AFRICAN UNION

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AFRICA REGIONAL INTEGRATION INDEX (ARII)

2019

Africa Regional Integration Index 2019

This report documents the performances of African countries and the Regional Economic Communities on the Africa Regional Integration Index—a multi-dimensional index that captures integration in five areas: trade, productive, macroeconomic, infrastructural and free movement of people dimensions. These dimensions consist of various indicators. Dimensions and indicators have been weighted using principal component analysis. The overall results evidence low level of integration. Policies should urgently address deficiencies on the productive and infrastructural dimensions that are hampering the progress of regional integration

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Acronyms

ACS	African Center of Statistics
AfCFTA	African Continental Free Trade Area
AfDB	African Development Bank
AFRAA	Afrcan Airlines Association
AFREC	African Energy Commission
AMU	Arab Maghreb Union
ARII	Africa Regional Integration Index
ATPC	African Trade Policy Centre
AU	African Union
CEN-SAD	Community of Sahel-Saharan States
COMESA	Common Market for Eastern and Southern Africa
COMTRADE	Commodity Trade Statistics Database (United Nations)
EAC	East African Community
ECA	Economic Community for Africa
ECCAS	Economic Community of Central African States
ECOWAS	Economic Commission of West African States
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
HPCI	Harmonized Consumer Price Index
ICT	Information and Communications Technology
IGAD	Intergovernmental Authority on Development
PPP	Public private partnetship
RITD	Regional Integration and Trade Division
SAATM	Single African Air Transport Market
TCI	Trade Complementarity Index
UN	United Nations
UNCTAD	United Nations Conference on Trade and Economic Development
WTO	World Trade Organization

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Joint Foreword: AUC, AfDB and ECA

The African Union Commission, United Nations Economic Commission for Africa and the African Development Bank are proud to present the second edition of the Africa Regional Integration Index. The timing could not be better with the recent endorsement of the African Continental Free Trade Area (AfCFTA) by more than 50 African countries. AfCFTA creates the largest free trade zone in the world, with a combined GDP of over USD 3.3 trillion and a population of more than 1.2 billion people. Breaking down tariff barriers alone will spur trade by at least 53% while the elimination of non-tariff barriers could double intra-African trade.

Africa's economic growth is projected to exceed 4% in 2019-2020, an increase from 3.5% in 2018. Spurred by AfCFTA, more than 40% of African countries are projected to post growth of at least 5% this year as commodity prices rise and domestic demand and infrastructure investments boost growth.

This then leads us to the importance of regional integration and the Africa Regional Integration Index. To reach or exceed growth targets, Africa needs greater integration. Regional integration is indispensable for factor connectivity, investment flows and value creation. Whether connecting landlocked countries to ports or ICT portals, from household to warehouses across the continent, connectivity is the chain link that characterizes the economy of the 21st century. Africa must forge ahead with these trends and lead where appropriate.

For our continent, that means not just the movement of people, goods and services within our member nations, but data transmission to allow for the flow of information and tools needed for higher value-added. These dual components of industrialisation and value addition are critical in creating wealth.

For free trade to happen seamlessly, African countries need to implement the Protocol on the Free Movement of People, which will in turn enable traders and investors to operate beyond their national borders. Africa must trade more with itself. And as markets trade on information, we need to move in the direction of connecting people and companies with data platforms and information to facilitate trade, investment, and promote the continent's economic development and welfare.

There is much to be said about the considerable investments being made in Africa in anticipation of future growth. Across the continent, we are seeing investments in power generation, transmission and distribution improving access to power for businesses and households. Roads and bridges, rail networks as well as new and improved airports will help to move goods and connect passenger and business traffic. Ports are being upgraded to enhance maritime exchange. We are doing all this sustainably — promoting a cleaner environment, and strengthening water basin management.

These investments are not happening in isolation, but complement improvements in the business environment to stimulate private sector growth and development, while strengthening trade flows across borders. This is sending strong signals that investment opportunities await those with capital to benefit from returns that come with increased economic activity. Sound infrastructure investments with explicit contractual economic pay-outs can spur integration efforts, trade and investment for sustainable growth.

In this regard, we are seeing the emergence of stronger banks, renewed interest from capital providers, and growth in trade finance. This attests to the kinds of opportunities that can be leveraged for Africa today and into the future.

However, it is not just about money — ultimately, it's about development impact and enhancing the quality of life for all Africans. So, while we continue to support social and economic initiatives across the continent, we reiterate that regional integration is crucial for sustainable and inclusive development. If we remain fragmented and weighed down by trade barriers, we create obstacles that only impoverish our people and penalise Africa in a competitive global market.

So how are we doing? The Africa Regional Integration Index provides a snapshot of progress made by member states. Some countries are forging ahead and showing positive results, particularly in terms of trade and macroeconomic policy alignment. Others are holding back and as a consequence, are missing out on opportunities that come with integration.

The index takes these dimensions into account, namely trade integration, productive integration, macroeconomic integration, infrastructure integration and the free movement of people. The index shows that trade and macroeconomic integration on the continent are moving ahead at a reasonable pace, but the need to improve on infrastructure connectivity, productive capacity and movement of people across borders is evident.

The 2019 Africa Regional Integration Index indicates that overall, the level of integration on the continent is low, with an average score of 0.327. Africa is poorly integrated on the productive and infrastructural dimensions, which are key aspects forming the foundations upon which the other dimensions of regional integration depend to function. The index shows that 20 African countries are performing well while 25 are low performing.

This index presents policy proposals that tackle weaknesses while supporting progress made so far on the continent. We intend to support these policy recommendations and initiatives within our member countries and regional economic communities. Now that we are moving forward with the implementation of AfCFTA, it is time for quantum leaps. Regional integration is the glue that will make that happen.

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Chairperson
African Union Commission

Akinwumi A. Adesina
President
African Development Bank

Vera Songwe
Under-Secretary General, United Nations
Executive Secretary, UN-Economic Commission

Key findings

The idea behind a regional integration index is to assess and monitor the performance of individual countries at the regional level on an array of dimensions that matter for social and economic development. The goal is to better inform policy by identifying specific areas where these regions are strong and build on these strengths to accelerate growth and, areas where these regions are weak so that necessary actions can be taken to improve their performance.

ARII 2019 also includes a continental ranking so that each member State can identify its performance vis à vis the rest of Africa in addition to the regional economic communities to which it belongs. The following summarises the findings of the index.

Within Africa

- **The overall integration level on the African continent is low[1], with an average score of 0.327.** There are 25 low performing countries and 20 high performing countries[2]. The relatively low maximum score of 0.625 (from the ideal score of 1) suggests that Africa has the potential to improve the integration of its countries on all the dimensions of regional integration and to tap on the potential benefits.
- **Africa is poorly integrated on the productive and infrastructural dimensions. This is true also for all RECs.** Corrective measures are necessary and urgent as these two aspects are the foundations upon which the other dimensions of regional integration rely to function properly.
  The continent has a moderate performance on the free movement of people and on the macroeconomic dimensions. However, there is much disparity in the performance of single countries. As a matter of fact, Libya scores 0 on the free movement of people while Comoros scores nearly 1.
- **South Africa demarcates itself as the most integrated country well ahead of Kenya.** South Africa is also the topmost performer on the productive and infrastructural dimensions. Moreover, it fares among the top four on the trade dimension and it is an average performer on the macroeconomic dimension. Its strength is in the productive dimension where it has the maximum score. Its weakness lies in the free movement of people. Kenya enjoys a relatively good performance on the productive, infrastructural and free movement of people dimension, where it ranks seventh, eighth and tenth respectively.
- **The least integrated African countries are South Sudan and Eritrea**. Eritrea lies in the bottom six in the free movement of people, infrastructural, macroeconomic and trade dimensions. The evident weaknesses of South Sudan are in the macroeconomic and infrastructural dimensions where it ranks last.
- **Overall ranking at the continental level appears in line with the current state of integration**. The most integrated countries tend to perform well on at least three

[1] Scores closer to 0 indicate low performances while scores closer to 1 indicate high performances.
[2] Low, average and high performing countries are identified based on a 95 percent confidence interval from the mean.

dimensions: for instance, Morocco that ranks fourth fares well on the macroeconomic, infrastructural and productive dimensions. The least integrated countries tend to have bad performance on all dimensions.

> The following findings remind the reader that the results are dependent upon the data, variables used and methodological choice:
>
> It is worth noting that **some countries have their rankings pushed upwards somewhat unexpectedly** because of the multidimensional nature of the index that does not stress single popular dimension such as the trade dimension but considers all dimensions. This is the case of Djibouti, Comoros and Somalia that are well-positioned in the overall ranking thanks to their top positions on the free movement of people dimension.
>
> The top position of Libya on the infrastructural dimension is primarily due to its outstanding third performance on the AfDB Composite Infrastructure Index that is an element of the infrastructural dimension in ARII.
>
> Although Nigeria is a great contributor to GDP on the continent, it signed but has not ratified yet the AfCFTA and its low intra-regional imports relegate the country to a realtively low-performer position on regional integration despite its outstanding performance as the second-best integrated country on the productive dimension.

Within African RECs

- **SADC has a low average score of 0.337 and 9 out of its 16 members are classified as average performers.** Top performers are South Africa, Mozambique and Zimbabwe while the bottom performers are the Democratic Republic of the Congo, Angola and Eswatini. Rankings appear to reflect the current state of socio-economic integration in the community with the best-performing countries having flourishing economies and enjoying a relatively good standard of living. The strength of the community is in the free movement of people dimension while it is lacking in its infrastructural integration.
- **ECOWAS enjoys a moderate score of 0.425; however, its low average score on the productive dimension indicates that there is potential for improved performances** if future investment is geared in complementary productive capacities. Côte d'Ivoire, Burkina Faso and Senegal are the top-performing countries and Liberia, Guinea-Bissau and Sierra Leone are the least performing countries. ECOWAS best performance is in the free movement of people dimension as travellers face no constraints to move within the region.

- **The results suggest that CEN-SAD records a low level of integration with an average score of only 0.377** and a low maximum score of 0.541. Similar to previous RECs documented, the community has a poor performance on the productive and infrastructural dimensions but fares relatively well on the free movement of people dimension. Côte d'Ivoire, Senegal and Morocco are the most integrated countries. Eritrea, Sudan and Chad are the least integrated countries.
- **Kenya, Rwanda and Zambia are the top three most integrated countries in COMESA while Eritrea, Eswatini and Sudan are the worst performers**. COMESA has a low average score of 0.367 and enjoys a maximum score of only 0.596. Its best performance is in trade but there is a lot of potential for improvement in all the other dimensions, in particular, in the productive dimension. Despite their poor performances on the trade dimension, the overall ranking of Comoros and Somalia are inflated as a result of their liberalised policies on the free movement of people.
- **The Republic of the Congo is the top-performing country in ECCAS followed by Gabon and Cameroon**. Burundi, Angola and the Democratic Republic of the Congo are the bottom performing countries in this REC. With an average score of 0.442, ECCAS enjoys a moderate level of integration. Unlike most RECs, the community excels on the macroeconomic dimension but like most RECs, it lags on the productive dimension albeit with large disparities in the performances of its members.
- **IGAD fares relatively well with an average score of 0.438. Its best performance is in the free movement of people** dimension as most of its countries committed to liberalising the movement of people on the continent. The productive dimension is where it has to improve**.** The top two performing countries in IGAD are Uganda and Kenya. The least performing countries in this community are Eritrea and South Sudan.
- **The best performer in EAC is Kenya followed by Uganda.** The least performing countries in this community are South Sudan and Burundi. EAC is relatively well-integrated with an average score of 0.537. Its best performance is in the free movement of people dimension boasting a high average score of 0.664. It is least performing on the productive dimension scoring only 0.328.
- **AMU has a moderate level of integration with an average score of 0.488.** It differs from other communities in that its weakness is in the free movement of people dimension and it performs relatively well on the macroeconomic dimension. Tunisia and Morocco are the best performers, while Mauritania and Libya are the worst performers.

Policy recommendations

More can be done and better. There is an urgent need for policies both at the country, regional and continental level to address the identified gaps in order to deepen regional integration and, thereby, unleashing its benefits.

Particular attention needs to be given to the sluggish productive dimension that is undoubtedly impeding the proper functioning of regional integration on the continent. Most RECs also lag on this dimension. It is, therefore, an imperative to improve the regional networks of production and trade by enhancing the productive, distributive and marketing capacities of individual countries and that complement each other. Such an endeavour can be more efficient if there is greater cross-border cooperation between and among public and private stakeholders. Some countries still need to win their place in the regional commodity and value chains. Others need to establish firm ground so as to maintain their positions.

Practically and first of all, more has to be done to investigate the opportunities for and hurdles of regional integration in different sectors of activity through innovative regional value chain frameworks. Bottlenecks have to be addressed, such as making use of better technologies, higher quality inputs and updated marketing techniques where applicable. With the forthcoming implementation of the AfCFTA, production, and, hence, export is expected to increase (Songwe, 2019). However, production decisions have to be made on sound bases with a long-term perspective; they should embed the use of state-of-the-art techniques and be forward-looking. In the context of the AfCFTA, non-tariff barriers (NTBs) constitute a major challenge to the full implementation of the agreement as well as the lowering of overall business costs. Continuous investment in research and development in regional value chains and business planning should not be overlooked by national planners.

Global value chains do not function without people. The continent should dig into its labour goldmine by identifying the skills gap and develop cross-border skills enhancement programme. In fact, the extent to which people can benefit from these chains of production depends on their skills, more precisely, on the matching of their skills with the technology and production capacities in place and their transferability. Studies report that cognitive skills such as literacy, numeracy and problem solving are of absolute importance for any industry to be able to succeed in the global economy. More importantly, skills that are easily transferable act as a shield from the negative impacts that global value chains could bring to social outcomes (OECD 2017). Policymakers should continue investing in the development of skills in line with the labour market requirements as production becomes more fragmented and sophisticated.

Second, policy-makers should immediately address the infrastructural deficiencies on the continent. Failure to tackle the infrastructural needs of the continent could prove disastrous for the advancement of regional economic and social integration. Inadequate infrastructure hampers economic activities: raw materials do not get to the factories and production cannot happen; goods do not reach consumers; trade and financial activities cannot flourish within or across borders. The unbundling of production beyond the national boundaries is dependent on functioning logistics and transportation infrastructures. FDI flows where there are locational cost advantages; poor infrastructure is, thus, a deterrent. Additionally, the functioning of modern society depends on the smooth supply of a vast range of infrastructural services that improve quality of life. These services ensure social well-being, health and safety standards and good environmental quality. Lack of infrastructure would negatively affect welfare.

Long-term coordinated plans to develop and maintain basic infrastructures and logistics are necessary to sustain social and economic development and allow regional integration to happen. Infrastructural development and upkeep are costly: the growing demand for infrastructure put governments budgets under great pressure. In many developing countries public finances are overwhelmed due to demographic upsurges, such as urbanisation, growing population and migration. Moreover, peace and security constrain these budgets.

Policy should resort to innovative approaches to finance infrastructure. While the private sector is already involved in some countries, innovative variants of public-private partnerships (PPP) can be used to attract private capital and expertise. Pension funds and insurance markets can be envisaged as additional finances for low-risk infrastructures.

Securing stable access to finance alone will not solve the problem of poor infrastructural integration. Oftentimes, the devil lies in the inefficient construction and operation of infrastructures. More competition should be introduced in procurement and operation and greater transparency should be established at all levels of the development of infrastructural projects. The legal and regulatory framework should be reviewed and improved accordingly. More efficient infrastructure demand management systems have to be set up in order to ensure the smooth supply of the infrastructure service or product, to better mitigate wear and tear and to cater for unforeseen events, such as natural or man-made disasters. Efficient management at a large scale can only happen if investment in new technologies is made and innovative management strategies are adopted.

The productive and infrastructural dimensions of regional integration are intricately linked. Improvement in one cannot happen without improvement in the other. Corrective measures to tackle these two dimensions together with the implementation of the AfCFTA would be a massive boon for the trade dimension which is currently under-performing. However, policymakers should take steps to mitigate the effects of the potential adjustment costs, for instance, lower tariff revenues, that would accompany the operation of the free trade area.

While the overall ARII 2019 results show relatively better performances on the macroeconomic integration and free movement of people dimensions, these performances are not uniform. For instance, the Arab-Maghreb Union (AMU) is yet to explore its potential on the free movement of people dimension. Disparities are humongous on the macroeconomic dimension; the Economic Community of Central African States (ECCAS) and the East African Community (EAC) do not have any bilateral investment treaties that are operational. The role that investment plays in fostering growth is well-documented. It is the foundation for furthering the productive and infrastructural dimensions. Policy-makers should take concrete actions to make investment a reality for these regions and the continent. Harmonised plan of actions should be established to safeguard the macroeconomic stability of these regions and disciplinary actions should be taken where necessary. In essence, exogenous shocks like natural disasters and capital outflows should be better managed to reduce economic instability.

Composition of the Africa Regional Integration Index (ARII) 2019

I. Trade Integration

- Average tariff on imports
- Share of intra-regional exports over GDP
- Share of intra-regional imports over GDP
- Share of intra-regional trade
- AfCFTA (Only at continental level)

II. Productive Integration

- Share of intra-regional intermediate exports
- Share of intra-regional intermediate imports
- Merchandise trade complementarity index

III. Macroeconomic Integration

- Number of bilateral investment treaties
- Regional convertibility of currency
- Regional inflation differential

IV. Infrastructural Integration

- AfDB Composite Infrastructure index
- Proportion of intra-regional flights connections

V. Free Movement of People

- Free Movement of Persons Protocol (Kigali)
- Number of countries that may obtain a visa on arrival
- Number of countries that require a visa

DIFFERENCE BETWEEN ARII 2016 AND ARII 2019

Indicators

Although the number of indicators remains the same, i.e. 16, some indicators have been removed while others added.

Recent institutional developments that pertain to trade integration have been included. The variable AfCFTA has been added on the trade dimension. The macroeconomic integration dimension includes the number of bilateral investment treaties in force.

After a robust sensitivity analysis, the variable net electricity import (which was recalculated as net electricity trade) has been removed as it was reducing the statistical coherence of the dimension. Moreover, electricity is embedded in the AfDB Composite Infrastructure Index.

The variable Single African Air Transport Market had initially been considered on the infrastructural dimension. It was removed due to statistical issues. Similarly, the variable average cost of roaming was removed due to unreliable data.

For more on the indicators, see Table 11 Description of dimensions and indicators used in ARII 2019in the annex.

Weights

While ARII 2016 assigns equal weights to the indicators, the 2019 index uses differing weights for both the indicators and dimensions. Weights are computed using principal components analysis (PCA) that uses the structure of the data to determine the weights.

PCA is widely used in building composite indexes due to its non-subjective assignment of weights. The Methodological Note that accompany this report can be consulted for more details on the methodology.

The making of ARII 2019

The second edition of ARII builds on the first edition (ARII 2016) and addresses its limitations (see Box 1). ARII 2019 has five dimensions[3]: trade integration, infrastructural integration, productive integration, free movement of people and macroeconomic integration.

In addition to covering member countries from the eight Regional Economic Communities (RECs) recognized by the African Union[4], the 2019 report also includes ranking at the African level. This is an important step towards enhancing regional integration beyond the communities to reach inter-communities and is essential for paving the way towards pan-Africanism. This allows the inclusion of continental variables such as the AfCFTA and enables comparison of countries' performances Africa-wide.

Regional integration is cross-border and multi-dimensional. Indicators that have a cross-border interaction and where quality data is available and comprehensive have been used to make up the Index.

The rationale behind the selection of dimensions and indicators

There is no consensus as to an exact definition of regional integration (Söderbaum 2009). However, there is widespread agreement that greater regional integration promotes socio-economic development by expanding markets and trade, enhancing cooperation, spreading risks, and fostering socio-cultural cooperation and regional stability among other benefits[5]. It is claimed to be able to maximise the benefits of globalisation while countering its negative effects.

The reach of regional integration is, therefore, broad, rendering the concept complex. Adding to this complexity is the fact that regions are heterogeneous: different regions have differing objectives and priorities that affect their perception of regional integration. Regional integration is best structured as a multidimensional concept that would account for the

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[3] The initial thinking was to have six dimensions in ARII 2019. Indeed, and in addition to the five dimensions that make up ARII 2019, a social dimension was envisaged with 3 variables: mean years of schooling, gender equality and net migration within RECs. The rationale behind a social dimension is that for regional integration to be successful, favourable social arrangements have to be in place. However, following an expert group meeting held in Addis Ababa in January 2019 where experts from member States and RECs were present, the dimension was considered to be problematic as its variables lack a regional component. Consequently, because ARII is meant to be a tool for member States and RECs, their concerns were addressed, and the dimension not included in the final version of ARII 2019.

[4] Source: African Union at http://www.au.int/en/organs/recs

[5] The Istanbul Programme of Action on "Programme of Action for the Least Developed Countries for the Decade 2011-2020" recognises that regional integration is a means to "achieve sustained, equitable and inclusive economic growth in least developed countries […] and overcoming their marginalization through their effective integration into the global economy". It also emphasizes that regional integration can facilitate development in least-developed countries through improved productive capacity (paragraph 44), infrastructure (paragraph 47), and trade (paragraph 64).

different aspects or dimensions of regional integration considering the overall socioeconomic structures, challenges and opportunities of the studied regions.

The making of ARII builds on regional economic literature, experiences of the individual countries and recent development that directly or indirectly affect regional integration on the continent. Representatives of the regions and countries involved, experts in the field, international organisations and partner institutions have been consulted at various stages in the making of the index. Nevertheless, great care has been taken to balance the economic and statistical coherence together with the vast array of opinions and recommendations gathered.

The trade, macroeconomic and productive dimensions, albeit under different nominations, are traditional dimensions that have gained an established place in the measurement of regional integration (See the "EU Index of Integration Effort" (König, 2015) for the first two and the Asia-Pacific Regional Integration Index (Huh and Park, 2017) for all of them). The cross-border nature of regional trade, in final or intermediate products, and of foreign investment are deeply ingrained in contemporary discourse; their role in furthering economic development and growth is well-accepted. What constitutes each of these dimensions may differ from region to region given the structure of the region, the availability, reliability of data and conceptual preferences.

Other dimensions of integration are often selected based on their importance for the specific regions being assessed. Relevant for developing countries due to their poor state and poor maintenance is regional infrastructure connectivity. Better physical connections have a direct impact on transaction costs reducing trade and investment costs and promoting regional integration[6]. It becomes crucial to include it as a measure of regional cooperation as it signals concrete efforts to bridge the gaps between countries. Integration in the purely economic sense implies the free movement of all factors of production including people. The free movement of people from places where there are no jobs to places where labour is in high demand allows production to take place efficiently. But beyond the economic gain, the movement of people across borders would foster social linkages, that, in turn, would fuel regional integration.

- **Trade integration**
  Trade openness is usually measured as trade to GDP (Harrison 1996; De Lombaerde 2009). It is the sum of a country regional exports and imports divided by its GDP. Consistent with the literature, the trade dimension in ARII includes both the intra-regional exports share and intra-regional imports share as a percentage of GDP. It includes the share of intra-regional goods trade as a percentage of total regional trade. To effectively capture policies that enhance trade openness the level of tariff

[6] The 2015 United Nations Resolution "Transforming our world: the 2030 Agenda for Sustainable Development" defines the goals and objectives to achieve sustainable development in the economic, social and environmental dimensions. It claims that better transport connectivity enhances mobility and ultimately serves as a catalyst for integration between local communities, cities, regions and countries, contributing to the promotion of peace and stability.

on imports is added in the dimension. Specific to the African region, the AfCFTA[7], a variable capturing whether countries have signed or ratified the trade agreement is included in the trade dimension.

- **Productive integration**

  A country is considered well-integrated productively if it has complementary productive capacities with respect to other countries in the region whereby it can specialize in the production stages where it has a comparative advantage benefitting from scale economies. It entails the country's involvement in the regional supply and value chains. Such involvement is measured in ARII through the imports and exports of intermediates goods in the region. Additionally, a more complex measure, the trade complementarity index is also included in this dimension; it measures the extent to which the export profile of a country matches the region import profile.

- **Macroeconomic integration**

  The convergence and stabilisation of macroeconomic policies create a healthy financial climate that attracts cross-border investments and is, therefore, conducive to financial and macroeconomic integration. Such convergence is accounted for in ARII through the variable regional inflation differential which measures the difference between a country's inflation rate to the target inflation rate set by the region otherwise the minimum positive rate is used. This is an important indicator in this dimension as it signals investors as regards the value of their investments. The dimension also includes the regional convertibility of currencies so as to measure the ease with which foreigners and businesses can transact. For lack of comprehensive data on regional foreign direct investment, the number of bilateral investment treaties in force has been used instead to capture the scope of cross-border capital flows.

- **Infrastructural integration**

  The infrastructural dimension in ARII is assessed through the AfDB Infrastructure Development Index. The latter is a composite index that accounts for development in electricity; transport; ICT; and water and sanitation. Ideally, indicators of a more regional nature, such as cross-border road connectivity or cross-border electrical infrastructures would have been preferred but the lack of comprehensive and reliable data motivates the use of this indicator. The variable net electricity trade has been used tentatively in this dimension, but a robust sensitivity analysis[8] recommended its removal in order to improve the overall validity of the dimension. Initially, the cost of mobile roaming was also envisaged but ultimately not considered because of the low quality and incompleteness of the data. The Single African Air Transport Market is an initiative aiming at opening the African skies and there are currently 28 countries that signed the agreement. This variable was initially included but failed to pass the statistical tests. This is comprehensible as what really matters for integration is the implementation of such an agreement. Instead, an important measure of cross-border

[7] This variable only applies to the Africa region as a whole and not to the RECs.
[8] See Methodological Note that accompany this report.

physical connectivity that is included in ARII is the proportion of flight connections in the region. The more air connections a country has with another is a good indicator of its physical capacity to accommodate regional flights.

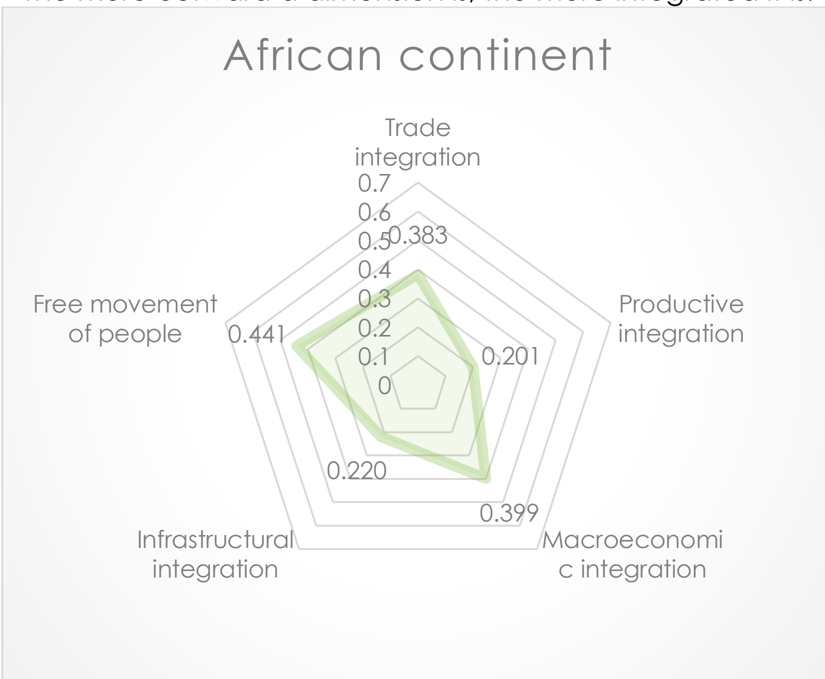
- **Free movement of people**

  Three variables are used in ARII to account for the free movement of people. To capture the ease with which people can move in the region for tourism purposes, to conduct business or for day-to-day transactions, the number of countries whose citizens are granted visas on arrival by each country in the region is used as a variable. Since many countries still have very rigid borders so that citizens of some countries have to go through the hassle of obtaining a visa before they travel, the variable the number of countries whose citizens strictly require a visa is also included to differentiate countries with close and open borders. Additionally, the dimension is also comprised of a variable that identifies whether countries have adhered to the protocol on the free movement of people, right of residence and right of establishment (Kigali). This variable intends to measure the willingness of countries to relax their visa policies and allow freer circulation of people. Such an endeavour would ultimately allow for a smoother flow of labour, tourists and business travellers.

