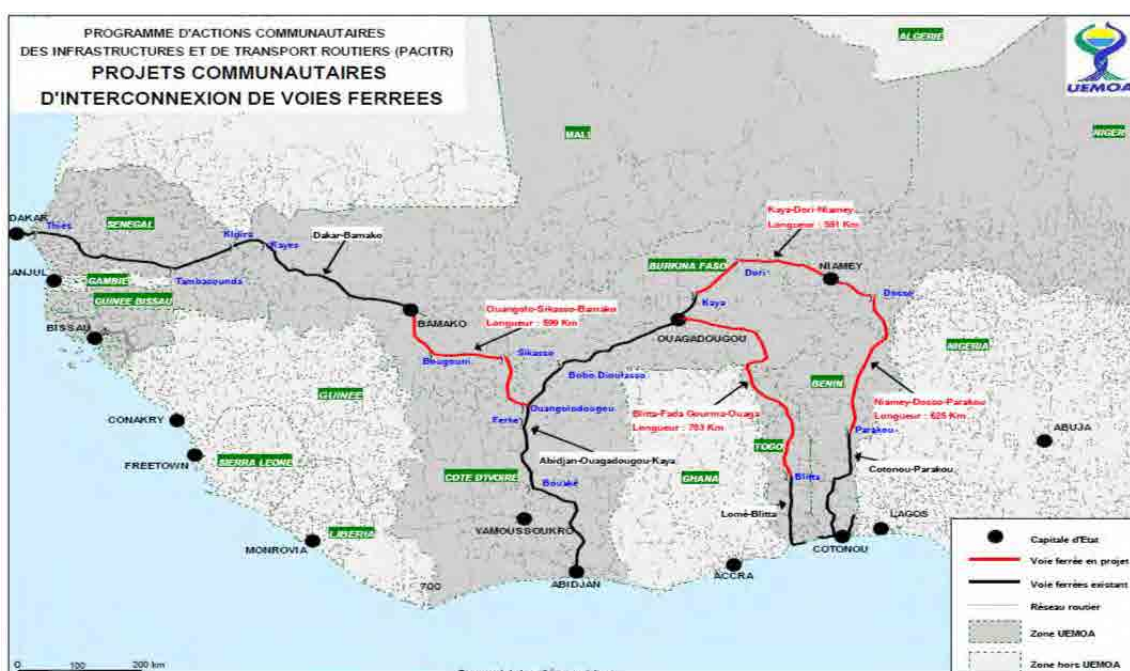
	Country	Route	length
1	Mali-Cote d'Ivoire	Bamako-Sikasso-Ouangolo	599km
2	Burkina Faso-Niger	Kaya-Dori-Niamey	551km
3	Togo -Burkina Faso	Blitta — Fada Ngourina-Ougadougou	783km
4	Niger-Benin	Niamey –Dosso-Parakou	625km
5	Mali- Burkina Faso	Sikasso-Orodara-Bobo Dioulasso	164km
6	Cote d'Ivoire-Mali	San Pedro-Man-Odiénné-Bamako	900km
Total			3,622km

Source: Based on the railroad strategy of UEMOA

In the strategy, it is indicated that a total of 2,500 km of new tracks be developed as a priority as shown in 1 to 4 in Table 4-9. The project size is expected to be 2,370 billion CFA including systems. Meanwhile, prior to the development of new tracks, it is necessary to rehabilitate existing tracks (3,300km) and the project scale is expected to be 1,080 billion CFA.

It is targeted that the development of tracks will be promoted by utilizing private companies in a PPP-based approach like SITARAIL. By considering the transport needs and investment actually made in rehabilitation projects so far, significant efforts will be required to realize the planned new track development.

Major donors involved in the development of corridors are UEMOA, AfDB and WADB. F/Ss currently under consideration at the UEMOA headquarters will target the following 3 routes.



Source: UEMOA railroad strategy

Figure 4-4 Railroad network project

Table 4-10 F/S for Railroad Development by UEMOA

Route	Contents
Dakar-Bamako-Ouagadougou	Investigation is underway. Dakar-Burkina Faso Border: US Trade & Development Agency Burkina Faso Border-Ouagadougou: UEMOA Headquarters
Parakou – Niamey	Parakou-Dosso: Niger-Benin are conducting survey. Dosso–Niamey: UEMOA Headquarters is waiting for execution of a contract.
Abidjan -Niamey	EU signed an implementation contract, but the study was temporarily halted due to security problems in Cote d'Ivoire.

Source : JICA Study team based on information from UEMOA

4.5 Summary of Chapter

(1) Road network

The routes other than the Bamako-San Pedro Corridor and Ouaga-Abidjan (Ouest) Corridor are asphalt-paved road networks, serving as international corridors. Despite of the road construction has already been finished; the Dakar-Bamako (South) Corridor is currently not functioning as an international corridor because a customs clearance service has not been established. Also, there is multiple routes providing access from the landlocked countries to ports.

(2) Road condition

Although corridors currently in operation have already been improved through asphalt paving, we also find that many road sections are deteriorating greatly. Also, some road sections are found to require large-scale rehabilitation. Specifically, there is a concern about road sections that are badly maintained in inland areas or areas close to the border far from the capital.

When such large-scale rehabilitation works are required in such places as the border section between Niamey and Benin, the work period hinders the traffic there to make traveling along the road inefficient and unsafe.

Only international corridors currently in operation can connect countries and it is highly important to keep them as permanent logistic routes through appropriate management and maintenance.

In addition, except for roadways around the capital's suburban areas, the UEMOA road maintenance standards (Caractéristique de construction et d'aménagement des routes communautaires) requiring roads to have at least a 7.00 m traffic lane width and a 1.50 m shoulder width are not fully met.

The degradation of road conditions is mainly due to the following causes:

- i. Problem of drainage;
- ii. Lack of weight control;
- iii. Poor construction materials;
- iv. Inadequate construction work;
- v. Lack of preventive maintenance.

(3) Railroad

Railroad service is available between Mali and Dakar (TRANSRAIL) and between Ouagadougou and Abidjan (SITARAIL). However, the transport capacity is insufficient to meet demand because of obsolete facilities and lack of equipment.

Future plans call for a network connecting the capitals of each country. Development utilizing private funds is sought, but achieving this in a short period is considered difficult because of lack of profitability.

Chapter 5 CURRENT STATUS OF INTERNATIONAL PORTS

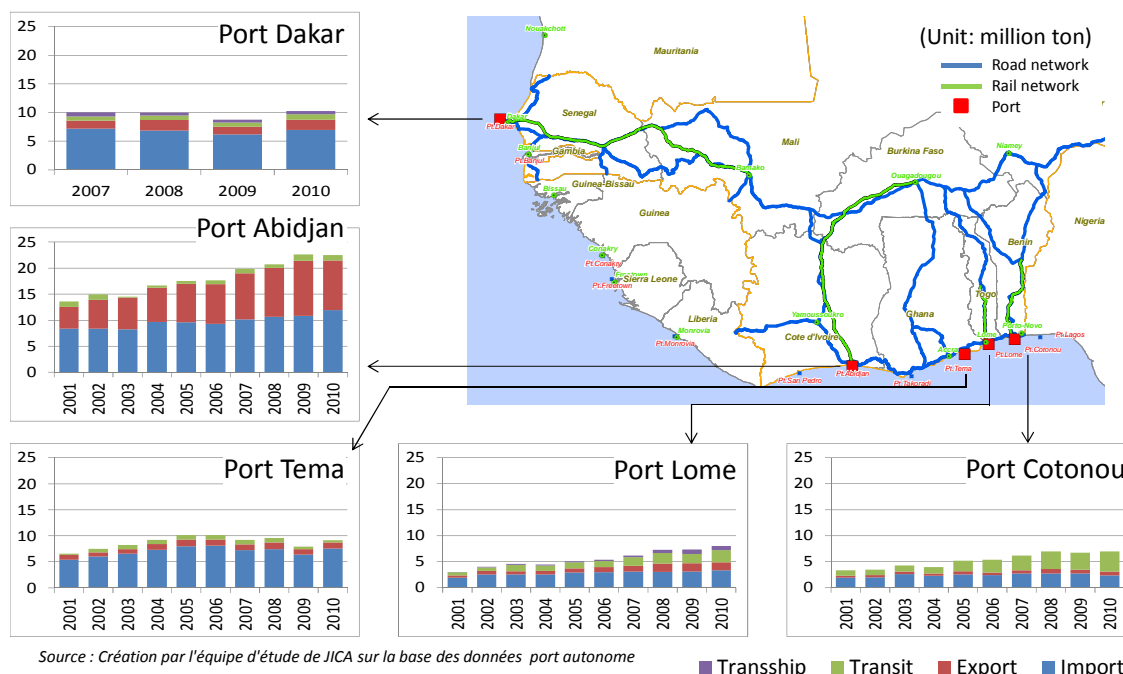
5.1 General Situation

Coastal countries covered by this survey, such as Benin, Togo, Ghana, Cote d'Ivoire, and Senegal have their own international ports. Each port is connected to a UEMOA corridor or a railroad so that it can function as a gateway of the country or landlocked countries.

Data on transaction volume in 2010 indicates that the volume handled at Abidjan Port (Cote d'Ivoire) was the largest at about 22 million tons. This port functions as a central port for the region.

The transaction volumes at the ports of Dakar and Tema have not substantially changed since the beginning of 2000, which indicates that they are approaching their capacity limits.

The ports of Abidjan, Dakar, and Tema mainly handle freightes for their domestic markets. Data on the ports of Lomé and Cotonou show transit freightes accounted for relatively high shares of volume. More than half of the transaction volume at Cotonou Port is for transit. Since the crisis in Cote d'Ivoire in 2002, the port of Lomé has been in charge of transit freight of Burkina Faso and has steadily increased the volume of transit freight it handles. The port of Cotonou has been in charge of transit freight which moves past Niger to the northern part of Nigeria, and has steadily increased the volume of transit freight it handles.



Source: Statistical data of Each Port Authority

Figure 5-1 Transaction volume at ports

5.2 Present State of Infrastructure at Ports

The state of development of typical ports in each country is summarized below.

5.2.1 Benin's Cotonou Port

About 50 % of Benin's national income is reported to come from revenue from the ports.

Cotonou Port, which supports the national economy, was developed in 1965. It handles cargoes exported to Togo, Niger, Burkina Faso, and Nigeria.

The area of the port zone is approximately 400,000 m². Quays are divided into eight berths: four 155 m long berths for conventional ships, two 180 m long classical berths for conventional ships, one 220 m long berth for container ships, and one Ro-Ro berth at the west end of the commercial quay. On the south side, there is the 250 m long oil berth. The depth at the port entrance is 12 m, and the depth at the berth for container ships is 10 to 11 m.

Table 5-1 Berth facilities at Cotonou Port

Port Zone	Facility
At the North Commercial Quay	<ul style="list-style-type: none"> - 6 conventional berths, 155 to 180 meters long each - 1 conventional berths, 220 meters long each - 1 roll-on / roll-off quay
At the South Commercial Quay	<ul style="list-style-type: none"> - Hydrocarbons terminal an oil wharf of 250 m long (ORYX) - Containers terminal 2 equipped containers stocks of 550 m (BOLLORE-SMTC)
On the Eastern jetty	<ul style="list-style-type: none"> - 1 berth for tankers and bulk carriers, 200 m long - 1 berth for edible oil tankers, 160 m long - 1 berth for fishing boats, 160 m long
Draught admitted	<ul style="list-style-type: none"> - The new containers terminals(BOLLORE) : 15 m (work en progress) - The other berths : 10m, 11m

Source : Authority of Cotonou Port



Source : Authority of Cotonou Port

Figure 5-2 Cotonou Port plan

5.2.2 Togo's Lomé Port

With the motto of “Founding the nation based on ports,” and with Burkina Faso, Mali, and Niger in the country’s hinterland, the Togo Government entertains great expectations on the potential of the port with its great depth¹. The Government is promoting development of the port as a vital point for national growth. The port was built under technical and economic agreements with Germany after independence in 1960.

Lomé Port has two quays Quay 1 has four multi-purpose berths, and Quay 2 has two container berths. In addition, there is one berth each for oil tankers and mineral ores. There are a total of eight berths.

The quay for mineral ores is used not only for transport of mineral resources for Togo, but also for Ghana. Ghana has two ports of Tema and Takoradi. The clinker plant of Ghana is closer to Togo, actually, about 10 km from Lomé Port, so that Lomé Port is chosen because of the short distance.



Source : Authority of Lomé Port

Figure 5-3 Present state of Lomé Port (2010)

¹ Only Lomé Port is the port with the depth of 14 m among ports of West African countries.

5.2.3 Ghana's Tema Port

Tema Port is located 29 km east of Accra. It was developed to promote industrialization of Ghana in 1962 immediately after independence. It is the largest port ever constructed artificially on the open sea in Africa. Tema Port has berths, and a dry dock, the only one existing in West Africa, which gives it the advantage of being able to offer ship repair, scratching (bottom cleaning), and painting.

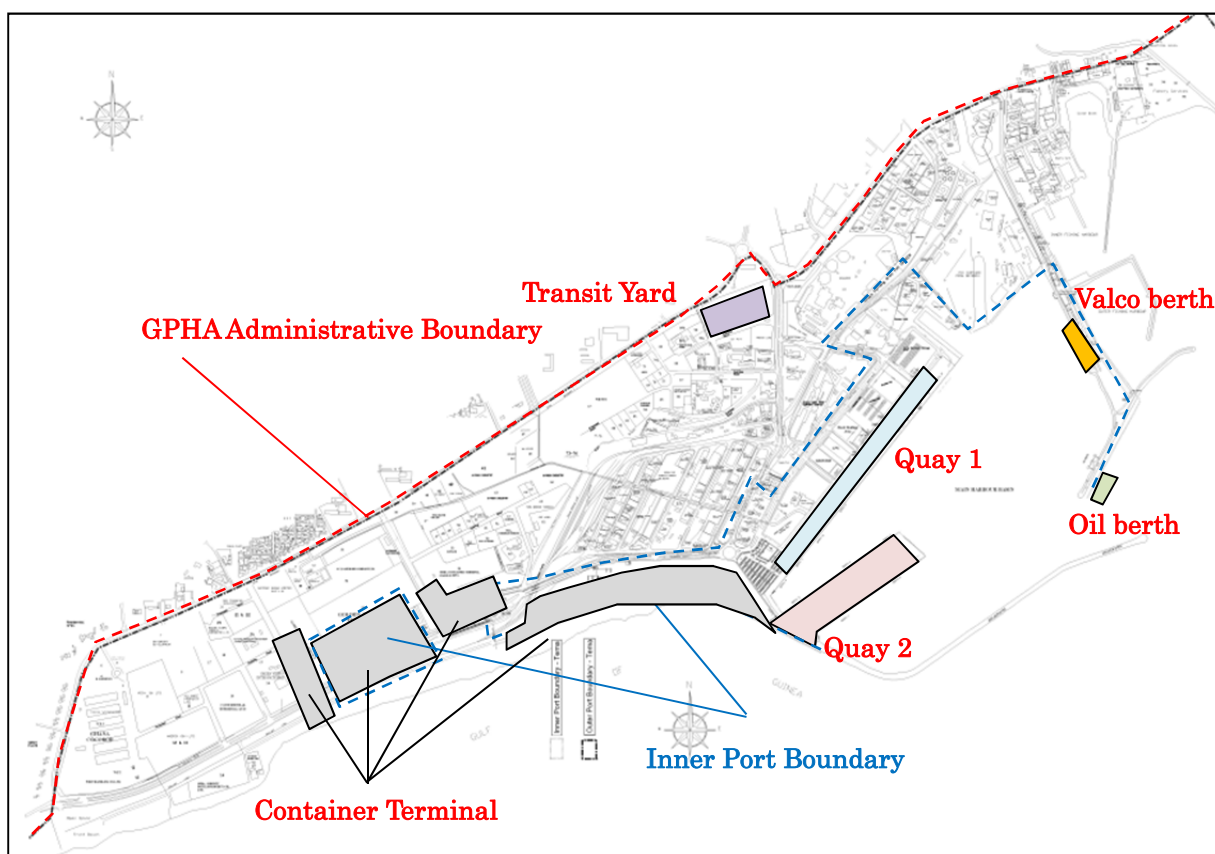
The cargo quay consists of two wharfs. No.1 wharf has a nearly straight quay, with seven multi-purpose berths, Nos. 6 to 12. No.2 wharf is a land-filled jetty with berths No.1 to 5. Berths Nos.1 and 2 face the waters between the jetty and breakwater and are dedicated for use by container ships. Berth No. 3 and Nos. 4 and 5 are located opposite to berths Nos. 1 and 2, to which battleships and other vessels not involving cargo handling are moored. The quay depth is the lowest at 7.65 m at No.12 berth and the greatest at 11.5 m at Nos. 1 and 2 berths at the container terminal quay.

There are also dry bulk berths for alumina, pitch coke, etc. and an oil berth.

Table 5-2 Quay and berth equipment condition of Tema Port

Wharf No.	Berth No.	Draft	Purpose
No.1 wharf	6, 7	8.0 m	Multi-purpose
	8	8.5 m	Liquid/multi-purpose
	9, 10, 11, 12	7.65 m-9.0 m	Ro-Ro berth, fruits, clinker, cement, multi purpose
No.2 wharf	1, 2	11.5 m	Container
	3	10.5 m	Multi-purpose
	4, 5	9.5 m	Multi-purpose
VALCO berth		9.0 m	Aluminum works
Oil berth		9.0 m	Oil, gas
Off-shore x-BM		-deep-	

Source : Data supplied by the Ghana Ports and Harbour s Authority



Source : Data supplied by the Ghana Ports and Harbour s Authority

Figure 5-4 Plan view of Tema Port (Present)

5.2.4 Cote d'Ivoire's Abidjan Port

Abidjan Port has become the principal port among the French-speaking countries of West Africa since the opening of the Virdi Canal (the approaching route to the inland bay) in 1950. In accordance with the transport strategy promoted since the independence, the port was first constructed, followed by a railroad connecting Abidjan to Kaya of Burkina Faso, a distance of 255 km. Abidjan enjoyed continuous prosperity and was called the “Paris of Africa.” but this period of prosperity ended with the depression of the 1990s. Civil war erupted in 1999, and Abidjan suffered economic dislocation and difficulties. Abidjan Port is still a gateway port of West Africa, but the amount of cargo handling has not recovered as expected. As for railroad facilities, a plan to extend service to Niamey, the capital of Niger, exists conceptually, but has not been realized yet.

There are five container berths (Nos. 21 to 25) of which three have a depth of 12.5 m. The remaining two berths have a depth of 11.5 m. The port also has berths handling wood, fruit, mineral ores, grains, and oils. The total number of berths is 26. Abidjan Port is also the leading tuna fishing port in Africa, and a large number of fishery-related facilities (cold storage warehouses, ice plant, fishing nets, fish meat factories, etc.) have been developed.

