West African Papers

Regional Integration in Border Cities

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WEST AFRICAN PAPERS April 2019 **No. 20**

REGIONAL INTEGRATION IN BORDER CITIES

"Cities" Collection

Under the direction of Marie Trémolières and Olivier J. Walther

Also in this Collection:

"Population and Morphology of Border Cities", No. 21
"Businesses and Health in Border Cities", No. 22
"Accessibility and Infrastructure in Border Cities", No. 23

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Abstract

This report, part of the "Cities" collection, highlights the contribution of border towns to the process of regional integration in West Africa. For 18 countries, six indicators are used to identify the specificities of border towns at the local, national and international levels: demography, urban morphology, formal enterprises, health infrastructure, road accessibility, border control posts. These indicators are analysed from the perspective of three geographical scales of regional integration (density, distance and division). The report details the economic and institutional obstacles facing border towns. It concludes with place-based political options to facilitate the economic and political development of West African border towns.

Key words: regional integration, border cities, West Africa, multidimensional analyses, placed-based policies
JEL classification: O18, O21, F15, F10

About the collection

One of the most dramatic transformations taking place in Africa, urbanisation is the result of growing demographics and societal and economic changes. Its dynamics and impacts need to be identified, mapped, measured and planned for in order to build sustainable policy options. This is the purpose of the "Cities" collection.

The Sahel and West Africa Club

The Sahel and West Africa Club (SWAC) is an independent, international platform. Its Secretariat is hosted at the Organisation for Economic Co-operation and Development (OECD). Its mission is to promote regional policies that will improve the economic and social well-being of people in the Sahel and West Africa. Its objectives are to improve the regional governance of food and nutrition security and improve the understanding of ongoing transformations in the region and their policy implications through regional, spatial and forward-looking analyses. SWAC Members and partners are Austria, Belgium, Canada, CILSS, the ECOWAS Commission, the European Commission, France, Luxembourg, the Netherlands, Norway, Switzerland, the UEMOA Commission and the United States. SWAC has memorandums of understanding with the NEPAD Agency and the University of Florida (Sahel Research Group).

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Acronyms and abbreviations

CCT	Council of Local Governments
HDX	Humanitarian Data Exchange
LOBI	Local Cross-Border Initiative Programme
PCTL	Programme for local cross-border co-operation
SATI	Integrated cross-border management schemes
UEMOA	West African Economic and Monetary Union
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Programme
UNHCR	Office of the United Nations High Commissioner for Refugees
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs

This Note is based on the Africapolis database produced by SWAC. The data are based on a spatial approach and apply physical (a continuously built-up area) and demographic criterion (more than 10 000 inhabitants) to define an urban agglomeration. The term city is used in this report to mean agglomeration.

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Executive summary

This report, composed of four *West African Papers* (nos. 20, 21, 22, 23) is the result of a systematic analysis of the role West African border cities play in the process of regional integration. Based on a multidimensional mapping of 18 countries, the report analyses the local dynamics that have developed in urban areas, the impact distance has on national cohesion and the impact territorial divisions have at the international level.

Density, distance and division

- At the local level, the study of demographic and morphological changes identifies the effects density has on border cities. It shows that since the mid twentieth century, the growth of border cities has almost always been greater than that of other cities in the region. This rapid growth has been especially visible within 50 kilometres of national borders, where the most dynamic markets are located. Growth has been particularly strong along Nigeria's borders and in the Gulf of Guinea between Benin and Togo. The report also confirms that border cities have very specific features. Twenty-seven of them are cross-border centres separated by land or river borders or are located on a coastline. These cross-border agglomerations emerged without a concerted development plan and remain very dependent on each other.

- At the national level, the impact of distance on border cities is studied by looking at health services and formal businesses. The map of regional health coverage shows that West African border areas are highly heterogeneous, and that the potential of harmonising the health policies of the different countries has been largely untapped. The mapping of formal businesses specialising in certain sectors of strategic importance to regional integration shows that most are located in political and/or economic capitals where decisions are made concerning customs policies as well as import/re-export strategies, and where major transportation and communications infrastructure is located. These results suggest that the lack of public investment in health services as well as roadway and education infrastructure in border regions can potentially pose major problems for national cohesion.

- At the international level, the effects of territorial divisions can be shown using an accessibility model developed to show the effects borders have on regional interactions. The results show that the population base for border cities could be 14% larger if border crossings did not impact the flow of goods and people and 12 to 50% larger without roadside check-

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points. Between Benin, Niger and Nigeria, an analysis of the condition of the road network shows that the combined population base of eight border cities would increase by one-third if there was no waiting at the borders. An exhaustive list of adjacent border posts in place or planned by national governments or regional organisations throughout sub-Saharan Africa further shows that trade facilitation runs up against the special interests of public servants and private-sector actors making a living from regional integration frictions. In West Africa in particular, few states are now able to benefit from the newly built border post structures in the region, most of which are not operational.