Visual overview of regional integration by dimensions

Figure 1 Average performances on each of the dimensions of regional integration

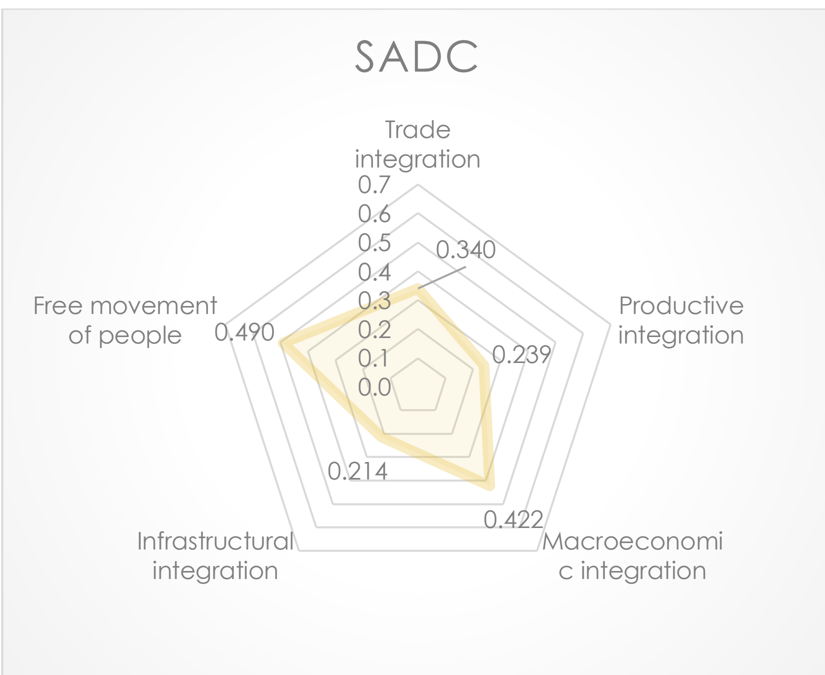
The more outward a dimension is, the more integrated it is.



Average score:
0.327

Best dimension:
Free movement of people

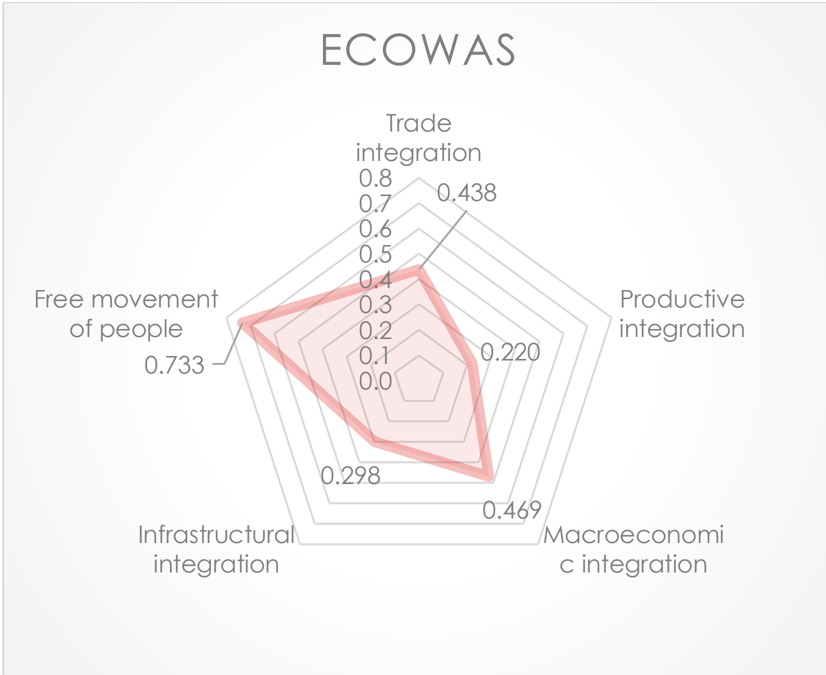
Worst dimension:
Productive integration



Average score:
0.337

Best dimension:
Free movement of people

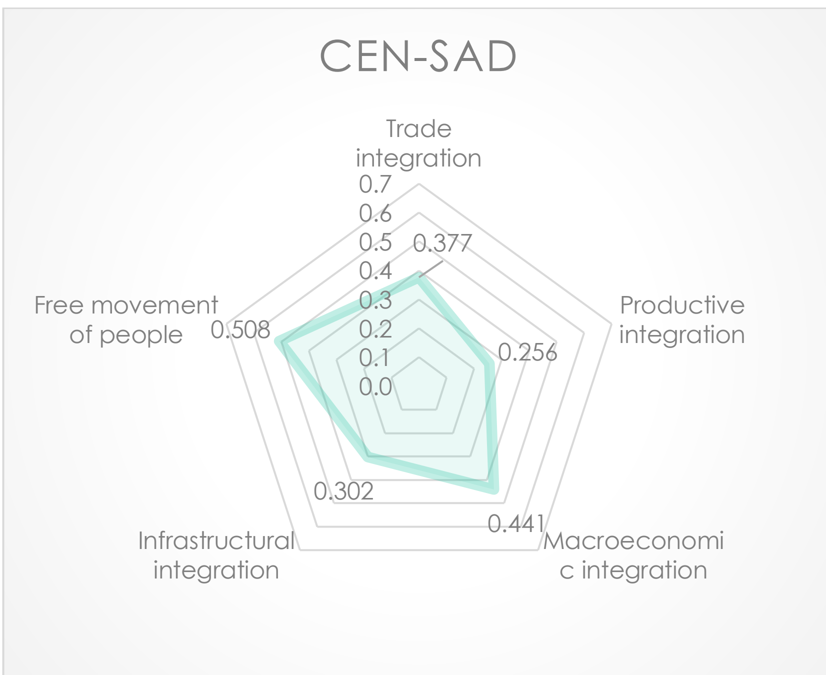
Worst dimension:
Infrastructural integration



Average score:
0.425

Best dimension:
Free movement of people

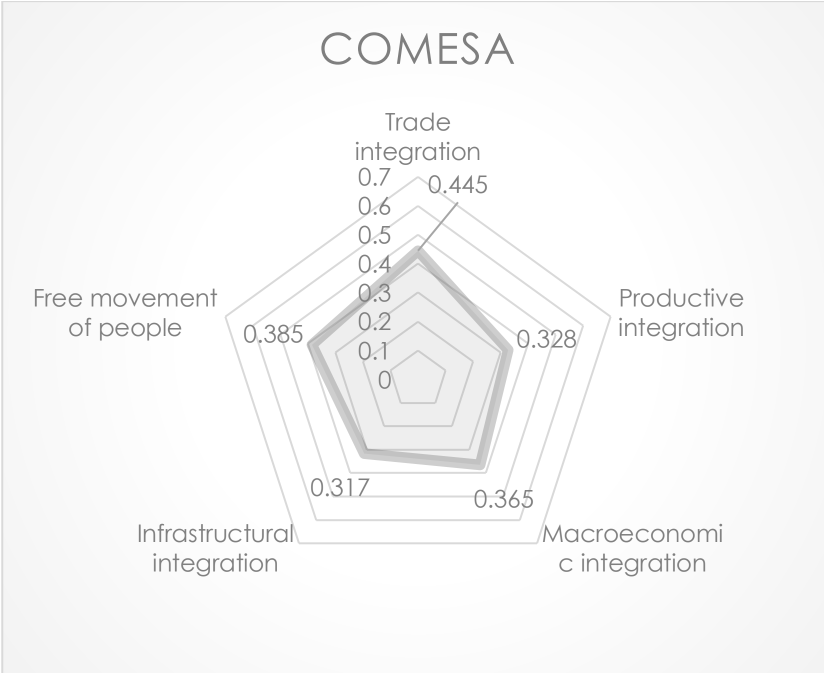
Worst dimension:
Productive integration



Average score:
0.377

Best dimension:
Free movement of people

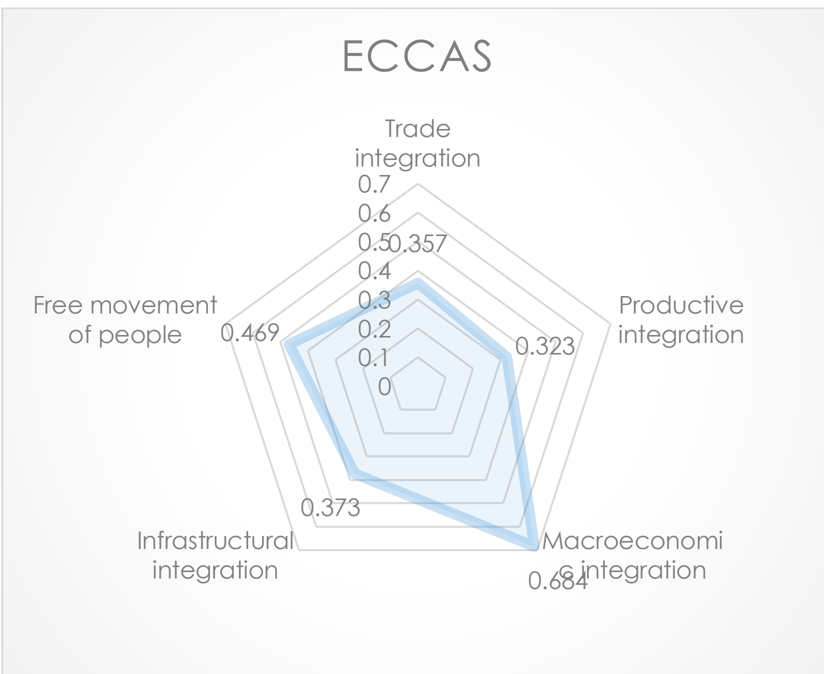
Worst dimension:
Productive integration



Average score:
0.367

Best dimension:
Trade integration

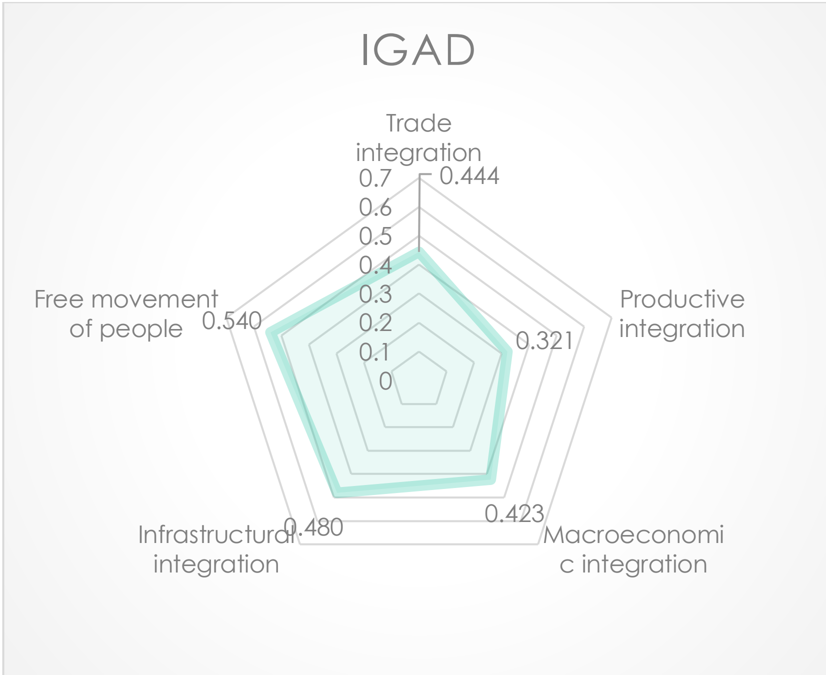
Worst dimension:
Infrastructural integration



Average score:
0.442

Best dimension:
Macroeconomic integration

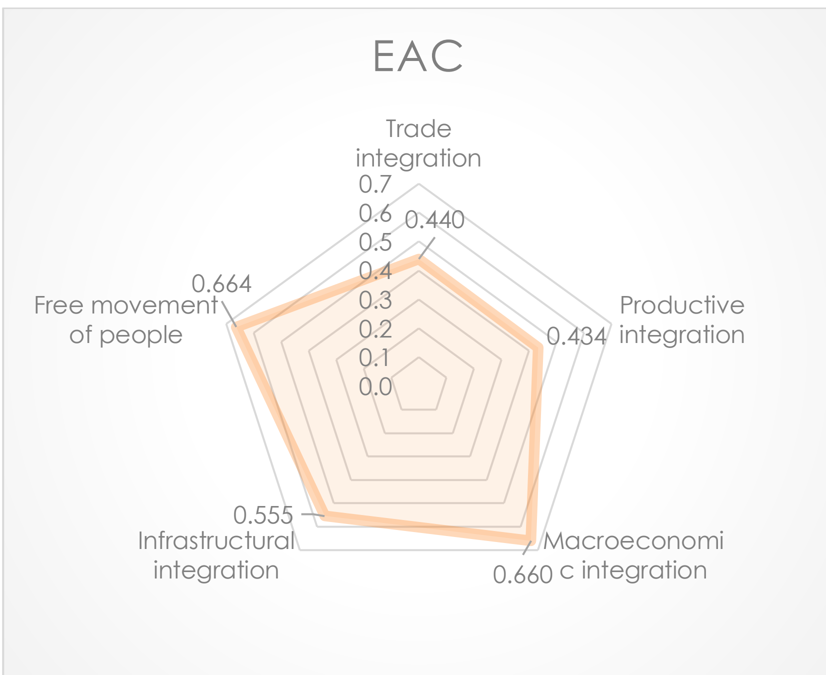
Worst dimension:
Productive integration



Average score:
0.438

Best dimension:
Free movement of people

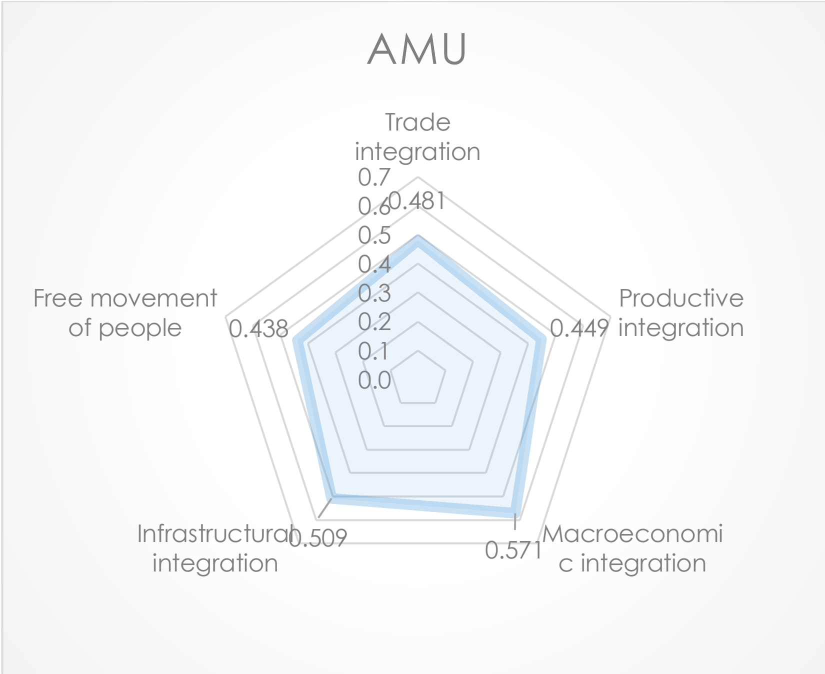
Worst dimension:
Productive integration



Average score:
0.537

Best dimension:
Free movement of people

Worst dimension:
Productive integration



Average score:
0.438

Best dimension:
Macroeconomic integration

Worst dimension:
Free movement of people

Regional Integration within Africa

At the continental level, South Africa is the most integrated country; the country leads with a score of 0.625 ahead of Kenya that scores of 0.444. They are followed by Rwanda, Morocco and Mauritius with scores of 0.434, 0.430 and 0.424 respectively.

The best performer, South Africa, is also the topmost performer on the productive and infrastructural dimensions. Moreover, it fares among the top four on the trade dimension and it is an average performer on the macroeconomic dimension. Its strength is in the productive dimension where it vaunts the maximum score of 1. Its weakness lies in the free movement of people dimension where it is among the low performers.

The second-best integrated country on the continent, Kenya, enjoys a very good performance on the productive, infrastructural and free movement of people dimensions, ranking seventh, eighth and tenth respectively. It is among the top performers in the trade dimension as it ratified the African Continental Free Trade Area (AfCFTA) agreement. However, it is a low performer on the macroeconomic dimension.

The strength of Rwanda is in the macroeconomic dimension, ranking fourth. It also enjoys a very good performance on the free movement of people dimension. The country promptly ratified the AfCFTA and liberalized the movement of people by signing the Kigali protocol on the free movement of persons, right of residence and right of establishment. Despite being an overall top performer, it is a low performer on the productive dimension.

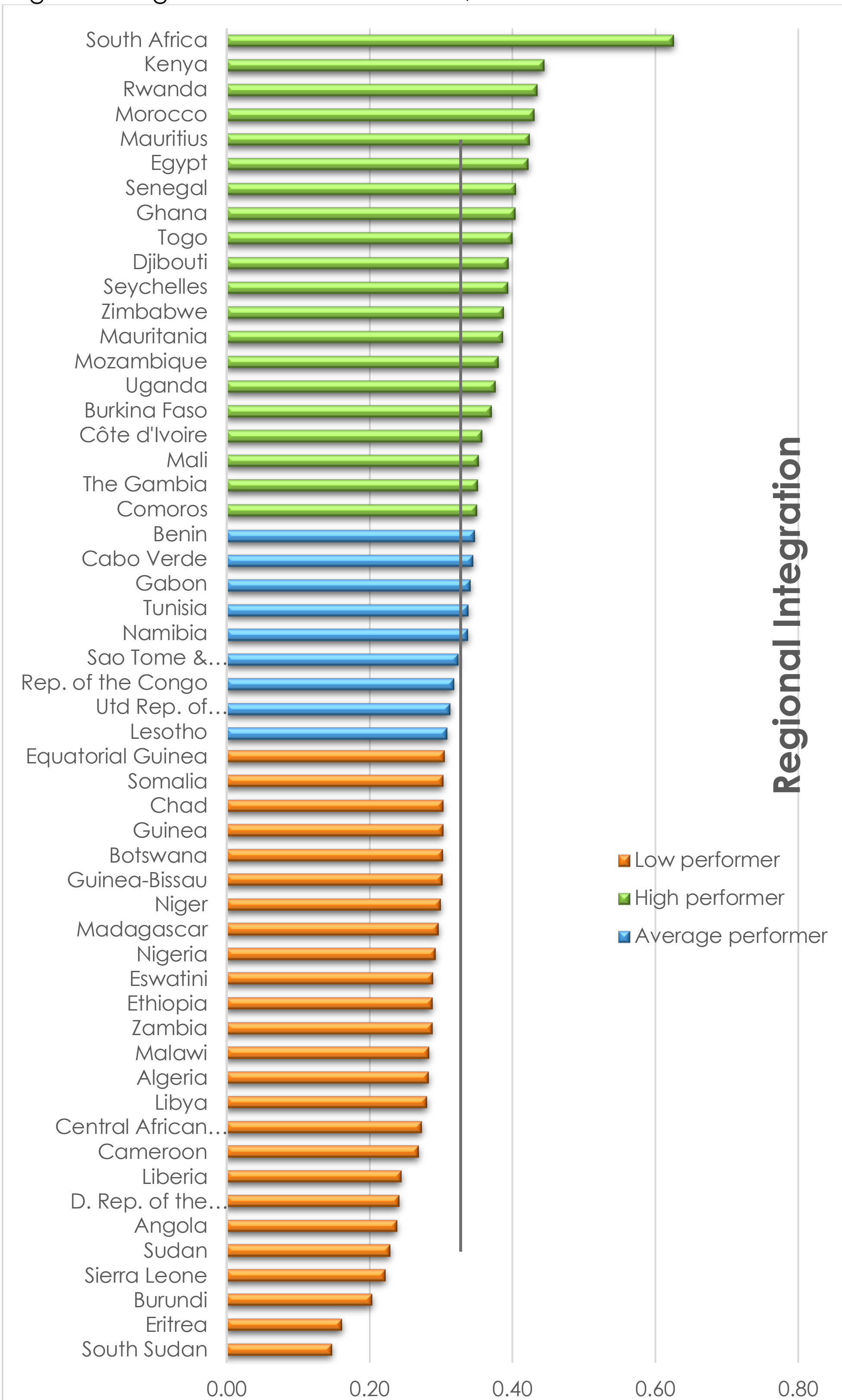
Morocco and Mauritius enjoy the first and second positions respectively on the macroeconomic dimension and this contributes to their good performance on overall regional integration. Moreover, both countries have good infrastructure: Morocco ranks fourth and Mauritius ranks sixth on the infrastructural dimension.

The least integrated African country is South Sudan with a score of 0.147 behind Eritrea with a score of 0.161. Eritrea lies in the bottom six in the free movement of people, infrastructural, macroeconomic and trade dimensions. The evident weaknesses of South Sudan are in the macroeconomic and infrastructural dimensions where it ranks last.

The other poor performing countries are Burundi, Sierra Leone and Sudan. The low performances of Burundi and Sierra Leone are principally driven by their non-commitment to liberalise the movement of people within the whole continent. Sudan has very poor performance in trade.

The overall integration level on the African continent is low, with an average score of 0.327. There are 25 low performing countries and 20 high performing countries (see Figure 2 for full details). It has a maximum score of only 0.625 suggesting that Africa has much potential to improve the integration of its countries and tap on the potential benefits. There is much disparity in the performance of countries, particularly, in the productive and infrastructural dimensions. It fares relatively well on the free movement of people and on the macroeconomic dimensions.

Figure 2 Regional integration at the African level, Mean score: 0.327



Trade Integration within Africa

Eswatini is the best performer on trade integration with a score of 0.730 followed by Namibia, 0.715. The next most integrated countries in trade are Lesotho, South Africa, and Zimbabwe with scores of 0.655, 0.627 and 0.550 respectively.

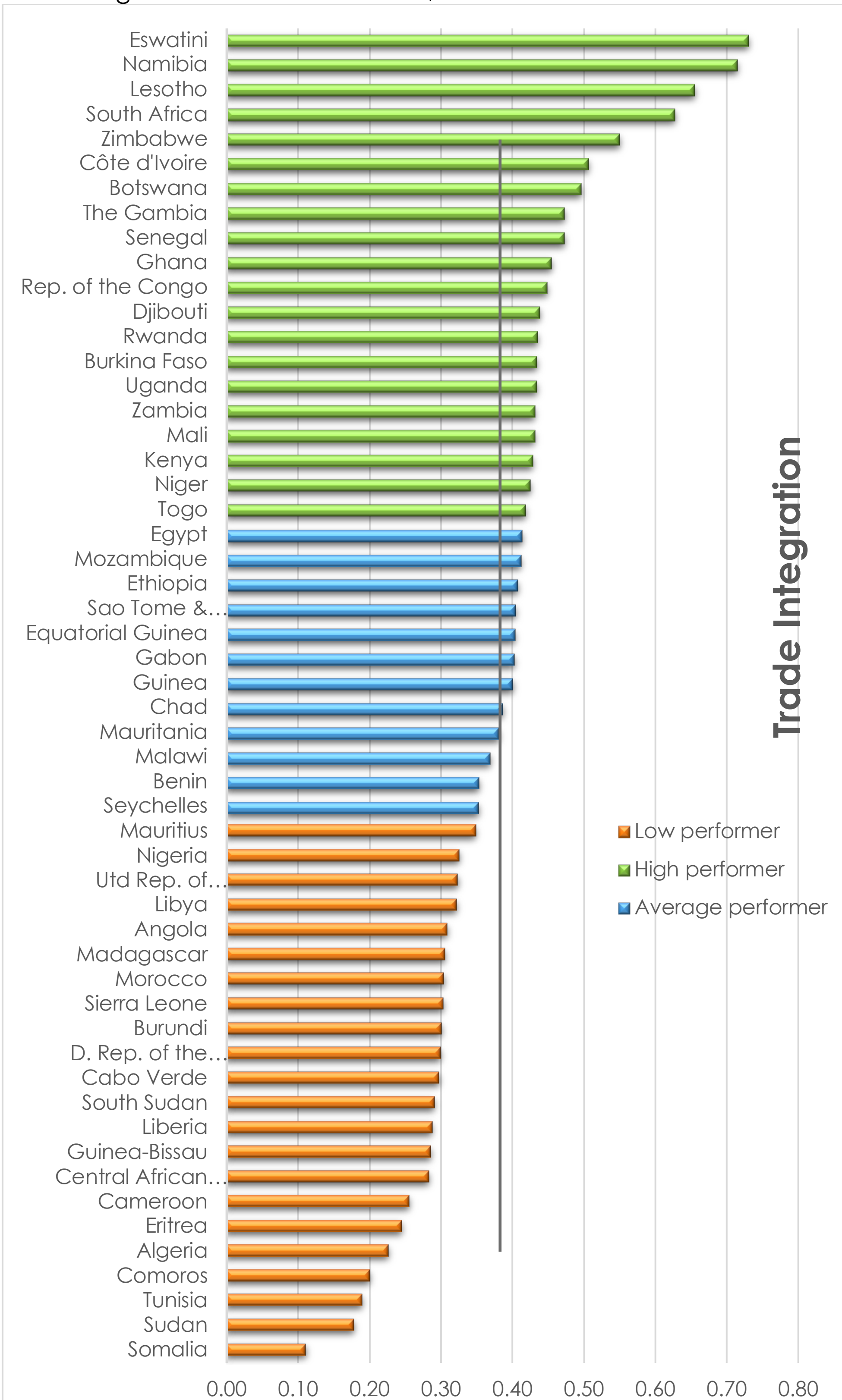
This ranking reflects the actual state of affairs in that four out of the five members of the South African Customs Union (SACU) are positioned in the top 4 while Botswana, the fifth member, is positioned seventh. SACU has achieved a high level of trade liberalisation as it boasts a full customs union status which renders its economies strongly interdependent. While Africa has the highest average import duty and the highest average non-tariff barriers when compared to other regions, there is considerable heterogeneity amongst its countries which is reflected in this ranking.

Besides having a favourable tariff rate in the region, Zimbabwe ratified the AfCFTA. Most top-performing countries (for example, Eswatini, Namibia, South Africa and Côte d'Ivoire) also ratified the agreement.

The least integrated country on the trade dimension is Somalia with a score of 0.111. It is followed by Sudan, Tunisia, Comoros and Algeria with scores of 0.178, 0.189, 0.200 and 0.226 respectively. Tunisia, Somalia, Sudan and Comoros have the highest import tariffs in the region. The poor performance of Algeria can be attributed to its poor imports and exports in the region.

Trade integration on the African continent tends towards the lower rungs of the score ladder with an average of 0.383. There are 22 low-performing countries and only 20 high-performing countries (see Figure 3). There is substantial room for improvement, particularly as more countries will ratify the AfCFTA and committing to liberalising their trade. The benefits of this agreement could slowly trickle down on all the other components of trade integration as greater trade liberalisation leads to increasing exports and imports and fostering further integration. These benefits would diffuse to other dimensions, accelerating the build-up of production capacities and infrastructure to meet with increasing demands.

Figure 3 Trade integration at the African level, Mean score: 0.383



Productive Integration within Africa

South Africa is inevitably the leader in productive integration on the continent showcasing the maximum score of 1. The second-best integrated country Nigeria lies much behind with a score of 0.364 followed by Angola, Tunisia and Zambia with scores of 0.340, 0.340 and 0.324, respectively.

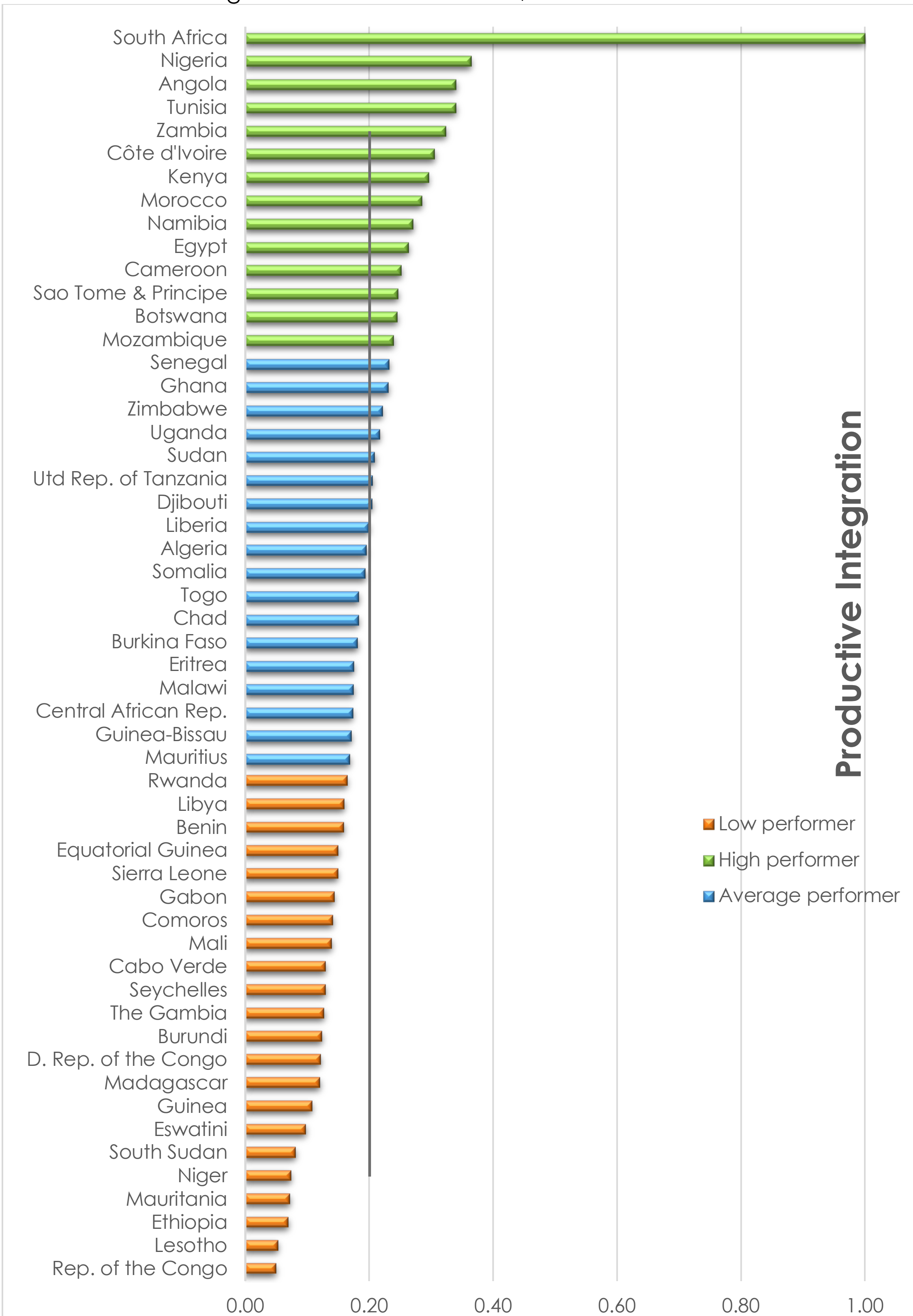
South Africa is the largest exporter and importer of intermediates products on the continent and has the highest Trade Complementarity Index (TCI). The flourishing fuel exports of Nigeria contributed to its good position. Both Tunisia and Angola have good complementarity with other African countries. Zambia's top position is thanks to its large imports of industrial equipment.