5.2.5 Senegal's DakarPort

Dakar Port has a 177 ha expanse of water with depths alongside varying between 10 and 13 meters. The port is surrounded by two breakwaters and its 15-meter-deep anchorage, is located near the entrance. Commercial functions are concentrated in the southern and northern zones.

The southern zone is composed of three jetties (Mole 1, 2, 3) linked by quay banks. Between the 1st and 3rd jetties, the water depth is 8.5-10 m. In the southern zone, there are a total of 15 berths, which consists of 3 Ro-Ro² berths, 12 for general cargo. These berths handle general cargo, and transit and Ro-Ro cargo for Mali. The southern zone receives general cargo products, 40 % of the container traffic, and the passenger traffic.

The northern zone is composed of four jetties (Moles 4, 5, 8, 10) with depths alongside varying between 5-12 m. There are a total of 20 berths.

The types of cargoes handled in port's seven jetties are shown in the following table.

Table 5-3 Berth layout

Mole	Cargo handled
Mole 1	Break Bulk Cargo and Container (Unspecified goods, rice, cereal, etc)
Mole 2	Ro-Ro (Vehicle)
Mole 3	Break Bulk Cargo (Transit cargo for Mali)
Mole 4	Break Bulk Cargo
Mole 5, 8	Container, Iron, Charcoal, Sulfur
Mole 10	Fishery

Source: Dakar Port Authority

² Ro-Ro: Roll-on/Roll-off ship is a vessel designed to carry wheeled cars such as automobiles, trucks, semi-trailer trucks, trailers or railroad cars that are driven on and off the ship on their own wheels. (= Car ferry)



Source: Dakar Port Authority

Figure 5-5 Plan view of Dakar Port

5.2.6 Level of Service at Port

According to an interview survey conducted with shipping/storage businesses, the level of service provided in terms of waiting time is not good at the port of Dakar, the port of Tema and the port of Cotonou, as the times to wait are longer there. In relative terms, the service level, however, is higher at the port of Abidjan and port of Lomé.

The port charge³ is relatively higher at the port of Abidjan than other ports, while it is lower than others at the port of Cotonou and the port of Lomé. It is partly why the higher volume of transit freight of landlocked countries is handled at these 2 ports.

Table 5-4 Quality of Service at Port

	Container dwell time(day)	Container vessel stay (hours)	Container vessel pre-berth waiting time(day)	General freight vessel stay (hours)	General freight vessel pre-berth waiting time (day)	Truck processing time for receipt and delivery of freight(hours)
Pt.Dakar	7	24	18	60	24	5.0
Pt.Abidjan	12	1	1	2.2	2.9	2.5
Pt.Tokorad	25	32	12.4	48	9.6	8.0
Pt.Tema	13	1	1	N/A	N/A	4.0
Pt.Lomé	12	36	24	48	48	6.0

Source: JICA Study team based on AICD database

Table 5-5 Charge of port (20ft Container)

Unit: CFA

Port	Terminal Charge	Freight handling charge	Total
Pt.Abidjan	21,200	186,000	207,200
Pt.Tema	9,400	76,500	85,900
Pt.Lomé	23,900	74,800	98,700
Pt.Cotonou	3,500	84,000	87,500

Source : JICA Study team based on information from port authorities

Table 5-6 Charge of port (Bulk: rice sac)

Unit: CFA

Port	Terminal Charge	Freight handling charge	Total
Pt.Abidjan	300	5,500	5,800
Pt.Tema	450	N/A	N/A
Pt.Lomé	3,000	1,400	4,400
Pt.Cotonou	2,100	1,500	3,600

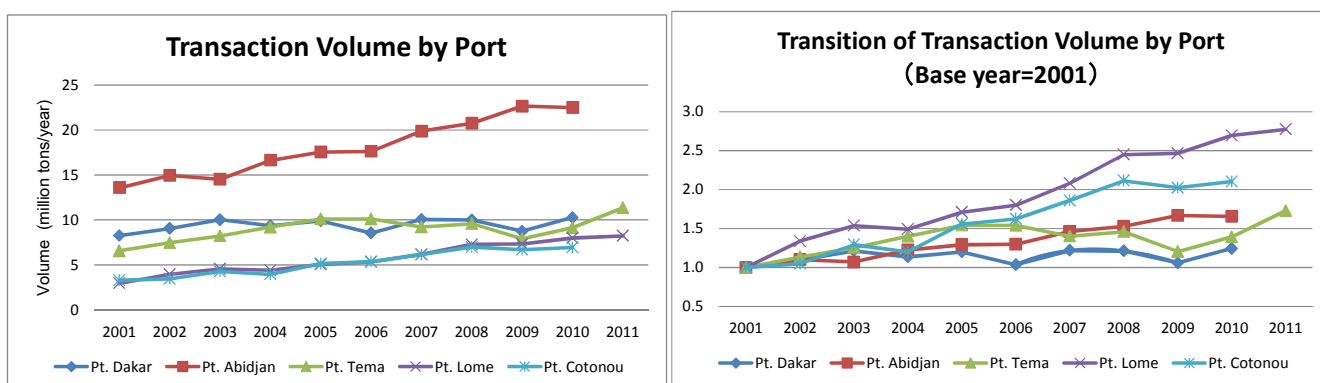
Source : JICA Study team based on information from port authorities

³ The port charge includes a total of payments to be made to public port corporations such as port use fees and freight weighing fees as well as to be made to crane operators for freight handling.

5.3 Transaction Volume

5.3.1 Changes in the Transaction Volume

As described above, Abidjan Port has the largest transaction volume among the ports of West Africa - approximately 22.5 million tons in 2010, which is more than double the amount handled by other ports. Abidjan Port is followed by the ports of Dakar, Tema, Lomé, and Cotonou in that order. However, year-to-year changes show that both Dakar Port and Tema Port have not seen a change in their transaction volumes since the beginning of 2000s, which appears to indicate that both of these ports have reached the limit of their capacity. When comparing these ports in terms of the growth in transaction volume in 2010 relative to 2001, Lomé Port achieved the largest, 2.7-fold growth, followed by Cotonou Port and Abidjan Port, at 2.1-fold and 1.7-fold, respectively.



Source: Prepared by the JICA Study Team on the basis of statistics of each port

Figure 5-6 Transition of transaction volume by port

(1) Volumes by Import, Export, Transit, and Transship

Overall, imports account for a greater share of cargo volume than exports. This trend is seen in all ports other than Abidjan Port. On the other hand, the ports of Dakar, Abidjan, and Tema showed smaller shares of transit and transship cargoes, while the ports of Lomé and Cotonou showed higher and annually increasing shares of transit cargoes.

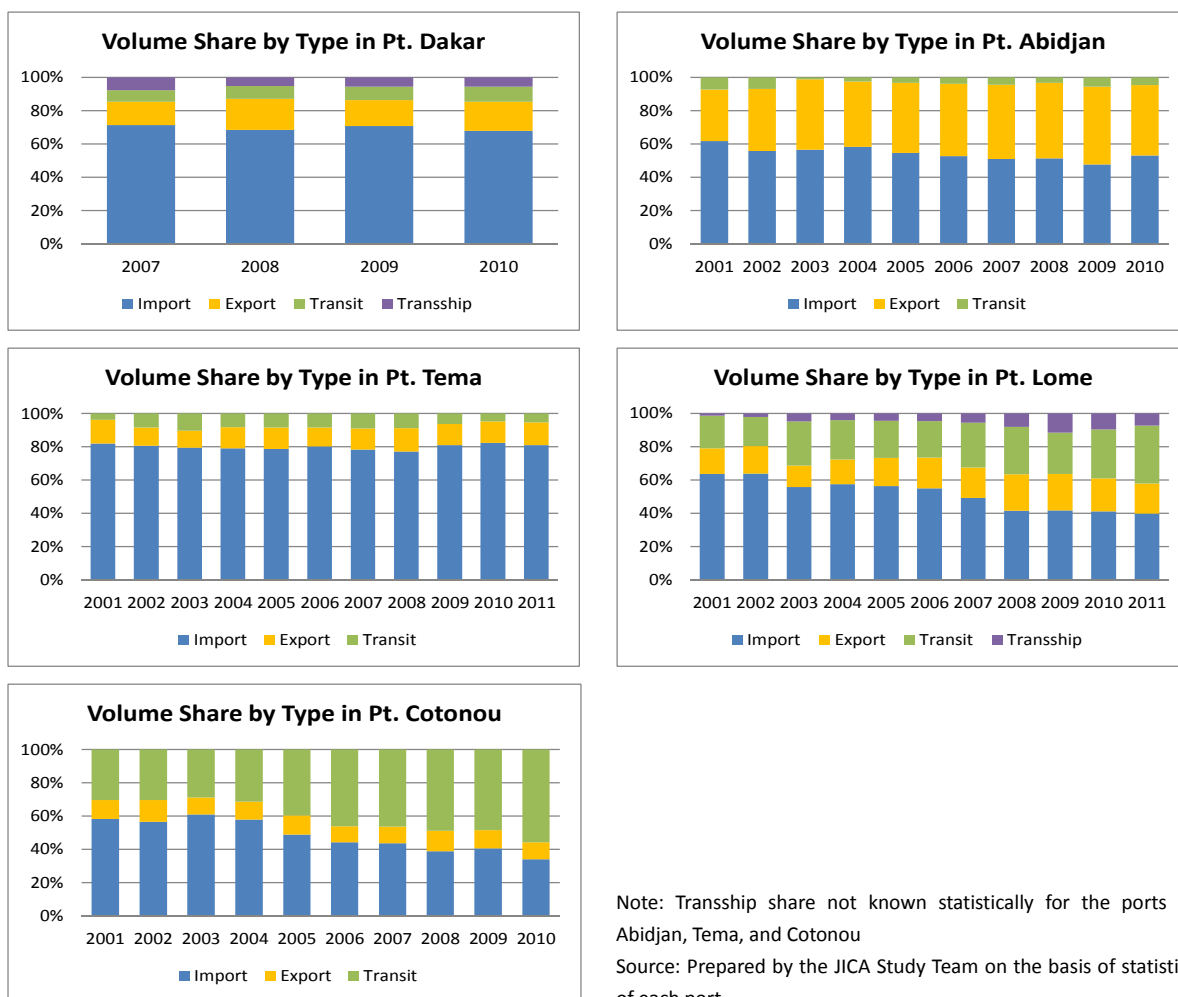
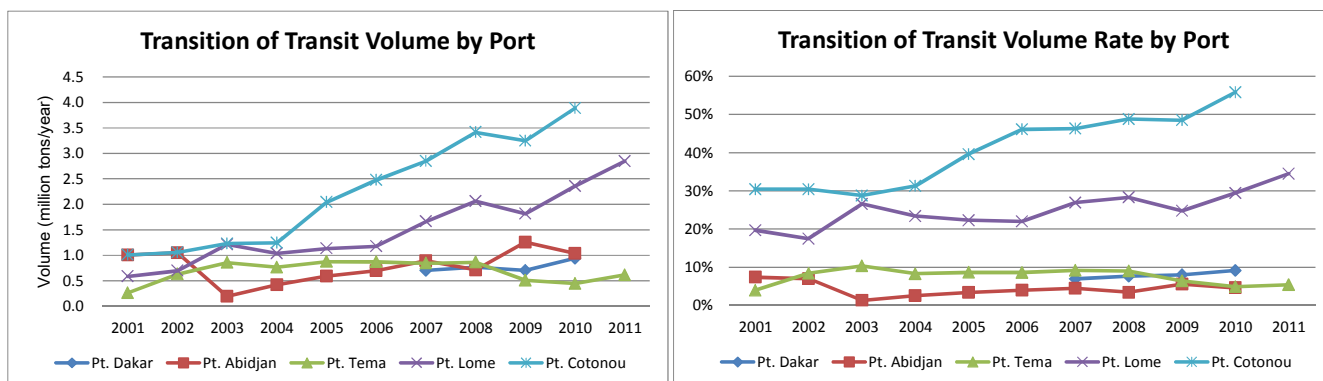


Figure 5-7 Volume share by import/export, transit, and transship

(2) Changes in Transit Volume

The transit volume of Cotonou Port has been increasing since 2005, reaching 3.9 million tons/year and accounting for 56 % of the total volume. Lomé Port, with the second largest transit volume, shows growth as indicated by an increase in the volume since 2007, reaching 2.8 million tons/year in 2011, and accounting for 34 % of the total volume. Other ports have seen the share of transit volume at 10 % or less of their totals; these shares have not been increasing in the past decade.

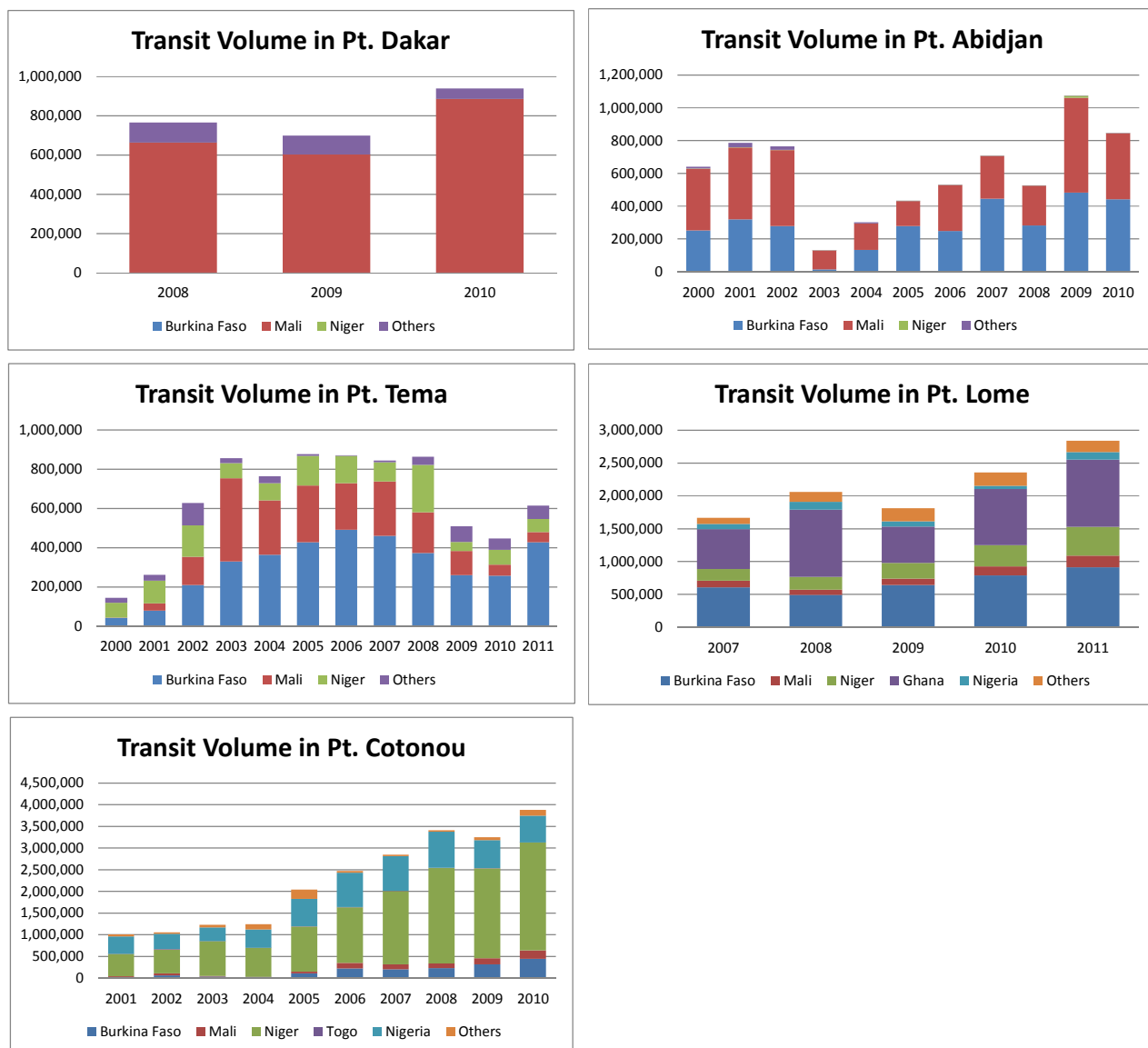


Source: JICA Study team on the basis of statistics of each port

Figure 5-8 Transition of transit volume

Changes in volumes by transit destination are shown for each port in Figure 5-9.

- Transit cargoes at Dakar Port are mostly directed to Mali.
- Transit cargoes at Abidjan Port are mostly directed to Burkina Faso and Mali. Though the volume dropped substantially due to civil war in 2003, it is gradually growing again. In 2009, it exceeded the level before the war.
- In Tema Port, the transit volume directed to Burkina Faso is the largest, followed by those for Mali and Niger. A decrease in volume since 2009 can be attributed to the recovery of Abidjan Port.
- At Lomé Port the largest transit volume is directed to Ghana, which is followed by Burkina Faso and Niger in that order.
- At Cotonou Port the largest transit volume is directed to Niger, which is followed by Nigeria and Burkina Faso in that order. In particular, cargoes for Niger have increased since 2005; they accounted about 64 % of the total transit volume in 2010.



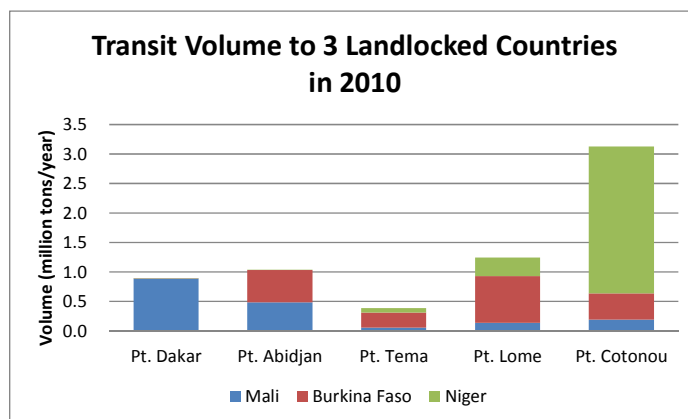
Source: JICA Study team on the basis of statistics of each port

Figure 5-9 Comparison of transit destination (Ports of Lomé and Cotonou)

Landlocked countries, such as Mali, Burkina Faso, and Niger, have no parts opening to the high sea and must use the ports of other countries if they are to undertake external trade. For these countries, securing access to seaports is one of the most important problems they must solve. Transit volumes by port for three landlocked countries (Mali, Burkina Faso, and Niger) are shown in Figure 5-10 and Table 5-7.

- For the three landlocked countries in the region surveyed, import and export volumes via Cotonou Port are the largest. The ports of Lomé, Abidjan, and Dakar follow in that order.
- The ports most used by each country are as follows: Dakar Port by Mali, Lomé Port by Burkina Faso, and Cotonou Port by Niger.