Main obstacles to cross-border urban development

The report confirms that cross-border cities lack the infrastructure needed to develop as both centres of local innovation and regional commercial hubs. This double constraint is expressed locally by urban development that is largely spontaneous and by a lack of markets, storage facilities and urban roads as well as medical, social and educational facilities. Border cities also suffer from congestion and a lack of upkeep on the road and rail infrastructure connecting them to the rest of the nation and neighbouring countries. The lack of productive, socio-educational and business investment typical of border cities considerably reduces the potential for agglomeration economies created by urban concentration. It also amplifies the negative effects of distance at the national level and imposes considerable constraints on regional trade.

From an institutional point of view, the main obstacle to the development of border cities is the low financial capacity of local and regional governments. While legal and institutional decentralisation has reached an acceptable level within the region, the tools and financial means needed to implement them are still limited. Low levels of economic independence and poor collection rates combined with a tendency to refrain from increasing taxes during election cycles are making the situation worse. Consequently, local governments lack the means to make the decentralised investments that could help them realise their urban and cross-border potential.

Main recommendations

The demographic and economic significance border cities have for regional integration justifies the need for place-based policies suited to their specific features.

- Development policies must foster the potential benefits of urban density at the local level by supporting the establishment of urban plans that maximise intra-urban interaction. The agglomeration economies created by high urban density can potentially reduce the cost of transportation and communications, foster innovation and make larger numbers of

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agricultural and manufactured products more widely available. These agglomeration economies would, however, be more easily exploitable if cities were to develop in keeping with a development plan and in concert with neighbouring border cities. The rapid population growth and urban sprawl seen today in West African border cities should encourage governments to sustainably invest in supporting these dynamics if they wish to make the most of agglomeration economies.

- Development policies should focus on reducing the distance separating border cities from other hubs in the urban network at the national level so as to minimise the inconvenience associated with their geographical marginalisation and to foster national cohesion. The development of border cities goes hand-in-hand with national policies aimed at projecting national government authority and providing services throughout the national territory.

- Development policies must continue to reduce the friction generated by the 32 000 kilometres of land borders that separate the countries of West Africa at the international level. This can be achieved by facilitating the mobility of goods, people, capital and ideas over short and long distances. The transportation corridors, dry docks, joint border posts, free trade zones and pipelines currently put in place by regional organisations and national governments must be supported by development policies.

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The role border cities play in regional integration

This chapter focuses on how border cities contribute to the process of regional integration in West Africa. Based on a multidimensional mapping of 18 countries, it presents the indicators used to describe the specificities of border cities at the local, national and international levels. The chapter then lays out the key obstacles faced by border cities in terms of socio-economic interaction as well as state-run and decentralised institutions. It ends with a summary of the place-based development policies that could be implemented in the region to facilitate the economic and political development of West African border cities.

Cities, borders and regional integration

West Africa is experiencing urbanisation on an unprecedented scale. While less than 30% of the region's population lived in urban areas in 1980, close to one out of two inhabitants will live in a city by the end of the decade. In 2015, most people in Cabo Verde, Cameroon, Gambia, Ghana, Nigeria, Senegal and Togo were already living in an urban area with a population of more than 10 000 people. This process of urbanisation, which is being fed by a high birth rate and heavy migration, has resulted in an increase in the size and number of cities. In 2015 there were 29 cities with more than one million inhabitants, including Lagos – the largest city in the region – which has a population of twelve million people (OECD/SWAC, 2018). By the end of the 2010s, five million people will live in Abidjan and in Accra, while the populations of Bamako, Dakar, Kano and Kumasi will exceed three million. The rapid increase in the urban population in recent decades has also led to an increase in the number of small and medium-sized cities. There were 2 469 urban centres in West Africa in 2015, as compared with 152 in 1950.

These changes have created an urban network of more than 182 million people as of 2015; one of the key features of this network is that it is cross-border in nature. One-quarter of West African territory is situated, and close to one-fifth of its urban population lives, less than 50 kilometres from a land border. In 2015, these urban border populations consisted of more than

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27 million people living in 681 cities of quite diverse size and significance. The impact of national borders is likely to vary a great deal, depending on the demographic, economic and political situation of these cities.

Borders clearly encourage trade with areas near or far from border cities. For example, the port infrastructure in Lomé, a city in Togo whose outskirts are adjacent to a border, services neighbouring Ghana as well as Sahelian countries. Other smaller cities also serve as platforms for cross-border trade. For instance, on the border between Niger and Nigeria, Gaya, Birni N'Konni, Illela, Jibia and Dan Issa serve both as collection points for local agricultural products and trade hubs for the flow of merchandise from global markets. Legislative differences, import bans and changes in the exchange rates between various countries contribute to the often rapid development of these urban centres.

Proximity to the border also facilitates the implementation of original co-operation initiatives that strengthen the process of regional integration. Border cities are not only indispensable links in the chain of flows moving through the region; they also serve as a life-hub for border populations and a political arena for local and regional governments. Proximity to a border also makes it possible to share socio-economic infrastructure with local populations living nearby; for example, the health centre shared by Warokuy in Burkina Faso and Wanian in Mali. For other urban centres such as Dori in Burkina Faso and Téra in Niger, the border provides an opportunity to implement joint development plans, obtain support from African regional organisations and funding from international donors.