The least integrated countries are The Republic of the Congo, Lesotho, Ethiopia, Mauritania and Niger. The weakness of the least performing country, Republic of the Congo, is its poor intermediate exports. Lesotho has very low complementarity in production with the continent and Niger has poor imports of intermediate goods. The other low performing countries perform poorly on intermediates exports.

In general, Africa is poorly integrated on the productive dimension which is the dimension with the smallest average score, 0.201, and 33 countries having a score that is below this average (see Figure 4). This implies that production is not geographically dispersed within the continent and countries are not reaping the benefits of variations in comparative advantage across countries. This may largely be due to poor or inexistent logistics that are necessary for regional supply to be operational.

There is, thus, great urgency for African countries to improve their productive capacities. This can be achieved by better coordination of pan-African trade and investment policies and greater cooperation among public and private sector stakeholders.

Figure 4 Productive integration at the African level, Mean score: 0.201



Macroeconomic Integration within Africa

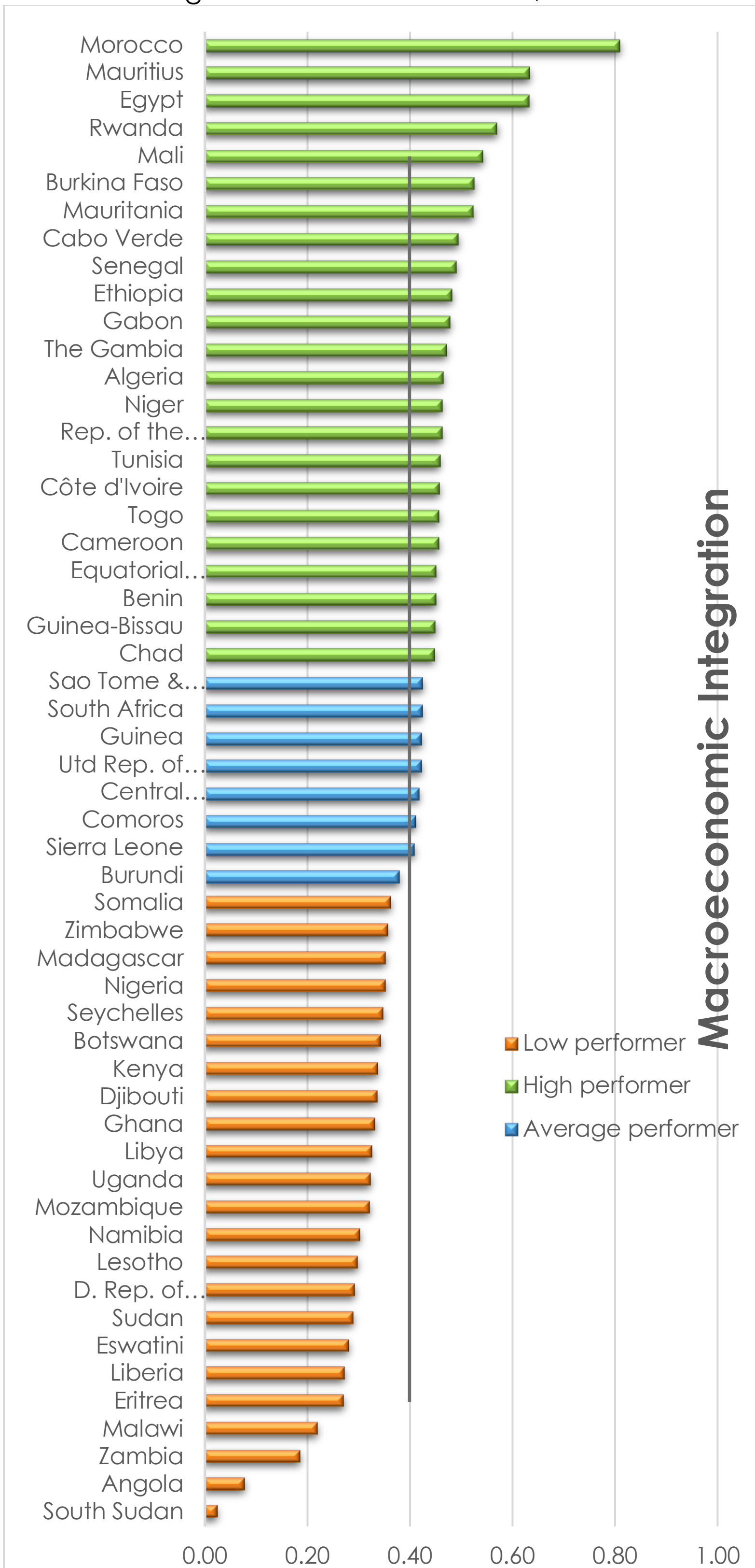
Morocco is the most integrated country in Africa on the macroeconomic dimension with a score of 0.809 much ahead of Mauritius that scores 0.633. They are followed by Egypt, Rwanda and Mali that score 0.632, 0.570 and 0.542, respectively.

Top performers are those whose currencies are easily convertible to other currencies such as the Rwandan franc and the Moroccan dirham. Egypt, Morocco and Mauritius also have the greatest number of bilateral investment treaties (BITs) that are in force; these factors help to boost up their positions on this dimension.

The two least macroeconomically integrated countries are South Sudan and Angola with scores nearing zero, 0.023 and 0.077 respectively. Other low performing countries are Zambia, Malawi and Eritrea scoring 0.185, 0.219 and 0.270 respectively. South Sudan has the most unfavourable inflation rate vis-à-vis other African countries and no BITs. Countries with currencies that are not convertible perform badly.

The continent has a moderate average score of 0.399. However, there is a lot of heterogeneity across countries with a gap of nearly 0.8 between the best and worst performer (see Figure 5). This result is mainly driven by the exorbitant inflation rate of some low performing countries. Coordinated and sound fiscal and monetary policies should be a priority to bring economic stability to the continent. Sound economic climate would, in turn, contribute to increasing cross-border investment and greater macroeconomic integration.

Figure 5 Macroeconomic integration at the African level, Mean score: 0.399



Infrastructural Integration within Africa

South Africa is the highest-ranked country on the infrastructural dimension with a score of 0.898 much ahead of other top integrated countries; Egypt, Seychelles, Morocco and Tunisia follow with scores of 0.585, 0.531, 0.530 and 0.498, respectively.

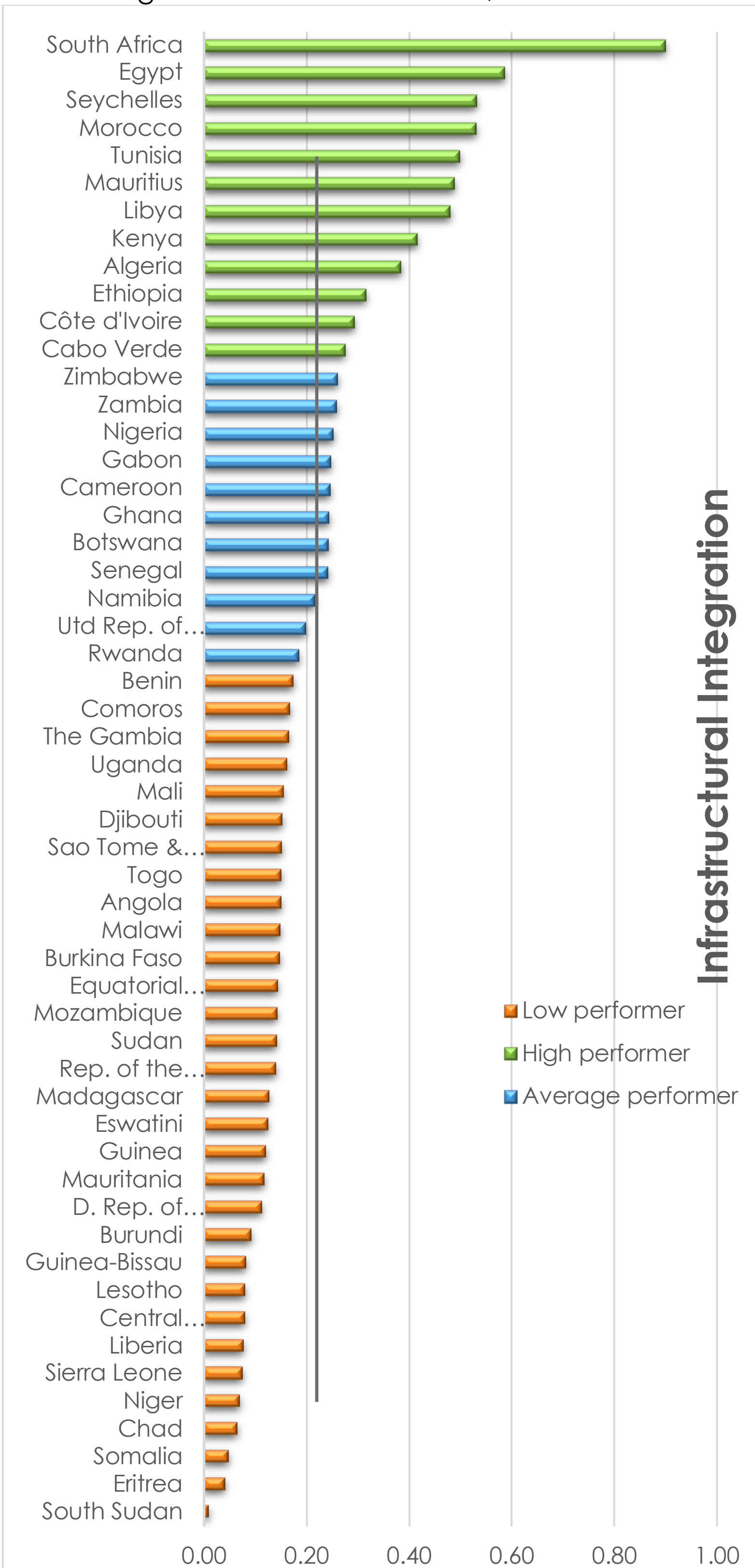
South Africa is well connected by air; it has the best flight connections within the continent providing both its citizens and citizens from all the other African countries the means to move within the continent; Morocco and Tunisia also enjoy good flight connections. Seychelles has the best infrastructure followed by Egypt as per the AfDB Composite Infrastructure Index that assesses infrastructural development in Africa.

The least integrated countries on the infrastructural dimension are South Sudan, Eritrea, Somalia, Chad and Niger, all of them scoring below 0.07. Somalia, South Sudan, Niger and Chad have the least developed infrastructure as per the AfDB's composite index. The weakness of Eritrea is in its poor flight connections within the continent.

Africa lags in infrastructural integration given its low average score of 0.220. Many countries have scores nearing zero and this contributes to the overall low integration of the region and its subsequent underperformance. A staggering 31 countries in Africa are classified as low performers and only eleven have an average performance (see Figure 6).

Regional integration cannot happen without adequate infrastructure. In our highly technological world, successful economic linkages at the trade, financial, productive and social level depends on well-designed economic infrastructure. Policies should put in place strategies to address the infrastructural deficit in Africa.

Figure 6 Infrastructural integration at the African level, Mean score: 0.220



Free Movement of People within Africa

Comoros, Djibouti and Somalia share the top position on the free movement of people dimension with scores nearing 1. Mauritania and Mozambique follow with scores of 0.951 and 0.944, respectively.

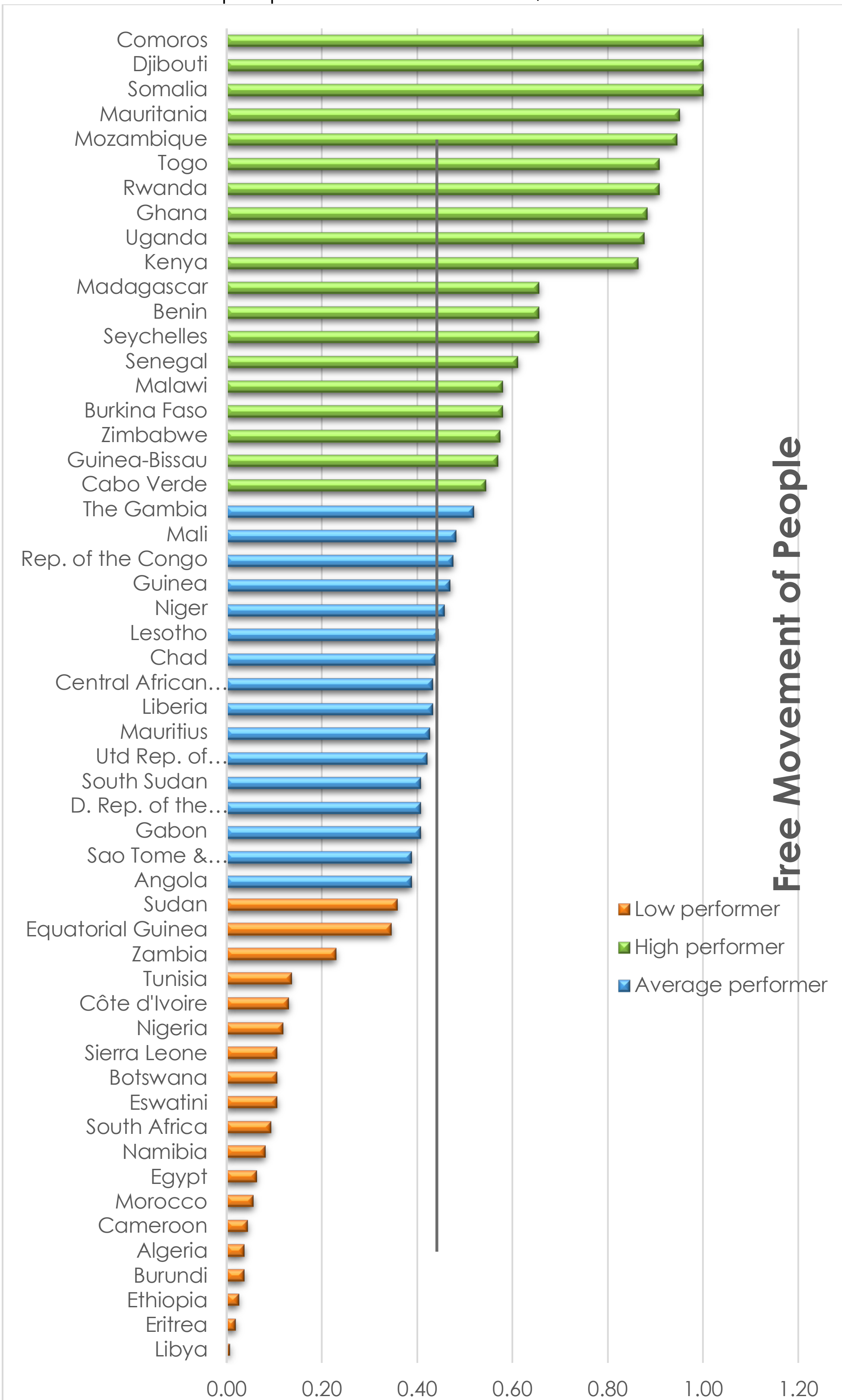
As per the AfDB visa openness data, citizens from all 53 African countries can obtain a visa on arrival in Somalia, Djibouti and Comoros; their visa policies together with their adherence to the protocol on the free movement of persons signed in March 2018 in Kigali make them top-performing countries on this dimension. All the top five countries are amongst the countries that have signed the Protocol.

Libya, Eritrea, Ethiopia, Burundi and Algeria are the least integrated on the free movement dimension with scores close to 0. All of the poorly integrated countries did not sign the protocol to allow free movement of people and most African citizens require a visa to enter these countries.

There is a lot of disparity in countries' scores on the continent with many countries having a score below 0.1 much below the African average of 0.441 (see Figure 7).

This reflects the current difficulty that African citizens encounter when they travel, thus, hindering business transactions, tourism and greater integration in general. Adhesion to the protocol and greater visa openness will help to improve the scores of the low performing countries.

Figure 7 Free movement of people at the African level, Mean score: 0.441



Regional Integration in SADC

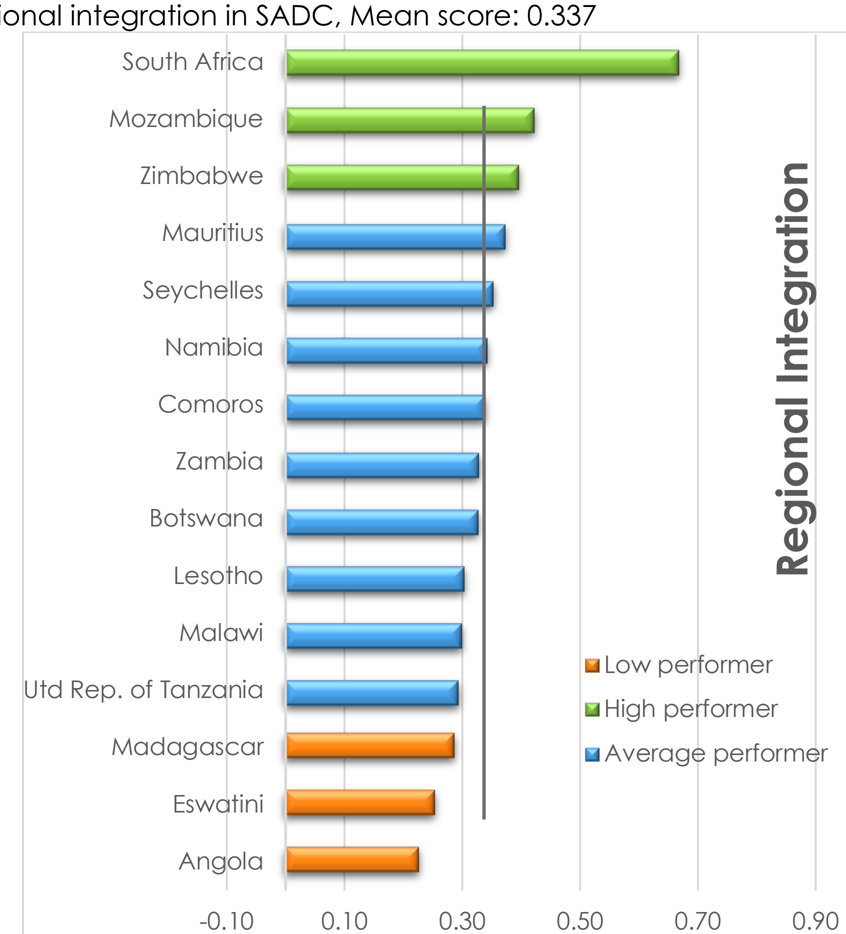
The Southern African Development Community (SADC) is comprised of 16 members with the latest accession of Comoros. The community's objective is to enhance the standard and quality of life of the people of Southern Africa and supporting the socially disadvantaged through regional integration.

As shown in Figure 8, South Africa is the best performer in SADC followed by Mozambique and Zimbabwe with scores of 0.667, 0.422 and 0.395 respectively. South Africa leads comfortably; it is also the leader in the productive and infrastructural dimensions. Mozambique and Zimbabwe are second and third respectively on the free movement of people dimension and, the former also fares well on the macroeconomic dimension.

The least performing country is the Democratic Republic of the Congo with a score of 0.188; it is the second-lowest performer in both the trade and infrastructural dimensions. Angola and Eswatini are the other poor performing countries in SADC with scores of 0.226 and 0.253, respectively.

SADC has a low average score of 0.337 with only three high performers and 8 out of 16 members are classified as average performers. It has the potential to improve its overall performance given its low maximum score of 0.667.

Figure 8 Regional integration in SADC, Mean score: 0.337

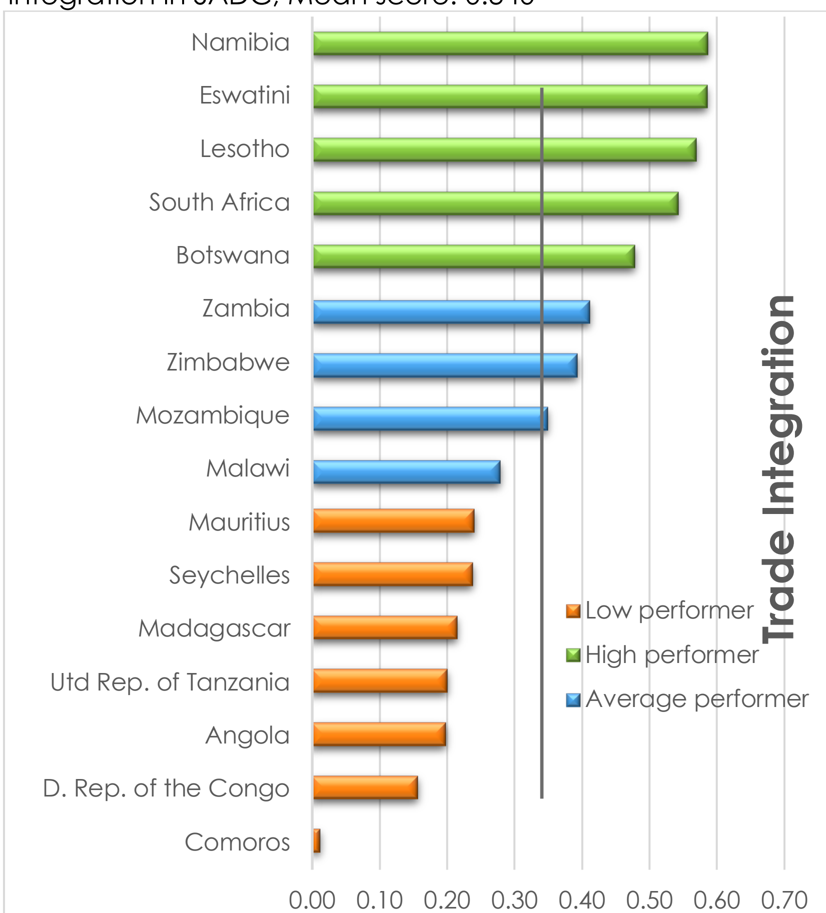


Trade Integration in SADC

The three most integrated countries on the trade dimension are Namibia, Eswatini and Lesotho with scores of 0.586, 0.585 and 0.569, respectively. They are all members of the South African Customs Union (SACU) including South Africa and Botswana that are positioned fourth and fifth in trade integration. The top three countries lead in their share of exports to the region.

The community's average score is 0.340 with seven countries classified as low performers. Comoros is the least integrated with a score of 0.012; it has the lowest regional trade share and worst tariff regime vis-à-vis other countries in the region. It is followed by the Democratic Republic of the Congo and Angola with scores of 0.156 and 0.197, respectively. The former has a very unfavourable tariff regime while Angola has a low share of imports and exports in the region. (see Figure 9).

Figure 9 Trade integration in SADC, Mean score: 0.340



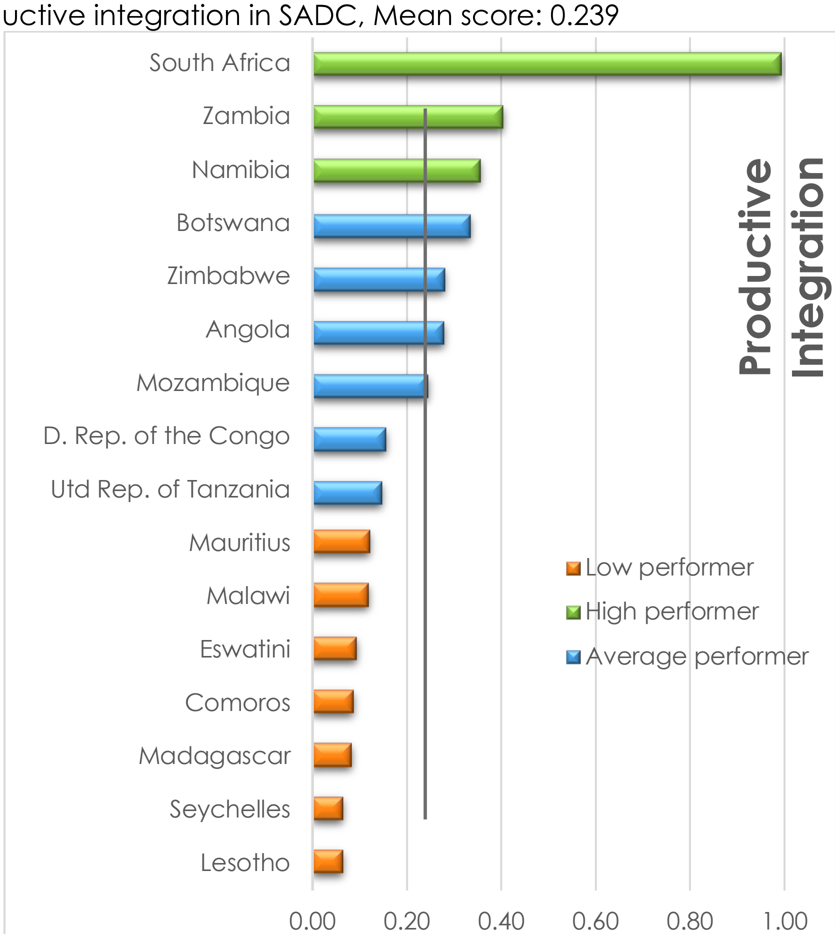
Productive Integration in SADC

South Africa leads comfortably in the productive integration dimension with a score of 0.993. Zambia and Namibia follow far behind with scores of 0.404 and 0.355 respectively. South Africa has both the best trade complementarity and best intermediate goods exports in the region. Zambia has the best intermediates imports. The third best productively integrated country, Namibia, has a good overall performance.

The bottom three countries have scores nearing zero and they are Eswatini, 0.059, Lesotho, 0.069 and Seychelles, 0.077. Both Eswatini and Lesotho have poor trade complementarities and low exports share; Seychelles ranks last in regional intermediates goods imports and exports although it has potential trade complementarities.

SADC suffers from low productive integration with an average score of 0.239 and seven countries are classified as low performers. A huge gap of 0.93 exists between the best and worst performer indicating much potential for improvement (see Figure 10).

Figure 10 Productive integration in SADC, Mean score: 0.239



Macroeconomic Integration in SADC

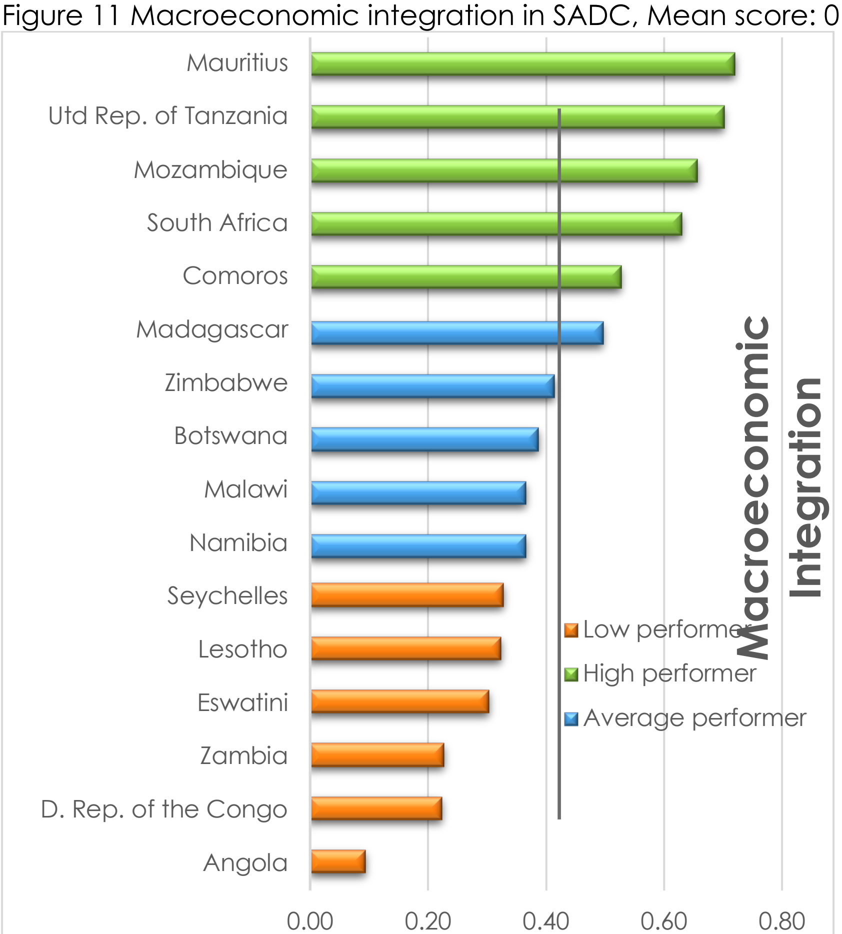
As shown in Figure 11, the most successful country in macroeconomic integration is Mauritius scoring 0.720. It is followed closely by the United Republic of Tanzania and Mozambique with scores of 0.701 and 0.656 respectively.