- More than 20 % of the total volume is handled, respectively, by Mali in Abidjan Port, by Burkina Faso in the ports of Abidjan and Cotonou. The role of these ports may change depending on the state of development and the security of the corridors and ports.



Source: JICA Study team on the basis of statistics of each port

Figure 5-10 Transit volume of three landlocked countries by port (2010)

Table 5-7 Transit volumes of landlocked countries by port (2010)

	Pt. Dakar	Pt. Abidjan	Pt. Tema	Pt. Lomé	Pt. Cotonou	Total
Mali	50.4 %	27.5 %	3.1 %	7.9 %	11.0 %	100.0 %
Burkina Faso	0.0 %	27.0 %	12.6 %	38.6 %	21.8 %	100.0 %
Niger	0.0 %	0.0 %	2.6 %	11.1 %	86.3 %	100.0 %

Source: JICA Study team based on statistics for each port

5.4 Future Plan

(1) Cotonou Port (Benin) Development Plan

1) Port Development

At present, construction of a new south quay, 600 meters long, is under way. One section, which is 300 meters wide and with a depth of 15 meters is set to be a container quay. Pavement and crane installation is set to begin, and the target for start of operation is, 2013. In addition, the concessionaire, the Bolloré Group, suggests the necessity of a dry port aiming at mitigation of congestion within the yard (port area) and crowding in the city center. Specifically, construction of two dry ports is said to be appropriate, one for domestic cargoes and the other for transit cargoes.

2) Trends Among other Donors

In accordance with Benin Government policies, the public sector has overwhelming power concerning operation of Pt. Cotonou. Until recently, positive participation from the private sector has not taken place. Lately, PPP projects in the Benin port sector have been promoted under the influence of foreign donors.

The US has provided, as part of the Millennium Challenge Corporation programme, grant aid of US\$ 169 million to the Benin Government for Port Sector Reform, with the condition that PPP projects be implemented for the Cotonou Port container terminal. The Private Infrastructure Development Group, to which the League of DFID, the Foreign Ministry of Netherlands, the International Development Agency of Sweden, and the Development Bureau of Austria provide support, is also promoting this cooperation programme. The IFC offered advisory services for PPP projects. As part of this Port Sector Reform, a consortium of the leading physical distribution companies of France, Bolloré and Société de Manutention du Terminal à Conteneurs de Cotonou, concluded, in March 2009, a 25-year concession agreement for management and operation of Cotonou Port and the South-Wharf Container Terminal. This provisions of this agreement include that the Bolloré group must pay US\$ 200 million in eight years after conclusion of agreement to the Cotonou Port Authority and invest a sum of US\$ 256 million in cargo-handling machinery and development of the terminal. The Bolloré group is reported to be aiming at increasing the container cargo volume from 315,000 TEU in 2008 to 1 million TEU by 2030.

(2) Lomé Port (Togo) Development Plan

Lomé Port has launched a major infrastructure development and expansion plan together with an equipment renewal venture. The programme includes:

- Building a harbor basin with a minimum depth of 16 meters, to accommodate a new container terminal;

- Building a third dock;
- Expanding the ore dock;
- Developing an inland dry port and overhauling the railroad to ensure rail transshipment of goods in transit;
- Building an alternative route bypassing the Alédjo Fault and the Défalé pass, to facilitate crossing the Togo corridor;
- Setting up a single window to streamline administrative and customs clearance procedures;
- Setting up a computerized port information system that can help people save time and avoid face-to-face formalities.

(3) Tema Port and Dakoradi Port (Ghana) Development Plans

Development of Tema Port is being prepared under assistance from the Netherlands. The master plan is to newly construct a breakwater outside the existing port, then build a berth as deep as 16 m and a 10 km bypass road from the west to the north of the port. The approximate cost is estimated to be US\$ 800 million (Phase 1). The BOT method is being considered as the way to implement the development plan.



Source: Data provided by Ghana Ports and Harbours Authority

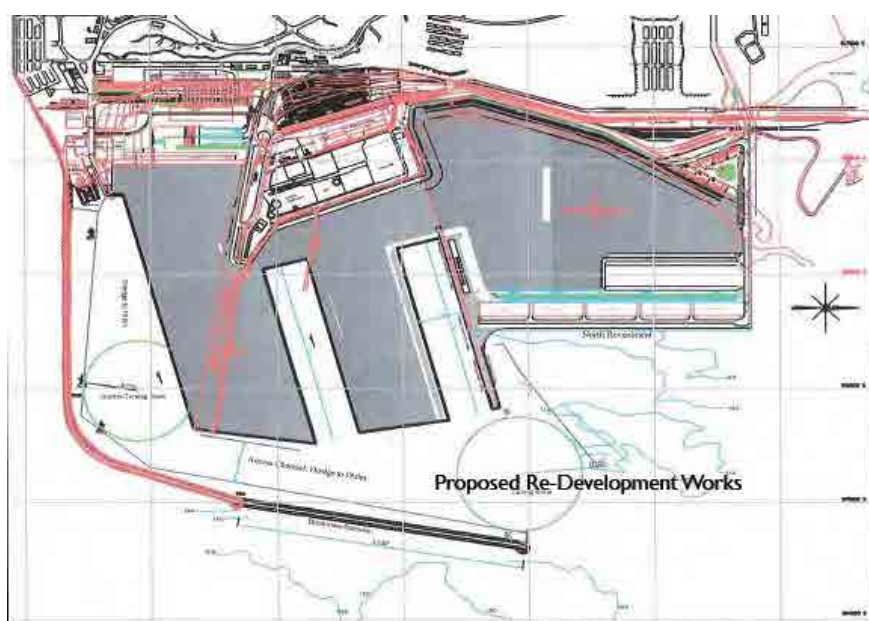
Figure 5-11 Tema Port Plan

A development plan for Dakoradi Port was established in 2010. Investment based on the PPP scheme is being solicited. Development is divided into Phase 1 and Phase 2. The details of development, required funds, and schedule of each phase are shown below.

Table 5-8 Dakoradi Port Development Plan

	Phase 1	Phase 2
Details	Extension of breakwater Mineral jetty Dredging, deepening	Land filling Wharf, revetments
Project cost	US\$ 150 million	US\$ 600 million
Schedule	2011-2013	2012-2016

Source: Ghana Ports and Harbours Authority



Source: Data provided by the Ghana Ports and Harbour s Authority

Figure 5-12 Dakoradi Port plan

(4) Abidjan Port (Cote d'Ivoire) Development Plan

1) Modernization of the North Berth

The project involves encroaching on the existing North berth block a sheeting pile berth of 13.5 m flow depth. The project also involves a carriageway structure at the rear of the berth. In this way, handling in the modernized North berth will be optimized by the use of berthed cranes to unload freighters.

The project is at the preliminary design stage and needs to be further developed. The estimated cost of the work, including construction of the berth, dredging and the carriageway structure, is worth of 18 billion CFA.

2) Deepening of Berth Access Channels

The project consists of dredging the middle ground of the berth access channels to increase the depths to 13.5 m or even 14.5 m. This is intended to comply with the Vridi Canal widening project. The deepening of channels will enable large vessels to navigate safely in the sailing area of the Abidjan port. The estimated cost stated in the preliminary design is 2 billion CFA.

3) Modernization of the South Berth

This consists of demolishing warehouses to increase the storage area for containers. As a result, all containers arriving at the Abidjan port will be handled at the South berth until the port expansion is achieved. A new form of quay wall is to be built in front of the current berth to facilitate the widening of the port basin. This new quay wall will include a curtain of sheeting pile peaked by a concrete beam and sealed tiebacks. The estimated cost stated in this preliminary design is 53 billion CFA.

4) Siveng Berth Modernization Project

The water in front of the berth is currently not deep enough to receive bulk carriers. The modernization project will lead to a 180 meter long berth, with 13.5 meters of flow depth. This would reduce the number of bulk carriers handled at other berths, causing from time to time congestion of port traffic. The project includes equipping the berth with a gantry crane and conveyor belts to carry products to storage areas and warehouses. This will significantly improve berth operations. The structural frame of the berth will be in sheeting pile. The estimated cost stated in the preliminary design is 3.7 billion CFA.

5) New Wharf Building Project

The work to be carried out includes building a 90 meter-long wharf and a gangplank. The wharf will rest on dredging spuds, with an anchorage front made of reinforced concrete beams. The gangplank, will be made of a paving stone 20 inches thick resting on reinforced concrete

beams. The project survey is over, and the call for tenders is available. The estimated cost of the work is 600 million CFA (tax included).

(5) Dakar Port (Senegal) Development Plan

In order to solve current issues and increase the transportation volume, PAD plans the following future development plan for Dakar Port.

1) Rehabilitation of the Petroleum Wharf

Rehabilitation and modernization of the petroleum wharf at Mole 8 are being planned to improve the quality of service and security for transshipment traffic. A bonded loan issuance has already been launched in UEMOA financial markets.

2) Deeping the Access Channel

Dredging of the external and internal access channels is being planned to create the same depth as the container terminal so that third-generation ships will gain access. A bonded loan issuance was conducted in UEMOA financial markets in 2010.

3) Rehabilitation of Mole 3

The quays and platforms of Mole 3, which is dedicated to Malian transit, were so heavily damaged that rehabilitation is necessary.

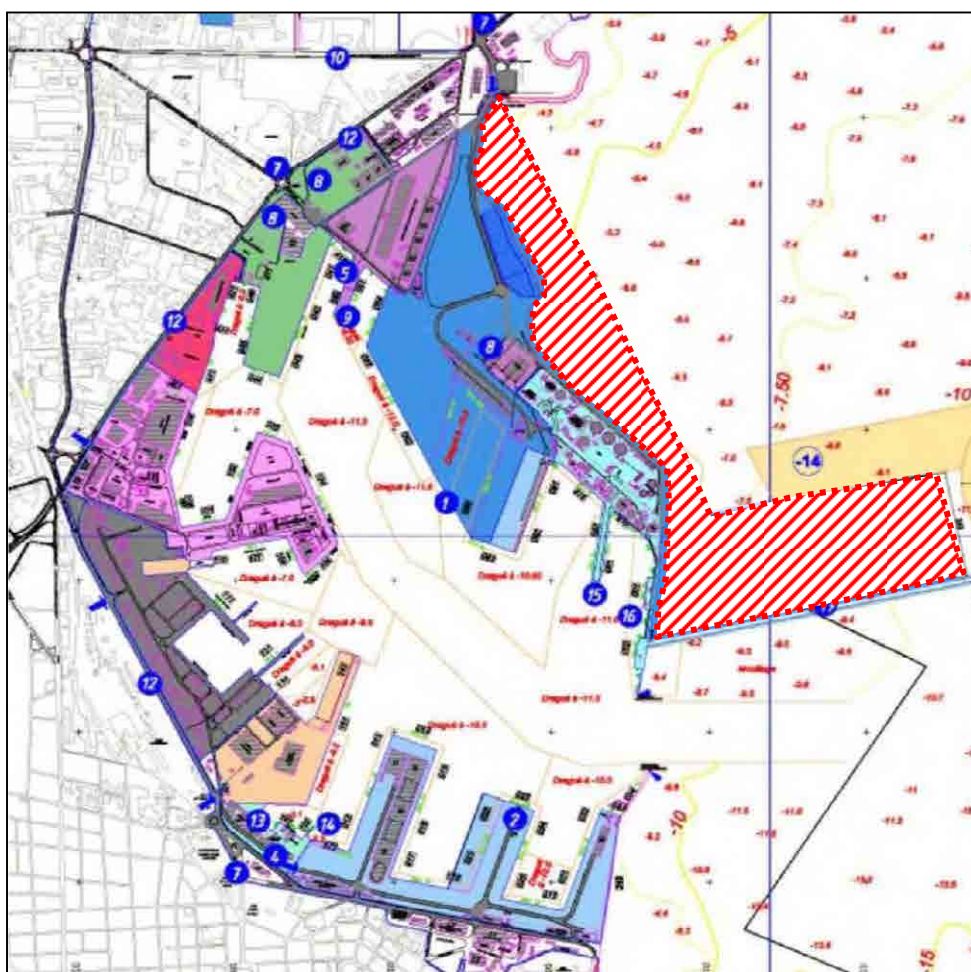
4) Project of Fruit Terminal

Construction of a refrigerated warehouse for good management of fruit and vegetable handling is planned. The project site is located in the southern zone of the port between Mole 2 and Mole 3.

5) The Port du Futur

The "Port du Futur" is one of the major projects of the Dakar Port, designed for dramatic growth in container traffic and containerization in maritime transport. A concession agreement for this project has been concluded between PAD and DP World to construct and operate a new terminal with a capacity of 1.5 million TEUs⁴.

⁴ TEU (Twenty feet Equivalent Unit): Number of containers equivalent to the twenty feet container.
Note: One 40-foot container = 2 TEUs



Source: Dakar Port Authority

Figure 5-13 Expansion Plan for Dakar Port

(6) Potential of Port Development

The port of Abidjan, where modernization has been going on, has a strong competitive advantage as it has already large-sized port facilities as well as an industrial zone within the port area. The port, therefore, is expected to continue to act as a hub port in the surrounding area in the future, too. Among other ports, the port of Lomé has a large potential of development as it has naturally good conditions such as a water depth as deep as 16 meters. At the port, currently, the third container berth is under construction and it is apparently planning to establish itself as a hub port for transit freight. In addition, 5 more berths to be used exclusively for containers are currently planned in order to increase the volume of transshipment freight it handles. On the other hand, in Benin where the port of Cotonou is located, there is a plan to accelerate the development of the port of Sémé-Podji. It will be a port having 2 berths exclusive for containers and it is expected to function to complement the port of Logos in the neighboring Nigeria where transshipment freight and the economy are expected to grow significantly.

5.5 Summary of Chapter

- In West African countries where the supply of various daily commodities is insufficient, handling imports is a basic economic activity. Viewing the import-export volume of the survey region by means of transport indicates that around 70 % of the total is by ship. In other words, the international ports play an extremely important economic role in the region. Therefore, all of the coastal countries of West Africa put a great deal of effort into port development. Each country has developed international ports at locations near their capitals.
- Data on transaction volume in 2010 indicates that the volume handled at Abidjan Port (Cote d'Ivoire) was the largest at about 22 million tons. This port functions as a central port for the region.
- The transaction volume at the ports of Dakar and Tema have not substantially changed since the beginning of 2000, which indicates that they are approaching their capacity limits.
- The ports of Abidjan, Dakar, and Tema mainly handle cargoes for their domestic markets. Data on the ports of Lomé and Cotonou show transit cargoes accounted for relatively high shares of volume. More than half of the transaction volume at Cotonou Port is for transit.
- All of above ports have plans for the future. Implementation of these plans is included normally in the concession agreement. Since the year 2000, the support by donors has been limited to projects for the rehabilitation of the ports of Lomé and San Pedro by the West Africa Development Bank.

Chapter 6 CURRENT STATUS OF DISTRIBUTION NODES

In this chapter, we organize the current situations of transportation nodes of broader area distribution in the surveyed areas. Specifically, we review ports, bonded warehouses, EPZ/FEZ, dry ports, distribution terminals, and border customs related to shipment of transit freight from ports to landlocked countries.

The information in the following table is based on the results of hearings with government organizations of each country. The facilities listed are major distribution nodes. Table 6-1 shows the locations.

Table 6-1 Principal International distribution nodes

Country	Type	Name (Current status)
SENEGAL	ICD	MSC, MAERSK Line, Bolloré Africa Logistics
	Dry port	Dakar Port Logistic Platform
	EPZ/SEZ	ZFID
	Warehouses	Maliens
BURKINA FASO	Dry Port / ICD /Transit Terminal	Ougarinter
		Dry port Bobo Dioulasso
NIGER	Dry port	Dosso Dry port (Planned)
	Dry port	Niger River Right Bank Dry port in Niamey (Planned)
	* A dry port or transit terminal does not exist, so the customs office functions as a terminal	
GHANA	EPZ/SEZ	Tema EPZ, Shama EPZ(Planned), Sekondi EPZ (planned) Ashanti Technology Park (planned)
	Dry Port	Boankra Dry port (planned)
	Warehouses	Burkinabe
TOGO	Transit Terminal	Sahel Terminal
	EPZ/SEZ	EPZ in Lomé Port / Meche Nina Factory
	Warehouses	Maliens, Burkinabe, Nigerian
BENIN	EPZ/SEZ	Seme EPZ area
	Dry Port / ICD	Zongo / Allada / Parakou (Planned)

*ICD : Inland Container Depot

*no information about Cote d'ivoire and Mali

Source : JICA Study team based on interview to Ministry of transport of each country



*1 Other facilities in table 6-1 are at each port area

*2 No information about Cote d'Ivoire and Mali

Source : JICA Study team based on interview to Ministry of transport of each country

Figure 6-1 Locations of Dry port

6.1 Senegal

6.1.1 Border Customs

Border customs facilities in Senegal are classified into two types: custom offices and border posts, according to traffic volume handled and location. Goods not exceed 500,000 CFA in value could be declared at a border post. On the other hand, custom declarations exceeding that amount (up to 1 billion CFA) have to be cleared at a customs office. Border customs are open and operate 365 days a year, 24 hours a day.

The main border customs facilities in Senegal are:

- i. Dakar Port: Custom office for export, import and transit;
- ii. Rosso: Customs office at border with Mauritania;
- iii. Kidira: Custom office on the north corridor between Senegal and Mali;
- iv. Moussala: Custom office (new) on the south corridor between Senegal and Mali;
- v. Karang and Keur Ayip: Border post on the northern border with Gambia;
- vi. Seleti and Senoba: Border post on the southern border with Gambia;
- vii. Vélingara: Custom office on the Trans-Gambian corridor;
- viii. Mpack: Post between Senegal and Guinea-Bissau;
- ix. Kalifourou: Post between Senegal and Guinea.

6.1.2 Dry Port/Inland Depot

(1) Inland Container Depot (ICD)

ICDs in Senegal are generally constructed and operated by private logistics companies and forwarders. Constructed ICDs are certified and registered after confirming whether they comply with standards set by the Dakar port authority and the Customs Department.

These ICDs have land for storage and handling of container as well as an area for customs clearance. Therefore, they are important facilities supporting the capacity of Dakar Port.

According to an interview with the Dakar port authority and some logistic companies, many ICDs operate in Senegal. They are mainly operated by the following companies;

- Mediterranean Shipping Company (MSC) Senegal SA
- MAERSK Line
- Bolloré Africa Logistics Senegal

(2) Dakar Port Logistic Platform

The Dakar Port Logistics Platform was built in 2010 as a dry port to solve the problem of congestion at the port by providing temporary storage space for export and import goods and custom clearance service. The platform has an area of 20 ha. Its storage capacity is 40,000 m².

(3) EMASE (Maliens Warehouses in Senegal)

EMASE, Maliens Warehouses in Senegal (Entrepôts Maliens au Sénégal), are managed by the National Direction of the Ministry of Land, Maritime and River Transports Mali (DNTTMF). It is an external service division of the Ministry of Transport. EMASE was created in 1963 according to an agreement signed in 2005 between governments of Mali and Senegal to facilitate commercial trade between the two countries.