From that perspective, this report provides a systematic analysis of the role border cities play in the process of regional integration. Based on a multidimensional mapping of 18 countries (Map 1.1), the report analyses the demographic, morphological, social, economic and political specifics of border cities in the region. A number of indicators shed light on the local dynamics that have developed in urban areas, the impact distance has on national cohesion and the impact territorial divisions have at the international level. The analysis also outlines the key obstacles that limit the integration potential of border cities in terms of socio-economic interaction and institutions. The study of these fundamental aspects constitutes a preamble to the institution of place-based development policies suited to the potential and constraints of West African urban areas.

Density, distance and division

West African border cities provide an ideal laboratory for analysing the process of regional integration. The features of these border cities and their proximity to state borders help shed light on three basic aspects of regional integration: density, distance and division (Figure 1.1). Each of the three "Ds" corresponds to a specific geographical level (World Bank, 2009).

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Map 1.1
Administrative regions

Source: OpenStreetMap

- **Density:** At the local level, border cities feature a dense environment for interaction between traders, farmers, civil servants, religious leaders and civil society representatives, even though regulatory, cultural, linguistic and currency differences may separate them. The specialised and complementary skills available in urban centres have specific benefits for those who live or do business there. The agglomeration economies present in all cities are of particular importance to border areas, in so far as borders are seen as a resource to be drawn on for trade or co-operation purposes.

- **Distance:** At the national level, many border cities are located at a considerable remove from decision-making centres. John Igué (1989) called these areas the "national outskirts" to draw attention to the development of clientelism standards and practices independent of those in place at the national level. The geographical distance between border cities and the centres of power is often synonymous with political marginalisation. This can be seen in the lack of public investment in health services as well as roadway and education infrastructure. This situation poses major problems for national cohesion. Independence or terrorist movements often feed on the marginalisation – actual or perceived – of border areas to spread their ideas among local populations, as has been done in northern Mali and north-eastern Nigeria since the mid-2000s.

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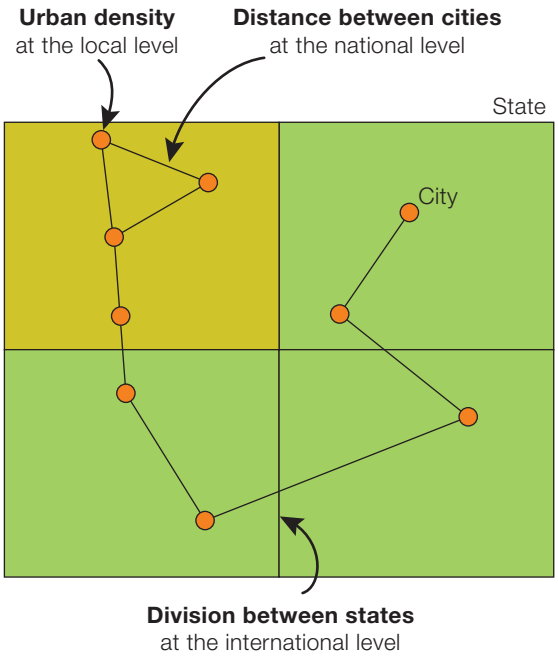
- **Division:** At the international level, border cities serve as hubs for the transportation and trade networks that connect West African countries to each other and to global markets. Their role as a crossroads facilitates the circulation of people and the goods that would not find markets at the local or national level. This has led to the development of transportation and communications infrastructure designed to encourage the fluidity of regional interaction such as bridges, docks, warehouses and border posts managed independently or jointly by national governments.

Figure 1.1
Density, distance and division



What features are specific to border cities?

The features specific to border cities were studied using six indicators developed for this study; they relate to one of the three basic aspects of regional integration: local density, geographical distance at the national level and international divisions. (Table 1.1).

The study of demographic and morphological changes (West African Papers, no. 21) identifies the effects density has on border cities at the local level. It shows that since the mid twentieth century, the growth of border cities has almost always been greater than that of other cities in the region. This rapid growth is especially visible within 50 kilometres of national borders, where the most dynamic markets are located. Growth has been particularly strong along Nigeria's borders and in the Gulf of Guinea between Benin and Togo; it has been markedly less strong in the western part of the region. In 2020, more than 33 million urbanites will live in those cities, as compared with 20 million in 2010. Consequently, the percentage of the West African population living in border cities is ever increasing and will account for 16% of the total urban population at 50 kilometres from a border and 30% at 100 kilometres from a border, by the end of the decade.

From a morphological perspective, border cities have very specific features. Twenty-seven of them are cross-border centres separated by land or river borders or are located on a coastline. Contrary to appearances, the national centres that make up these agglomerations were often duplicated or relocated after colonial partition, rather than having been separated by current borders (Soi and Nugent, 2017). These cross-border agglomerations emerged without

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a concerted development plan and remain very dependent on each other. For example, the current recession effecting Nigerian urbanites is also having a very direct impact on used vehicle vendors in Cotonou, Benin. The size and functions of the centres of these cross-border agglomerations vary a great deal, especially when a political capital is adjacent to another urban centre. The population of N'Djamena in Chad is 20 times greater than that of Kousséri, Cameroon (Map 1.2), and Lomé has a population 11 times the size of that of Aflao, Ghana.