Mauritius has the most bilateral investment treaties in force and together with Comoros and Botswana, it has the most favourable inflation rate. The strength of Mozambique and Tanzania rests in the ease with which their currencies can be converted.

Angola, the least integrated country, scores only 0.093; it has the most unfavourable inflation differential rate in the region. The other bottom performing countries are the Democratic Republic of the Congo and Zambia with scores of 0.223 and 0.226 respectively; they have no investment treaties in force in the region and their currencies are not easily convertible.

SADC enjoys a relatively moderate average score of 0.422 on this dimension. More cross-border investments within the region would greatly promote regional integration.

Figure 11 Macroeconomic integration in SADC, Mean score: 0.422



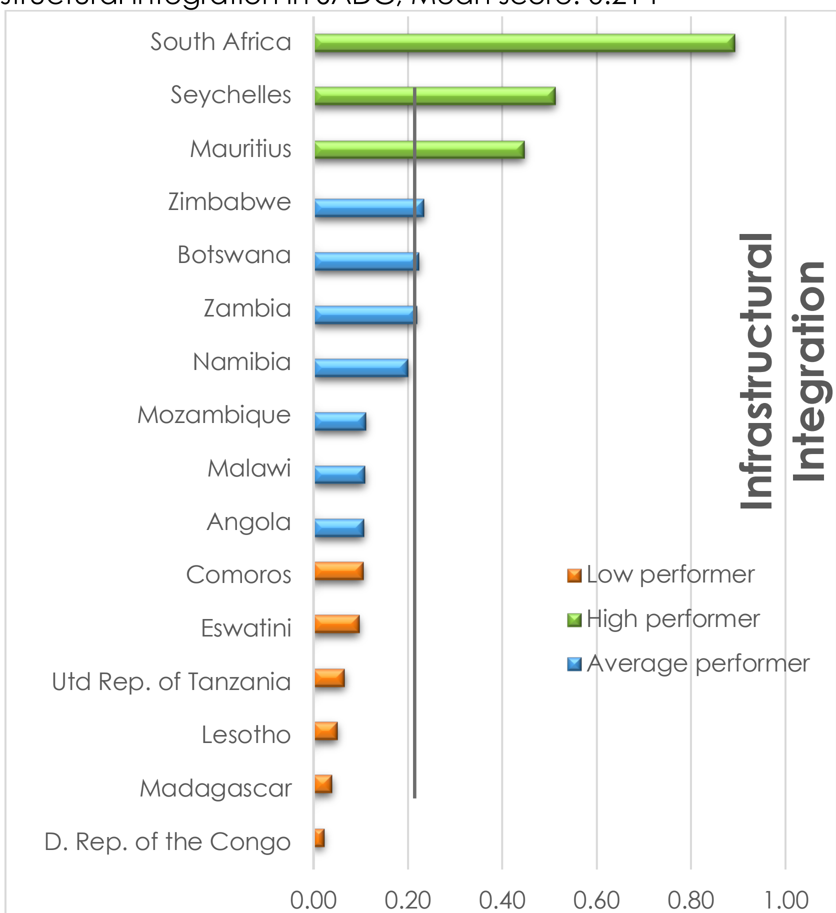
Infrastructural Integration in SADC

The most infrastructurally integrated country in SADC is inevitably South Africa with a high score of 0.893. Seychelles and Mauritius follow with scores of 0.512 and 0.446 respectively. South Africa has the highest score on flight connectivity and Seychelles is the best SADC country on the AfDB composite infrastructure index while Mauritius is third on the same index.

The five lowest-performing countries have scores nearing 0, with the last three being the Democratic Republic of the Congo, Madagascar and Lesotho. They have poor performances in their flight connections and infrastructural development.

The poorest performance of the region is in infrastructural integration where it has the lowest average score of 0.214. Seven of its members are low performers with scores close to 0. Large disparities exist between the top and bottom performers (see Figure 12). Investment in infrastructure in the poor performing countries is a must to sustain integration in the community.

Figure 12 Infrastructural integration in SADC, Mean score: 0.214



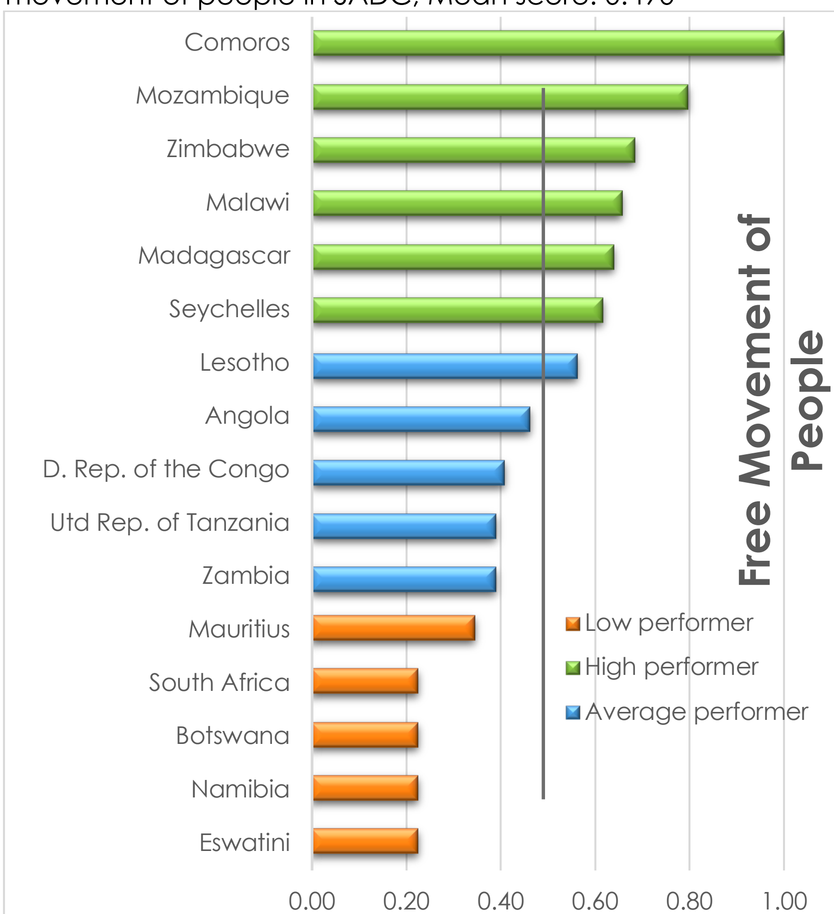
Free movement of people in SADC

Comoros leads in the free movement of people in the community boasting the highest score. The island adhered to the Kigali protocol on the free movement of people and has liberal visa policy towards members of the community. It is followed by Mozambique and Zimbabwe with scores of 0.797 and 0.683 respectively (see Figure 13); they also adhered to the free movement of persons protocol and have favourable visa policies.

Contrarily, the least performing countries, Eswatini, Namibia and Botswana have stricter policies on visas and they did not join the protocol on the free movement of persons.

Nevertheless, the region enjoys a moderate average score of 0.490.

Figure 13 Free movement of people in SADC, Mean score: 0.490



Regional Integration in ECOWAS

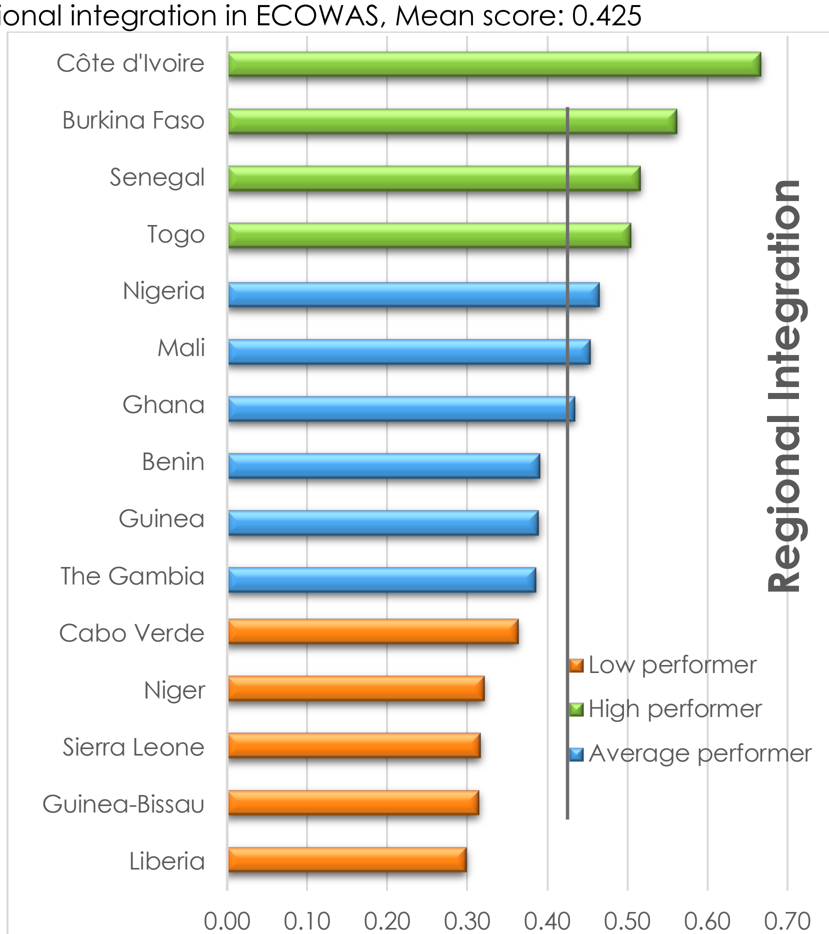
The Economic Community of West African States (ECOWAS) is comprised of 15 members. It is, in principle, both a common market aiming at the harmonisation of taxes and a customs union that has been applying a common external tariff as from January 2015.

Côte d'Ivoire is the best performer in ECOWAS as shown in Figure 8 leading with a score of 0.667 ahead of Burkina Faso and Senegal that score 0.561 and 0.516 respectively. Côte d'Ivoire leads in trade, productive and infrastructural dimensions. Burkina Faso enjoys the topmost position in the free movement of people. Senegal ranks second in infrastructural integration.

Liberia is the least performing country behind Guinea-Bissau and Sierra Leone with scores of 0.298, 0.314 and 0.316 respectively. These countries weaknesses lie in both the trade and infrastructural dimensions (see Figure 14).

Overall, the regional economic community ECOWAS enjoys a moderate score of 0.425 but the low maximum score indicates that the community is not performing at its full potential.

Figure 14 Regional integration in ECOWAS, Mean score: 0.425



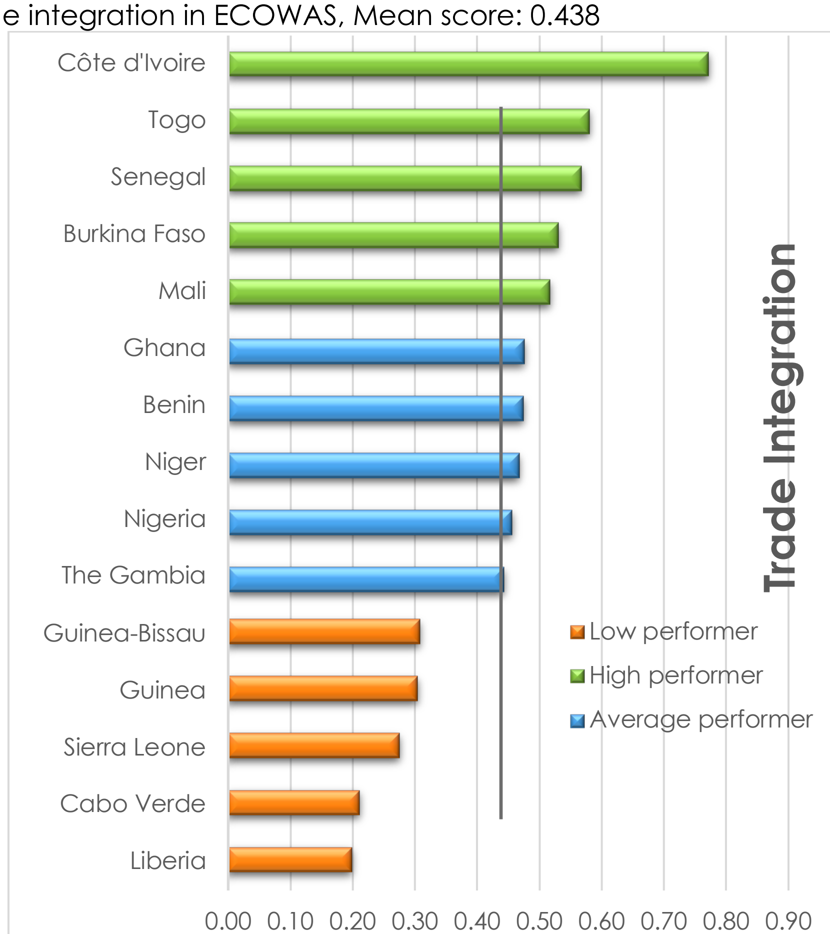
Trade Integration in ECOWAS

The top three integrated countries on the trade dimension are Côte d'Ivoire, Togo and Senegal with scores of 0.772, 0.580 and 0.567 respectively (see Figure 15). Côte d'Ivoire stands first in intra-ECOWAS trade while Togo has the best exports share over GDP in the region. Senegal has a favourable tariff policy and ranks third in the region export share.

The least performing countries are Liberia, Cape Verde and Sierra Leone with scores of 0.198, 0,210 and 0.275 respectively. Their poor trade share together with poor regional exports and imports make Liberia and Cape Verde the worst performers. Sierra Leone has the worst tariff regime.

The region has a moderate average score of 0.438 with five countries classified as top performers in trade integration.

Figure 15 Trade integration in ECOWAS, Mean score: 0.438

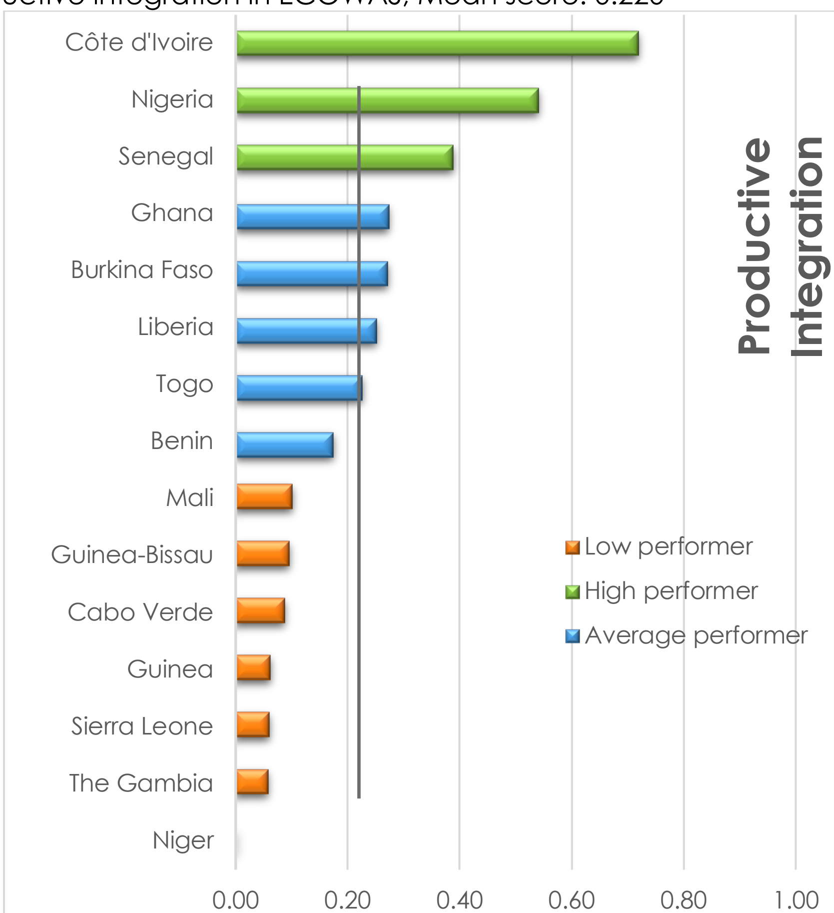


Productive Integration in ECOWAS

As displayed in Figure 16, the best-performing countries on the productive dimension are Côte d'Ivoire, Nigeria and Senegal with scores of 0.718, 0.540 and 0.388, respectively. Côte d'Ivoire has both the best trade complementarity and best intermediate goods imports in the region. The strength of Nigeria is in intermediates exports. Senegal has a good performance overall.

ECOWAS performs poorly on the productive dimension with a low average score of 0.220 with seven countries classified as low performers. Niger scores zero on all variables considered and is, thus, the least integrated. The Gambia and Sierra Leone are the other least performing countries in productive integration with a score of 0.0057 and 0.060. Their intermediates exports and imports are very low.

Figure 16 Productive integration in ECOWAS, Mean score: 0.220



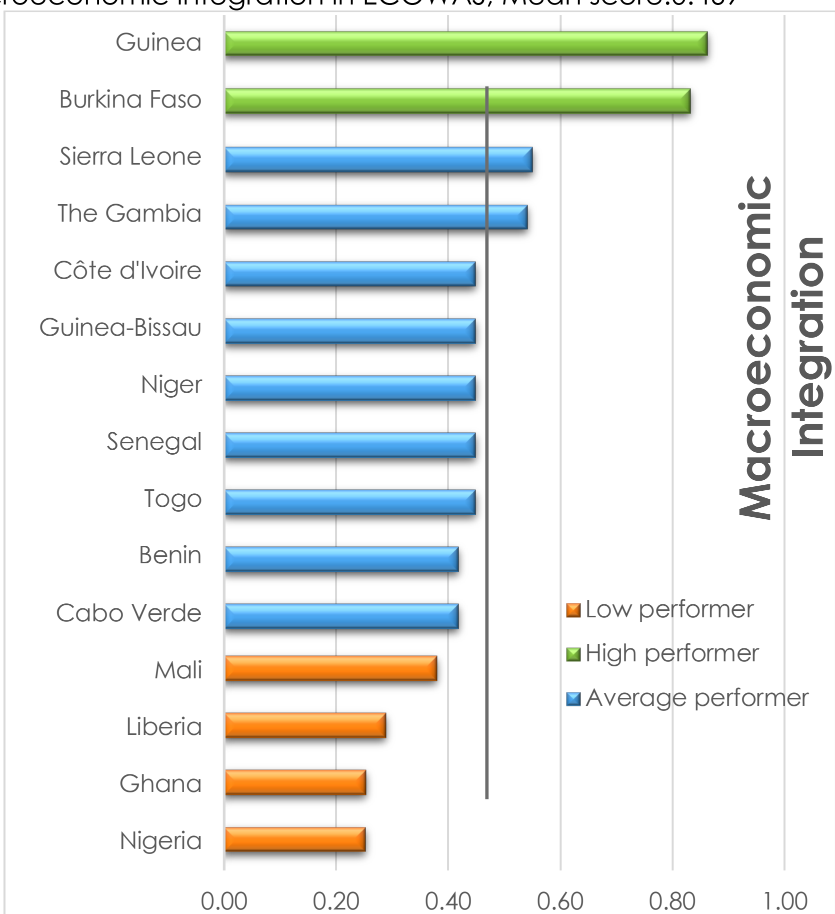
Macroeconomic Integration in ECOWAS

Guinea and Burkina Faso are the most successful countries in macroeconomic integration scoring 0.862 and 0.832 (see Figure 17) much ahead of the rest of the community. Their favourable positions are thanks to their bilateral investment treaties in force.

ECOWAS enjoys a relatively moderate average score of 0.469 on this dimension with a maximum score of 0.862. Most countries are average performers.

The least integrated countries are Nigeria, Ghana and Libera with scores of 0.252, 0.253 and 0.288 respectively. Nigeria and Ghana have the worst inflation differential rate in the region and Liberia has the worst currency convertibility.

Figure 17 Macroeconomic integration in ECOWAS, Mean score:0.469



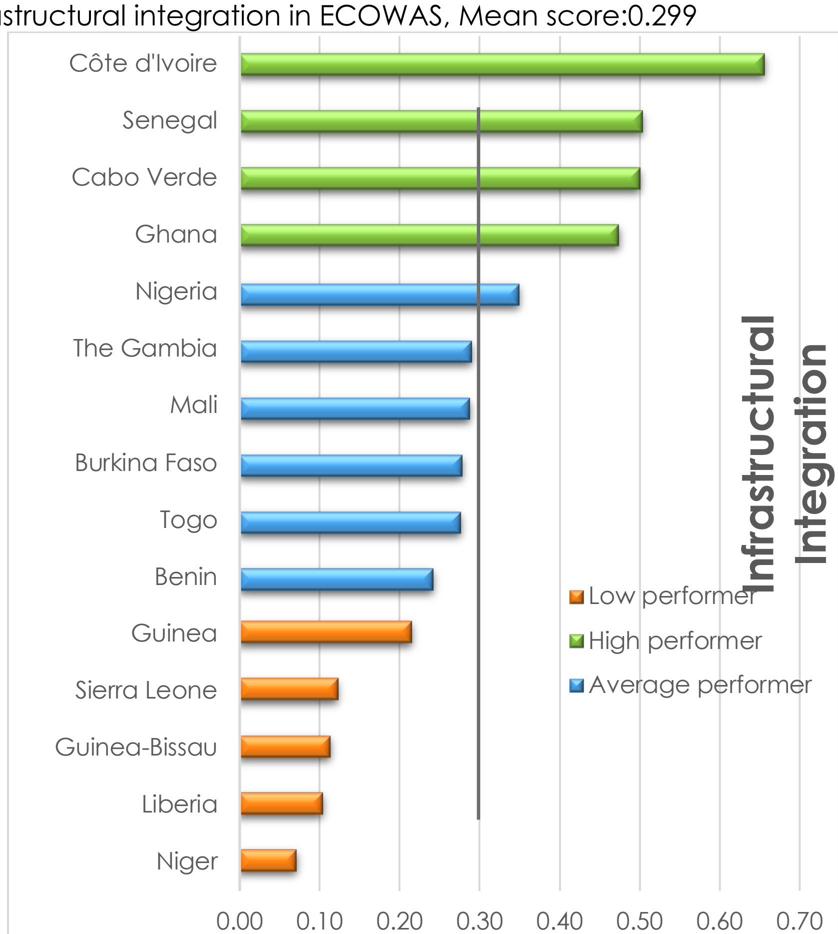
Infrastructural Integration in ECOWAS

The most infrastructurally integrated countries are Côte d'Ivoire, Senegal and Cape Verde scoring 0.656, 0.503 and 0.5, respectively (see Figure 18). Côte d'Ivoire has the highest score on flight connectivity while Senegal ranks second on this variable. Cape Verde is the best ECOWAS country on the AfDB composite infrastructure index but it has the worst performance in terms of flight connections.

The least performing countries have scores of 0.071, 0.103 and 0.113 and they are Niger, Liberia and Guinea-Bissau respectively. Niger has the worst AfDB infrastructure index while the other countries have poor flight connections within the region.

The average score of the region in infrastructural integration is 0.299, a relatively low score compared to other dimensions.

Figure 18 Infrastructural integration in ECOWAS, Mean score:0.299



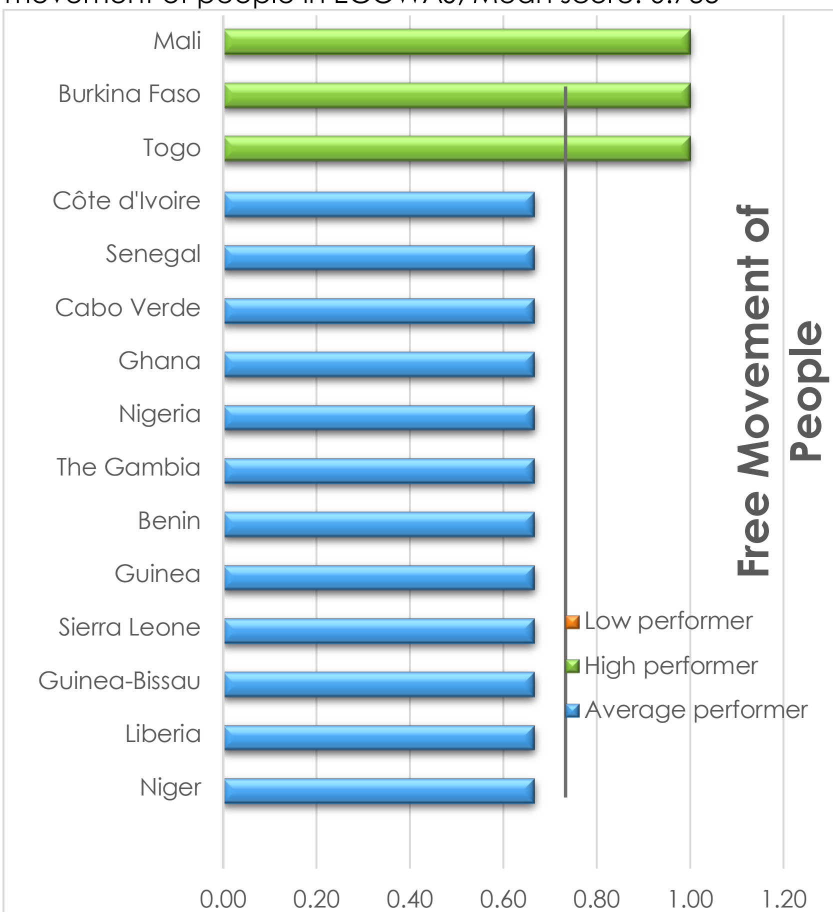
Free movement of people in ECOWAS

Figure 19 indicates that Mali, Burkina Faso and Togo are the top three integrated countries in terms of free movement of people being the only three countries in ECOWAS that adhered to the Kigali free movement of persons protocol.

The vision of ECOWAS is the "creation of a borderless region" and, in practice, it has made considerable progress to achieve its vision.

All countries in ECOWAS have open visa policies and as such there are no low performers in this dimension. ECOWAS performs best in this dimension with the highest average score of 0.733.