According to the above agreement, the government of Senegal assigns the following facilities to EMASE through the Dakar port authority in order to facilitate its activities:

- Mole 3, which is a terminal exclusively for trade with Mali. It has 2,350 m² of warehouse space and 17,018 m² of embankment;
- EMASE, with an area of 43,000 m², including 7,018 m² of covered warehouses, is used especially for storage of cotton to be exported from Dakar port;
- EMASE also has a 400 m² logistics platform in Dakar port.

6.2 Burkina Faso

6.2.1 Border Customs

(1) Outline of the Customs System

Burkina Faso has set up customs offices along the international corridor facing the border to check passing freight, and manages freight by obliging shippers to use customs escorts, a sys-

tem used to move convoys of trucks accompanied by customs officers so that freight will surely and safely arrive at destinations stated on customs applications. In Burkina Faso, customs officers or designated customs brokers ride on the first and last vehicles of convoys.

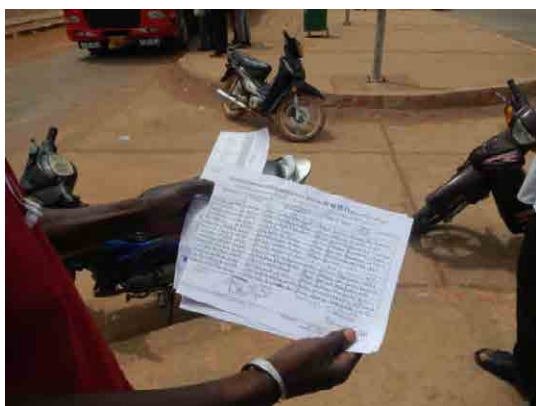
For example, cargo trucks entering the country from Niangoloko (border city of Cote d'Ivoire) are weighed at the border customs office and, with customs escorts, go to the dry port Bobo Dioulasso (Bobo-inter). Thereafter, convoys are organized for each destination and depart to Ougarinter (Ougadougou), Mali, Niger, or other ultimate destinations. At Niangoloko (at the border of Cote d'Ivoire), convoys depart at 15-16 o'clock. A weigh bridge is installed at border offices set up at Bittou, Bakola, Koloko, Niangoloko and Faramana.



Waiting for departure (1)



Waiting for departure (2)



List of truck for escort



Waiting for departure (3)

Source: JICA Study team (1/June/2012)

Photo 6-1 Departure of convoys with escort at OUGARINTER

To complete customs clearance formalities at Burkina Faso, shippers must use the customs service organized in the form of offices, posts and annexes, each of which has a separate scope of responsibility.

(2) Types of Customs Offices

1) Main Customs Offices in Category 1

These are offices responsible for customs operations concerning all goods and encompassing all customs procedures.

However, the main offices are organized into a motor vehicle customs office specializing in customs clearance of vehicles; the Bingo office for hydrocarbons; and the Ouagarinter office for rail freight.

2) Main Customs Offices in Category 2

- Release for consumption with no limit on value, of agricultural, livestock and fishery products;
- Release for consumption of all other goods, the customs value of which, by importer, does not exceed 1,300,000 CFA.

Two other categories of customs offices are secondary customs offices and customs posts.

According to a hearing with customs officers at Niangoloko, the customs office at the Cote d'Ivoire border has Category 1 and Category 2 offices. The biggest parts of the customs procedure at the borders are transit procedures, and the weighing. The processing time is about 1-2 hours. On the other hand, the waiting time between arrival and departure is about a half day or a full day because of the dependence on the departure time of customs escorts in the case of imports. Actually, drivers consider the border point for transit to be a resting place. In terms of schedule, drivers often arrive at the border point by the evening of previous day, complete customs procedure in the next morning, and depart in the afternoon accompanied by customs escorts. The documents required for transit are processed by the various offices.

Table 6-2 List of customs offices at borders (for importation)

customs offices	Koloko	Niangoloko	Dakola	Bittou /Cinkansé	Kantchari
Location	Border of Mali	Border of Cote d'Ivoire	Border of Ghana	Border of Togo	Border of Niger
Category	category 2	category 1	category 2	category 2	category 2
Process Time	1h~2h	1h~2h	1h~2h	1h~2h	1h~2h
Residence time	Half day ~ 1 day	Half day ~ 2 day	Half day ~ 2 day	Half day ~ 1 day	Half day ~ 1 day
Weighbridge	Yes	Yes	Yes	Yes	None

Source: JICA Study team based on interview the customs office

(3) Computer System for Customs Procedures

Since 1990, Burkina customs offices have computerized their customs clearance procedures by using the customs clearance system called SYDONIA. Currently, Burkina is using SYDONIA ++. A switch to SYDONIA World is scheduled for 2013.

(4) Taxation System for Customs Clearance Operations

1) For Imports

The customs tariff applied in Burkina Faso is the Common External Tariff of the West African Economic and Monetary Union. The relevant goods are classified into four categories (0 to 3) based on the commercial, economic and social policies of the Union.

The taxable value retained is the CAF value of the goods at the point of entry into national territory.

2) For Exports

No customs charge or tax is levied at the customs border during formalities for export of goods.

(5) Measures Taken to Facilitate Commercial Operations

In modernizing customs clearance procedures, the customs offices of Burkina Faso have taken several measures to facilitate commercial operations:

- Streamlined selectivity of customs declarations allowing accelerated handling of declarations but with a low risk of fraud;
- The acquisition of two scanners at the customs offices at Ougarinter and Dry port Bobo Dioulasso enabling the trade supply chain operations to be secure and facilitated;
- The remote connection of approved customs agents allowing downsizing of fast track clearance units;
- The signing of memorandums of understanding with certain companies, which allows them to expedite the progress of their goods through customs.

6.2.2 Distribution Terminals

The nodes of international distribution in Burkina Faso are Ougarinter, and Dry port Bobo-Dioulasso in the second largest city of Bobo-Dioulasso. These two facilities serve as distribution centers. At the two facilities, customs clearance of 60 % (weight) of imports takes place. Both facilities are owned and managed by the Chamber of Commerce of Burkina Faso.

(1) OUAGARINTER

Ougarinter, located in southern Ouagadougou, is the first platform in West Africa for international and national road traffic of imported only goods by road. It does not handle goods imported by railroad, imported cars, and oil. It was established in 1980.

It is one of the special interface terminals for transport in the sub-region, function for:

- Rationalization of transit freight handling
- Provisions of space for temporary storage of bulk products

Description of facility

- Area: 260,000 m²
- 3 customs warehouse : 5,000 m²
- Weighbridge :capacity of 50 tons
- Office area : 2100 m²
- Parking Areas : (28,800 m², 10,000 m²)
- Container terminal and scanner

Activities OUAGARINTER

- Clearance and transit of goods imported by road
- Handling and storage of cargo
- Weight measurement of heavy trucks
- Parking of heavy trucks
- Public administration: earning public revenue
- Offices for logistics service providers

Freight traffic (2011)

- 150 trucks per day are in transit to Mali and Niger
- 10,000 trucks per year weighed on the weigh bridge
- 7,000 trucks per year of international freight transport
- 10,000 TEUs per year handled by container terminal
- 800,000 tons per year of general cargo

The necessity of relocating Ouagarinter outside the city of Ouagadougou city has arisen for the following reasons:

- Constraints and other problems due to the current location in central Ouagadougou,
- Traffic growth which makes it difficult to manage customs services,
- Insufficient space for expansion due to the increase in traffic, and containerization; storage requirements for used vehicles and commercial needs.



Parking



Entrance

Source: JICA Study team (1/June/2012)

Photo 6-2 OUAGARINTER

(2) Dry Port of Bobo Dioulasso

Bobo Dioulasso is located on a crossroads for regional trade that particularly concerns Burkina Faso, Mali, Niger, Cote d'Ivoire and Ghana. This dry port is located in an industrial zone of Bobo Dioulasso, three km from the airport of Bobo Dioulasso.

It is served by road and rail routes from Cote d'Ivoire, Mali and Ghana, and trucks coming from the Lomé and Cotonou Ports. Its main objective is to contribute to improving the treatment of national and international freight and participate in export promotion. Infrastructure there includes customs offices and transit areas. There is also an under customs warehouse and an out of customs warehouse.



Entrance



Customs office



Awaiting customs clearance



Railroad



Container depot



Imported car (Awaiting customs clearance)

Source: JICA Study team

Photo 6-3 Dry port Bobo Dioulasso

(3) Procedure of Customs Clearance at Ouagarinter and Bobo Dioulasso Dry Port

The same procedures are applied in the dry ports at Ouagarinter and Bobo Dioulasso. The difference between the two facilities is that Bobo Dioulasso dry port accepts oil and goods coming by truck, and rail. The customs clearance procedure includes the following steps.

Table 6-3 Procedure of customs clearance at Dry Port in Burkina Faso

Exportation		
	Process Description	Responsibility
1	Weighing of the goods	Chamber of Commerce
2	Identification of the goods	The Customs and forwarding agents
3	Eventual unloading of the goods if they are mixed	Customs
4	Count of the goods	The Customs and forwarding agents
5	Registering the goods	Customs
6	Verification of the declaration	Customs
7	Verification by the customs office head	Customs
8	Customs of the goods to the port	The shipper
Total time: 24- 48 hrs		
Importation		
	Process Description	Responsibility
1	Truck arrives at the entrance to the dry port	Security guards
2	Weighing of the goods	Chamber of Commerce
3	Identification of the goods	Customs and the forwarding agent
4	Eventual unloading of the goods if they are mixed ones	Chamber of Commerce and customs
5	Count of the goods	Customs and forwarding agents
6	Registering of the goods	Customs
7	Payment of the customs duty and declaration	Forwarding agent
8	Verification of the declaration	Customs
9	Verification by the customs office head	Customs
10	Exit of the goods to the importer	Customs
Total time: 24- 48 hrs		

Source: JICA Study team based on the interview to Chamber of Commerce and custom office

6.3 Niger

6.3.1 Border Customs

(1) Outline of Customs System

Niger requires transit procedure at entrance customs to control transit freight. Truck drivers visit the customs office upon entry and submits a transit declaration. The customs office creates a document called the *carnet de transit routier*, inputs data in the customs information system,

(ASYUCUDA) and gives transit approval. The procedure is handled by customs brokers.

Flow of the border customs procedure:

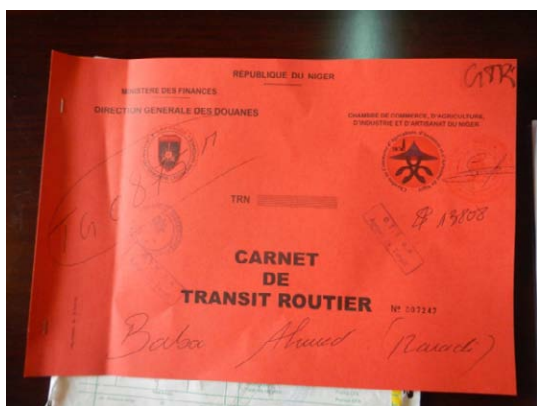
- Driver gives documents to the customs broker.
- Cargo inspection by the customs offices (with the customs broker)
- Transit application (delegated by the customs broker)
- Preparation of *carnet de transit routier*, and data input in ASYUCUDA (customs officers)
- Approval (Chief of customs signs *carnet de transit routier*.)
- Truck driver receives *carnet de transit routier*.



Approval by the chief of customs



Input in ASYUCUDA



Document for clearance at Customs

Source: JICA Study team



Data input at CNUT office

Photo 6-4 Torodi Custom office

There are two border customs facilities in the surveyed area, namely, Torodi customs (at border with Burkina Faso) and Gaya customs (at border with Benin). The Gaya facility is a gateway to the Benin corridor. It handles about 60 % of all exports and imports, and is the most important point in the Niger border customs. The Torodi customs handles various types of freight from Burkina Faso, Mali, Togo, Ghana, and Cote d'Ivoire.



Parking at Torodi Customs Office



Parking at Torodi Customs Office



Gaya Customs Office



Parking at Gaya Customs Office



Road Condition in Gaya (1)



Road Condition in Gaya (2)

Source: JICA Study team

Photo 6-5 Customs Office in Niger

Table 6-4 shows the results of an infrastructure survey. Gaya Customs handles freight to and from Niger as well as transit freight to Nigeria in the north. It is open 365 days a year due to the large amount of freight. The documents submitted when the facility opens are processed in the morning. Truck drivers arrive at the border by the previous day and depart in the afternoon of the next day at the shortest.

The Torodi Customs facility does not operate on Sundays. However, fresh food cargo can pass through customs at all times. Therefore, truck drivers arrange their driving schedules by considering the day off on Sundays. If there is no error in the documents, the procedure takes 1-2 hours except during busy times. Interviewed drivers said they have to wait for a half day.

Table 6-4 Border Customs in Niger

	Torodi customs (Niger-Burkina Faso)	Gaya customs (Niger-Benin)
Operating hours	9:00-19:00 Off on Sundays. Fresh foods can pass customs at all times.	8:00-13:00, 16:00-23:00 Open 365 days (off on Sundays depending on situation.)
No. of employees	Customs officers : 40	Customs officers : 50, Civilians : 50
Parking lot	About 100 cars (Spaces for 200 cars required after a public holiday)	About 1,000 cars (About 5 minutes away from customs office)
Functions	Basic transit procedures Customs clearance of freight less than CFA 1 million is possible. It is busy in March and April. Priority procedure for fresh foods.	Customs clearance 20 %, and transit 80 % 60 % of the transit freight go to Nigeria. 1-50 cars are processed at same time (empty cargo treatment). Niger cars : check only Cars of other countries : produce grey card (vehicle registration certificate)
Process Time/ Residence time	1 hour In the case of no document error	Customs clearance : 4-5 hours Transit : 2-3 hours

Source: JICA Study team

6.3.2 Distribution Terminal

Currently there is no distribution terminal such as a dry port. The plan developed by the Ministry of Transportation calls for dry port construction in Dosso City and Niamey City.

It is reported that Dosso Dry port will be constructed on the Benin Corridor in the suburb of Dosso City about 140 km southeast of Niamey. The Dosso Dry Port will handle transit freight from Cotonou and will serve as the main international distribution point of Niger.

A dry port is to be constructed on the right bank of the Niger River in Niamey City. It will handle transit freight from Lomé, Tema, and Abidjan Ports.

The Ministry of Transportation intends to use the PPP approach in the construction of the dry port. The Ministry is responsible for selecting an appropriate concessionaire. Also, it intends to construct and establish facilities to handle railroad freight in the future.

6.4 Ghana

6.4.1 Dry Port/Inland Depot

(1) Status

- There is no ICD now used for international distribution.
- There is an inland depot in Akosombo for freight for Ghana. It is used for distribution to Tamale and vicinities in northern Ghana by transportation on small boats on Lake Volta.

(2) Future Plan

Boankrah Inland Port

- The Ghana Shippers Council, together with the Ghana Ports and Harbours Authority (GPHA), operators of the port project, are providing facilities such as electricity, water, a telecommunication system, road network and an administrative block.
- The inland project is still in progress, and the two organizations are looking for a participating investor who will build, operate and transfer (BOT) to other investors.
- The Boankrah Port Project would have a "one-stop" point for all trade regulations, where research work and all trade activities would take place to ensure the facilitation of business and boost the economy.
- Both importers and exporters will use the facilities as a major source of transportation to get their products to consumers around the world.

6.4.2 EPZ/SEZ

Ghana has three Export Processing Zones. One, Tema EPZ, is operating, and the others, Shama EPZ and Sekondi EPZ are undergoing expansion.

(1) Managing and Controlling Entities

These facilities are operated and administered by the Ghana Free Zones Board (GFZB). GFZB was established on 31 August 1995 by an Act of Parliament, The Free Zone Act, 1995 (Act 504), to enable the establishment of free zones in Ghana for the promotion of economic development; to provide for the regulation of activities in free zones and for related purposes. The Board operates under a regulation (L.I. 1618). Actual implementation of the Programme commenced in September 1996.

(2) EPZ in Current Operation

1) Tema EPZ

Background of the facility

The Tema Export Processing Zone is located in Tema, Ghana's major residential and industrial city. Located about 24 km from the international airport in Accra, Tema has the largest

seaport in Ghana and is one of the country's fastest growing cities with well-developed infrastructure. Many industries are located in the Tema industrial area where there is also a concentration of skilled labour. Well-planned and managed residential communities complement Tema's industrial complex.

Outline of the facility

With a total area of 1,200 acres (480 hectares), the Tema EPZ offers investors a favorable environment for manufacturing, services and export activities. Business processing is facilitated by the deliberate convergence of all front-line export/investment promotion institutions such as the Customs Excise and Preventive Service, Police, Immigration, Environmental Protection Agency, Internal Revenue Service and so forth into a one-stop center. A range of property options including factory shells, office space and land parcels serviced with good-quality roads, drains, water and electricity, and a dependable sewerage system are readily available for use by prospective investors and new business start-ups.

The following off-site facilities at the Tema EPZ offer the following:

- Dedicated electrical power grid
- Large reservoir constructed to ensure the constant supply of water
- Central Sewerage System
- Telecommunication services
- Enclosures with good security

Tema's Free Zone enclave is also linked to the airport and seaport by a first-class road network. It has been developed into a multipurpose industrial park to enable non-free zone investors to have access to the industrial site and superior services that will boost their productive capacities.



Facility gate



Vehicle exiting the facility

Source: JICA Study team (12/Apr/2012)

Photo 6-6 Tema EPZ

Current Operational Condition

Although the land has been partitioned to contain 48 industries, only 24 have been built and are currently operating. These include but are not limited to: Cargill, Yara, Niche and C.P.I. Industries within the enclave specializing in cocoa processing, manufacture of fertilizer and production of construction material among others

Table 6-5 Main destination of processed products

Main Destination	Type of goods
Tema Port	Various
Cocoa Marketing Company (Tema)	Cacao
Yara Company (Tema)	Fertilizer, agri-business
Tarzan Company (Tema)	Logistics
Monolo Plant Gh. Company (Tema)	Concrete

Source: Tema EPZ

6.4.3 Currently Expanding EPZ

(1) Shama EPZ

1) Outline of the Facility

The Shama Export Processing Zone (Shama EPZ) is another one of the Ghana Free Zones Board's (GFZB) land banks. It is located in the Shama Ahanta East Metropolitan area in the Western Region of Ghana. The Shama EPZ is GFZB's dedicated industrial park serving the petroleum and petrochemical sector.

The Shama enclave is a good, strategic location with 3,200 acres of seafront land. The Free Zones Board provides investment support in downstream refinery, distribution, transit and supply chain business services, including leading operators in chemical production as well as manufacturing of by-products such as plastics and jellies, provided they are intended for export. The GFZB also provides support in skills development and capacity building services for employers and employees in the petroleum sector.