Table 1.1
Aspects and indicators of regional integration

Local urban density	Distance between cities at the national level	Divisions between states at the international level
Demography	Health	Accessibility
Morphology	Business	Infrastructure

The impact of distance on border cities at the national level is studied by looking at health services and formal businesses that, for the most part, were established in accordance with the national strategy (West African Papers, no. 22). The map of regional health coverage shows that West African border areas are highly heterogeneous, and that the potential of harmonising the health policies of the different countries has been largely untapped. From that perspective, the health centre shared by Warokuy-Wanian, often cited as an example of cross-border co-operation, appears to be an exception in the region. The mapping of formal businesses specialising in certain sectors of strategic importance to regional integration shows that most are located in political and/or economic capitals where decisions are made concerning customs policies as well as import/re-export strategies, and where major transportation and communications infrastructure is located.

At the international level, the effects of territorial divisions can be shown using an accessibility model developed specifically to show the effects borders have on regional interactions (West African Papers, no. 23). The model is used to calculate how many people can be reached from each of the border cities in the region, taking into account the extent of the road network, average speed observed and roadside checks likely to slow down commercial trade on the main arteries and increase the cost of transportation. It provides a very accurate assessment of the accessibility gains that would result from opening up the borders at the regional level, improving the condition of the road network and ending police spot checks. The results show that the population base for border cities could be 14% larger if border crossings did not impact the flow of goods and people and 12% larger without roadside checkpoints. For some urban centres located on the Gulf of Guinea, the increase in the number of checkpoints reduces road accessibility by more than half. Between Benin, Niger and Nigeria, an analysis of the condition of the road network shows that the combined population base of eight border cities would increase by one-third if there were no waiting at the borders.

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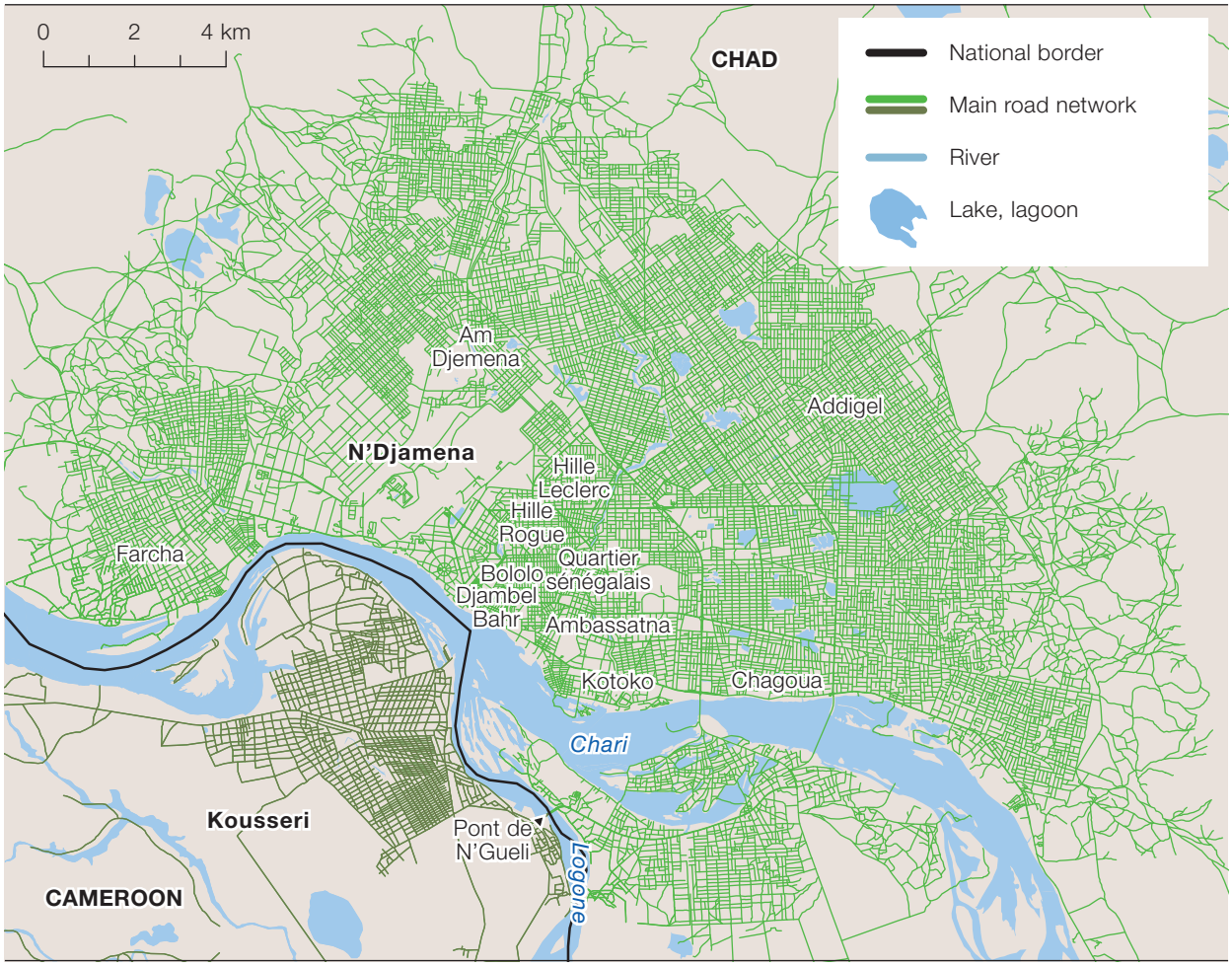
Map 1.2
The N'Djamena-Kousséri cross-border agglomeration (Chad-Cameroon)