Figure 19 Free movement of people in ECOWAS, Mean score: 0.733



Regional Integration in CEN-SAD

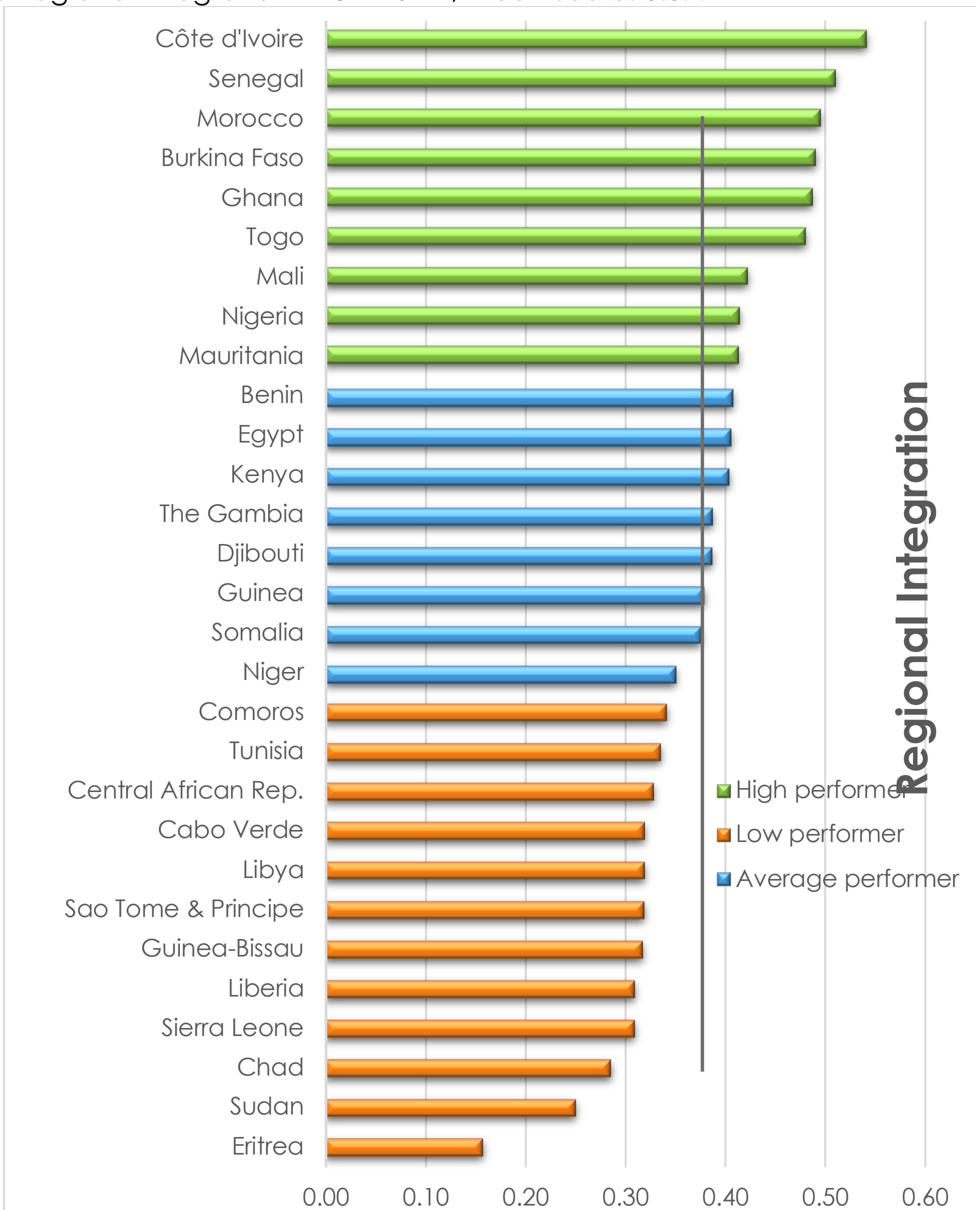
The community of Sahel-Saharan States (CEN-SAD) has 29 members whose principal aim is to achieve economic unity by facilitating the free movement of people and goods. The results suggest that the REC has achieved a low level of integration with an average score of only 0.377 and the maximum score is 0.541.

As shown in Figure 820, the best performers are Côte d'Ivoire, Senegal and Morocco with scores of 0.541, 0.509 and 0.495 respectively. The most integrated country, Côte d'Ivoire is also the leader on the trade and productive dimensions. Its weakness is in the free movement of people dimension. The strength of Senegal is in trade integration and it enjoys a good position on all the dimensions of regional integration. Morocco tops the list on the macroeconomic and infrastructural dimensions but, similar to Côte d'Ivoire, it has a poor performance on the free movement of people dimension.

Eritrea is the least performing country in CEN-SAD scoring only 0.157. Its weaknesses reside in the macroeconomic, infrastructural and free movement of people dimensions where it is amongst the bottom two. Sudan and Chad are the other poor performing countries with scores of 0.250 and 0.285 respectively. Sudan performs poorly in the trade and macroeconomic dimensions while Chad lags in the productive and infrastructural dimensions.

In general, the community's overall poor performance seems to be largely due to its underperformance on the productive and infrastructural dimensions.

Figure 20 Regional integration in CEN-SAD, Mean score: 0.377



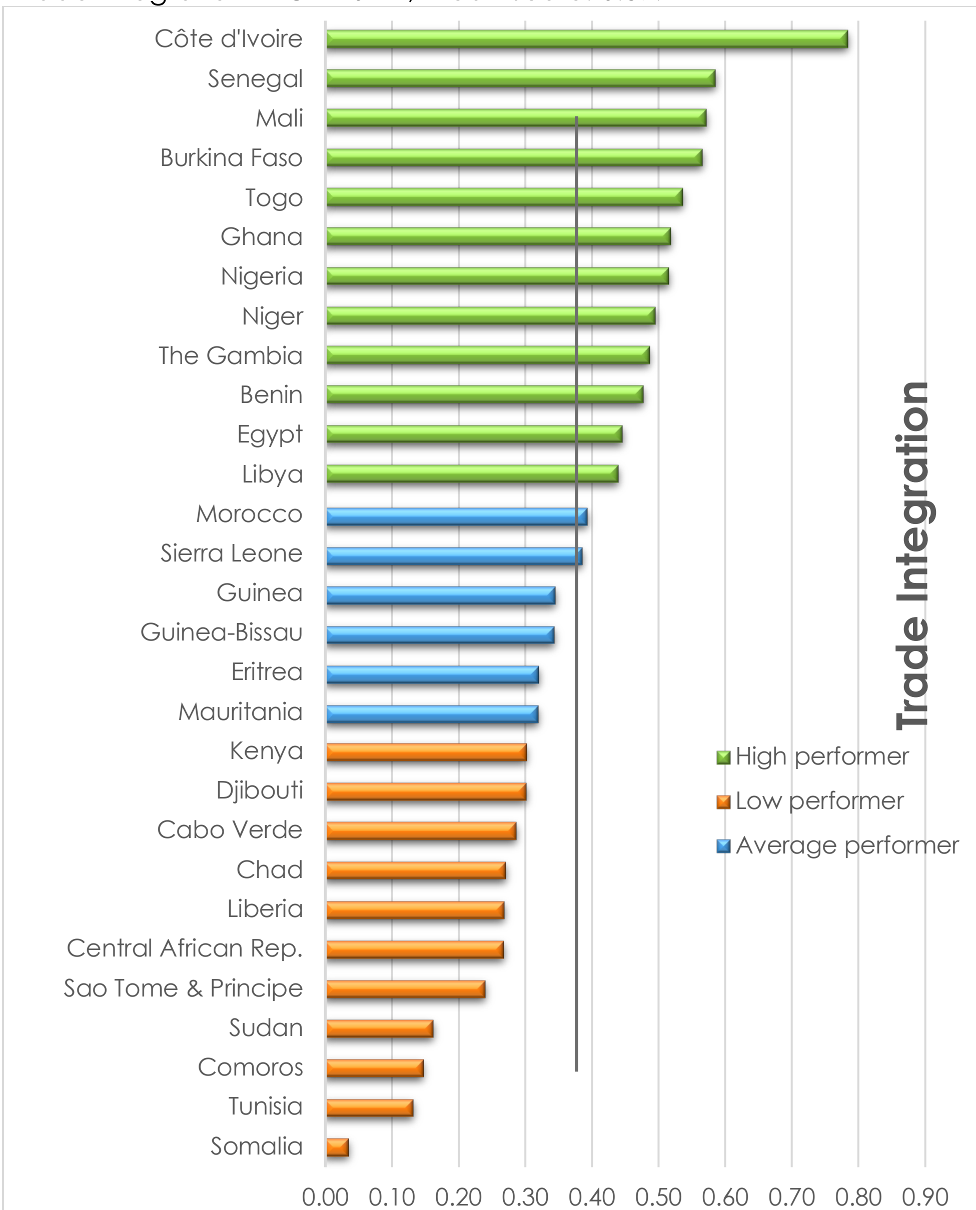
Trade Integration in CEN-SAD

Côte d'Ivoire is the most integrated country on the trade dimension leading comfortably with a score of 0.783 (see Figure 21). It is followed by Senegal and Mali with scores of 0.585 and 0.571 respectively. The leading country, Côte d'Ivoire, has the best share of trade in the region. Senegal enjoys a favourable tariff rate and has the second-best export share of GDP in the region. The top position of Mali is due to its high import share and favourable tariff rate.

With a score nearing zero, 0.035, Somalia is the least integrated country on the trade dimension. It performs poorly on all variables in this dimension, particularly, it has an unfavourable tariff regime in the region. Tunisia and Comoros are the other low performing countries with scores of 0.131 and 0.146 respectively. Tunisia has the worst regional tariff and Comoros the worst export share in the region.

The low average score of 0.377 suggests that there exist avenues for increased integration on the trade dimension. In particular, policies promoting regional exports would greatly facilitate trade integration.

Figure 21 Trade integration in CEN-SAD, Mean score: 0.377



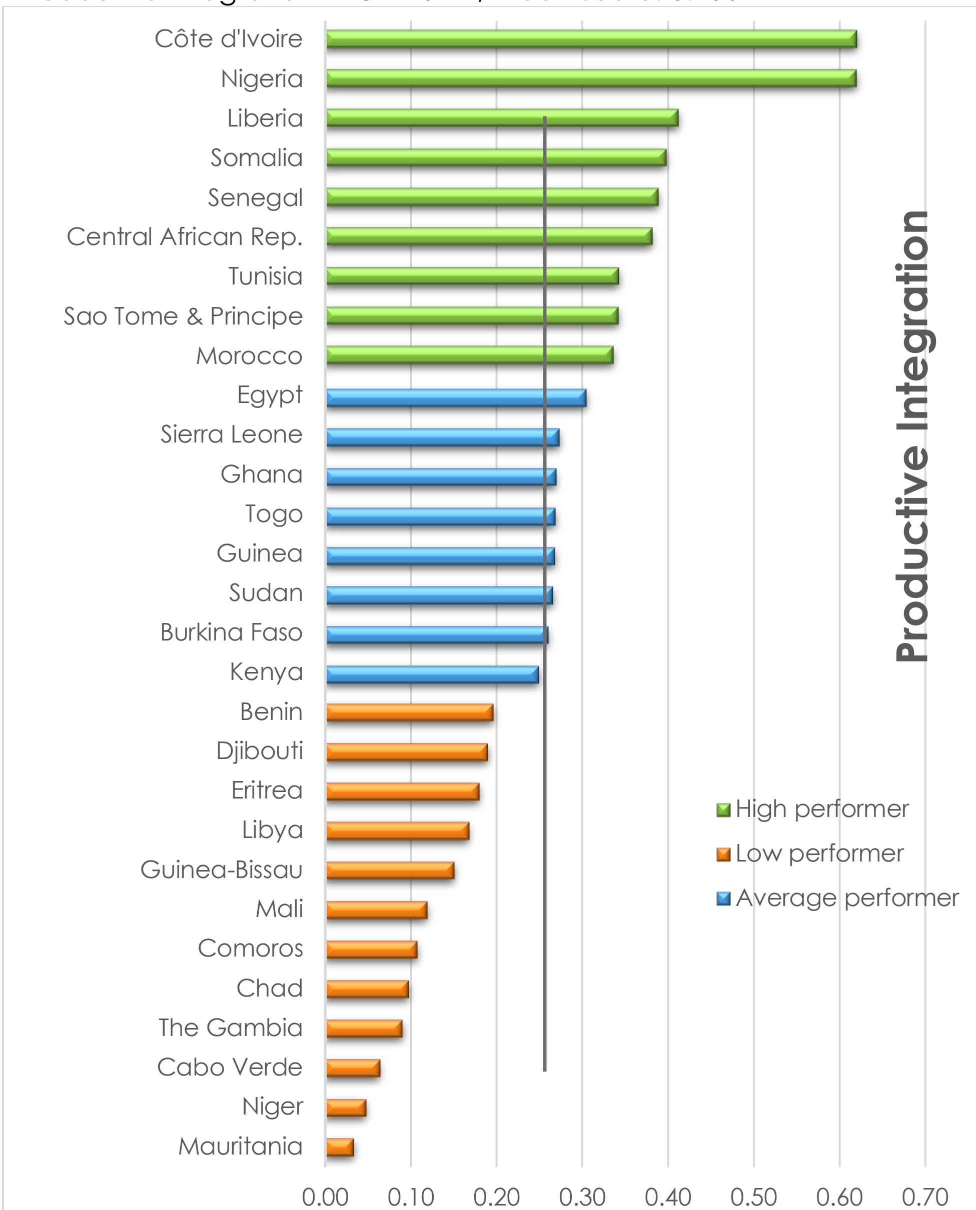
Productive Integration in CEN-SAD

Côte d'Ivoire and Nigeria are the two most productively integrated countries in the community with scores of 0.620 and 0.619; the former has the highest share of intermediates imports in the region while the latter has the highest share of intermediates exports. These two countries trade much with each other in fuel and lubricants. The third most integrated country on the productive dimension is Liberia with a score of 0.412. It enjoys the best trade complementarity index in CEN-SAD.

Mauritania, Niger and Cape Verde are the bottom three countries with very low scores of 0.033, 0.047 and 0.063 respectively. Mauritania has the worst trade complementarity and Niger and Cape Verde has poor intermediates trade.

With an average score of 0.256, CEN-SAD suffers from low productive integration with 12 out of 29 countries classified as low performers (see Figure 22). This poor performance is mainly driven by its scant exports of intermediates to the region.

Figure 22 Productive integration in CEN-SAD, Mean score: 0.256



Macroeconomic Integration in CEN-SAD

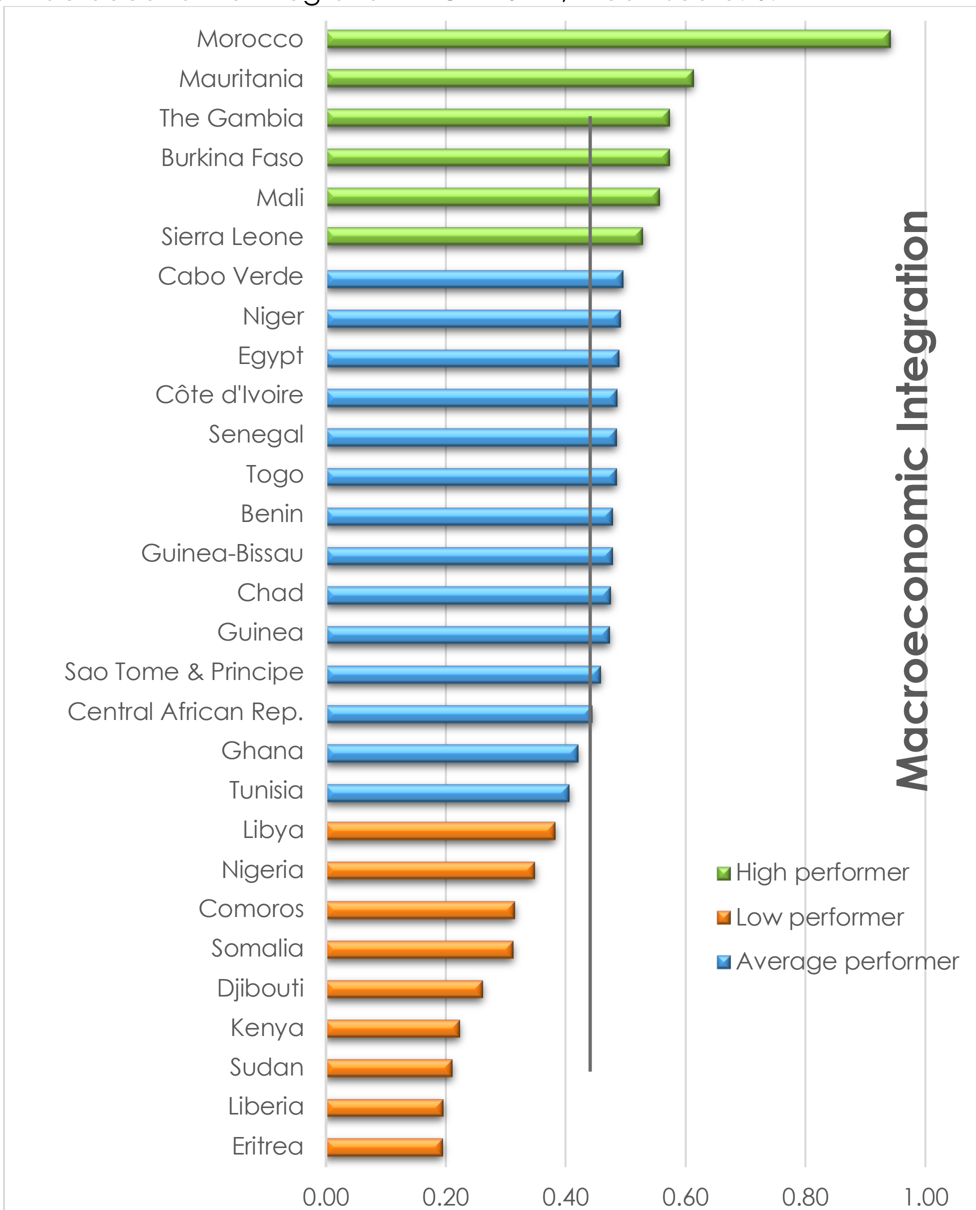
As shown in Figure 23, Morocco leads comfortably with a high score of 0.941 on macroeconomic integration. It is followed closely by Mauritania and The Gambia with scores of 0.612 and 0.573, respectively.

The top performer has the most bilateral investment treaties in force. Mauritania and The Gambia enjoy a favourable inflation rate their currency can be easily converted in the community.

The community has a moderate average score of 0.441 on this dimension. However, there is a large gap between the top performer and the rest of the community.

Eritrea, Liberia and Sudan are the least integrated countries with scores of 0.194, 0.195 and 0.211 respectively. The weakness of these countries stems from the low convertibility of their currencies in the region. Eritrea and Liberia also have no investment treaties in force in the region.

Figure 23 Macroeconomic integration in CEN-SAD, Mean score: 0.441



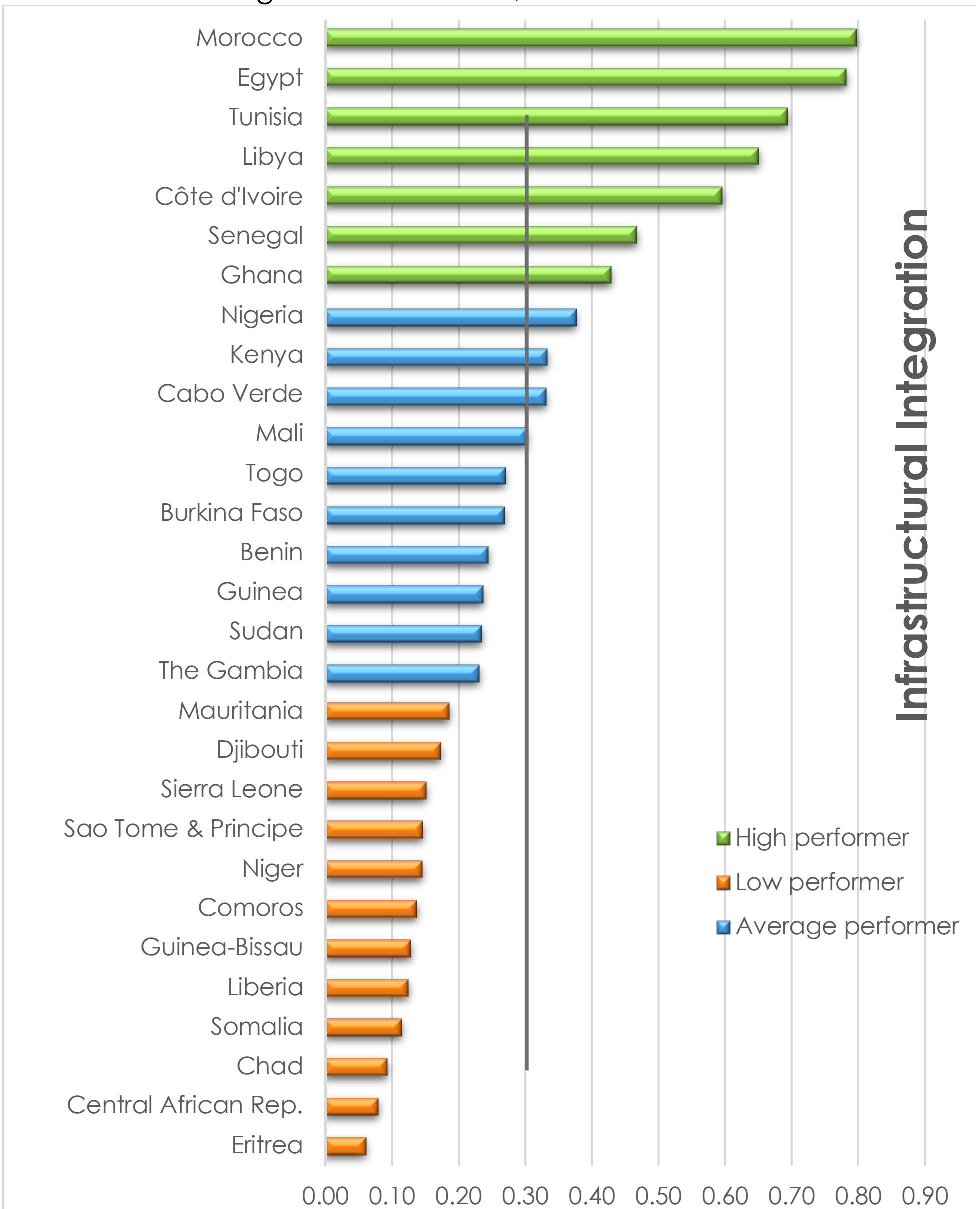
Infrastructural Integration in CEN-SAD

Morocco is the most infrastructurally integrated country followed by Egypt and Tunisia with scores of 0.797, 0.781 and 0.693, respectively. Morocco and Egypt rank second and first as regards their flight connections in the community. Tunisia enjoys a good position on both the AfDB infrastructure index and its flight connections.

Eritrea, the Central African Republic and Chad are the least infrastructurally integrated countries scoring 0.060, 0.079 and 0.092 respectively. Eritrea and Chad perform poorly on the AfDB infrastructure index. The weakness of the Central African Republic is in its flight connections.

The region suffers from poor infrastructural integration with a low average score of 0.302. A huge gap of 0.7 exists between the top and the least performing countries (see Figure 24). In order to benefit from regional integration, CEN-SAD has to put emphasis on its infrastructure.

Figure 24 Infrastructural integration in CEN-SAD, Mean score: 0.302



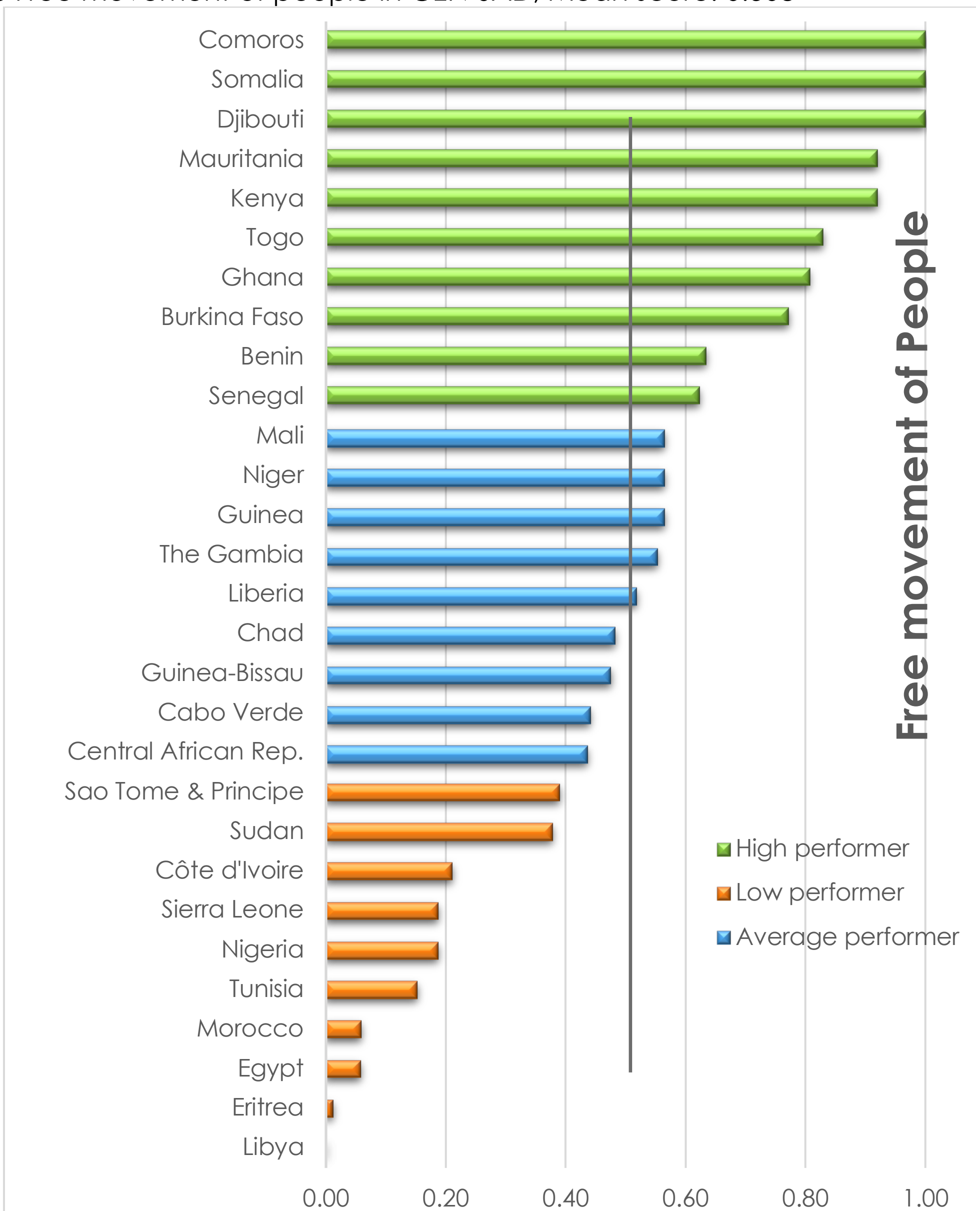
Free movement of people in CEN-SAD

The top three integrated countries in terms of free movement of people are Comoros, Somalia and Djibouti boasting the highest score of 1. They all signed the Kigali free movement of persons protocol and they all have in practice very liberal visa policies.

The least performing country Libya scores 0 on this dimension given its strict visa policies; African citizens require a visa to enter the country and cannot benefit from visa on arrival. Eritrea has a score of 0.011 and Egypt 0.058; these low scores make them the least performing countries; they did not join the protocol and they also impose visa for entrance into their countries.

Nevertheless, the region enjoys a moderate average score of 0.508 but there is a clear distinction between the top and bottom performing countries. Ten out of the 29 countries in CEN-SAD are classified as low performers (see Figure 25).

Figure 25 Free movement of people in CEN-SAD, Mean score: 0.508



Regional Integration in COMESA

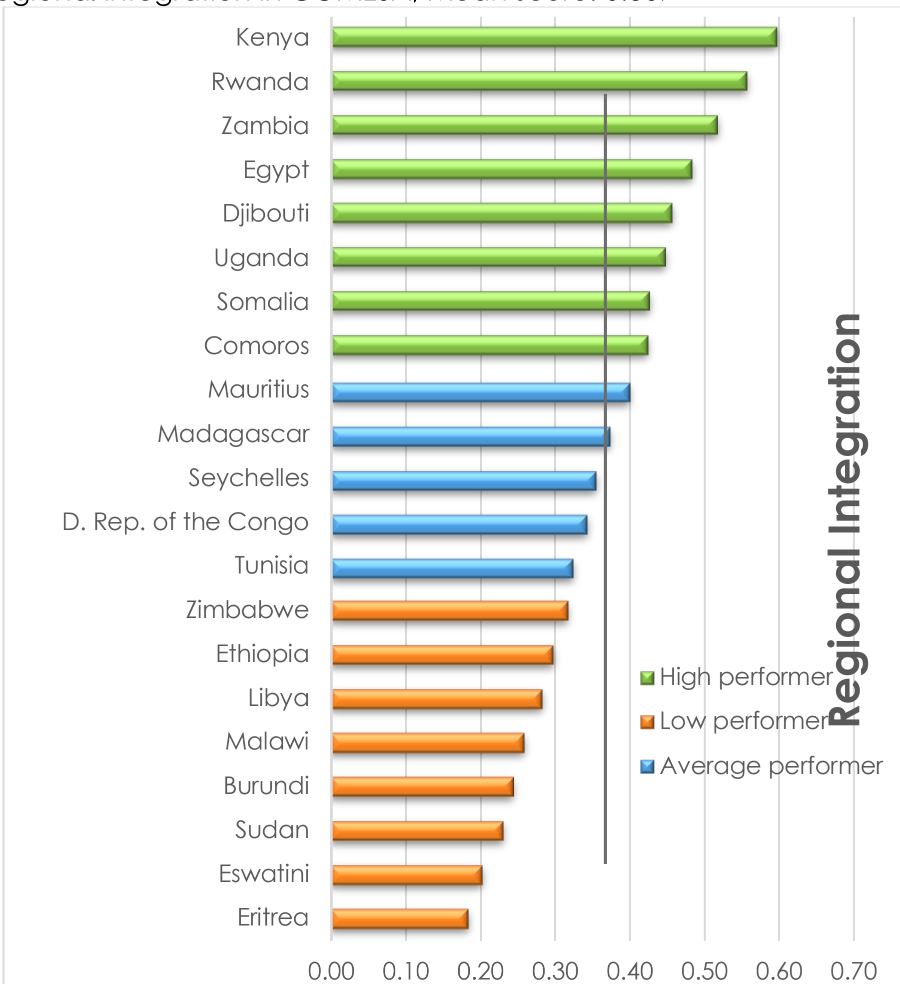
The Common Market for Eastern and Southern Africa (COMESA) has grown to 21 members with the recent accession of Somalia and Tunisia in July 2018.