The GFZB will provide land for tank farms, storage yards for logistics and haulage contractors, manufacturing of chemical inputs and accessories for the petroleum industry at very competitive prices.

It is the GFZB's intention to sustain its participation in Ghana's oil sector by licensing and monitoring growing businesses in all the downstream and support services segments. The Shama EPZ will serve as an ideal industrial zone for those kinds of operations.



The facility under expansion

Source: JICA Study team (12/Apr/2012)



Vehicle exiting the facility

Photo 6-7 Shama EPZ

2) Current Operating Conditions

The Shama EPZ is still under construction. A large parcel of land has been acquired by the Shama Municipal Assembly for this purpose. It is mainly for firms interested in treating off-shore oil waste.

3) Operating Company

The following two firms in oil waste treatment are engaged in construction in this zone. They are:

- Zeal Technologies Limited; and
- ZOIL Company Limited

4) Number of Gates

The facility has not been properly demarcated even though it has a common point serving as an entry and exit point for both construction vehicles and people living along the zone.

(2) Sekondi EPZ

The GFZB also has a 2,200 acre industrial enclave in the Western Region of Ghana. It is designated as the Sekondi Export Processing Zone (EPZ). Its proximity to the country's second-largest seaport with a direct road link is ideal for heavy industry.

The GFZB has signed an MOU with Hassan Investment (Gh) Ltd., a Chinese Multinational Company, as the developers of the Sekondi EPZ. Hassan Investment, in turn, has signed an MOU with Bosai Mineral Group of China, Dazhon Iron & Steel Group and First Sun Energy LLC of the U.S. as its strategic anchor tenants.

The Sekondi EPZ is to be developed into an integrated industrial mineral processing zone. The Environmental Impact Assessment and other feasibility studies are in progress.

6.4.4 New EPZ Construction Plan

The Ashanti Technology Park (ATP) located at Ejisu in the Ashanti Region is in the very center of Ghana. The Ashanti Region has abundant resources, including most of Ghana's rich cocoa bean, gold, timber and wood, leather ware, and tourist sites. The Park occupies an area of 1,099 acres.

The GFZB is positioned for partnership with investors interested in developing the Ashanti Technology Park. Participation can be through joint ventures and sector-specific infrastructure development.

Industries earmarked for this up-coming zone include:

- ICT Cyber Village
- Cocoa processing
- Light industrial manufacturing
- Heavy industrial manufacturing
- Warehousing and logistics services
- Social Services Center
- Bio-technology development

The Ashanti Technology Park is to evolve into a multi-purpose export processing zone where opportunities also abound for investment in water production and distribution, electrical energy from thermal and bio-mass plants, telecommunications, accessories manufacturing, data processing and call center operations, development of telecommunications infrastructure and data processing centers.

6.5 Togo

6.5.1 Sahel Terminal

The Port of Lomé is a hub for sub-regional trade, and the conditions it offers makes it the best ocean gateway for Sahel countries such as Burkina Faso, Mali and Niger.

In 1994, the Port Authority set up a special cargo escort service for its Sahel partners called *Solidarité sur la Mer*, which has set an example for West Africa.

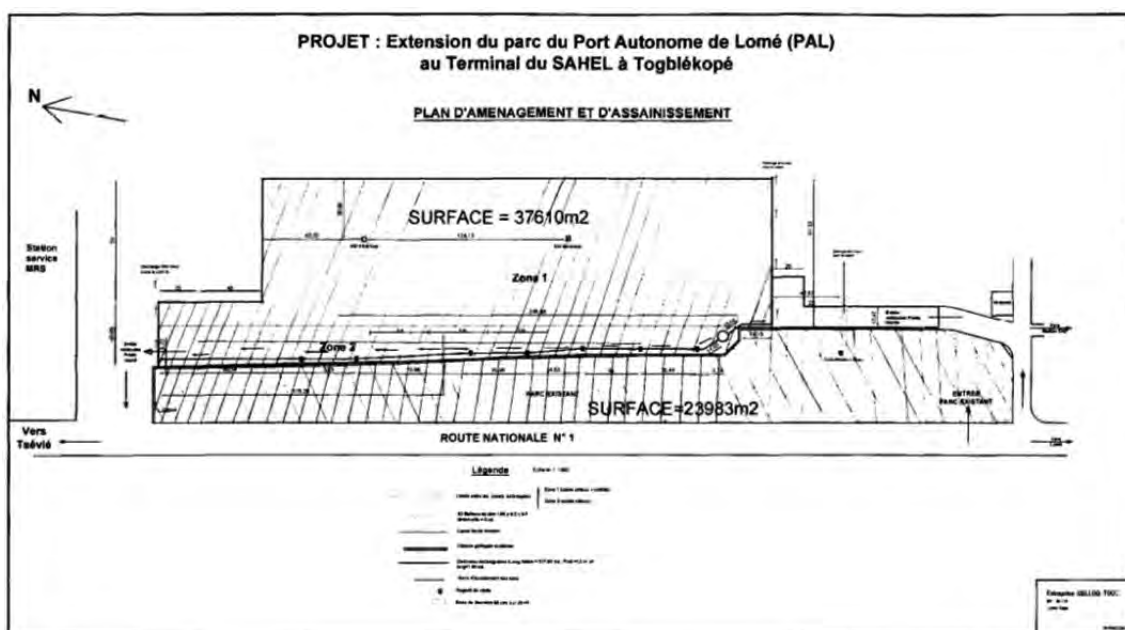
The philosophy underpinning *Solidarité sur la Mer* is to establish and operate customs and police escorted convoys for goods headed to landlocked Sahel countries. Travel to the Sahel region is thus enhanced under the best possible conditions in terms of security, time spent, and cost.

The advantages provided by this "premium" service are as follows:

- Security for goods and people;
- Improved traffic flow due to less roadblocks;
- Reduced red-tape and ancillary costs that otherwise artificially increase transportation costs for goods.

Logistic support to the process is provided by a 40,000 m² parking and rest area known as the Terminal du Sahel, which has been established at the northern exit of Lomé for haulers.

Since 2012, the customs in Togo no longer need to convey or escort for trucks in transit on the corridor after the introduction of the electronic tracking system.



Source: Port Authority of Lomé

Figure 6-2 Expansion plan of Sahel Terminal



Weighbridge



Customs office



Parking(1)



Parking(2)



Road condition side of the Sahel terminal



Imported cars

Source: JICA Study team (20/june/2012)

Photo 6-8 Sahel Terminal

6.6 Benin

6.6.1 EPZ

1) Managing Organ

Agence d'Administration de la Zone Franche Industrielle (AZFI)
(Free Processing Zone Board)

2) Controlling Agency

Ministry of Maritime Economy and Port Affairs

3) EPZ Location

It is located about 20 km from Seme-Podji, Cotonou Port and Airport and less than 10 km from the Sub-Saharan Market, which is the largest in Niger.

4) Outline of EPZ :

- Area of EPZ : 230 ha
- Information on the settled firms: (20) authorized companies, (10) companies at franc point, (1) agribusiness company (pasta), (1) battery recycling company, (1) cotton company

5) Other Information

- The companies in EPZ are obliged to export 65 % or more of the products produced in EPZ.

6.7 Summary of Chapter

- In transit transport connecting the inland and ports, dry ports located inland, border customs houses, and bonded warehouses function as principal distribution terminals.
- These terminals provide as customs clearance, custom bonds, and transit facilities. They also contribute to alleviating traffic congestion in urban areas and smooth transport of transit cargo.
- Due to a recent increase in the distribution flow, facilities are becoming cramped, and expansion is being planned. Landlocked countries are planning new development of dry ports. At present, the marine container utilization rate in transit transport is less than 20 %. In view of the expected growth in demand, the necessity of container depots will increase.
- Distribution nodes including boundary customs houses are expected to shorten required clearance times, increase flexibility of operation schedules due to more efficient customs procedures, and reduced customs escort (transition of tracking systems to alternative method). On the other hand, issues on the user side such as deficient documentation, and delay of customs by consignor cause increases in delays.

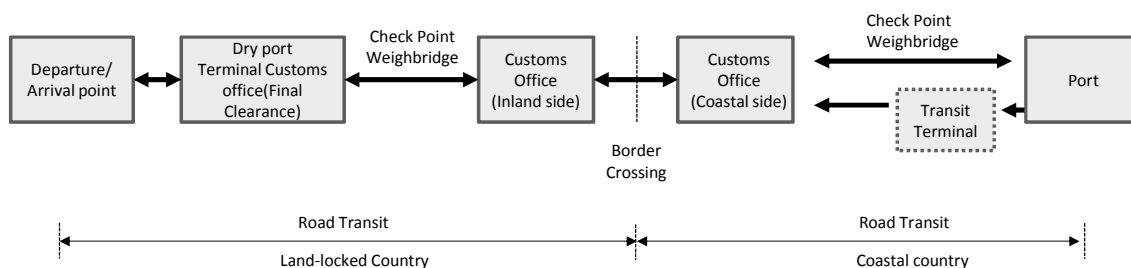
Chapter 7 SUMMARY OF INTERNATIONAL CORRIDORS BETWEEN LANDLOCKED COUNTRIES AND PORTS

7.1 Transit Transport Systems in West African Landlocked Countries

7.1.1 Transit Transport Systems

The transit transport flow connecting landlocked countries and ports is graphically shown in the figure below. It is based on the present state survey and interviews in the survey area. With the port assumed as a starting point, freight departing from the port pass through a boundary customs house of a coastal country, then go through the transit procedure at the boundary customs house of the landlocked country, and finally arrives at the customs house of the final destination. The route is reversed for export.

Note that Figure 7-1 shows the infrastructure situation related to transit transport in the survey area. As described in Chapter 4, a look at the road situation indicates that international corridors connecting landlocked countries and ports or countries can be considered to be of a network structure which depends on single routes.



Source: JICA Study team

Figure 7-1 System of transit transport

7.1.2 Agreement concerning Road Transport among Countries

Among the 8 countries subject to this survey, RECs and bilateral agreements are in place concerning the use and development of international corridors so that transit transport can be implemented.

(1) Bilateral agreements on road transport

Bilateral agreements are also in place concerning road transports. These agreements are exchanged mainly between neighboring 2 countries sharing a common border (*Protocole d'accord de Transports routiers*). For example, Burkina Faso has an agreement with Benin (1984), Cote d'Ivoire (1975), Ghana (1968), Mali (1968), Niger (1966) and Togo (1984). These agreements are mainly related to promoting smooth road transport (for both for passengers and

cargo). By arranging how cargo should be shared between landlocked countries and coastal countries and establishing transport routes, cargo distributors in coastal countries can have a certain share in cargo.

1) Share in passenger traffic and cargo traffic

- Share in volume of transit cargo handled (weight in tons)
 - 2/3: Cargo distributors in landlocked countries
 - 1/3: Cargo distributors in coastal countries
 - Non-transit cargo is divided into halves
- The number of passengers transported is divided into halves

2) Limit on vehicle weight for trucks and buses

- Limit for 1 axle: 11.5 tons
- Limit on total vehicle weight for freight trucks: 2 axles (17 tons), 3 axles (22 tons) and trailers (35 tons)
- Limit on total vehicle weight for buses: 16 tons

3) Retention of required documents and disclosure of those at checkpoints, etc.

- Documents concerning warranty of cargo
- Documents concerning vehicle ownership
- Customs clearance documents, etc.

4) Designation of transport routes

- Limited to major arterial roads
- Transit cargo cannot pass through third-party countries where a port is located.
(Ex. Cargo leaving the port of Lomé for Niger cannot pass through Benin where the port of Cotonou is located.)

(2) Multilateral agreement concerning international corridors

An agreement has been in place concerning road traffic among member countries of ECOWAS (Convention A/P2/5/82 regulating Inter-state road transportation between ECOWAS member states 29/May/1982). This agreement is aimed at promoting standardization and effectiveness of road development, imports and exports (customs clearance) and passenger transport.

In order to complement bilateral agreements, agreements are in place with an aim to reduce burden of customs clearance for cargo transport through standardization of documents (Transit Routier Inter-Etats: TRIE; signed in the 1970s and 1980s, respectively).

Among member countries of UEMOA, an agreement is in place to limit axle loads (No14/2005/CM/UEMOA). This agreement stipulates fines for excess loads and aims at solving issues related to excess loads in the framework of UEMOA.

In addition, design standards for roads are in place under UEMOA (*Caractéristique de construction et d'aménagement des routes communautaires, 2009*). In these standards, basic aspects are set up for structures necessary for road development.

- The main criteria for road construction
 - Design speed: Over 80 km/h, 120km/h (when central reserve, etc. is in place)
 - Road site width: 50m
 - Road width: 7.00m
 - Road shoulder: 1.5m

7.1.3 Present Situation of Transit Traffic from Ports to Landlocked Countries

(1) Transshipment of containers at ports

Cargo is shipped increasingly in containers at ports. More than half of imported cargo is shipped in containers and more cargo is expected to be shipped in containers in the future. Meanwhile, as shown in this current traffic survey (see Chapter 8), container trailers used in road transport account for less than 20%. This means, approximately 60-80% of imported cargo arriving in containers is actually transshipped to trucks as bulk cargo. This is likely a reason for inefficient transit transport and excess load.

In interview surveys made with the cargo owners' association, cargo owners and truck transport businesses, respondents indicated the following as the main reasons:

- Vehicles owned by truck transport businesses are mainly in use for bulk cargo and they are not suitable for marine container cars.
- Bulk cargo can be transported in a larger volume in a truck.
- Illegal actions can be easily committed during customs clearance, if cargo is transshipped from containers to trucks as bulk cargo.
- Fees for container cars are higher at checkpoints along the corridors.
- Container cars require higher deposit fees (there will be container rental fee payment, if it takes longer than scheduled for cargo transport and customs clearance when traveling between ports and landlocked countries).
- Containers need to be returned to ports.

(2) Increase in costs and time related to customs clearance escorts

Of countries subject to this survey, some have already introduced a customs clearance escort system for transit cargo, including Mali, Burkina Faso, Niger and Benin. In Ghana and Togo, a tracking system is in place and the customs clearance escort mechanism was abolished. In this survey, we have not confirmed what the situation is in Cote d'Ivoire.

The customs clearance escort system is a monitoring mechanism to ensure transit cargo be moved to the predetermined final destination as described in the document. Specifically, in this mechanism, more than one truck in a convoy is to travel in the presence of customs officers. As shown in Chapter 6, in Burkina Faso, escorts are required to travel along from a border to another border as well as from a border to a dry port. Issues related to the escort mechanism are described below.

- Increase in transport time:
 - Scheduling is required to make in time with the escort's departure
 - Increase in transport time caused by travel in a convoy
- Increase in costs: Accrual of escort costs

(3) Cross-border customs clearance required in both countries

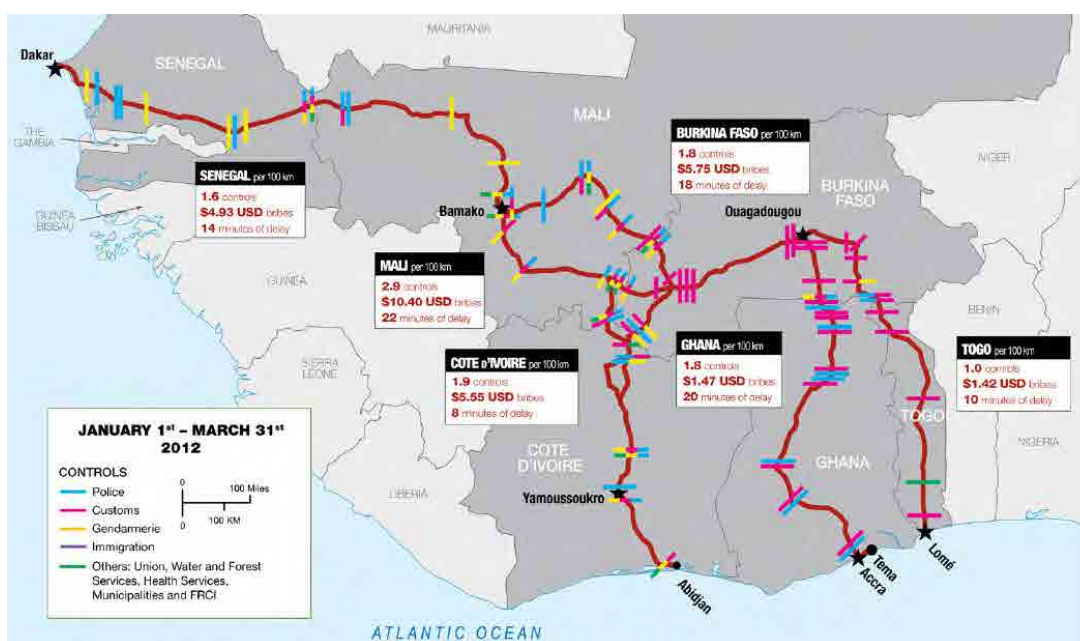
At the border customs clearance, it is expected that time required to clear customs will be decreased and trucks' freedom of travel will be increased, through the development of OSBPs, a more efficient customs clearance process and decreased need for a customs clearance service (the shift to an alternative such as a tracking system). Time to clear customs required at the border between Burkina Faso and Niger and coastal countries is usually from half a day to one day. Some customs clearance offices do not operate on Saturdays, Sundays and holidays. Fresh goods, however, are cleared preferentially as they are handled as specialty goods.

In transit transport, procedures should be made at the border customs clearance offices at both the coastal country and landlocked country sides, respectively. Each of these procedures takes about several hours to one day, if there is no inadequate entity found in documents. As mentioned above, customs clearance escorts are required at the landlocked country side, which makes scheduling arrangements prior to departure a necessity.

(4) Existence of a large number of control points

Along the corridors, there are a number of control points established at major points by the police or the customs office. The purpose to set up a checkpoint is to inspect documents retained and the vehicle itself but illegal charges of money (bribery) can be made sometimes. Truck drivers mentioned that these many control points are an obstacle for transport, which results in an increase in transport time.

Details of control points along the corridors connecting landlocked countries and coastal countries were surveyed regularly by a USAID project. In this report, the 19th Road Governance Report UEMOA (a.k.a. OPA: Observatoire des Pratique Anormales) published by the West Africa trade hub project of USAID is used. From the report, it is known that the number of control points has decreased between Ouagadougou and Lomé, which we believe indicates that this corridor has an advantage over other corridors.