Source: OpenStreetMap 2018

In addition to this analysis, an exhaustive list of adjacent border posts in place or planned by national governments or regional organisations throughout sub-Saharan Africa is drawn up. It shows that trade facilitation runs up against the special interests of public servants and private-sector actors making a living from regional integration frictions. In West Africa in particular, few states are now able to benefit from the newly built border post structures in the region, most of which are not operational.

What are the obstacles to urban cross-border development?

The development of cross-border cities is difficult due to a combination of functional and institutional obstacles that further marginalise these urban centres.

From a socio-economic point of view, cross-border cities lack the infrastructure needed to develop as both centres of local innovation and regional

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commercial hubs. This double constraint is expressed locally by urban development that is largely spontaneous and by a lack of markets, storage facilities and urban roads as well as medical, social and educational facilities. From the perspective of regional interaction, border cities suffer from congestion and a lack of upkeep on the road and rail infrastructure connecting them to the rest of the nation and neighbouring countries. The lack of productive, socio-educational and business investment typical of border cities considerably reduces the potential for agglomeration economies created by urban concentration. It also amplifies the negative effects of distance at the national level and imposes considerable constraints on regional trade, which contributes to making sub Saharan Africa one of the most costly places in the world to do business (Teravaninthorn and Raballand, 2009).

From an institutional point of view, the main obstacle to the development of border cities is the low financial capacity of local and regional governments. While legal and institutional decentralisation has reached an acceptable level within the region, and although decentralisation plans are in place in all countries, the tools and financial means needed to implement them are still limited. Low levels of economic independence and collection rates combined with a tendency to refrain from increasing taxes during election cycles are making the situation worse. Consequently, local governments lack the means to make the decentralised investments that could help them realise their urban and cross-border potential.

Which development policies are best suited to border cities?

The demographic and economic significance border cities have for regional integration justifies the need for development policies suited to their specific features to be implemented by states and their regional and international partners. Such place-based policies should support urban growth and the formation of cross-border urban regions by developing infrastructure and public assets adapted to fit different scales (OECD, 2009; OECD/SWAC, 2017).

- Development policies must foster the potential benefits of urban density at the local level by supporting the establishment of urban development plans that maximise intra urban interaction. The agglomeration economies created by high urban density can potentially reduce the costs of transportation and communications, foster innovation and make larger numbers of agricultural and manufactured products more widely available. However, actors could more easily exploit agglomeration economies if cities were to develop in keeping with a development plan and in concert with neighbouring border cities. The rapid population growth and urban sprawl seen today in West African border cities should encourage national governments and their partners to sustainably invest in supporting these dynamics if they wish to make the most of agglomeration economies.

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- At the national level, development policies should focus on reducing the distance separating border cities from other hubs in the urban network so as to minimise the inconvenience associated with their geographical marginalisation and to foster national cohesion. From that perspective, the development of border cities goes hand in hand with national policies aimed at projecting national government authority and providing services throughout the national territory.

- At the international level, development policies must continue to reduce the friction generated by the 32 000 kilometres of land borders that separate the countries of West Africa. This can be achieved by facilitating the mobility of goods, people, capital and ideas over short and long distances. The transportation corridors, dry docks, joint border posts, free trade zones and pipelines currently put in place by regional organisations and national governments should be supported by development policies.

From a functional point of view taking into account the divergent interests of the actors who live in, pass through or trade in border cities from a distance is one of the major problems associated with border city development policies. Border cities are in fact hubs for the local populations making daily border crossings for commercial or social purposes, for the traders using the roads and railroads for regional trade purposes, and for the major economic operators who, from bases in the capital cities, are active in the raw materials and manufactured products sectors (Dobler, 2016).

While local populations and regional traders make a living in part from maintaining the differences in pricing and taxation across different nations, the major operators who make most of their profit at the global level have a vested interest in harmonising regional trade. These operators are the most fervent supporters of initiatives aimed at removing the friction related to international trade (Zeller, 2008). They share the interests of the regional organisations who promote such infrastructure, while the regional vendors and national civil servants responsible for controlling the border – who often have developed clientelism networks – generally oppose it.

Development policies should take into account the fact that border cities are a place where local populations live, a needed hub for traders and a mandatory stopover for major players in the global market. Consequently, such development policies cannot be limited to promoting free trade zones and regional transportation corridors which mainly enhance formal trade between urban centres to the detriment of local development and the informal economy.