As shown in Figure 26, Kenya, Rwanda and Zambia are the most integrated countries in COMESA with scores of 0.596, 0.556 and 0.517, respectively. Kenya is the second-best integrated country on productive and infrastructural dimensions. Rwanda has a good performance in trade, macroeconomic and the free movement of people dimensions where it stands second. Zambia is the most integrated country in trade and productive dimensions but is among the bottom performers in the macroeconomic dimension.

The least performing country is Eritrea with a score of 0.183; it is the worst performer on the infrastructural dimension and among the bottom three performers in the trade and free movement of people dimensions. Eswatini is the second least-performing country with a score of 0.202; its weakness is in the productive and infrastructural dimensions. Sudan has a score of 0.230 and its worst performance is in the free movement of people dimension.

The community has a low average score of 0.367 and enjoys a maximum score of only 0.596. Its best performance is in trade but there is a lot of potential for improvement in all the other dimensions.

Figure 26 Regional integration in COMESA, Mean score: 0.367



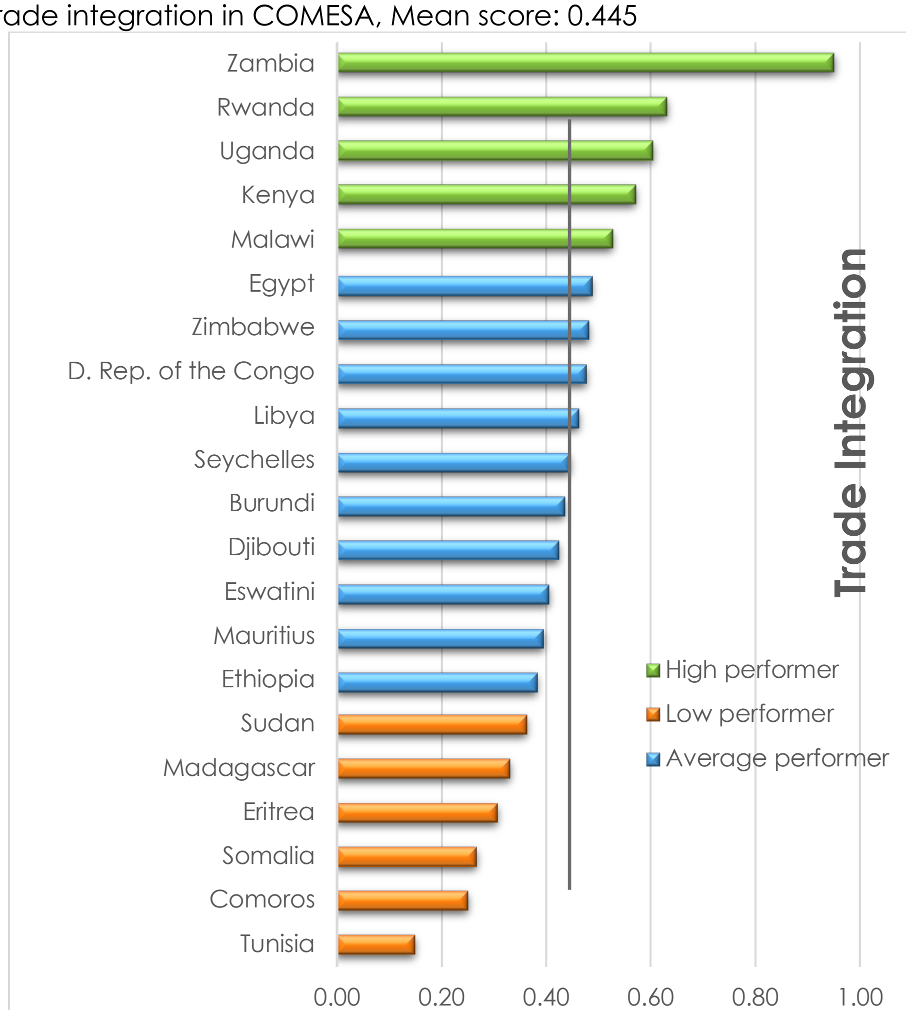
Trade Integration in COMESA

The highest-ranked country on trade integration is Zambia with an outstanding score of 0.951; the country vaunts the best trade and export share in the region. Rwanda is the second-best integrated country with a much lower score of 0.631 followed by Uganda with a score of 0.604. Both countries fare well on all variables that contribute to trade integration.

Tunisia is the least integrated on the trade dimension with a score of 0.149; it has the worst tariff regime in the region and a very low share of imports. It is followed by Comoros with a score of 0.250; the country ranks last in its regional export and trade shares. Somalia is also a low performing country with a score of 0.267; its weakness is in its export share as opposed to its top performance in imports.

COMESA's best performance is in the trade dimension with a moderate average score of 0.445. Six countries are classified as low performers (see Figure 27).

Figure 27 Trade integration in COMESA, Mean score: 0.445



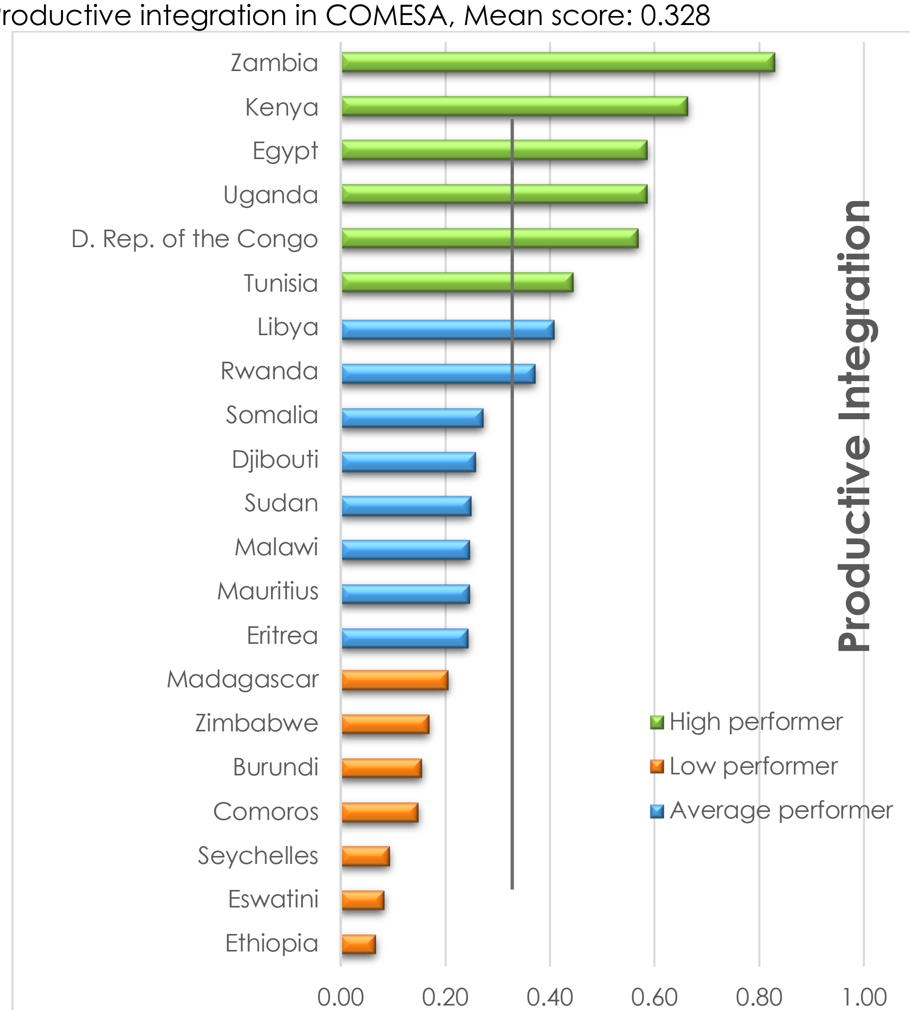
Productive Integration in COMESA

Zambia also excels in the productive dimension scoring 0.829 much ahead of Kenya that scores 0.663. Zambia has the best intermediates import share in the region. Kenya has the best trade complementarity index.

With a score of only 0.066, Ethiopia is the least productively integrated country in COMESA; the country has the worst trade complementarity and a low share of intermediates exports. Eswatini and Seychelles are amongst the bottom three with scores of 0.083 and 0.093, respectively. Eswatini is lacking in its low share of intermediates imports while the Seychelles lack in intermediates exports.

The community has a low average score of 0.328 and large disparities exist between the top and bottom performers (see Figure 28).

Figure 28 Productive integration in COMESA, Mean score: 0.328



Macroeconomic Integration in COMESA

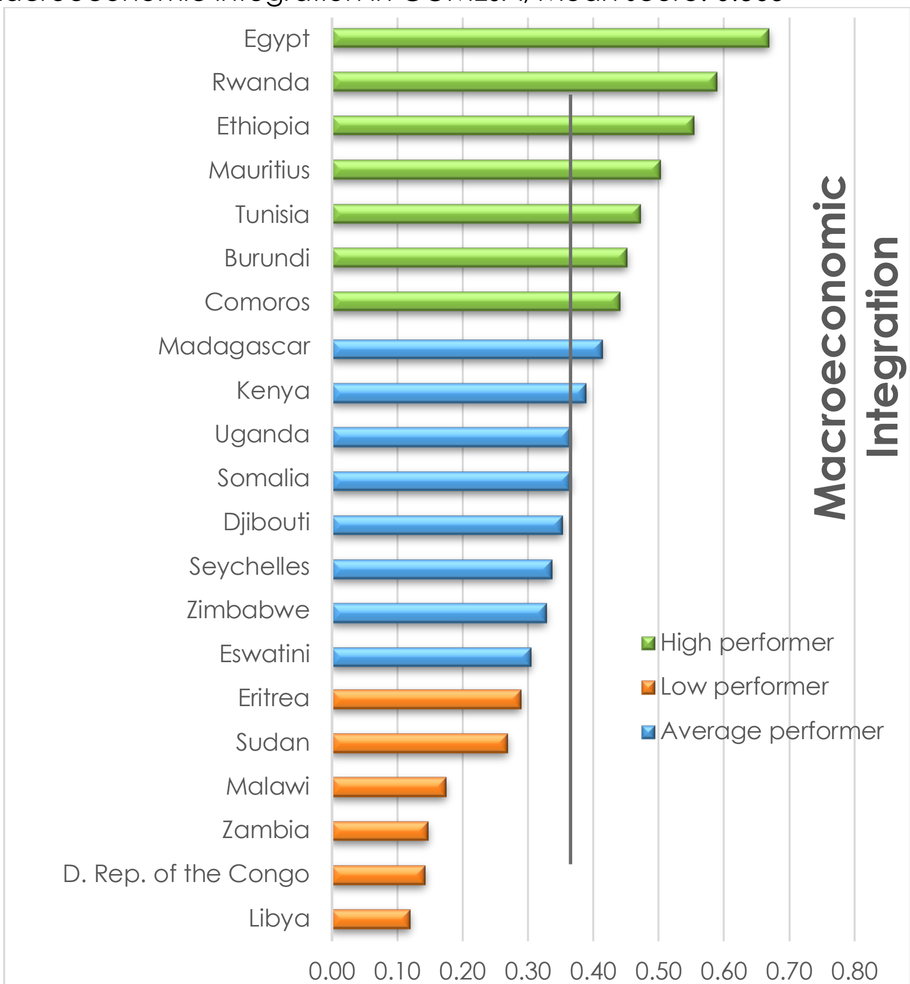
Egypt is the best-integrated country on the macroeconomic dimension scoring 0.669. The country boasts the most bilateral investment treaties in force and enjoys a favourable inflation differential rate. Rwanda is the next best macroeconomically integrated followed closely by Ethiopia with scores of 0.589 and 0.554, respectively.

Rwanda's currency is the most convertible in the region. The strengths of Ethiopia lie in its number of bilateral Mauritius has the most bilateral investment treaties in force and favourable inflation differential rate.

Libya, the Democratic Republic of Congo and Zambia are the least integrated countries with scores of 0.119, 0.142 and 0.147 only 0.094 respectively. Libya has the worst inflation differential rate in the region. The other bottom performing countries have no investment treaties in force in the region and rigid currencies.

COMESA has a low average score of 0.365 on this dimension and the strengths and weaknesses of its members are diverse (see Figure 29). There is great potential for improved macroeconomic integration as countries enforce their investment treaties and make their currency more convertible.

Figure 29 Macroeconomic integration in COMESA, Mean score: 0.365



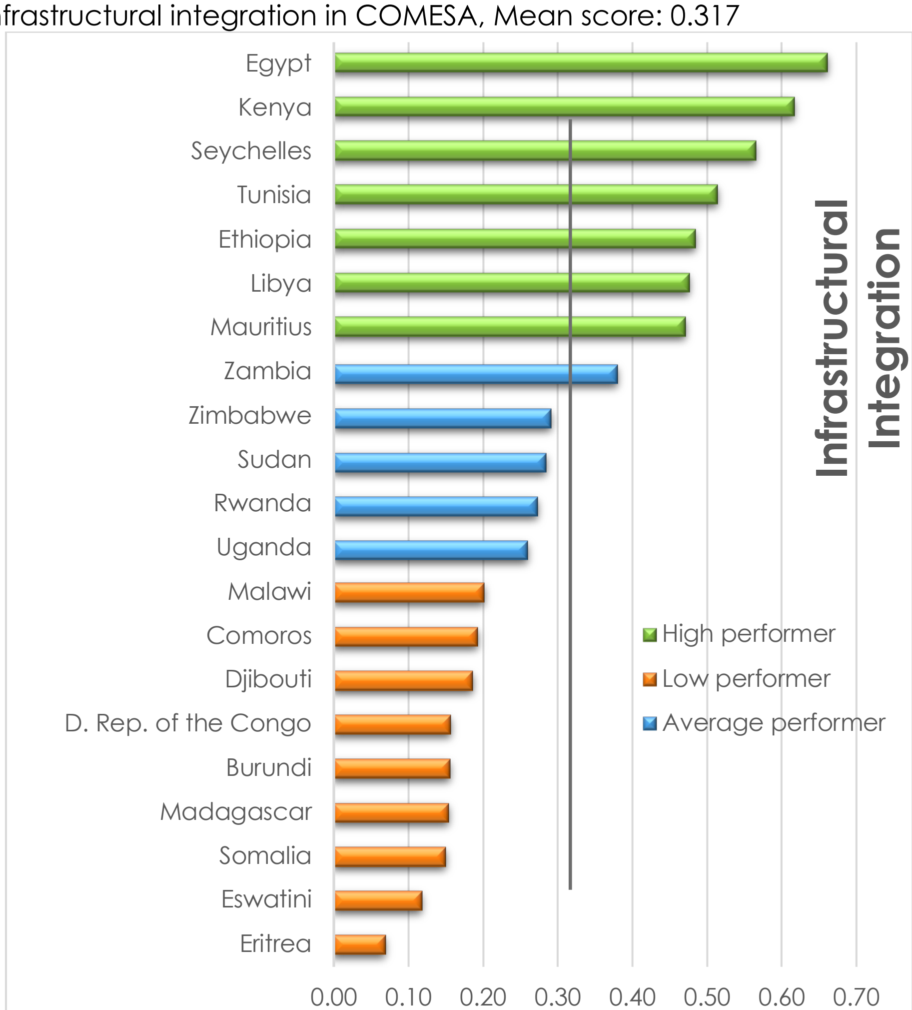
Infrastructural Integration in COMESA

The most infrastructurally integrated countries are Egypt, Kenya and Seychelles with scores of 0.661, 0.616 and 0.565, respectively. Egypt is the second most integrated country on the AfDB infrastructure index and Seychelles is the first-most. Kenya has the highest score on the flight connectivity indicator.

Eritrea is the least performing country on this dimension with a score of 0.069; the country is lacking in both the AfDB infrastructure index and its proportion of flight connections. Eswatini is also a low performer scoring 0.117; it has the worst flight connectivity. Somalia scores 0.150; its low performance is driven by its poor score on the AfDB infrastructure index.

The worst performance of COMESA is in infrastructural integration where it has the lowest average score, 0.317. There are nine countries in the category of low performers (see Figure 30).

Figure 30 Infrastructural integration in COMESA, Mean score: 0.317



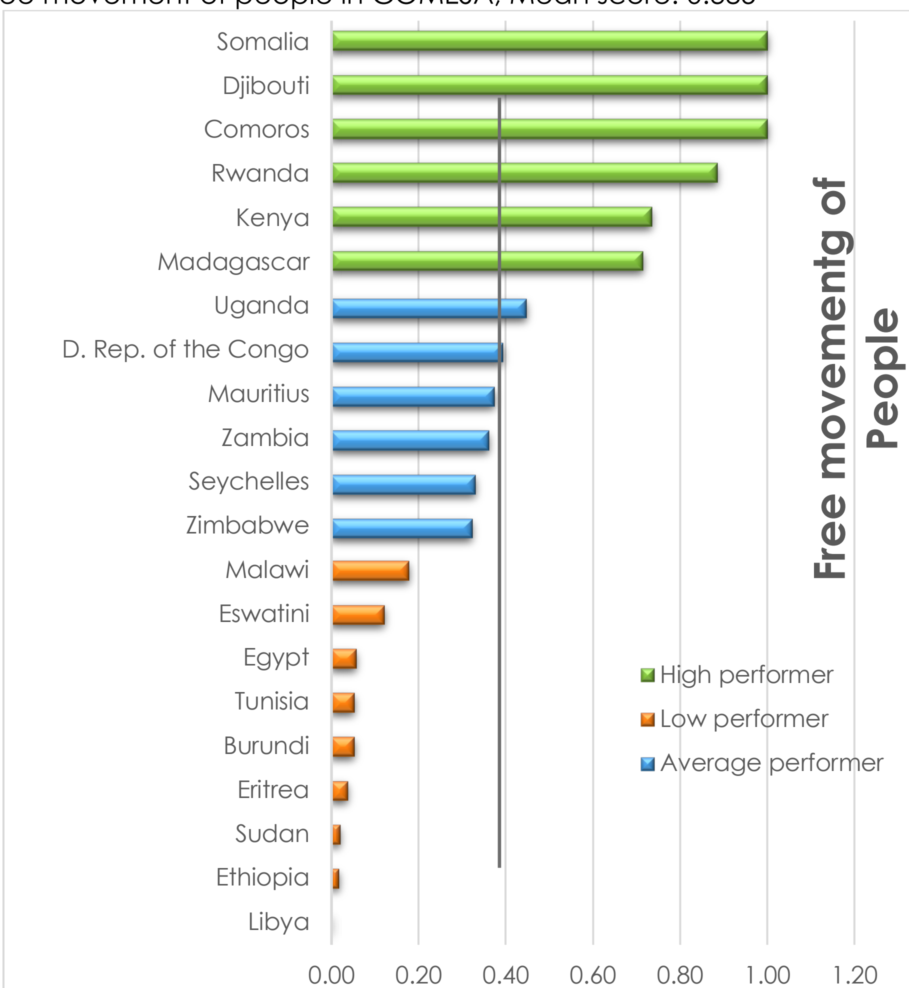
Free movement of people in COMESA

The top three integrated countries in terms of free movement of people are Somalia, Djibouti and Comoros. They showcase the highest score of 1 given their open visa policies and adherence to the protocol on the free movement of persons.

Contrarily, the least performing country, Libya, has strict visa policies and it did not join the protocol. It has the minimum score of 0. Ethiopia and Sudan also have strict visa policies and they score 0.017 and 0.019, respectively.

COMESA has a low average score of 0.385 with the maximum disparity between the top and bottom performers. There are 9 countries in the low performing category, thus, there is enormous potential for improvement in this dimension (see Figure 31).

Figure 31 Free movement of people in COMESA, Mean score: 0.385



Regional Integration in ECCAS

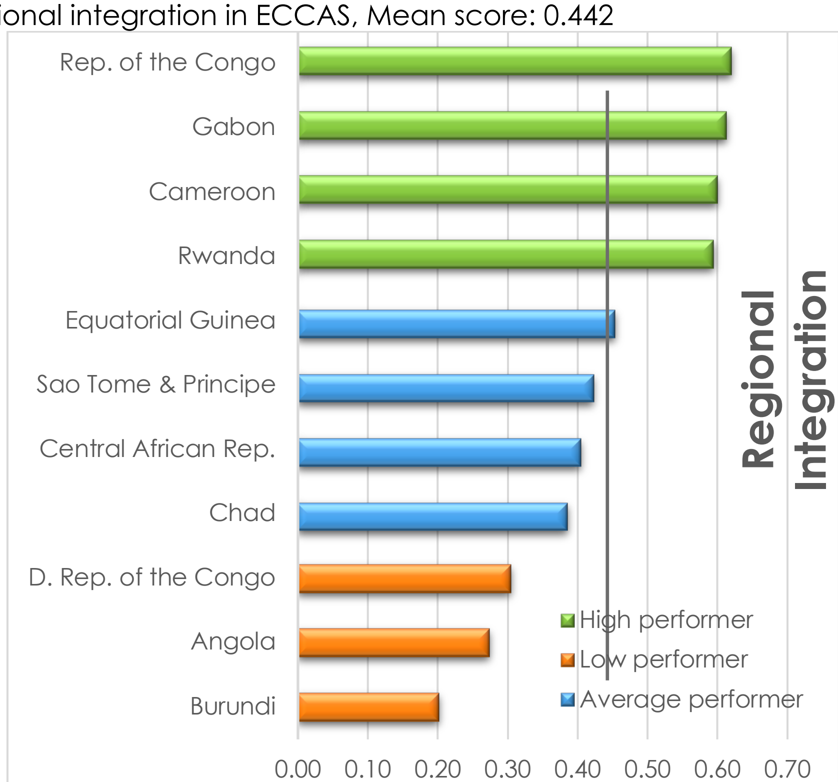
There are 11 members in the Economic Community of Central African States (ECCAS). The Community values "harmonious cooperation" in order to achieve an increased standard of living and economic stability.

The Republic of the Congo is the top-performing country in ECCAS scoring 0.619 (see Figure 32). It is the most integrated country on the trade dimension and second-best in the productive dimension. Gabon and Cameroon follow with scores of 0.612 and 0.599, respectively. The former leads in the infrastructural dimension while the latter in the productive dimension.

Being last in the productive and the free movement of people dimensions, Burundi is the least performing country in ECCAS scoring 0.201. Angola and the Democratic Republic of Congo are the other bottom performing countries in this REC with scores of 0.273 and 0.304, respectively. Angola is the least performing country on the macroeconomic dimension. The weakness of the Democratic Republic of Congo is in the trade and infrastructural dimensions.

With an average score of 0.442, ECCAS enjoys a moderate level of integration.

Figure 32 Regional integration in ECCAS, Mean score: 0.442



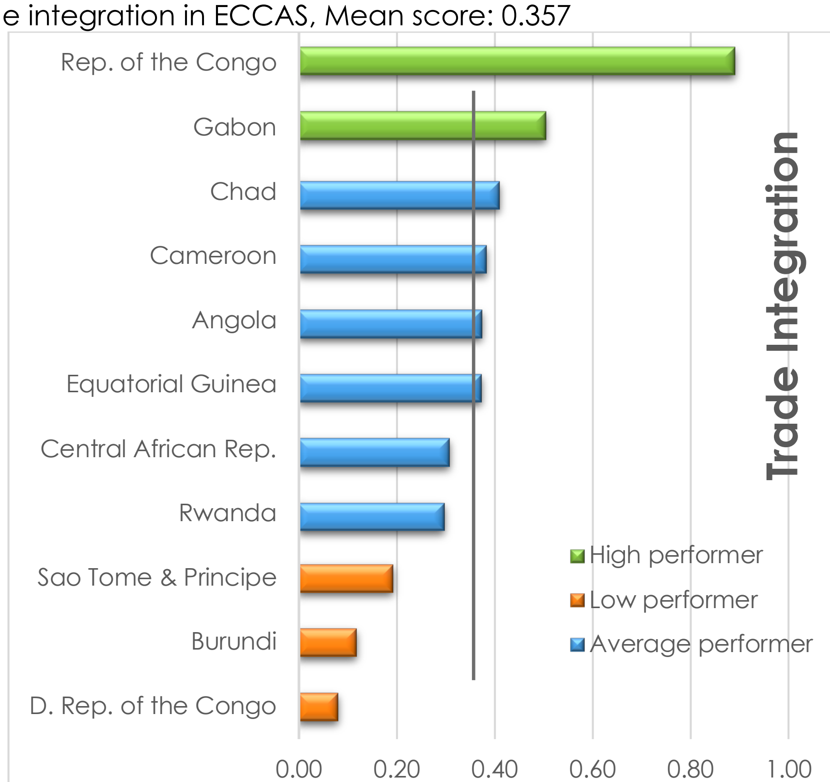
Trade Integration in ECCAS

As displayed in Figure 33, the Republic of the Congo leads on the trade integration scoring 0.890, much ahead of Gabon and Chad that score only 0.504 and 0.409, respectively. The top-performing country has the best export and trade share in the region. Gabon has a favourable tariff rate together with a good performance on intra-regional exports. Similarly, Chad has a favourable tariff rate and performs well on its trade share.

ECCAS performance in trade integration is mediocre with an average score of 0.357. Six out of 11 countries are classified as average performers.

The least integrated country in trade is the Democratic Republic of the Congo with a score of 0.08; it has the worst tariff regime in the region. It is followed by Burundi and Sao Tome & Principe with scores of 0.118 and 0.192 respectively. Their worst performance is on intra-regional trade share.

Figure 33 Trade integration in ECCAS, Mean score: 0.357



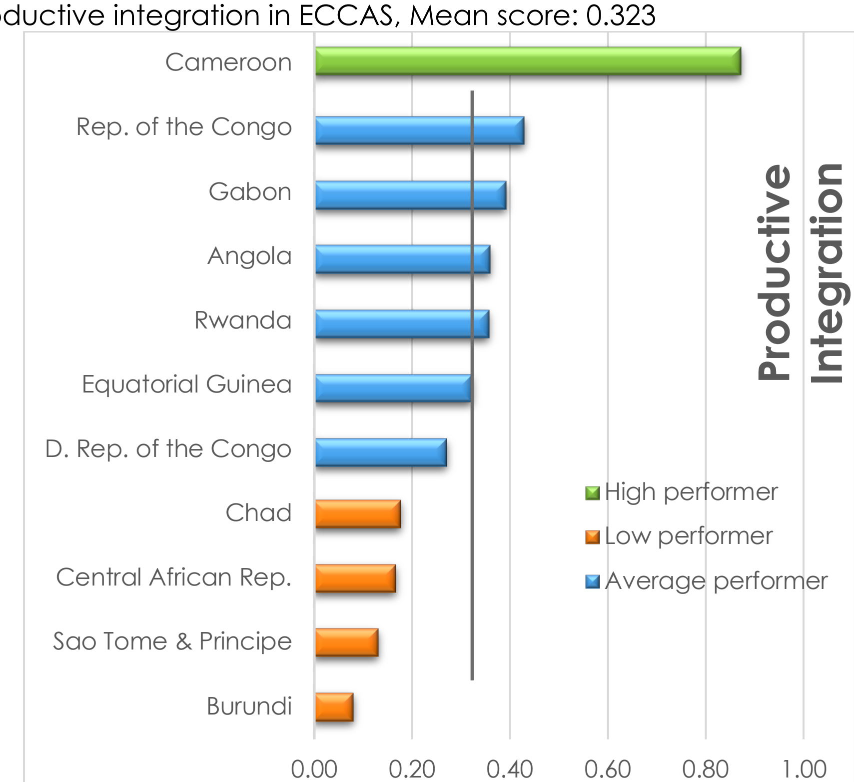
Productive Integration in ECCAS

Cameroon stands as the only high performer in productive integration in ECCAS. It features a high score of 0.871; it has the highest share of intermediates imports in the region and second-highest intermediate exports. The Republic of the Congo lies much behind with a score of 0.429 followed by Gabon with a score of 0.391. The former ranks third on both its share of intermediates imports and exports. while the latter has the highest share of intermediates exports. The latter enjoys the best trade complementarity index in the community.

Burundi is the least performing country scoring 0.080; it has a low share of intermediate imports. Sao Tome & Principe and the Central African Republic are the other least performing countries with scores of 0.130 and 0.166. Both countries have poor intermediate exports share despite their trade complementarities to the region.

ECCAS suffers from low productive integration with an average score of 0.323. Apart from Cameroon, all its members have a low share of intermediate imports (see Figure 34).