Source: 19th Road Governance Report UEMOA (USAID West Africa trade hub project)

Figure 7-2 Road governance initiative data map

Table 7-1 Bribery per trip by corridor

	Bribes on the road except at the border(US\$)	Bribes at the border(US\$)	Total(US\$)
Dakar-Bamako	83	51	134
Abidjan-Bamako	95	48	143
Abidjan-Ouagadougou	61	22	83
Tema-Ouagadougou	19	12	31
Lomé-Ouagadougou	19	11	30

Source: 19th Road Governance Report UEMOA (USAID West Africa trade hub project)

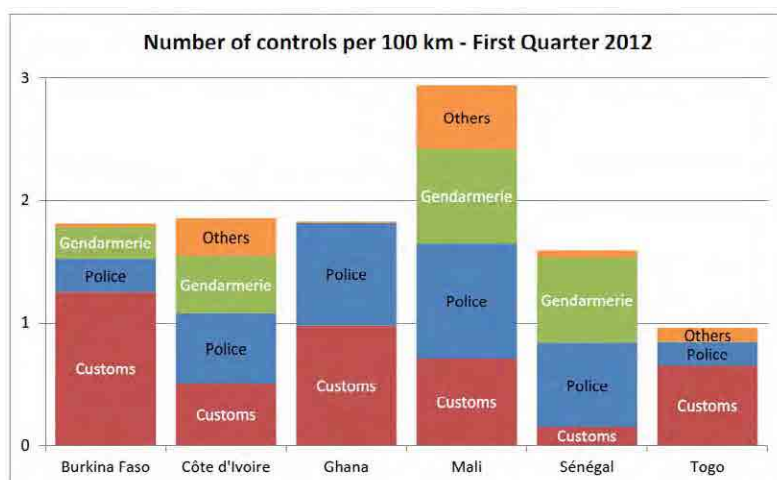


Figure 7-3 Density of controls by country and by service

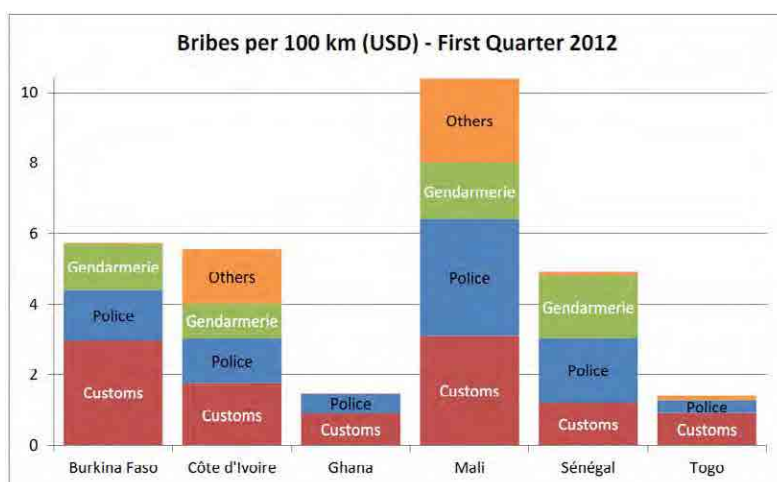


Figure 7-4 Density of bribery by country and by service

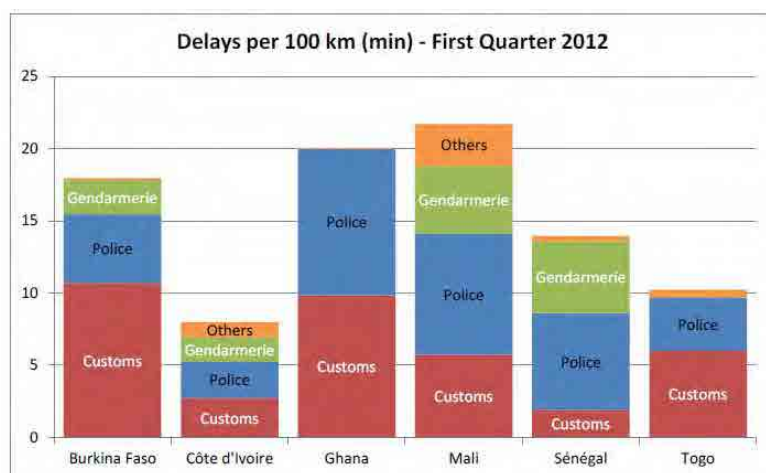


Figure 7-5 Responsibility for delays, by country and uniformed service

Source: 19th Road Governance Report UEMOA (USAID West Africa trade hub project)

(5) Transport costs and time

Costs required for transit transport were reviewed based on materials collected on site and the result of interview surveys. Sections surveyed include those between each port and end destination (in this case, Ouagadougou and Niamey) and marine transport costs are not included. Transport costs include road transport costs and fees to be paid to customs agents.

Total transport costs are 1.4 million CFA to 1.9 million CFA for travel to Ouagadougou. The most inexpensive cost is found between Ouagadougou and the port of Lomé, where both port charges and transport costs are relatively low.

For travel to Niamey, the lowest costs are found from the port of Cotonou, which are 1.5 million CFA and 2.0 million CFA. Port charges are higher than those at the port of Lomé, which is approximately at the same level of the port of Tema, while transport costs here are more inexpensive. The distance between Niamey to the port of Cotonou or the port of Lomé is almost the same. When traveling from Niamey to the port of Lomé, however, it is necessary to pass through Burkina Faso, which means there will be additional transit costs.

It is characteristic that the waiting time at the port represents a high portion of the total transport time for each corridor. Of transport time for travel between Ouagadougou and ports, the transport time along the Ouagadougou-Lomé corridor is the shortest. Although there is geographic influence working here, it is partly because the waiting time is shorter and the number of control points along the corridor is fewer.

Table 7-2 Transportation cost (Import to Ouagadougou)

Structures		Pt. Abidjan	Pt. Tema	Pt. Lomé	Pt. Cotonou
Port Authority		21	9	24	4
Handling charges		186	77	75	84
Consignees		94	50	46	55
Shippers council		16	2	70	65
Transport (Including forwarding fee)	Niamey	1,650	1,650	1,300	1,350
	Ouagadougou	1,600	1,600	1,200	1,300
Total	Niamey	1,967	1,788	1,515	1,558
	Ouagadougou	1,917	1,738	1,415	1,508

Unit: thousand CFA

*1 Excluding the fee at final destination (ex. Ouagarinter) in the landlocked country

*2 This cost is the average value of 20ft container or 30t f bulk freight

Source: JICA Survey Team based on results of interview surveys

Table 7-3 Transportation time (Import to Ouagadougou)

	Unit	Pt. Abidjan	Pt. Tema	Pt. Lomé	Pt. Cotonou
Distance	Km	1,148	1,040	948	1,060
Total Time	Days	15	13	12	14
-Road Transport	Days	6	5	4	5
-Waiting time at Port	Days	9	8	8	9

Source: JICA Survey Team based on results of interview surveys with OTRAF and transporters

Based on the result of interview surveys with the forwarders' association (OTRAF: Road Transport Organisation Burkina) and truck transport businesses, road transport costs from Ouagadougou and ports are shown in Table 7-4. In addition to the amounts shown below, charges illegally made at control points along the corridor and parking fees (for drivers to rest) are necessary.

Table 7-4 Truck transport costs (Ouagadougou-Port)

	Unit: thousand CFA							
	Voie Abidjan		Voie Tema		Voie Lomé		Voie Cotonou	
	export	import	export	import	export	import	export	import
Total (Round-Trip)	931.5		907.5		867.0		1,088.5	
Salaire (monthly)	85.0		85.0		85.0		85.0	
Carburant	350.0	400.0	350.0	375.0	350.0	350.0	375.0	550.0
Roadfees	51.5	45.0	61.5	36.0	42.0	40.0	38.5	40.0
Customs (Oauga-inter)	5.0	-	5.0	-	5.0	-	5.0	-
CCIB(Ouaga-inter)	1.5	-	1.5	-	1.5	-	1.5	-
Tolls	15.0	15.0	5.0	5.0	10.0	10.0	10.0	10.0
Union	-	10.0	-	11.0	-	11.0	-	10.0
Customs(Burkina)	5.0	2.0	5.0	2.0	5.0	2.0	5.0	1.0
Customs (Coastal country)	10.0	2.0	6.0	2.0	6.5	1.0	N/A	3.0
Pass for truck	6.0	-	30.0	-	6.0	-	6.0	-
Weigh bridge	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Entry into port	3.0	-	3.0	-	2.0	-	5.0	-

CCIB: Chamber of Commerce and Industry Burkina Faso

Source: JICA Survey Team based on results of interview surveys with OTRAF and transporters

7.2 Transport Risk Factors

When a landlocked country intends to undertake international trade activity by using ports, geographical restrictions force the country to rely on a port located within the territory of a coastal country. Therefore, the country faces transport risks occurring within the neighboring transit country. Entities engaged in transit transport, such as consignors, carriers, and forwarders carry out transport while facing transport risks in the corridors. The principal risks in transit transport are summarized in Table7-5.

Table7-5 Factors influencing selection of ports

Item	Port characteristics
Time	<ul style="list-style-type: none"> • Port capacity (waiting time is shorter if there is sufficient capacity to meet demand.) • Whether or not container ships can use the port (port depth and cargo machinery and equipment influence this). Reshipment by feeder boats requires extra money.) • Proximity to the cargo loading and unloading place in the sea route network (influence on shipping time) • Efficiency of various port procedures • Efficiency of the container terminal operation (influence on the container passing time at ports) • Time required before unloading • Time required for customs clearance and transit procedures • Road conditions near the port (congestion will affect total transportation time) • Whether or not benefits are extended for frequent transactions
Cost	<ul style="list-style-type: none"> • Whether the port accepts container ships (reshipment by feeder boats is an added cost. Port depth and cargo machinery and equipment affect costs.) • Proximity to the cargo handling place in the sea route network (affects shipping costs) • Port fees (berthing, unloading, and storage fees) • Free storage period and extra storage fees • Customs clearance fee • Other customs fees (bond for transit cargos, etc.) • Taxation of transit cargos by the customs of the port country (e.g. export cargos using the port in Ghana)
Reliability	<ul style="list-style-type: none"> • Cargo security (risk of loss and damage) • Political risk (risk of port or border closure) • Presence or absence of warehouse capacity and functions (freezing and refrigerating facilities) • Presence or absence of railway sidings (for general cargo and container cargo)
Others	<ul style="list-style-type: none"> • Secured berth allocation of particular ports. • Availability of beneficial treatment depending on frequency of transactions at specific ports • Consigners often designate specific ports

Source: JICA study team based on JICA project study and interview on site.

Table7-6 shows the factors in selection of Railroads and roads. What is important here is that ports compete with each other but there is no competition in a specific corridor. Railroads and roads, however, are in constant competition. Due to the aging of Railroads, road transportation is dominant now.

Table7-6 Factors influencing choice of railroads and roads

Item	Factors in selecting Railroads	Factors in selecting roads
Time	<ul style="list-style-type: none"> • Service frequency (influences capacity). • Transportation capacity (affects waiting time). • Wagon waiting time (influences total transportation time). • Condition of railway infrastructure and vehicles (influence service time). • Connection to truck transportation at the place of departure and arrival. 	<ul style="list-style-type: none"> • Road conditions (affects running speed). • Number of checkpoints (stops increase transportation time). • Truck waiting time. • Time required for customs inspection near borders • Congestion near borders • Parking lots near borders
Cost	<ul style="list-style-type: none"> • Railroad rate (comprehensive judgment by the fare system). • System of storage fees at departure and arrival points. • Transparency in the order of loading on wagons. 	<ul style="list-style-type: none"> • Road conditions (fuel cost changes depending on travelling speed). • Presence or absence of customs escort and the level of fees • Presence or absence of GPS tracking system • Cost required for border passage • Presence or absence of axle weight regulations (influences transportation cost). • Number of checkpoints • Presence or absence of truck distribution by groups of firms
Reliability	<ul style="list-style-type: none"> • The risk of loss and damage of cargos is lower than with trucks in normal operation. • Operation as scheduled (more reliable than trucks). • Conditions of railway infrastructure and cars (Danger of derailment affects damage risk) 	<ul style="list-style-type: none"> • Road conditions (influence cargo damage risk). • Vehicle conditions (influence cargo damage risk). • Driver reliability (sense of responsibility, punctuality, maintenance of cargos, and safe driving) • Development of rest facilities enhances safe driving.
Others	<ul style="list-style-type: none"> • In the case of prioritizing low cost over time. • Railroads are generally more advantageous for land transportation of 500 km or more. • Railroad transportation is advantageous for bulk cargos (mineral resources, salt, cement and rice). • Railroad is often used for export cargos. 	<ul style="list-style-type: none"> • There is no railway infrastructure. • In the case of prioritizing time (speed) over cost. • Transportation of fresh food and other agricultural products.

Source: JICA study team based on JICA project study and interview on site.

7.3 Present State of Route Selection for Transit

For the consignors and forwarders of Burkina Faso, the reasons for selecting a route in transit transport were surveyed. The question was to ask the reason for selecting the route concerned. The selected routes and the reason are shown below.

(1) Choices of route

- Burkina Faso – Abidjan Route
- Burkina Faso – Tema Route
- Burkina Faso – Lomé Route

The Port of Cotonou route is used mostly for importing gasoline and other petroleum products. Since one forwarder monopolizes transport of petroleum products, this has been excluded from the scope of this survey.

(2) Reasons for route selection

Following 12 reasons have been pointed out for choice of the transport route and ports. After having selected the route, the respondents provided reasons as highlighted for route choice.

Table 7-7 Reasons for route choice

1. Transport time	7. Time spent on formalities at port
2. Transport costs	8. Level of port facilities
3. Road condition	9. Ship network
4. Time used for formalities at border point	10. Port security
5. Waiting time at port	11. Language
6. Port costs	12. Other reason

(3) Survey questionnaire

The survey was conducted among 38 shippers located in Burkina Faso. Since the entities to select the route and ports are consignors according to the practical situation in the area, these consignors were chosen to be interviewed. Consignors are contractors dealing with the food, everyday sundries, electrical equipment, and construction materials.

(4) Survey Method

Surveyor visited shippers' offices and obtained responses in interviews.

(5) Survey results

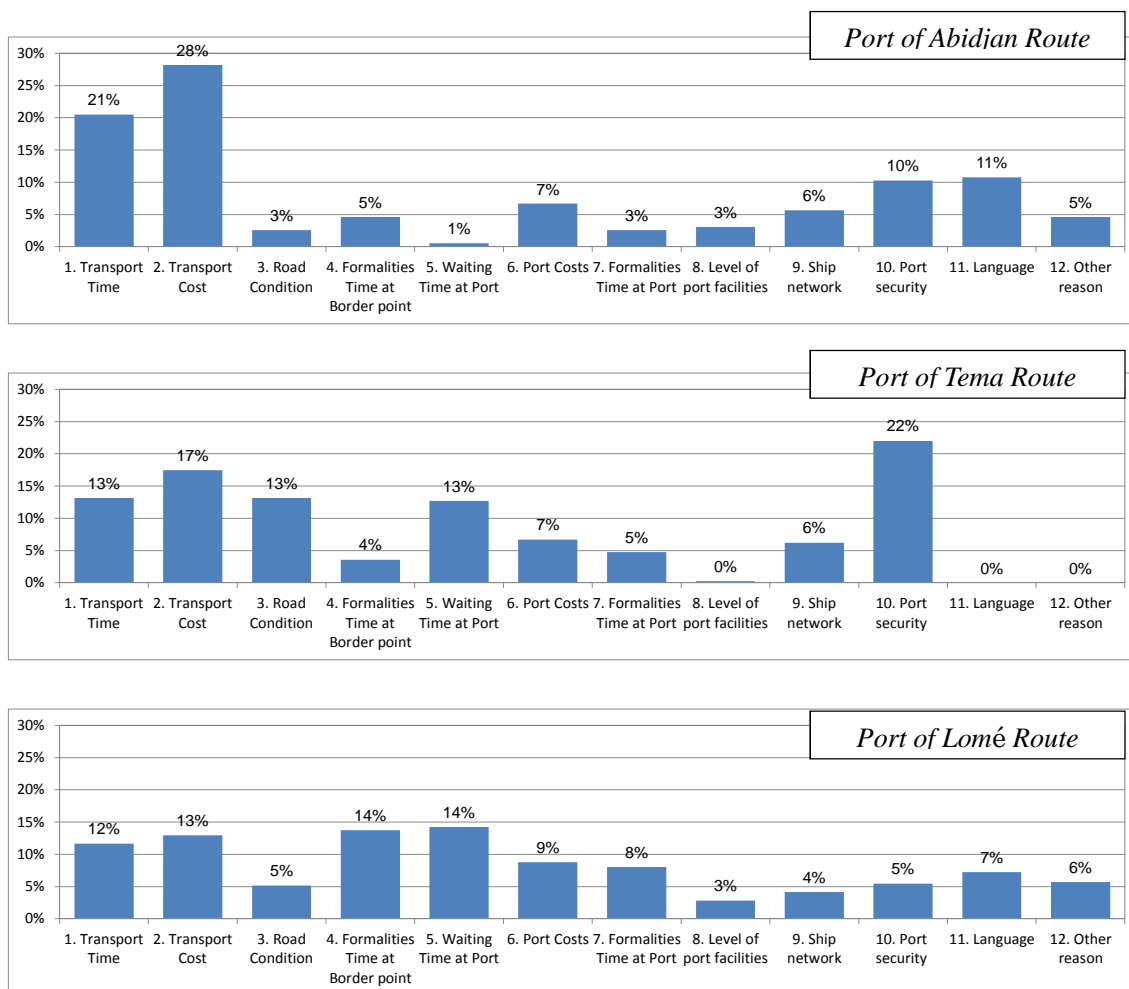
The consignors utilizing the Port of Abidjan Route evaluated "2. Transport Costs" (28%) as the most important, which was followed by "1. Transport Time" (21%) and "11. Language" (11%). While they evaluated the Route's road transport cost and time highly, their evaluation of

the waiting time at the port was low.

The consignor utilizing the Port of Tema Route valued “10. Port Security” (22%) as the most important, which was followed by “Transport Costs” (17%). This was followed by “1. Transport Time,” “3. Road Condition,” and “5. Waiting Time at Port,” respectively at 13%.

On the other hand, the consignors utilizing the Port of Lomé Route indicated that they value the superiority of the cost and time for the Route as a whole; other factors were evaluated in the responses as follows: “4. Formalities Time at Border point” (14%), “5. Waiting Time at Port” (13%) “2. Transport Costs” (13%), and “1. Transport Time” (12%).

As evident from the questionnaire results, factors cited as important in route choice are matters related to road transport for the Abidjan Route, port security for Tema Route; the cost and time as considered comprehensively for road transport – customs clearance – ports for the Lomé Route.