From an institutional point of view, the development of border cities requires a voluntary financial decentralisation policy. Now is the right time for this kind of change. Thanks to the lobbying efforts of the Council of Local Governments (CCT) of the West African Economic and Monetary Union (UEMOA),

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the Cross-border Co-operation Programme is now encouraging regional institutions and national governments to further integrate cross-border co-operation into their public policies. This change could benefit border cities. A number of Integrated Transboundary Development Schemes (SATI) have been funded to foster cross-border co-operation among local and regional governments in Benin, Burkina Faso, Côte d'Ivoire, Mali and Niger. This new tool for co-operation among sector-based operators as well as regional and cross-border actors can be used to set goals, develop local cross-border project proposals and persuade donors to fund the projects. Connectivity, economic and social development as well as governance are among the priorities for cross-border projects supported by SATI in West Africa. Development policies should support this process and work to increase the political weight cities and regions bring to bear in the decision making processes that directly affect border interactions.

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A multidimensional approach to border cities

This chapter shows that regional integration is a process of convergence arising from intensified interactions between territories separated by national borders. Six indicators were used to bring to light the major role border cities play in that process at the local, national and international levels: demographics, urban morphology, formal business, health infrastructure, accessibility by road, and border checkpoints. This chapter outlines how these indicators were chosen, the sources used to inform them and their contribution to the multidimensional study of border cities.

Convergence and interactions

Regional integration can take two complementary forms. On the one hand, it is a process of *convergence* between national territories whose physical and human characteristics tend to become more homogenised. For example, differences in the morphology of urban centres or a population's standard of living can drop over the course of time due to regional integration. As shown in Figure 2.1, two urban areas that develop on either side of a border can feature densities that decrease as the distance from their urban cores increases. During the process of integration, these densities are likely to converge until they form a single urban centre.

On the other hand, regional integration is a process of intensified social, economic and political *interactions* between actors based in different countries. Border areas are, as such, more highly integrated if they are linked by flows of people and goods or by co-operation agreements. Figure 2.1 illustrates this process; it shows how building new roads between border cities – shown in red – is likely to encourage socio-economic and political interactions.

The combined study of the convergence and interactions giving rise to regional integration poses three specific issues that are methodological, conceptual and spatial in nature.

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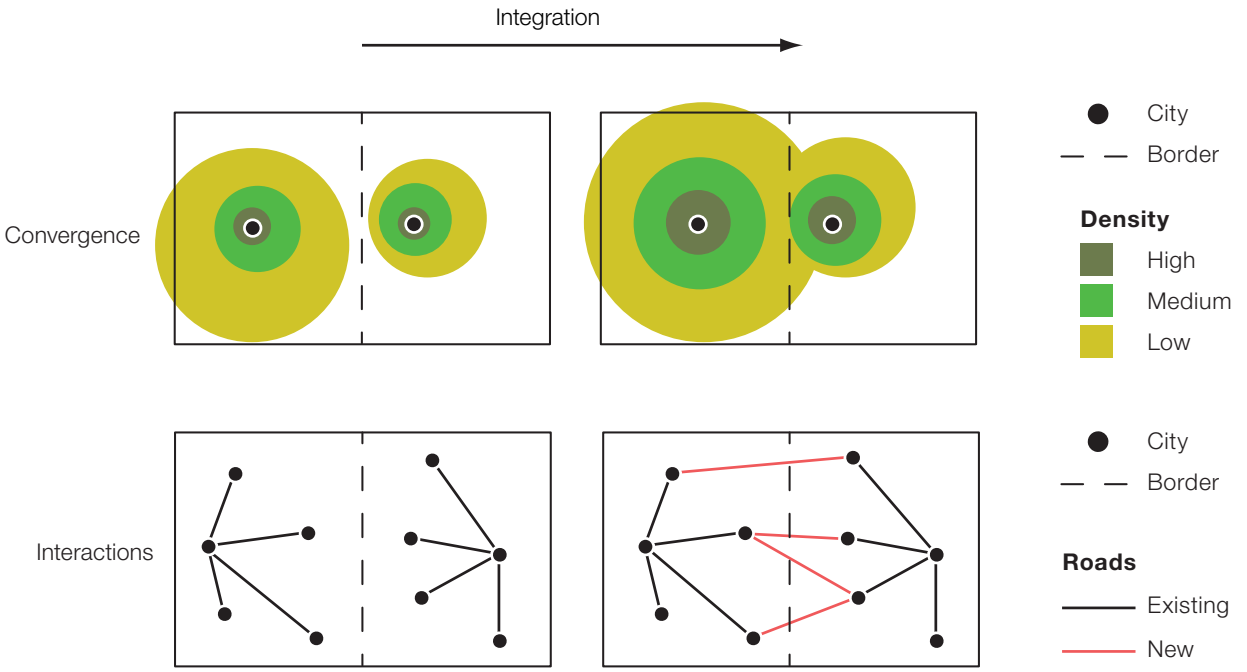
Figure 2.1
Convergence and interactions in the process of integration



Source: adapted from De Boe et al. (1999)

Convergence and interactions cannot be measured in the same way. Indeed, while the *attributes* of border cities, such as size or density, are used to measure convergence, the actual flows linking those cities to other urban centres must be considered when measuring interactions. In Africa and the rest of the world a great deal more data are available on city attributes than on the relationships between cities. This is the case because it is often easier to quantify the static attributes of cities, such as surface area or population, than it is to measure the flow of people and merchandise, which are dynamic by definition. The lack of relational data is also due to the fact that the organisations responsible for collecting statistics prioritise territorial data on visible and quantifiable inventory at the national level rather than intra or inter city interactions (Taylor, 2013). This problem is common to all states, but is of greater significance in sub-Saharan Africa where relational data at the sub national level are especially rare, even in areas of crucial importance to urban development such as migration or daily work residence commutes.