Figure 34 Productive integration in ECCAS, Mean score: 0.323



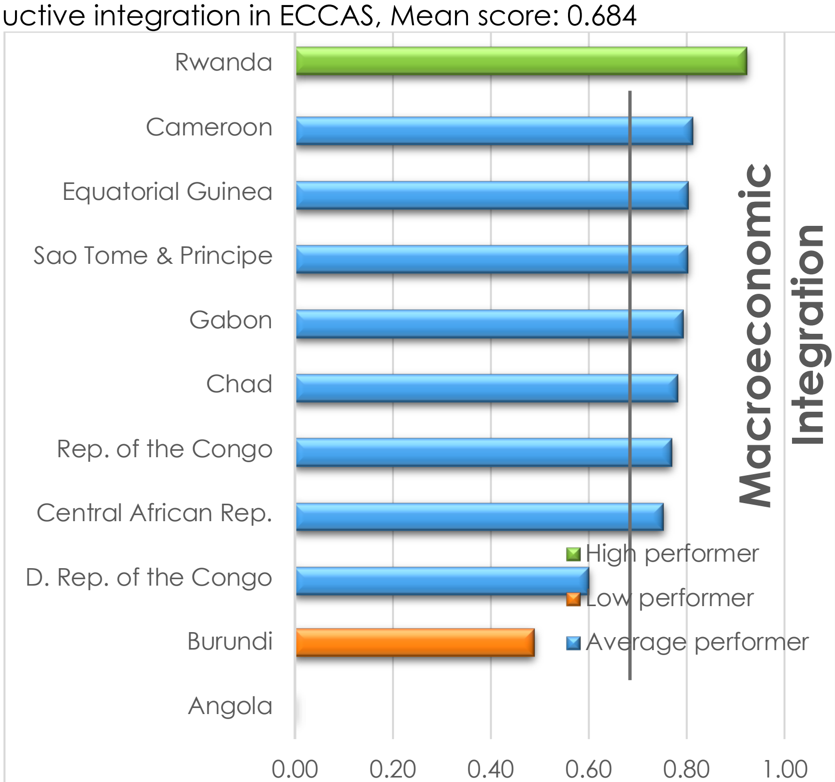
Macroeconomic Integration in ECCAS

ECCAS shows a good performance on macroeconomic integration with an average score of 0.684. Eight out of eleven countries have a score above 0.7 (see Figure 35). It should be noted, however, that none of its members has bilateral investment treaties in force so that they are only assessed on the basis of the regional convertibility of their currency and their inflation differential.

The leader and the only high performer on this dimension is Rwanda with a score of 0.923. It is followed by Cameroon that scores 0.813. Rwanda is the top country on the convertibility of its currency while Cameroon has the most favourable inflation differential.

Angola is the least performing country scoring zero as it is last on both variables considered. Burundi is the second least performing country scoring 0.489; its weakness is in the regional convertibility of its currency.

Figure 35 Productive integration in ECCAS, Mean score: 0.684



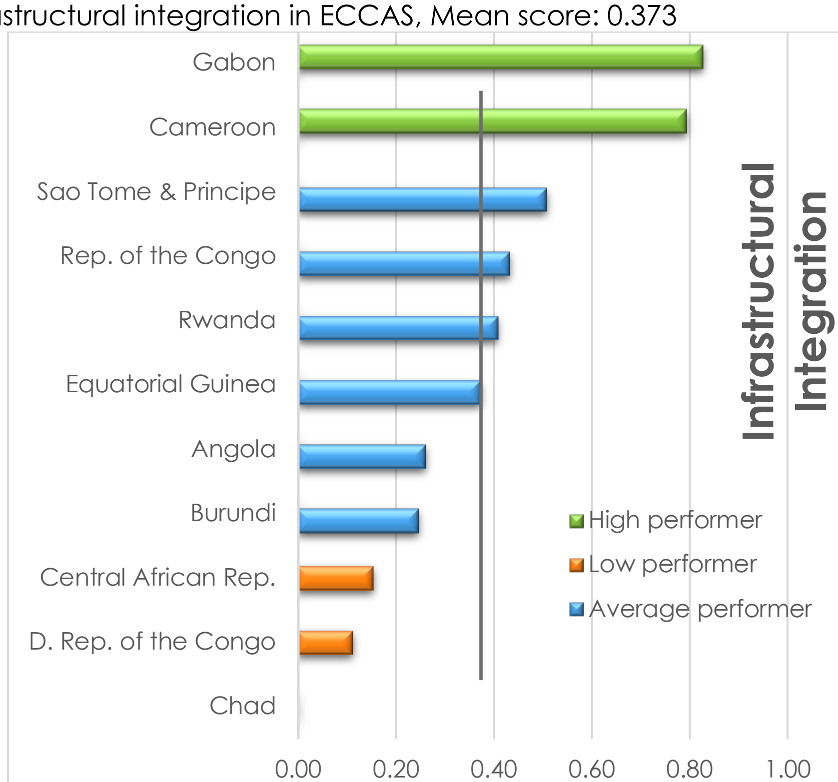
Infrastructural Integration in ECCAS

Gabon and Cameroon are the best infrastructurally integrated countries in ECCAS with scores of 0.827 and 0.793 respectively. The former ranks first on the AfDB infrastructure index and the latter has the best flight connections.

With a score of zero, Chad is the worst-performing country; it ranks last on both the AfDB infrastructure index and the regional flight connectivity. The Democratic Republic of the Congo is a bottom performer with a score of 0.111; it has a poor performance on the AfDB infrastructure index.

ECCAS is not well-integrated infrastructurally with an average score of 0.373. The performances of countries are quite diverse on the two variables considered (see Figure 36). The low performing countries could greatly improve their performances by increasing their flight connections.

Figure 36 Infrastructural integration in ECCAS, Mean score: 0.373



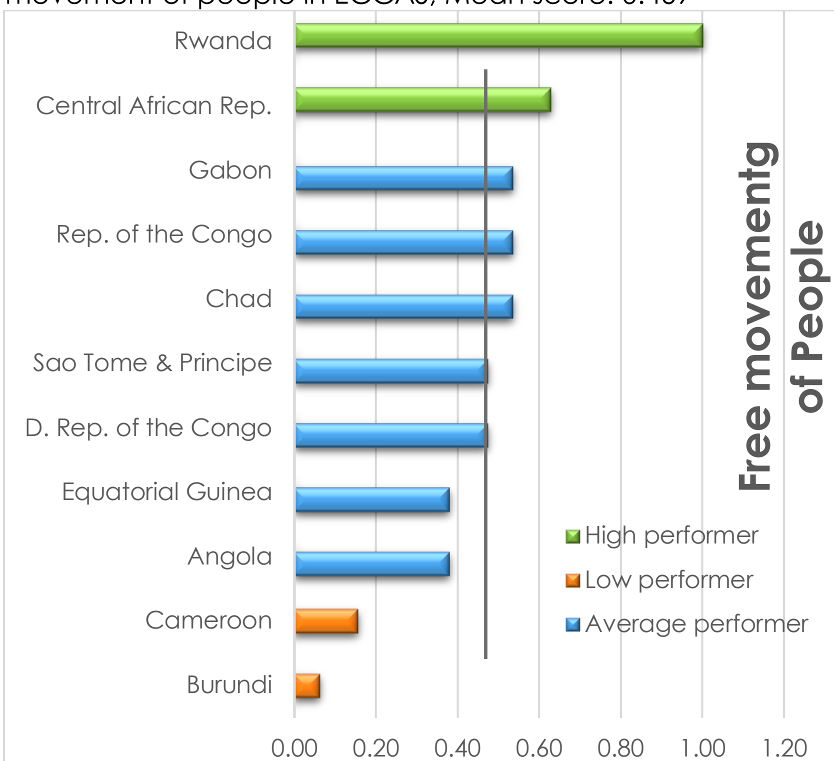
Free movement of people in ECCAS

Rwanda is the most integrated country in terms of free movement of people vaunting the highest score of 1. It is the only country offering visas on arrival in the community. The Central African Republic is the second-best integrated country with a much lower score of 0.619. It has a relatively favourable visa policy.

The least performing countries are Burundi and Cameroon with scores of 0.062 and 0.156 respectively. Both countries did not join the protocol on the free movement of persons.

The region enjoys a moderate average score of 0.469 but displays large disparities in countries score (see Figure 37). As more countries would ultimately grant visas on arrival, the community's performance could significantly improve.

Figure 37 Free movement of people in ECCAS, Mean score: 0.469



Regional Integration in IGAD

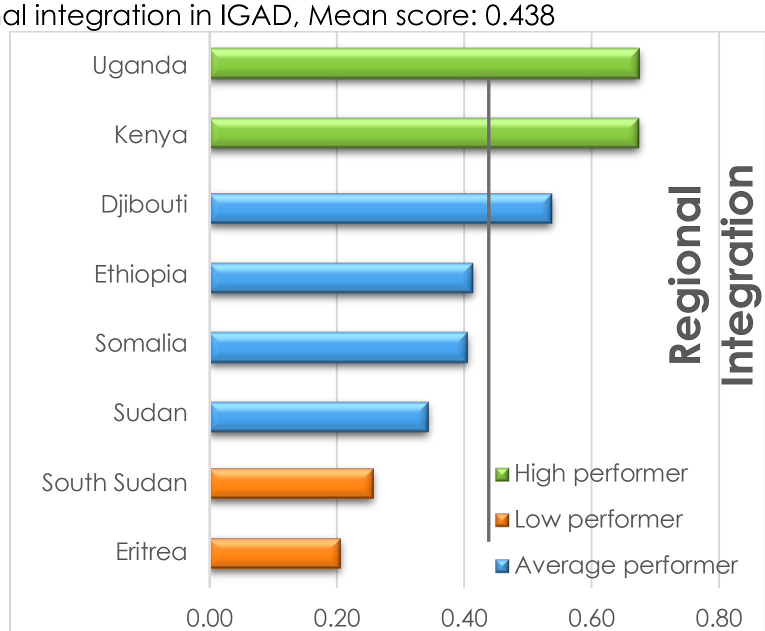
The Intergovernmental Authority on Development (IGAD) has 8 members with a heterogeneous level of development from the economically small Somalia to the large Kenya.

The top two performing countries in IGAD are Uganda and Kenya with scores of 0.675 and 0.674, respectively. The strength of Uganda is in the trade and productive dimensions. Kenya leads in the infrastructural dimension and stands second in the trade and productive dimensions.

The least performing countries in this community are Eritrea and South Sudan with scores of 0.205 and 0.256, respectively. The weakness of Eritrea is in the macroeconomic dimension while South Sudan lags in the infrastructural dimension.

IGAD has an average score of 0.438. Its best performance is in the free movement of people dimension but is lacking in the productive dimension.

Figure 38 Regional integration in IGAD, Mean score: 0.438



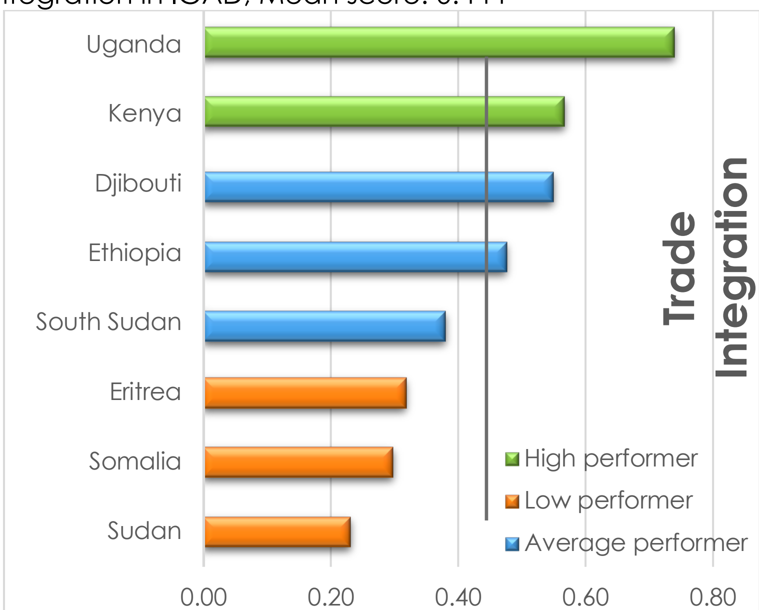
Trade Integration in IGAD

As indicated in Figure 39, the top performer on the trade dimension is Uganda with a score of 0.739, well ahead of Kenya that scores 0.566. Uganda has the best trade share in the region and second-best export share. Kenya stands second in the regional trade share and has a favourable tariff policy.

The least performing countries are Sudan and Somalia with scores of 0.230 and 0.297 respectively. Sudan suffers from poor regional exports and imports while has the worst tariff regime in this REC.

IGAD has a moderate average score of 0.444. Increased trade within this region is a necessity to advance their overall regional integration agenda.

Figure 39 Trade integration in IGAD, Mean score: 0.444



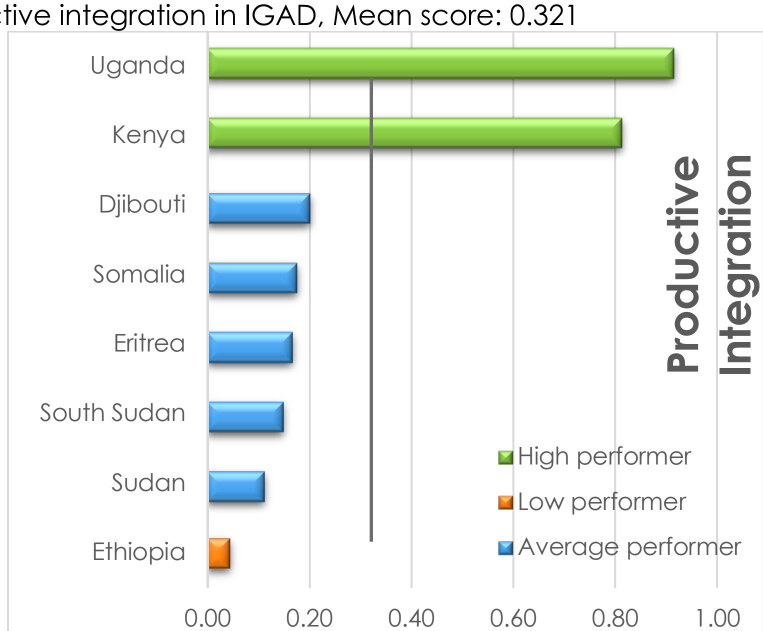
Productive Integration in IGAD

Uganda is the best-performing country on the productive dimension followed by Kenya with scores of 0.915 and 0.813, respectively. Uganda has the best intermediate goods imports in the region while Kenya has both the best intermediate goods exports in the region and the best trade complementarity index.

Ethiopia is the least productively integrated country scoring only 0.043. Sudan is the next least performing country with a score of 0.111. The former country ranks last on intermediate goods imports. The intermediates export and import of the latter are very low.

IGAD has a poor performance on the productive dimension with a low average score of 0.321. Besides the top two countries, the remaining six countries have scores of 0.2 or below (see Figure 40).

Figure 40 Productive integration in IGAD, Mean score: 0.321



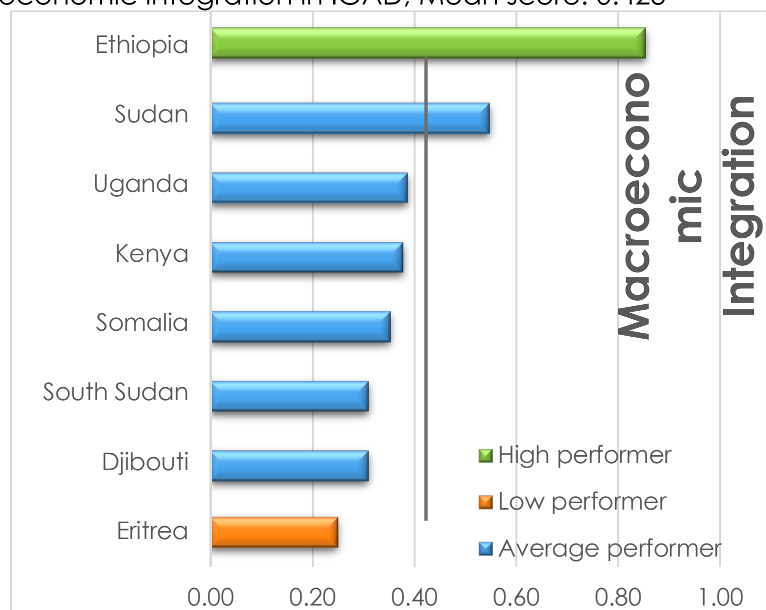
Macroeconomic Integration in IGAD

Ethiopia is the best-integrated country macroeconomically scoring 0.853. It is followed by Sudan scoring 0.547. They are the only two countries with bilateral investment treaties in force and Ethiopia's currency is easily convertible.

Eritrea and Djibouti are the least integrated countries with scores of 0.249 and 0.309 respectively. In addition to not having any bilateral investment treaties in force, their currencies are the least convertible.

The REC has an average score of 0.423 on this dimension. The majority of countries are average performers (see Figure 41).

Figure 41 Macroeconomic integration in IGAD, Mean score: 0.423



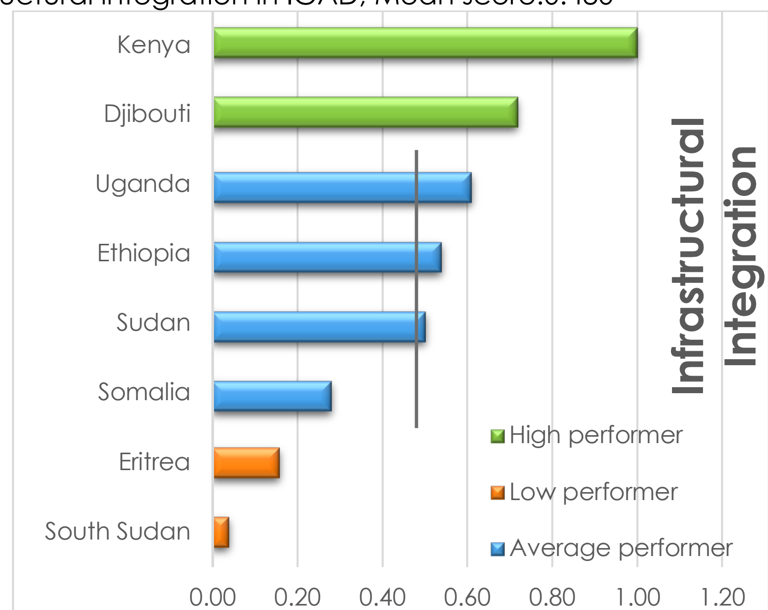
Infrastructural Integration in IGAD

As shown in Figure 42, Kenya vaunts the highest score on the infrastructural dimension as it is the best-integrated country on both the AfDB infrastructure index and in terms of flight connections. Djibouti is second-best integrated country scoring 0.718; it stands second on the AfDB infrastructure index.

The least performing countries are South Sudan and Eritrea that have scores of 0.038 and 0.157 respectively. They are the least performing countries as regards their flight connections within the region.

The community enjoys a moderate average score of 0.480.

Figure 42 Infrastructural integration in IGAD, Mean score:0.480



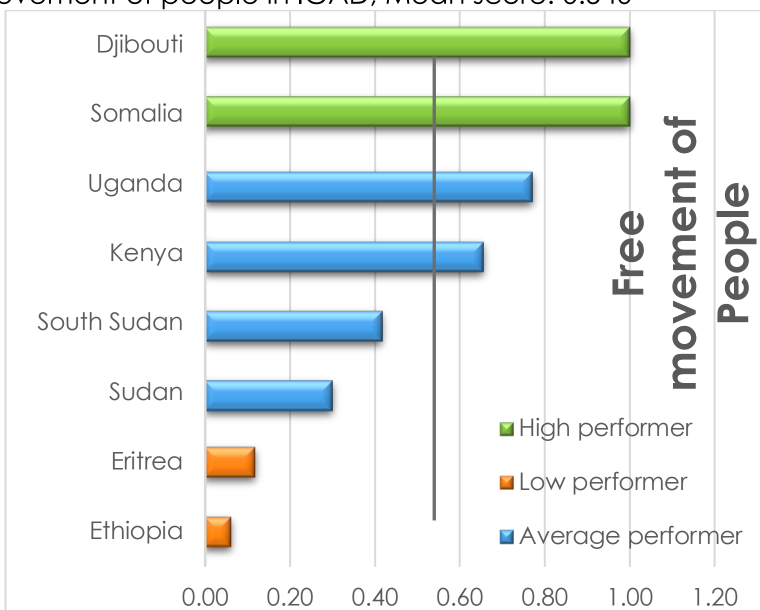
Free movement of people in IGAD

The top two integrated countries in terms of free movement of people are Djibouti and Somalia (see Figure 43). They enjoy the highest score of 1 thanks to their adherence to the Kigali protocol on free movement of persons and favourable visa policies.

These good performances contribute to the relatively good average score of the community, 0.540. However, there is considerable heterogeneity between the top and bottom performers.

Ethiopia and Eritrea are the least performing countries scoring 0.061 and 0.117, respectively. They did not ratify the protocol on the free movement of people and Ethiopia has strict visa policies for members of IGAD.

Figure 43 Free movement of people in IGAD, Mean score: 0.540



Regional Integration in EAC

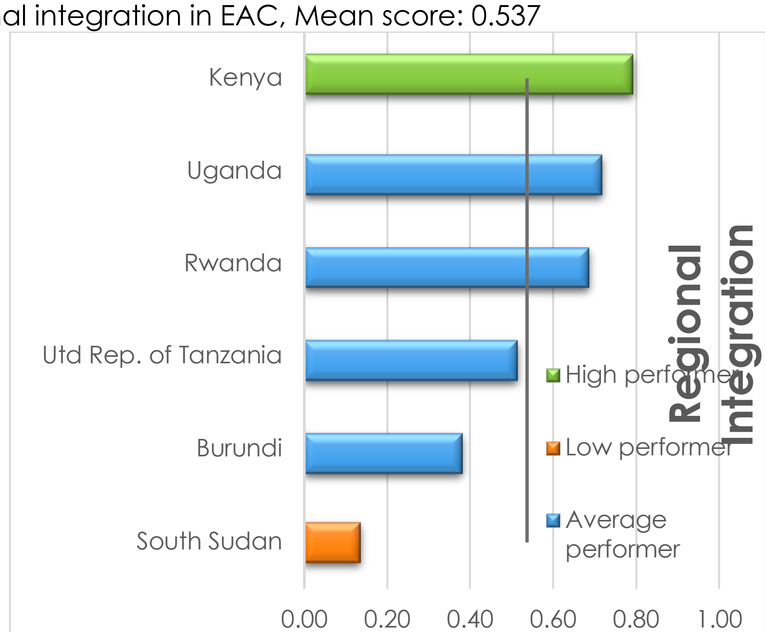
The East African Community (EAC) is a six-member community composed of diverse countries, such as, the economically large Kenya that has a total GDP 20 times more than that of Burundi. The community has established a common market in 2010 and its aim is to achieve a monetary union.

The best performer in EAC is Kenya that leads comfortably with a score of 0.792 (see Figure 44). It tops the list on the infrastructural dimension and is second on the trade and productive dimensions. Uganda is the second-best performer with a score of 0.717 leading on the trade and productive integration dimensions.

The least performing countries in this community are South Sudan and Burundi with scores of 0.134 and 0.380 respectively. South Sudan stands last in the infrastructural, trade and macroeconomic dimensions. The weakness of Burundi is on the productive dimension where it is the least performing and it performs poorly on the infrastructural dimension.

EAC is relatively well-integrated with an average score of 0.537. Its best performance is on the free movement of people dimension where it has a good average score of 0.664 while it is relatively less integrated on the productive dimension scoring only 0.434.

Figure 44 Regional integration in EAC, Mean score: 0.537



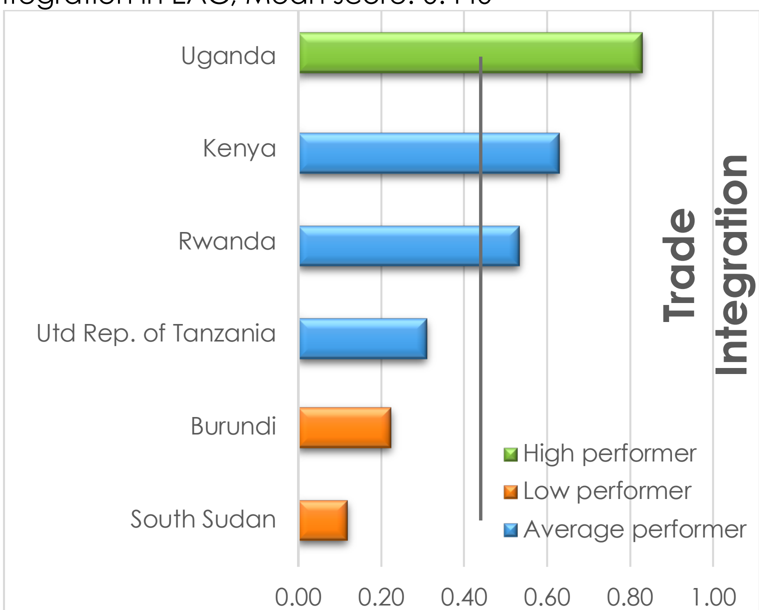
Trade Integration in EAC

Uganda leads on the trade dimension with a high score of 0.829 ahead of Kenya that has a score of 0.628 (see Figure 45). The strength of Uganda is its top export share over GDP in the region, while Kenya has the best regional trade share.

The least performing countries are South Sudan and Burundi with scores of 0.117 and 0.223 respectively. They both have poor trade and export shares; Burundi ranks last in the former and South Sudan ranks last in the latter.

EAC has a moderate average score of 0.440 in trade integration. The weakness of the region is in its low regional export share. EAC members are not assessed on their tariff levels as tariffs have been eliminated within the community.

Figure 45 Trade integration in EAC, Mean score: 0.440



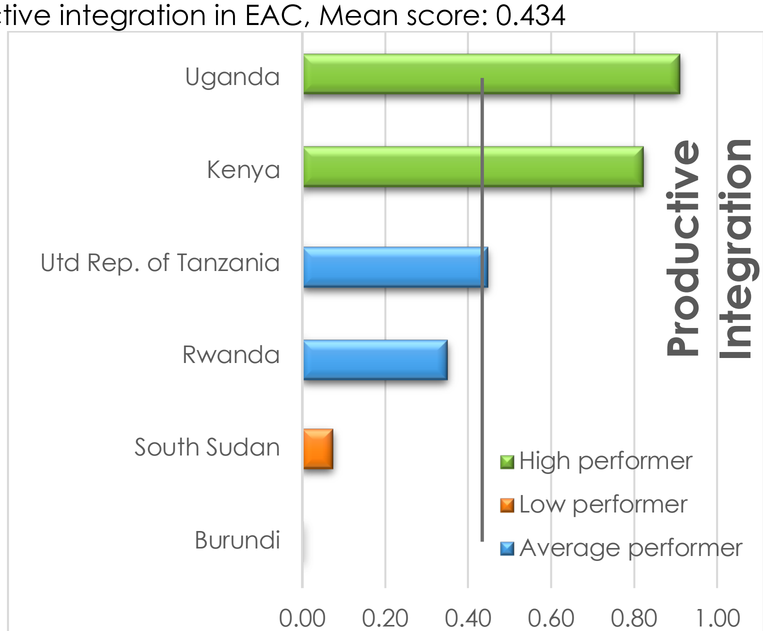
Productive Integration in EAC

Uganda and Kenya are also the best performing countries on the productive dimension are with scores of 0.910 and 0.822, respectively. Uganda has the best intermediate goods imports in the region and second-best trade complementarity. Kenya has both the best intermediates exports and trade complementarity.

Burundi has the worst performance on intermediate goods imports and trade complementarity index and is, therefore, the least integrated productively with a score of 0.003. It is behind South Sudan that scores 0.073; its weakness is in intermediates export.

The community has a moderate average score of 0.434. However, there is an enormous disparity in the scores of its members (see Figure 46). There is an urgent need for the region to improve its productive capacity so as to enhance its trade complementarity.

Figure 46 Productive integration in EAC, Mean score: 0.434



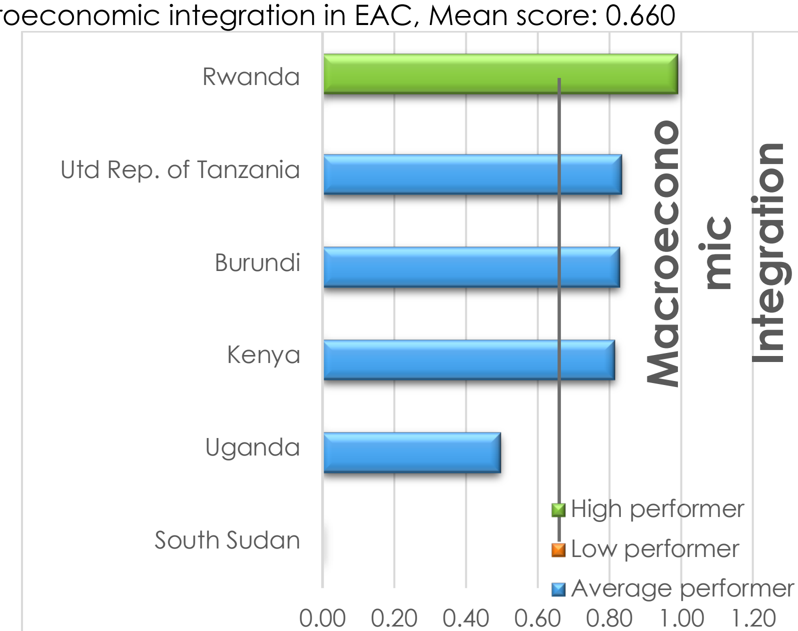
Macroeconomic Integration in EAC

With a high score of 0.991, Rwanda is the macroeconomically most integrated country. The United Republic of Tanzania follows with a score of 0.833. They are not assessed on bilateral investment treaties in force since none of the EAC members has any. Rwanda has the best currency convertibility and Tanzania the best inflation differential.