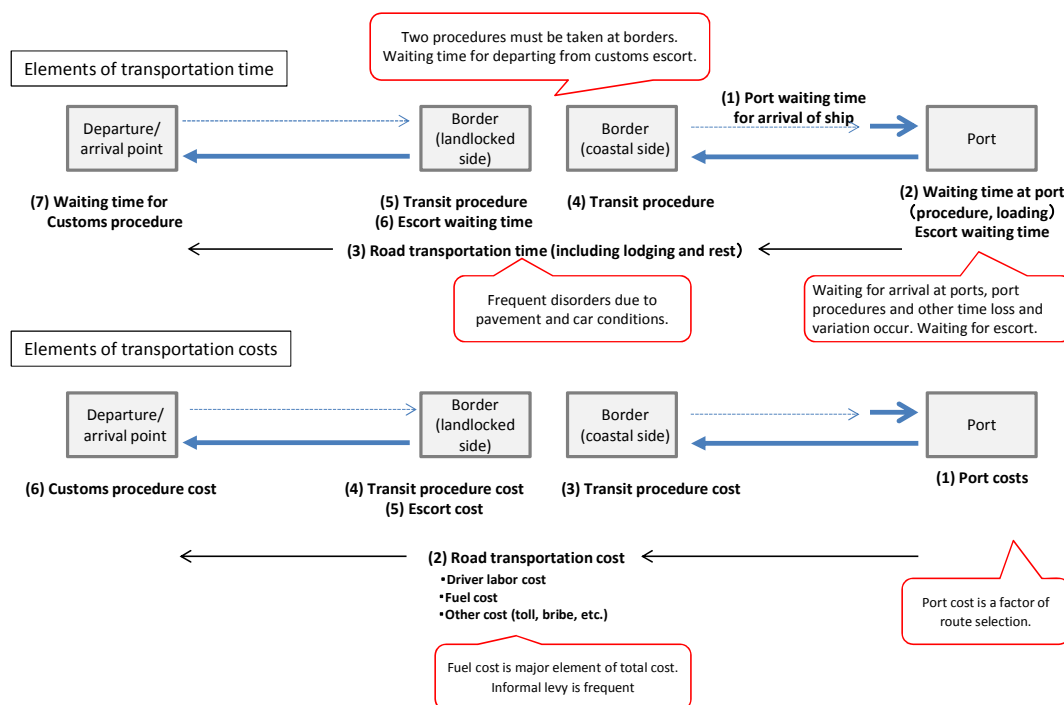
Source: JICA Study team based on Questionnaire survey to shippers

Figure7-6 Evaluation of each corridors by the shipper

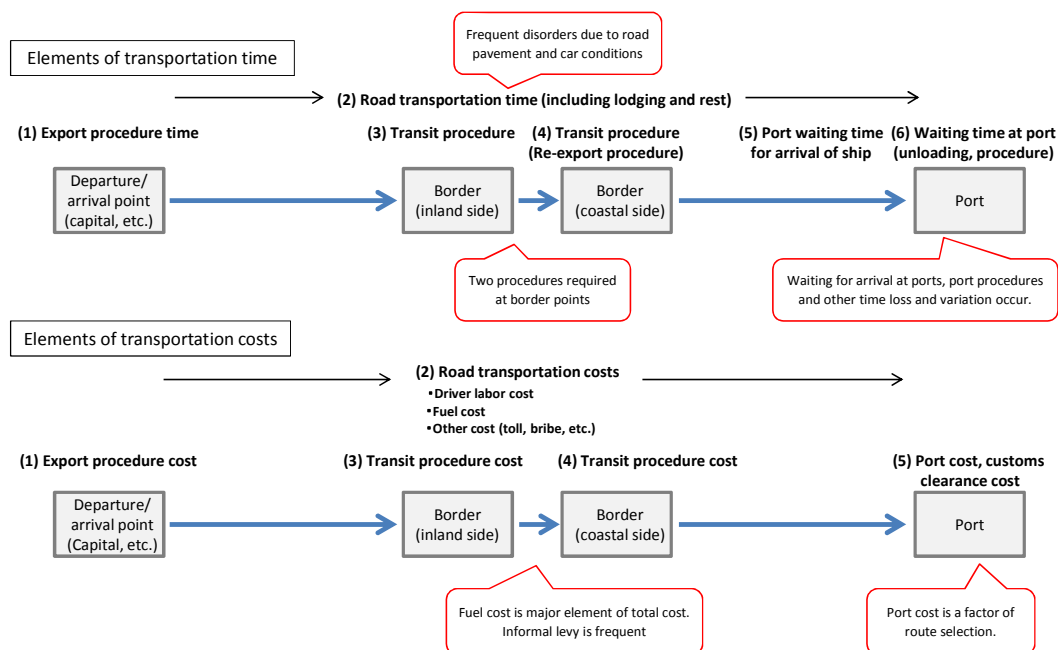
7.4 Summary of Chapter

This chapter summarizes the current state of transit traffic between landlocked countries and the port. The main bottlenecks in such transit traffic are summarized as shown in Figure7-7

Main Bottlenecks in Importation



Main Bottlenecks in Exportation

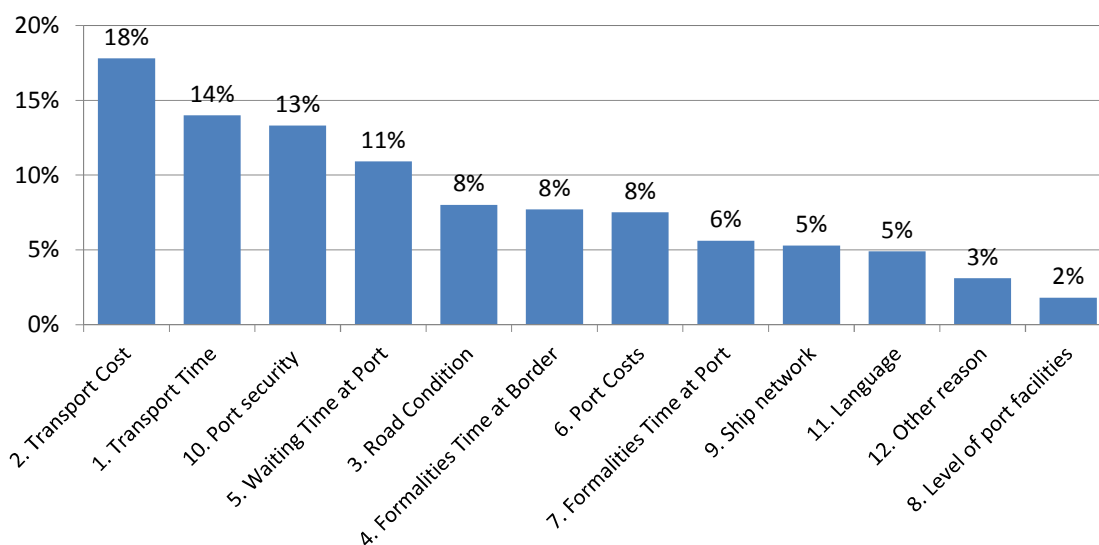


Source: JICA Study team

Figure7-7 Main bottleneck factors on the corridor

Figure7-8 shows the results of a questionnaire conducted of corridor users (shippers) on their reasons for choosing the corridor, including the port. The results indicate the high level of need for improvement of the transport cost and time, with road-related items ranking in the top two. Based on the above, all-round environmental improvement is required, such as reduction of checkpoints and provision of OSBP in conjunction with road improvement and appropriate maintenance.

As for improving the appeal of the port, modernization is a basic issue, including reduced at the port and improved security functions.



Source: JICA Study team based on Questionnaire survey to shippers

Figure7-8 Reasons for route choice by the shipper

Environmental improvement covering roads and the port would enhance the attraction of the corridor. The main measures for improving the transport infrastructure in order to raise the level of services (reduction in transport costs and time) are shown below.

- Reinforcement of road transportation capacity (asphalt paving of all main distribution routes, appropriate maintenance, expansion of overtaking lanes capacity, etc.)
- Reduction of checkpoints and escorts by introduction of tracking system
- Streamlining of customs clearance procedures by introduction of single windows and OSBP (at ports and border posts)
- Improvement of port capacity and facilitation of freight transit by establishment of dry port
- Smooth access to international corridor and port (improvement of urban beltway and provision of truck pool)

Chapter 8 ANALYSIS OF CURRENT TRAFFIC AND LOGISTICS

8.1 Description of Survey

8.1.1 Objective of Survey

The objective of the survey was to understand motor vehicle-based cross-border traffic conditions in the West African region centered on the UEMOA zone and Ghana.

The survey consisted of a total of five surveys of the actual situation with regard to traffic and physical distribution. They included the acquisition of quantitative data on cross-border traffic through spot traffic count surveys and Origin–Destination (OD) survey.

8.1.2 Survey Items

For the above objectives, a traffic count survey and an OD interview survey of vehicle drivers were conducted mainly at the borders of international corridors.

The OD interviews were also conducted at ports and other logistics facilities such as Dry port and Export Processing Zones (EPZ) that affect the international logistic flow. Survey items are shown in the following table.

Table 8-1 Survey items

No.	Survey Item
1	Traffic Count Survey
2	Roadside OD Interview Survey
3	OD Interview Survey for Port
4	OD Interview Survey for Landlocked Container Depots / Dry Ports
5	OD Interview Survey for Export Processing Zones (EPZ) / Special Economic Zones (SEZ)

Source : JICA Study team

8.1.3 Survey Methods

Traffic count survey method

- This mainly involved a counting survey at road crossings near borders.

Roadside OD interview survey method

- The OD surveys (road crossings) were conducted at the same points on the road as the spot traffic volume surveys. This method involved interviewing of drivers. The surveyor stops a vehicle, interviews the driver, and writes the results on the survey sheet. The total flow to the final destination was identified.

OD interview survey method (logistics facilities)

- This method involved interviewing drivers of freight vehicles driving into and out of the major ports, inland container depots, export processing zones (EPZs) and special economic zones (SEZs). The net flow to the final destination was identified.

Table 8-2 List of survey items

Classification	Name	Number of Days	Time	Locations	Target	Method	Items
Survey No.1	Traffic Count survey	3 weekdays 1 holiday	24-hour survey	Border Point:15 points Internal Point:6 points Total: 21 locations	Spot traffic volume (All vehicle types)	Counting (Complete survey) Equipment can be used.	<ul style="list-style-type: none"> Traffic volume on inbound and outbound lanes Survey of vehicle types (passenger cars, buses, small and large freight vehicles and container vehicles) Survey unit: Aggregated every hour
Survey No.2	Roadside OD survey	As above	16-hour survey (6:00 to 22:00)	As above	Car drivers (passenger cars and freight vehicles)	Interview drivers on inbound and outbound lanes and fill out survey sheets. (20% of samples)	<ul style="list-style-type: none"> Origin/ Destination For passenger cars: Purpose of trip, number of passengers For freight vehicles: Items carried, load weight, maximum allowed load
Survey No.3	Survey at port gate (OD survey)	3 weekdays 1 holiday	16-hour survey (6:00 to 22:00)	Senegal: Dakar Port Cote D'Ivoire: Abaidjan Port Ghana: Tema Port Togo: Lome Port Benin: Cotonou Port Total: 5 ports	Freight vehicle drivers	Interview incoming and outgoing drivers separately and fill out survey sheets. (20% of samples)	As above
Survey No.4	Dry Port Inland depot survey (OD survey)	1 weekday	As above	Entrances to terminals Total: 5 locations	As above	As above	As above
Survey No.5	EPZ/SEZ survey (OD survey)	1 weekday	As above	Entrances to major EPZs/SEZs Total: 5 locations	As above	As above	As above

Source: JICA Study team

8.1.4 Location of Surveys of Actual Traffic Situations

(1) Traffic count survey and roadside OD survey (Surveys No.1 and No.2)

The traffic volume survey points selected were points at the border. The purpose was to identify cross-border traffic in the major international corridors. Additionally, survey points were established in the international corridors of the countries with ports. Surveys were conducted at a total of 21 locations.

(2) OD surveys at port gates (Survey No.3)

Five ports were selected for the survey: the ports of Dakar, Abidjan, Tema, Lomé, and Cotonou. Drivers of freight vehicles were interviewed at the entrance gates.

(3) OD surveys for logistic facilities (Surveys No.4 and No.5)

The survey was carried out by interviewing the drivers of freight vehicles at the entrance gates of the Dry port, export processing zones (EPZs) of each country. The locations of surveys of each item are shown in the following figure.

Table 8-3 List of survey points

Survey Item	Survey Point			
	No.	Country	Name	Remarks
Traffic Count / Roadside OD	1	Senegal	Rosso	B. Mauritania
	2	Senegal	Tambacounda	N 1
	3	Senegal	Mpac	B. Guinea Bissau
	4	Senegal	Kalifourou	B. Guinea
	5	Senegal	Kidira	B. Mali
	6	Burkina Faso	Koloko	B. Mali
	7	Burkina Faso	Yendéré	B. Cote d'Ivoire
	8	Burkina Faso	Dakola	B. Ghana
	9	Burkina Faso	Cinkansé	B. Togo
	10	Burkina Faso	Kantchari	B. Niger
	11	Niger	Gaya	B. Benin
	12	Niger	Konni	B. Nigeria
	13	Cote d'Ivoire	Yamoussoukro	N 3
	14	Ghana	Elubo	B. Cote d'Ivoire
	15	Ghana	Offinso	N 10
	16	Togo	Kara	N 1
	17	Togo	Notse	N 1
	18	Ghana	Aflao	B. Togo
	19	Togo	Sanvecondji	B. Benin
	20	Benin	Dassa	N 1
	21	Benin	Seme	B. Nigeria
Entrance of Port	1	Senegal	Dakar Port	-
	2	Cote d'Ivoire	Abidjan Port	-
	3	Ghana	Tema Port	-
	4	Togo	Lomé Port	-
	5	Benin	Cotonou Port	-
Entrance of Dry Port	1	Burkina Faso	OugarInter	-
	2	Burkina Faso	BobolInter	-
	3	Togo	Sahel-terminal	15 km North from Lomé Port
	4	Benin	Zongo	Near Cotonou Port
	5	Benin	Allada	45 km North from Cotonou Port
Entrance of EPZ	1	Senegal	ZFID	15 km Northeast from Dakar Port
	2	Ghana	Tema EPZ	10 km North from Tema Port
	3	Togo	Port EPZ	Next to Lomé Port
	4	Togo	Meche Nina Factory	5 km North from Lomé Port
	5	Benin	Seme	25 km East from Cotonou Port

Note: B.=Border、 N= National Road

Source : JICA Study team



Figure 8-1 Survey point for Traffic count / Roadside OD survey

Source : JICA Study team



Figure 8-2 Survey point for the Port gate survey

Source : JICA Study team



Figure 8-3 Survey point for the Logistic facilities survey

Source : JICA Study team

8.1.5 Description of Each Survey

(1) Traffic count surveys

1) Survey Method

All vehicles passing through the survey points were counted by vehicle type and direction, and the survey was conducted manually by surveyors.

2) Date and Duration

No. of days: Total 4 days (1 weekend day, 3 weekdays)









Duration: 24 hours from 6:00 a.m. to 6:00 a.m.

(At the border gates, survey duration varied according to hours open.)

3) Vehicle type

Vehicles were classified into five types as shown in the following table.

Table 8-4 Vehicle type classification

Vehicle type	Example	
Passenger car or taxi		
Bus		
Light truck		
Truck and trailer		
Container truck		

Source : JICA Study team

(2) Roadside OD interview surveys

1) Survey Method

Roadside OD interview surveys were conducted of the vehicle drivers passing through the survey points. The surveyor stops the vehicles at the roadside temporarily with the permission and collaboration of local police and custom staff, and interviews the drivers and fills out the questionnaire.

2) Date and Duration

- No. of days: Total 4 days (1 weekend day; 3 weekdays)
- Duration: 16 hours, from 6:00 a.m. to 10:00 p.m.

(At the border gates, survey duration varied according to hours open)

3) Interview Items

Interview items of the survey were as follows;

- Survey Date and Time
- Vehicle Type
- Origin of Trip (Country, Region, Department, City)
- Final Destination of Trip (Country, Region, Department, City)
- Driver's Residence
- Trip purpose
- Number of Passengers
- Type of Goods *for Light Truck, Truck, and Container Trailer
- Load capacity (ton) *for Light Truck, Truck, and Container Trailer
- Maximum loading capacity (ton) *for Light Truck, Truck, and Container Trailer

(3) OD interview surveys at port gates

1) Survey Method

OD Interviews for freight transportation in ports were conducted of vehicle drivers passing through the entry and exit gate of international ports. The surveyor stops the vehicles around the gate with the permission and collaboration of administrative staff of port facilities, and interviews the drivers and fills out the questionnaire.

2) Date and Duration

No. of days: Total 4 days (1 weekend day; 3 weekdays)

Duration: 16 hours from 6:00 a.m. to 10:00 p.m.

3) Interview Items

Interview items of the survey were as follows;

- Survey Date and Time
- Vehicle Type
- Origin of Trip (Country, Region, Department, City)
- Final Destination of Trip (Country, Region, Department, City)
- Type of Goods *for Light Truck, Truck, and Container Trailer
- Load capacity (ton) *for Light Truck, Truck, and Container Trailer
- Maximum loading capacity (ton) *for Light Truck, Truck, and Container Trailer

(4) OD interview surveys for dry ports and landlocked container depots

1) Survey Method

These OD interviews were conducted of vehicle drivers passing through the entry and exit gates of the facilities. The surveyor stops the vehicles around the gate with the permission and collaboration of administrative staff of the facilities, and interviews the drivers and fills out the questionnaire.

2) Date and Duration

No. of days: 1 weekday

Duration : Open hours of the facility

3) Interview Items

Interview items of the survey were as follows;

- Survey Date and Time
- Vehicle Type
- Origin of Trip (Country, Region, Department, City)
- Final Destination of Trip (Country, Region, Department, City)
- Type of Goods *for Light Truck, Truck, and Container Trailer
- Load capacity (ton) *for Light Truck, Truck, and Container Trailer
- Maximum loading capacity (ton) *for Light Truck, Truck, and Container Trailer

(5) OD interview surveys for Export Processing Zones (EPZ) and Special Economic Zones (SEZ)

1) Survey Method

The OD interviews for export processing zones (EPZ) and special economic zones (SEZ) were conducted of vehicle drivers passing through the entry and exit gate of the facilities. The surveyor stops the vehicles around the gate with the permission and collaboration of administrative staff of the facilities, and interviews the drivers and fills out the questionnaire.