A paradox exists in addition to these challenges. The existing regional integration studies tend to show that increased interactions between cities and border territories do not necessarily foster convergence between them (Sohn et al., 2009; Decoville et al., 2013). In other words, regional integration is fed by the difference between areas separated by national borders, which

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implies that areas that are highly connected are those where the dissimilarities are greatest. On the one hand, this paradox arises from the fact that relationships between cities are often highly unequal and result in marked differences in revenue or economic growth. Some cities specialise in certain commercial areas such as goods, residential accommodations or industrial development, based on their comparative advantages. Therefore, strong functional relationships are no guarantee of joint development. On the other hand, a process of convergence may develop as a result of dynamics internal to border cities and regions though they may not be linked by close interactions. It is therefore possible for two states to implement decentralisation policies that strengthen the autonomy of border cities without necessarily boosting their mutual relations.

Assessing the process of regional integration in border cities involves three specific geographic scales (World Bank, 2009). Border cities are dense urban environments that facilitate local interaction and provide opportunities to those who live and spend time there. The proximity of the border, which functions more as a resource than a barrier between West African border cities, fosters the development of these agglomeration economies. Border cities are also mandatory entry and exit points for the goods and services that feed the national urban network. The distance separating them from the rest of the national territory is likely to impact national cohesions and, when marginalised, feed pro independence or autonomy movements in border areas. Lastly, border cities are international trade hubs. Due to their infrastructure and strategic location, they function as relays that can ease, or conversely, accentuate the effects of the territorial division of West Africa.

A multidimensional analysis

The specifics of the regional integration process require a multidimensional analysis (six indicators) that takes into account the attributes of cities, the relationships between them and the different spatial scales (Table 2.1, Box 2.1).

The six indicators produce less than a complete picture of all possible aspects of the process of integration. In addition, due to the lack of sub national data on cross-border flows of commuters, per capita wealth differences and the percentage of foreign residents usually used to measure the process of regional integration, the indicators chosen are less complex than those outlined in the literature on European border cities (ESPON, 2010; Decoville et al., 2013) and global cities (Taylor and Derudder, 2016). Accessibility by road is the only indicator of interactions; the others measure city attributes.

The threshold at which border dynamics influence West African cities is likely to change depending on the indicators considered. The study of the population was carried out at 20, 50 and 100 kilometres of a border. As for

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Table 2.1
Border city indicators

Aspect	Indicators	Definition	Tresholds
Local density	Population	Population, density and the growth of border cities	20, 50, 100 km
	Morphology	Urban built environment and existence of a morphological cross-border agglomeration	20 km
National distance	Business	Formal businesses specialised in sectors of importance to regional integration	50 km
	Health	Major cross-border health infrastructure	20 km
International division	Accessibility by road	Potential number of people that can be reached from border cities in under four hours	20 km
	Infrastructure	Adjacent border checkpoints	20 km

health facilities, a threshold of 20 kilometres is more appropriate in terms of accounting for any cross-border travel, especially since only intermediary- and higher level establishments such as hospitals and regional health centres were included. A patient requiring care at that type of facility would, presumably, be willing to travel a considerable distance (up to 40 kilometres return as the crow flies). A threshold of 50 kilometres applies to formal businesses, whose headquarters and main offices are often located some distance from borders. Using this threshold makes it possible to include some of the major cities where businesses serving the region are based, rather than border markets only.

Only those cities located at least 20 kilometres from a land border were included in the study on morphology and division. This methodology limits the analysis to cities whose morphology, accessibility and infrastructure are more likely to be influenced by a border. It also ensures that the study results can be compared to those of previous work on West African border cities and markets in which the same threshold was used (SWAC/OECD, 2014; 2017).

Six integration indicators

Density

The local effects of density are assessed by looking at the population and morphology of border cities (see Box 2.1 for the sources used).

- The demographics study made it possible to identify the size, density and growth of West African border cities since the 1950s. Availing of

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Box 2.1
Data sources

Demographics and morphology. Sources include the harmonised Africapolis database, which includes all urban agglomerations with more than 10 000 inhabitants from 1950 to the present (OECD/SWAC, 2018) and satellite images from Google Maps and Google Earth.

Business. Data on businesses were gathered from the Africa Directory for Benin, Burkina Faso, Cabo Verde, Chad, Ghana, Nigeria and Senegal. Information for 2017, or the most recent available, from Go Africa for Côte d'Ivoire, Guinea, Guinea-Bissau, Liberia, Mauritania, Niger, Sierra Leone and Togo was used as data sources. The following additional sources were also used: the directory published by Gambia's Ministry of Business; the Africa Yellow Pages; Delili for Mauritania; Business Sierra Leone, DCLA and the Sierra Leone Chamber of Commerce; the Buyers Directory for Liberia, Sierra Leone and Guinea-Bissau; Mali's investment promotion agency (API) and Niger's 2016 Registry of Companies.