2) Date and Duration

- No. of days: 1 weekday
- Duration : Open hours of the facility

3) Interview Items

Interview items of the survey were as follows;

- Survey Date and Time
- Vehicle Type
- Origin of Trip (Country, Region, Department, City)
- Final Destination of Trip (Country, Region, Department, City)
- Type of Goods *for Light Truck, Truck, and Container Trailer
- Load capacity (ton) *for Light Truck, Truck, and Container Trailer
- Maximum loading capacity (ton) *for Light Truck, Truck, and Container Trailer

Table 8-5 Sample ratio on the OD surveys

Survey Item	Survey Point			Survey Result (Daily Average)		
	No.	Country	Name	Traffic Volume Total	OD Sample Volume Total	Sample Ratio
Traffic Count / Roadside OD	1	Senegal	Rosso	71	71	100 %
	2	Senegal	Tambacounda	1,555	330	21 %
	3	Senegal	Mpac	98	70	72 %
	4	Senegal	Kalifourou	55	55	100 %
	5	Senegal	Kidira	440	161	37 %
	6	Burkina Faso	Koloko	182	122	67 %
	7	Burkina Faso	Yendéré	221	216	98 %
	8	Burkina Faso	Dakola	245	219	90 %
	9	Burkina Faso	Cinkansé	598	150	25 %
	10	Burkina Faso	Kantchari	453	322	71 %
	11	Niger	Gaya	994	210	21 %
	12	Niger	Konni	1,261	293	23 %
	13	Cote d'Ivoire	Yamoussoukro	2,815	602	21 %
	14	Ghana	Elubo	2,304	502	22 %
	15	Ghana	Offinso	6,037	1,220	20 %
	16	Togo	Kara	1,572	336	21 %
	17	Togo	Notse	2,634	1,014	38 %
	18	Ghana	Aflao	1,174	294	25 %
	19	Togo	Sanvecondji	2,752	792	29 %
	20	Benin	Dassa	1,901	678	36 %
	21	Benin	Seme	715	230	32 %
Entrance of Port	1	Senegal	Dakar Port	2,452	522	21 %
	2	Cote d'Ivoire	Abidjan Port	1,672	360	22 %
	3	Ghana	Tema Port	862	249	29 %
	4	Togo	Lomé Port	1,994	705	35 %
	5	Benin	Cotonou Port	4,168	872	21 %
Entrance of Dry Port	1	Burkina Faso	Ouga-Inter	322	95	30 %
	2	Burkina Faso	Bobo-Inter	186	95	51 %
	3	Togo	Sahel-terminal	349	162	46 %
	4	Benin	Zongo	83	83	100 %
	5	Benin	Allada	25	25	100 %
Entrance of EPZ	1	Senegal	ZFID	167	145	87 %
	2	Ghana	Tema EPZ	159	159	100 %
	3	Togo	Port EPZ	49	49	100 %
	4	Togo	Meche Nina Factory	310	310	100 %
	5	Benin	Seme	49	49	100 %

Source : JICA Study team

8.1.6 Execution Date of Surveys

Execution dates for each survey item and point are shown in the following table. All survey was conducted in 2012.

Table 8-6 Execution date of the surveys

Survey Item	Survey Point			Survey Date (In 2012)
	No.	Country	Name	
Traffic Count / Roadside OD	1	Senegal	Rosso	June 3-6
	2		Tambacounda	June 10-13
	3		Mpac	June 24-27
	4		Kalifourou	June 17-20
	5		Kidira	June 10-13
	6	Burkina Faso	Koloko	May 31-June 1, June, 3-4
	7		Yendéré	
	8		Dakola	May 29-31, June 3
	9	Niger	Cinkansé	June 27-30
	10		Kantchari	
	11		Gaya	May 13-16
	12	Konni		
	13	Cote d'Ivoire	Yamoussoukro	April 29-May 2
	14	Ghana	Elubo	April 15-18
	15		Offinso	
	16	Togo	Kara	June 24-27
	17		Notse	
	18	Ghana	Aflao	April 15-18
	19	Togo	Sanvecondji	June 24-27
	20	Benin	Dassa	June 3-6
	21		Seme	
Port OD	1	Senegal	Dakar Port	May 27-30
	2	Cote d'Ivoire	Abidjan Port	April 29-30, May 2
	3	Ghana	Tema Port	April 16-18 (conducted by GPHA)
	4	Togo	Lomé Port	June 24-27
	5	Benin	Cotonou Port	June 3-6
ICD/Dry Port OD	1	Burkina Faso	Ouga-Inter	May 31
	2		Bobo-Inter	
	3	Togo	Sahel-terminal	June 22
	4	Benin	Zongo	June 1
	5		Allada	
EPZ OD	1	Senegal	ZFID	May 24
	2	Ghana	Tema EPZ	April 12
	3	Togo	Port EPZ	June 22
	4		Meche Nina Factory	June 22
	5	Benin	Seme	June 1

Source : JICA Study team

8.2 Result of Traffic Count Survey

8.2.1 Average Daily Traffic and Vehicle Type Share

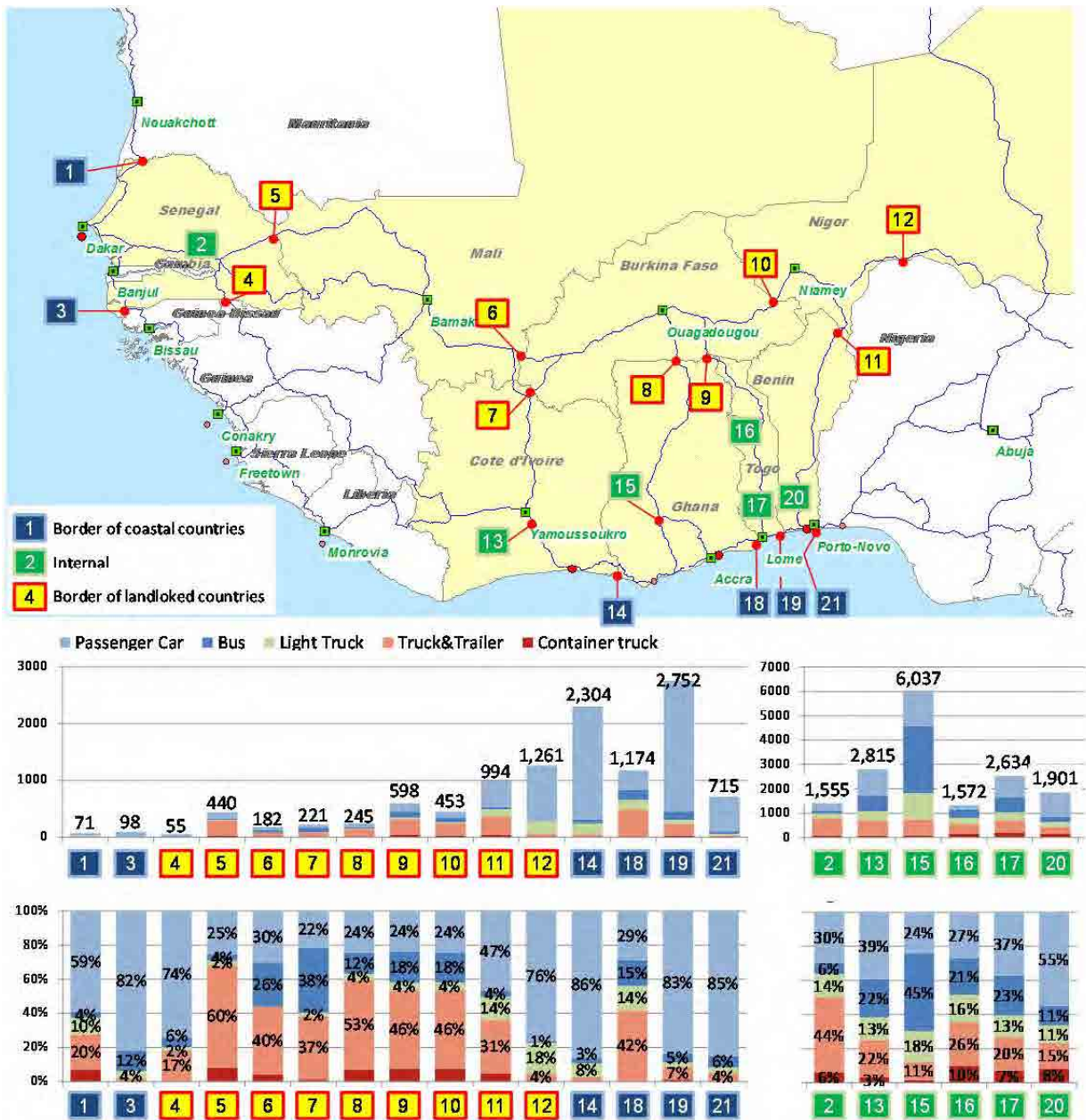
Figure 8-4 shows the results of traffic counts at the respective spots. The numbers are average daily traffic volumes for four days. As a result, the following things became clear:

Result of traffic count survey

- The cross-border maximum traffic between landlocked countries and coastal countries is roughly 994 (Point 11) vehicles per day. Senegal-Mali and Burkina Faso-coastal countries had cross-border traffic of 200-600 vehicles per day.
*Point 12 (Niger-Nigeria border) has more traffic than other points. It is thought that there are daily exchanges such as purchasing at markets on Sundays.
- In the cross-border traffic departing from and arriving in Burkina Faso, the traffic at the border with Togo (Point 9) leading to the Port of Lomé is more than twice as much as the traffic at the borders with other countries.
- In the cross-border traffic departing from and arriving in Niger (excluding Point 12 where regional traffic is great), the traffic at the border with Benin (Point 11) leading to the Port of Cotonou is more than twice as much as that at the border with Burkina Faso (Point 10).
- The cross-border traffic (Points 6 and 10) between landlocked countries is roughly 500 vehicles per day.
- In the cross-border traffic between coastal countries, Benin-Togo border (Point 19) was the greatest at 2,752 vehicles per day. Next, the Cote-d'Ivoire-Ghana border (Point 14) had 2,304 vehicles per day; the Togo-Ghana border (Point 18) had 1,174 vehicles per day; and the Benin-Nigeria border (Point 21) had 715 vehicles per day.
- The traffic departing from and arriving in Senegal was low as compared to other points, as the traffic other than the Mali border (Point 5) was less than 100 vehicles per day.

Daily traffic volume by types of vehicles

- Large freight commercial vehicles accounted for 36 %-70 % of the cross-border traffic of landlocked countries.
- The figure for large freight commercial vehicles was 68 % at the Mali-Senegal border, 59 % at the Burkina Faso-Ghana border; 54 % at the Burkina Faso-Togo border, and 54 % at the Burkina Faso-Niger border.
- In the cross-border traffic between coastal countries, the large freight commercial vehicles ratio was high at 42 % at Ghana-Togo border, but 6 % at other points.
- Marine container vehicles accounted for 10 % or less on the whole.



Note: The percentage accounted for by freight cars means the ratio of truck and trailer and container trucks to all vehicles
 Source : JICA Study team

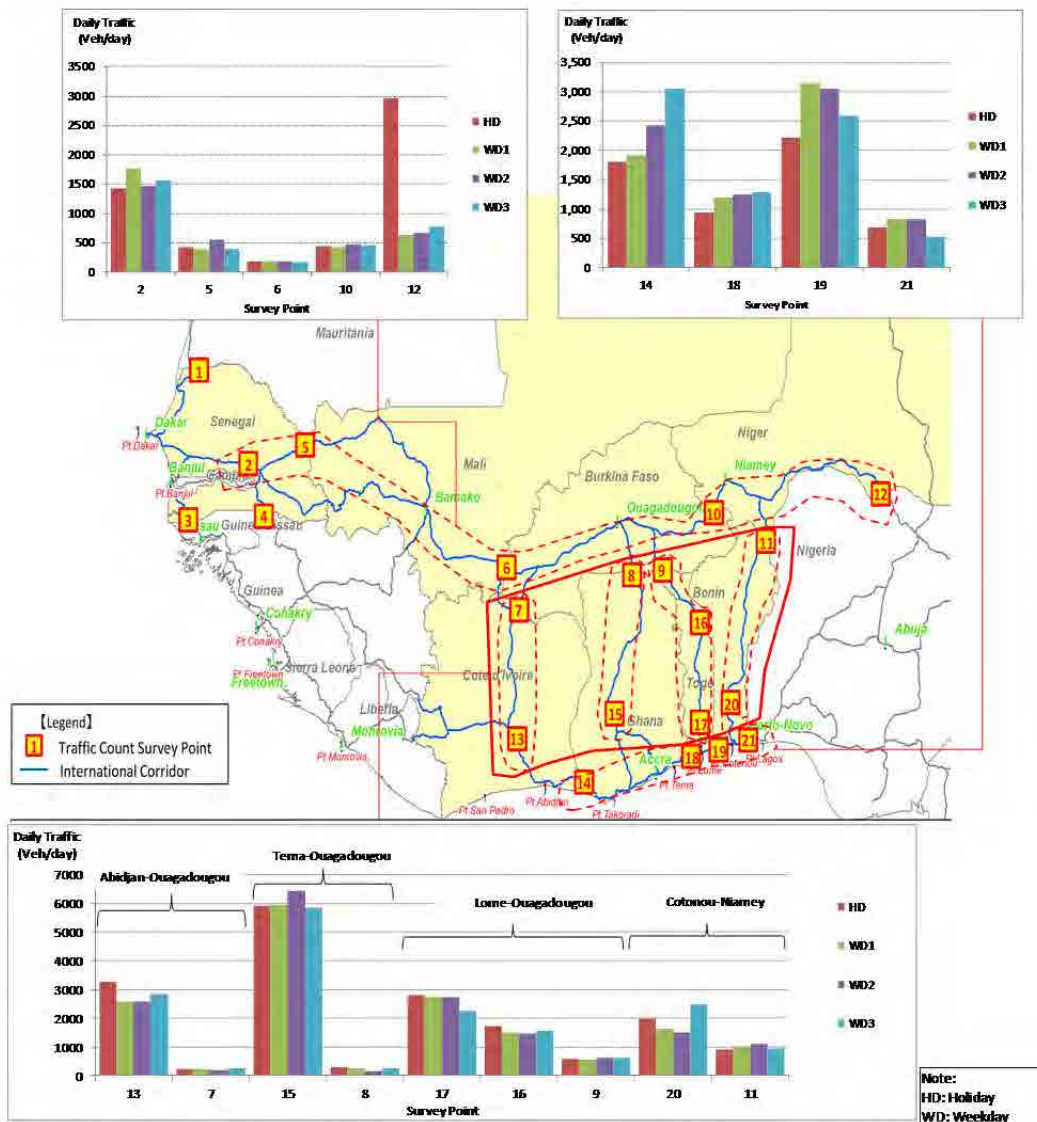
Figure 8-4 Average daily traffic and percentages accounted for by each vehicle type

8.2.2 Daily Traffic Variation

Daily traffic variation at the survey points on the above-mentioned corridor is shown in the following figure. The following points become clear:

Result of Daily traffic Variation

- In the cross-border traffic between landlocked and coastal countries, we did not see a clearly different tendency between weekdays and holidays.
- In the cross-border traffic between coastal countries, we saw that weekday traffic exceeds holiday traffic.
- The holiday at Point 12 was considered to be influenced by traffic to the market which is open once a month.
- At other points, we did not see a clear difference between weekday and holiday traffic.



Source : JICA Study team

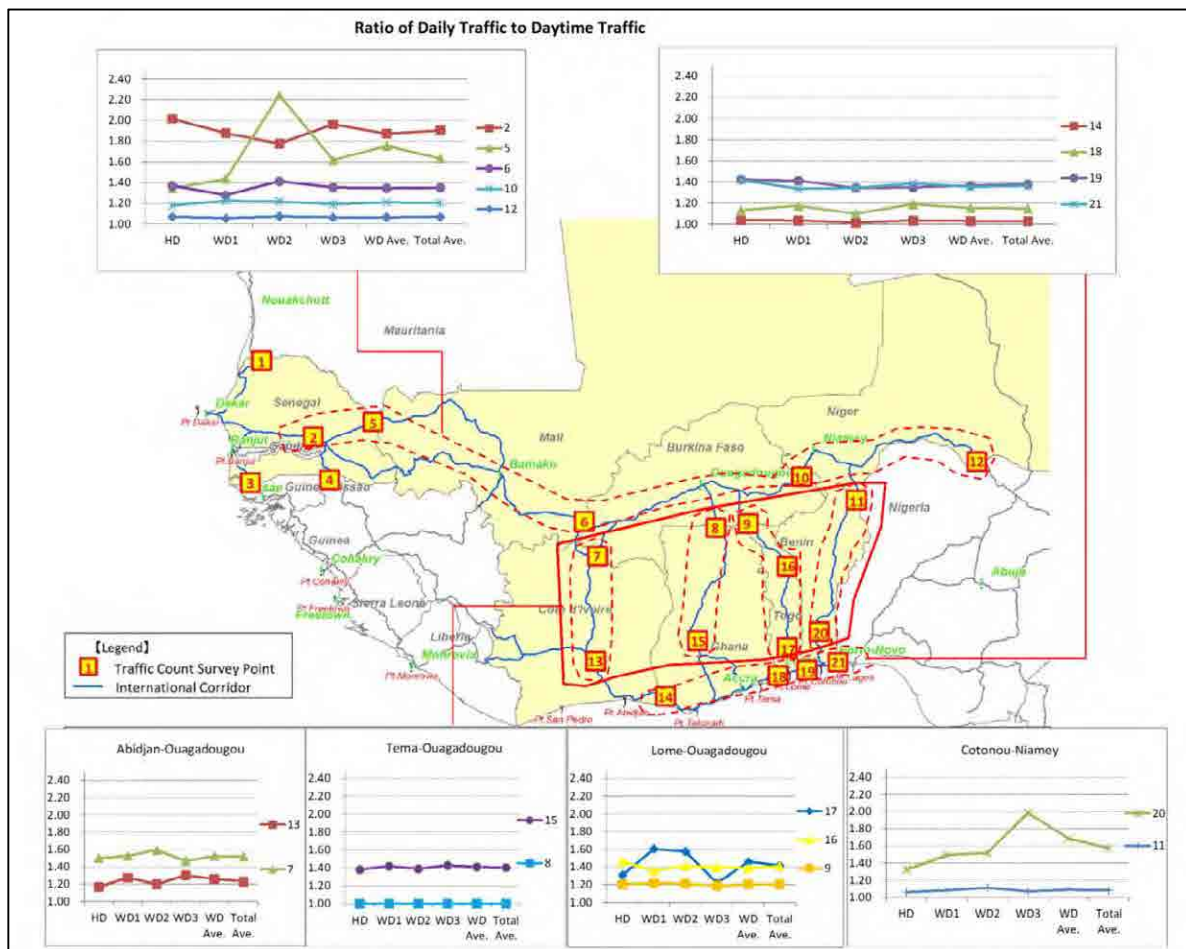
Figure 8-5 Daily traffic variation

8.2.3 Comparison between Weekdays and Holidays

The ratio of daily traffic to daytime traffic in the survey points on the above-mentioned corridor is shown in the following figure. The following points become clear:

Comparison between weekdays and holidays

- The cross-border traffic between landlocked and coastal countries is characterized by the low ratio of daily traffic to daytime traffic as compared to spots within the countries. Other than the Senegal-Mali border (Point 5) and the Burkina Faso-Cote d'Ivoire border (Point 7), the ratio of daily traffic to daytime traffic is 1.20 or less.
- In the cross-border traffic between landlocked and coastal countries, freight trucks operating at night are few.
- In the cross-border traffic between coastal countries, the ratio of daily traffic to daytime traffic at Ghana's borders (Points 14 and 18) was lower than at other points.



Source : JICA Study team

Figure 8-6 Ratio of daily to daytime traffic