Health. Sources of data on health include the Global Healthsites Mapping Project of the United Nations Office for the Coordination of Humanitarian Affairs' Humanitarian Data Exchange (HDX) open platform. Data from 2017 or the most recent available were collected by national governments, international organisations or non governmental organisations. In Niger's Diffa region, the data collected since 2013 by the United Nations High Commissioner for Refugees and by REACH were also included. In the Liptako-Gourma region, data from the United Nations Capital Development Fund (UNCDF) and the United Nations Development Programme were used, as were data collected by the UNCDF's Local Cross-border Initiatives programme for inclusion in their Atlas of the IIR Sahel region. In Chad (2013), Burkina Faso (2013), Niger (2014) and Mali (2012), national health statistics yearbooks were used in addition to the HDX data.

Accessibility. Sources used for this indicator include land cover data from the European Space Agency (2010); data on road networks from OpenStreetMap (2018) and from the Global Roads Open Access Data Set (2018); data on altitudes from NASA (2014); data on borders from the Global Administrative Areas (2018); population data from LandScan ™ (2014) and Africapolis (OECD/SWAC, 2018). Data from the Permanent Inter-State Committee for Drought Control in the Sahel (CILSS) on road harassment were used to refine the model by identifying the location of checkpoints along major transportation corridors in 2017 (CILSS, 2017). The average speed of vehicles is estimated at about 30 kilometres per hour across the entire network, except in the Dendi region in Benin, Niger and Nigeria where field data were collected by the University of Niamey which made it possible to include actual speeds by accounting for current road conditions.

Infrastructure. Data for this indicator were taken from the following sources: a survey of international experts and an analysis of satellite images taken from Google Maps, and well as field observations and bibliographical sources.

the harmonised Africapolis database ensures that the results for all countries in the region can be compared. The study can also be used to compare the demographic changes in border cities to that of other cities in the urban network in order to highlight the specific characteristics of borders.

- The morphological study of border cities focuses on cross-border agglomerations, defined as urban units forming a continuous fabric on

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both sides of the border. In highly interdependent border cities, this makes it possible to show how the existence of a land or river border impacts the continuity of the built environment.

Distance

Two indicators were used to consider the impact distance has on border cities: formal businesses and health facilities. Both are characterised by the fact that they are subject to national dynamics. The geographic distribution of the formal businesses considered in the report is an expression of national imperatives. It is a question of how to best serve the market in each West African state. The location of health facilities is determined on the basis of "health maps" aimed at reaching the greatest number of patients possible given the available resources. The study of these indicators are then used to show to what degree border cities contribute to national cohesion.

- The formal business study concentrates on companies specialising in certain sectors of vital importance for regional integration such as logistics and transit, road and rail transport of goods as well as international trade. The businesses considered have a head office, are registered with the national register of companies and pay taxes. Informal businesses active in cross-border commerce – of which there are many in West African border areas – were not taken into account as it would be impossible to determine their activities.

- The study of the health sector identifies and locates the cross-border health facilities in West Africa. This indicator focuses on the health facilities with the potential to motivate institutional co-operation between two geographic entities separated by a national border or encourage local populations to travel across the border. This new indicator makes it possible to highlight the differences between national and cross-border health coverage.

Division

An accessibility model and a study of adjacent border checkpoints were used to account for the effects of international division. These indicators make it possible to account for the interactions that link border cities with the rest of West Africa.

- The accessibility indicator maps the population base that can, in theory, be reached in less than a four hour drive from any border city with more than 10 000 inhabitants in 2015. The model was initially developed by Alterra at Wageningen University and Research (Van Eupen et al., 2012; Gløersen, 2012; Jochem, 2016) for the purpose of calculating the potential population of European regions, and was first used by the Sahel and West Africa Club Secretariat to study West African border markets (OECD/SWAC, 2017) before being applied in this study to all border cities in the

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region. The model is helpful in terms of recreating the actual travel conditions in the region by considering the scope and existence of roadside checkpoints and other physical variables that impact the speed of vehicles travelling in the region including grade, vegetation and the existence of rivers and borders. In the Dendi region in Benin, Niger and Nigeria, the actual condition of the road network is taken into account.

- The data on adjacent border checkpoints were used to geolocalise 59 such checkpoints throughout sub-Saharan Africa. The indicator provides information on their status as of 2017–18 based on the following categories: planned, under construction, inaugurated without being operational and functioning.

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West African Papers

Regional Integration in Border Cities

This report, part of the "Cities" collection, highlights the contribution of border towns to the process of regional integration in West Africa. For 18 countries, six indicators are used to identify the specificities of border towns at the local, national and international levels: demography, urban morphology, formal enterprises, health infrastructure, road accessibility, border control posts. These indicators are analysed from the perspective of three geographical scales of regional integration (density, distance and division). The report details the economic and institutional obstacles facing border towns. It concludes with place-based political options to facilitate the economic and political development of West African border towns.

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