The least integrated country is South Sudan; it scores 0 as it ranks last on both variables. Uganda, an average performer as it scores 0.495, is the next least integrated country. Its currency is also the least convertible.

EAC enjoys a good average score of 0.660 on this dimension thanks to the high scores of the top two performers (see Figure 47). However, the community is lacking in bilateral investment treaties.

Figure 47 Macroeconomic integration in EAC, Mean score: 0.660



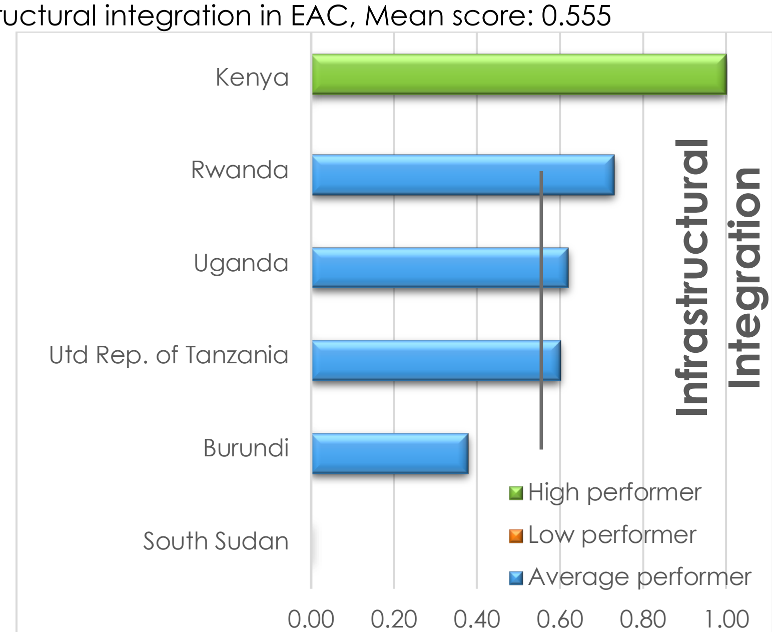
Infrastructural Integration in EAC

As shown in Figure 48, the absolute leader on the infrastructural dimension is Kenya scoring 1; it ranks first on the AfDB infrastructure index and, additionally, it has the best flight connections. Rwanda follows with a score of 0.731; the country is second-best on the infrastructure index and has good flight connectivity.

South Sudan is the worst-performing country scoring 0; It ranks last on both the AfDB infrastructure index and the regional flight connectivity. Burundi, an average performer with a score of 0.378 is the next least performing country; its weakness is in its regional flight connections.

EAC is infrastructurally well-integrated with an average score of 0.555.

Figure 48 Infrastructural integration in EAC, Mean score: 0.555



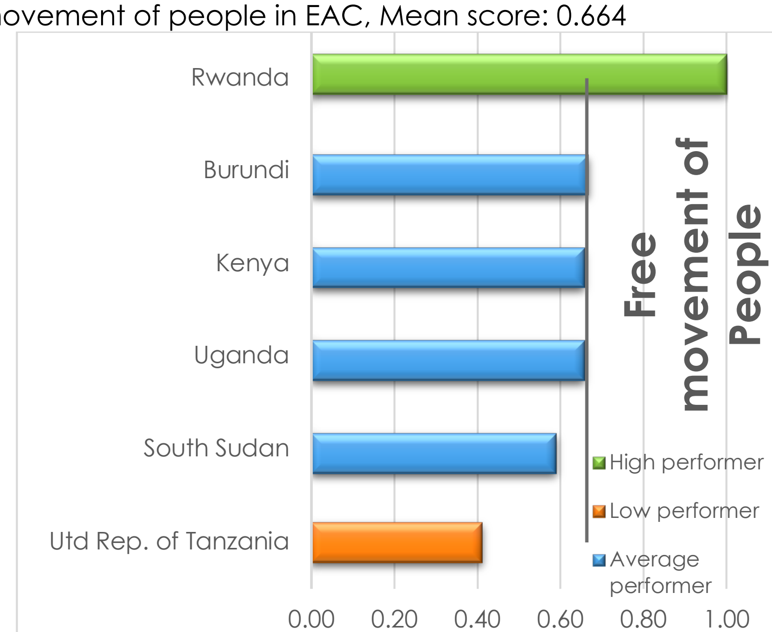
Free movement of people in EAC

The best performance of the community is in the free movement of people dimension; it enjoys a good average score of 0.664.

Rwanda is the most integrated country in terms of free movement of people vaunting the highest score of 1 (see Figure 49). It adhered to the Kigali free movement of persons protocol and no visas are required by members of the community to enter the country[9]. Burundi is the second-best integrated country in EAC; although it waived prior visa requirements, it did not join the Kigali protocol.

The least performing countries are the United Republic of Tanzania and South Sudan with scores of 0.410 and 0.590, respectively. The former did not join the protocol on the free movement of persons and the latter still has visa requirement from a country in the community.

Figure 49 Free movement of people in EAC, Mean score: 0.664



[9] The source for the data on visa requirements is the AfDB Visa Openness Index. According to this index, Rwanda scores 0 on the variable visa on arrival. However, the country has fully opened its borders as no EAC citizens require a visa to enter the country. As such, to avoid the country being penalized, its score on visa on arrival has been adjusted accordingly. The same adjustment has been made for Burundi that faces the same issue.

Regional Integration in AMU

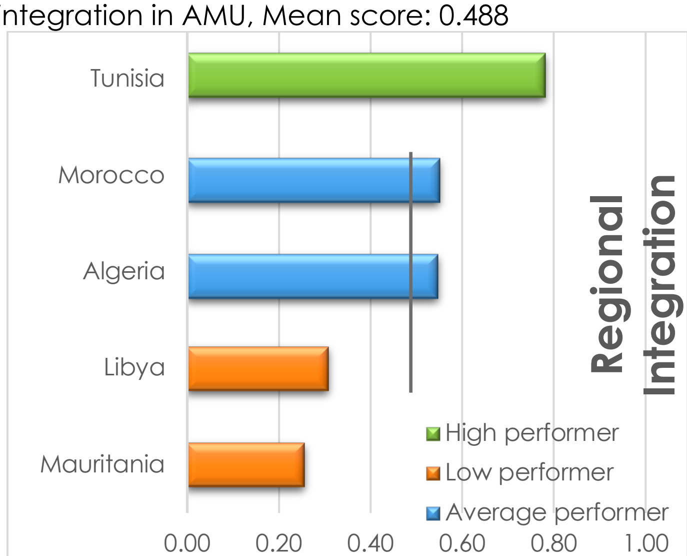
Algeria, Libya, Mauritania, Morocco and Tunisia together make up the Arab Maghreb Union (AMU).

Tunisia is the most integrated country in the Union with a score of 0.780 (see Figure 50). Its strength is in the trade, productive and infrastructural dimensions where it is the top performer. Morocco is the second-best integrated country scoring 0.550 and leading on the macroeconomic dimension.

Mauritania and Libya are the least integrated country in AMU with scores of 0.255 and 0.307 respectively. Although Mauritania leads in the free movement of people dimension, it is the least performing on the trade, productive and infrastructural dimensions. Libya ranks last on the macroeconomic dimension and performs poorly on the trade and productive dimensions.

AMU has a moderate level of integration with an average score of 0.488. Its weakness is in the free movement of people dimension but performs relatively well on the macroeconomic dimension.

Figure 50 Regional integration in AMU, Mean score: 0.488



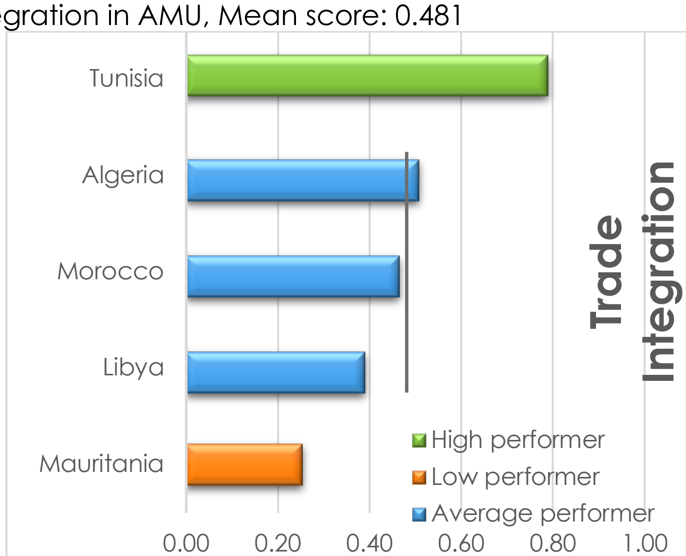
Trade Integration in AMU

As displayed in Figure 51, Tunisia tops the trade dimension with a score of 0.790; it has the best regional export share and second-best trade share in the region. Algeria stands second with a score of 0.507; it ranks first in the Union's regional trade share and has a favourable tariff policy.

The least performing countries are Mauritania and Libya with scores of 0.253 and 0.390, respectively. Although Mauritania has the best regional import share, it suffers from poor regional exports and trade share. Moreover, it has the most unfavourable tariff regime in this REC. The weakness of Libya is in its poor export share.

The Union has a moderate average score of 0.481. It suffers from poor exports within the region.

Figure 51 Trade integration in AMU, Mean score: 0.481



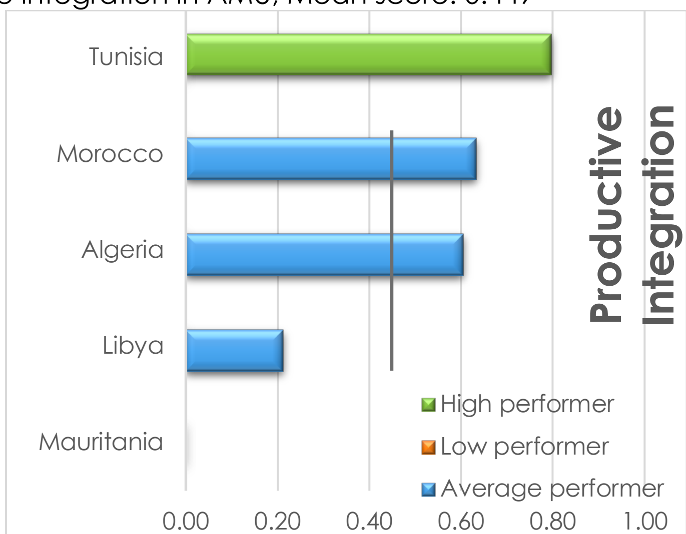
Productive Integration in AMU

Tunisia and Morocco are the best performing countries on the productive dimension with scores of 0.796 and 0.632, respectively. Tunisia has the best intermediate goods imports in the region while Morocco is the best performer on the trade complementarity index.

With a score of zero, Mauritania is the least productively integrated country; it ranks last on all variables. Libya is the next least performing country with a score of 0.211. It has a poor performance on its share of intermediate goods imports and on the trade complementarity index.

Productively, the members of the union have heterogeneous performance (see Figure 52). The region has an average score of 0.449.

Figure 52 Productive integration in AMU, Mean score: 0.449



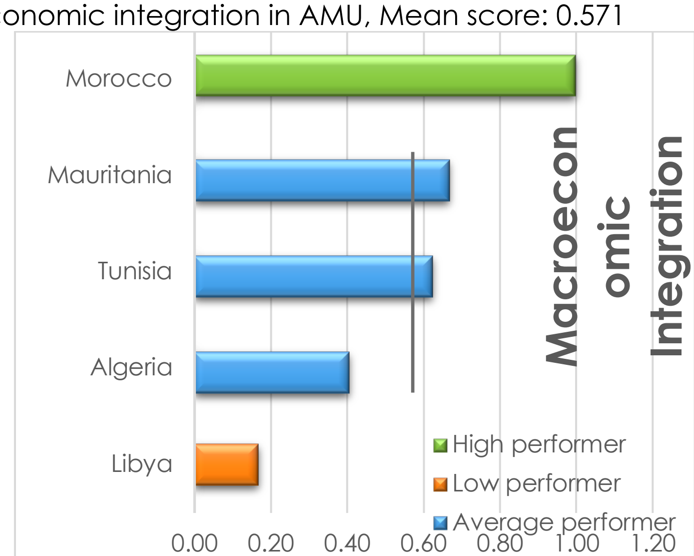
Macroeconomic Integration in AMU

The best performance of AMU is on the macroeconomic dimension where it has the highest average score, 0.571. The currencies of the union members are perfectly convertible; therefore, they are not assessed on this variable.

Morocco is the best macroeconomically integrated country with a high score of 0.998 (see Figure 53). It has the most bilateral investment treaties in force and second-best most favourable inflation differential rate. Mauritania ranks second on this dimension with a score of 0.667; its inflation differential is the most favourable in the union.

Libya is the least integrated country, scoring 0.167. It has the least favourable inflation differential rate. Algeria, although an average performer, is the next least performing, scoring 0.404. It ranks last on bilateral investment treaties in force.

Figure 53 Macroeconomic integration in AMU, Mean score: 0.571



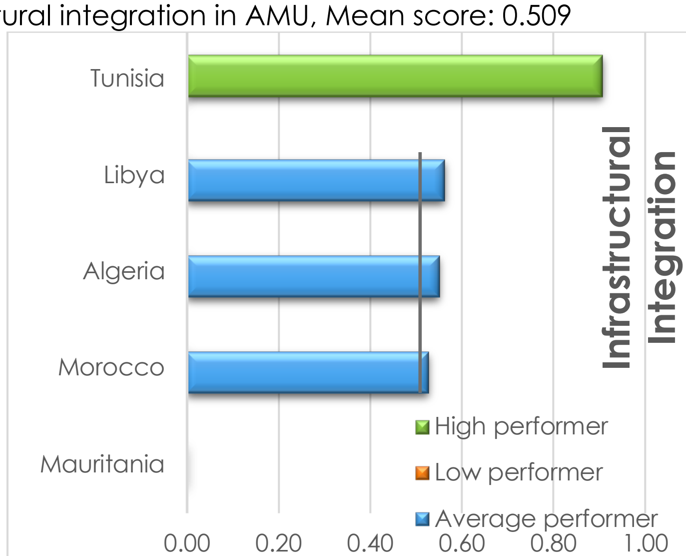
Infrastructural Integration in AMU

Tunisia is the most infrastructurally integrated country scoring 0.906; it vaunts the best proportion of flight connections and is second on the AfDB infrastructure index. Libya is the second-best integrated country with a much lower score of 0.561; it stands first on the AfDB infrastructure index.

Mauritania is last on both its flight connectivity within the region and the infrastructure index. It is inevitably the least performing country with a score of zero. It is behind Morocco that performs much better with a score of 0.526. Its weakness is in its flight connections within the region.

AMU enjoys a good average score of 0.509 on this dimension despite the poor performance of Mauritania (see Figure 54).

Figure 54 Infrastructural integration in AMU, Mean score: 0.509



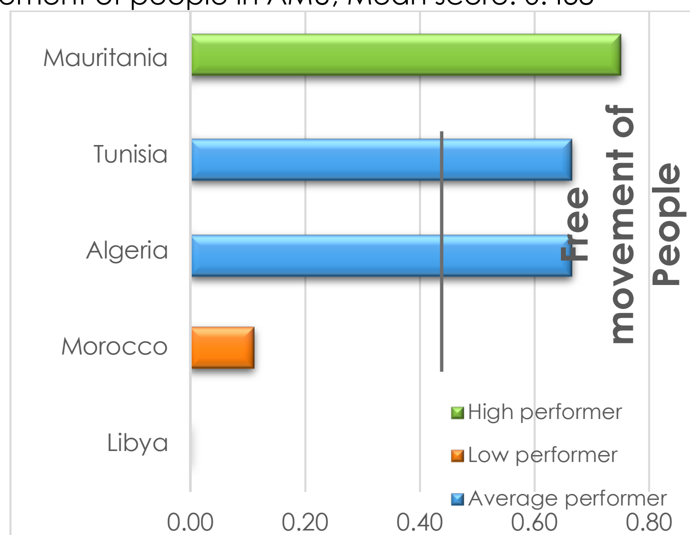
Free movement of people in AMU

The top integrated country in terms of free movement of people is Mauritania with a high score of 0.750. It is the only country in the union that adhered to the Kigali protocol on the free movement of persons and it has liberal visa policies.

Libya and Morocco are the least performing countries scoring 0 and 0.111 respectively (see Figure 55). They did not ratify the protocol on the free movement of people and have relatively stricter visa policies in the region.

The lowest performance of AMU is on this dimension with a score of 0.438. The region could tap into the potential benefits of regional integration by relaxing its visa policies.

Figure 55 Free movement of people in AMU, Mean score: 0.438



Annex: Table of scores, weights and description of variables

Table 1 Scores and ranks for Africa

Country	Regional integration	Rank	Trade integration	Rank	Productive integration	Rank	Macroeconomic integration	Rank	Infrastructural integration	Rank	Free movement of people	Rank
South Africa	0.625	1	0.627	4	1.000	1	0.423	25	0.898	1	0.093	45
Kenya	0.444	2	0.428	18	0.296	7	0.337	38	0.415	8	0.864	10
Rwanda	0.434	3	0.435	13	0.164	33	0.570	4	0.184	23	0.907	6
Morocco	0.430	4	0.304	39	0.284	8	0.809	1	0.530	4	0.056	48
Mauritius	0.424	5	0.348	33	0.169	32	0.633	2	0.487	6	0.426	29
Egypt	0.422	6	0.414	21	0.263	10	0.632	3	0.585	2	0.062	47
Senegal	0.404	7	0.472	9	0.232	15	0.490	9	0.241	20	0.611	14
Ghana	0.403	8	0.454	10	0.230	16	0.331	40	0.244	18	0.883	8
Togo	0.399	9	0.418	20	0.183	25	0.456	18	0.150	31	0.907	6
Djibouti	0.394	10	0.438	12	0.204	21	0.335	39	0.152	29	1.000	1
Seychelles	0.393	11	0.352	32	0.129	42	0.347	36	0.531	3	0.655	11
Zimbabwe	0.387	12	0.550	5	0.221	17	0.357	33	0.261	13	0.574	17
Mauritania	0.386	13	0.381	29	0.072	51	0.523	7	0.117	42	0.951	4
Mozambique	0.380	14	0.411	22	0.239	14	0.320	43	0.141	36	0.944	5
Uganda	0.376	15	0.434	15	0.217	18	0.322	42	0.162	27	0.876	9
Burkina Faso	0.370	16	0.434	14	0.181	27	0.525	6	0.147	34	0.580	16
Côte d'Ivoire	0.357	17	0.506	6	0.305	6	0.458	17	0.292	11	0.130	40
Mali	0.352	18	0.431	17	0.139	40	0.542	5	0.154	28	0.481	21
The Gambia	0.351	19	0.472	8	0.127	43	0.471	12	0.164	26	0.518	20
Comoros	0.350	20	0.200	51	0.141	39	0.410	29	0.166	25	1.000	1
Benin	0.347	21	0.353	31	0.159	35	0.450	21	0.174	24	0.655	11
Cabo Verde	0.344	22	0.297	43	0.129	41	0.494	8	0.274	12	0.544	19
Gabon	0.340	23	0.402	26	0.143	38	0.477	11	0.247	16	0.407	33
Tunisia	0.338	24	0.189	52	0.340	4	0.458	16	0.498	5	0.136	39
Namibia	0.337	25	0.715	2	0.271	9	0.301	44	0.215	21	0.080	46
Sao Tome & Principe	0.324	26	0.404	24	0.247	12	0.424	24	0.150	30	0.388	34
Rep. of the Congo	0.317	27	0.448	11	0.049	54	0.462	15	0.140	38	0.475	22
Utd Rep. of Tanzania	0.312	28	0.323	35	0.205	20	0.422	27	0.197	22	0.420	30
Lesotho	0.308	29	0.655	3	0.052	53	0.297	45	0.080	46	0.444	25
Equatorial Guinea	0.304	30	0.403	25	0.149	36	0.450	20	0.143	35	0.345	37
Somalia	0.303	31	0.111	54	0.194	24	0.362	32	0.047	52	1.000	1
Chad	0.303	32	0.386	28	0.182	26	0.447	23	0.064	51	0.438	26
Guinea	0.303	33	0.400	27	0.107	47	0.422	26	0.120	41	0.469	23
Botswana	0.302	34	0.496	7	0.245	13	0.342	37	0.242	19	0.105	43
Guinea-Bissau	0.301	35	0.285	46	0.170	31	0.449	22	0.081	45	0.568	18
Niger	0.299	36	0.425	19	0.073	50	0.462	14	0.069	50	0.456	24
Madagascar	0.296	37	0.305	38	0.120	46	0.352	34	0.126	39	0.655	11
Nigeria	0.292	38	0.325	34	0.364	2	0.352	35	0.252	15	0.117	41
Eswatini	0.288	39	0.730	1	0.097	48	0.280	48	0.124	40	0.105	43
Ethiopia	0.287	40	0.407	23	0.069	52	0.482	10	0.316	10	0.025	52
Zambia	0.287	41	0.431	16	0.324	5	0.185	52	0.258	14	0.229	38
Malawi	0.282	42	0.369	30	0.174	29	0.219	51	0.148	33	0.580	15
Algeria	0.282	43	0.226	50	0.195	23	0.464	13	0.384	9	0.037	50
Libya	0.280	44	0.321	36	0.159	34	0.325	41	0.480	7	0.006	54
Central African Rep.	0.273	45	0.282	47	0.173	30	0.417	28	0.079	47	0.432	27
Cameroon	0.268	46	0.255	48	0.252	11	0.456	19	0.245	17	0.043	49
Liberia	0.244	47	0.287	45	0.200	22	0.272	49	0.076	48	0.432	27
D. Rep. of the Congo	0.241	48	0.299	42	0.121	45	0.292	46	0.112	43	0.407	32
Angola	0.238	49	0.308	37	0.340	3	0.077	53	0.149	32	0.388	34
Sudan	0.228	50	0.178	53	0.209	19	0.289	47	0.141	37	0.357	36
Sierra Leone	0.222	51	0.303	40	0.149	37	0.408	30	0.074	49	0.105	42
Burundi	0.203	52	0.301	41	0.123	44	0.379	31	0.091	44	0.037	50
Eritrea	0.161	53	0.245	49	0.175	28	0.270	50	0.040	53	0.019	53
South Sudan	0.147	54	0.290	44	0.081	49	0.023	54	0.009	54	0.407	31
Average	0.327		0.383		0.201		0.399		0.220		0.441	
Standard deviation	0.078		0.123		0.133		0.128		0.166		0.304	

Table 2 Scores and ranks for SADC

Country	Regional integration	Ra nk	Trade integration	Ra nk	Productive integration	Ra nk	Macroeconomic integration	Ra nk	Infrastructural integration	Ra nk	Free movement of people	Ra nk
South Africa	0.667	1	0.542	4	0.993	1	0.630	4	0.893	1	0.224	13
Mozambique	0.422	2	0.348	8	0.245	7	0.656	3	0.110	8	0.797	2
Zimbabwe	0.395	3	0.393	7	0.279	5	0.414	7	0.234	4	0.683	3
Mauritius	0.372	4	0.240	10	0.120	10	0.720	1	0.446	3	0.344	12
Seychelles	0.352	5	0.238	11	0.068	15	0.327	11	0.512	2	0.616	6
Namibia	0.342	6	0.586	1	0.355	3	0.365	10	0.200	7	0.224	13
Comoros	0.338	7	0.012	16	0.086	13	0.527	5	0.105	11	1.000	1
Zambia	0.328	8	0.411	6	0.404	2	0.226	14	0.219	6	0.390	10
Botswana	0.326	9	0.478	5	0.334	4	0.387	8	0.223	5	0.224	13
Lesotho	0.303	10	0.569	3	0.063	16	0.323	12	0.050	14	0.561	7
Malawi	0.299	11	0.278	9	0.119	11	0.365	9	0.109	9	0.656	4
Utd Rep. of Tanzania	0.293	12	0.200	13	0.146	9	0.701	2	0.066	13	0.390	10
Madagascar	0.286	13	0.214	12	0.082	14	0.496	6	0.039	15	0.638	5
Eswatini	0.253	14	0.585	2	0.093	12	0.302	13	0.096	12	0.224	13
Angola	0.226	15	0.197	14	0.278	6	0.093	16	0.107	10	0.461	8
D. Rep. of the Congo	0.188	16	0.156	15	0.155	8	0.223	15	0.021	16	0.407	9
Average	**0.337**		**0.340**		**0.239**		**0.422**		**0.214**		**0.490**	
Standard deviation	**0.103**		**0.170**		**0.223**		**0.178**		**0.221**		**0.223**	

Table 3 Scores and ranks for ECOWAS

Country	Regional integration	Rank	Trade integration	Rank	Productive integration	Rank	Macroeconomic integration	Rank	Infrastructural integration	Rank	Free movement of people	Rank
Côte d'Ivoire	0.667	1	0.772	1	0.718	1	0.449	5	0.656	1	0.667	4
Burkina Faso	0.561	2	0.530	4	0.271	5	0.832	2	0.278	8	1.000	1
Senegal	0.516	3	0.567	3	0.388	3	0.449	5	0.503	2	0.667	4
Togo	0.504	4	0.580	2	0.226	7	0.449	5	0.276	9	1.000	1
Nigeria	0.464	5	0.456	9	0.540	2	0.252	15	0.349	5	0.667	4
Mali	0.454	6	0.517	5	0.101	9	0.379	12	0.287	7	1.000	1
Ghana	0.434	7	0.475	6	0.273	4	0.253	14	0.474	4	0.667	4
Benin	0.391	8	0.474	7	0.174	8	0.417	10	0.242	10	0.667	4
Guinea	0.389	9	0.304	12	0.061	12	0.862	1	0.214	11	0.667	4
The Gambia	0.386	10	0.442	10	0.057	14	0.541	4	0.290	6	0.667	4
Cabo Verde	0.363	11	0.210	14	0.087	11	0.417	11	0.500	3	0.667	4
Niger	0.321	12	0.467	8	0.000	15	0.449	5	0.071	15	0.667	4
Sierra Leone	0.316	13	0.275	13	0.060	13	0.550	3	0.122	12	0.667	4
Guinea-Bissau	0.314	14	0.307	11	0.095	10	0.449	5	0.113	13	0.667	4
Liberia	0.298	15	0.198	15	0.251	6	0.288	13	0.103	14	0.667	4
Average	**0.425**		**0.438**		**0.220**		**0.469**		**0.298**		**0.733**	
Standard deviation	**0.101**		**0.150**		**0.193**		**0.171**		**0.165**		**0.133**	

Table 4 Scores and ranks for CEN-SAD

Country	Regional integration	Rank	Trade integration	Rank	Productive integration	Rank	Macroeconomic integration	Rank	Infrastructural integration	Rank	Free movement of people	Rank
Côte d'Ivoire	0.541	1	0.783	1	0.620	1	0.486	10	0.595	5	0.210	22
Senegal	0.509	2	0.585	2	0.388	5	0.484	11	0.467	6	0.623	10
Morocco	0.495	3	0.393	13	0.335	9	0.941	1	0.797	1	0.058	26
Burkina Faso	0.490	4	0.565	4	0.260	16	0.573	4	0.268	13	0.772	8
Ghana	0.487	5	0.517	6	0.269	12	0.420	19	0.428	7	0.806	7
Togo	0.480	6	0.536	5	0.268	13	0.484	12	0.269	12	0.829	6
Mali	0.422	7	0.571	3	0.118	23	0.556	5	0.303	11	0.564	11
Nigeria	0.414	8	0.514	7	0.619	2	0.348	22	0.376	8	0.187	23
Mauritania	0.413	9	0.319	18	0.033	29	0.612	2	0.185	18	0.920	4
Benin	0.407	10	0.476	10	0.196	18	0.478	13	0.244	14	0.634	9
Egypt	0.405	11	0.445	11	0.304	10	0.488	9	0.781	2	0.058	27
Kenya	0.403	12	0.301	19	0.249	17	0.222	26	0.332	9	0.920	5
The Gambia	0.387	13	0.486	9	0.090	26	0.573	3	0.230	17	0.553	14
Djibouti	0.386	14	0.301	20	0.189	19	0.261	25	0.173	19	1.000	1
Guinea	0.379	15	0.345	15	0.268	14	0.473	16	0.236	15	0.564	11
Somalia	0.375	16	0.035	29	0.397	4	0.312	24	0.114	26	1.000	1
Niger	0.350	17	0.495	8	0.047	28	0.490	8	0.145	22	0.564	11
Comoros	0.341	18	0.146	27	0.107	24	0.315	23	0.137	23	1.000	1
Tunisia	0.335	19	0.131	28	0.342	7	0.406	20	0.693	3	0.152	25
Central African Rep.	0.327	20	0.267	24	0.381	6	0.444	18	0.079	28	0.436	19
Cabo Verde	0.319	21	0.286	21	0.063	27	0.495	7	0.331	10	0.440	18
Libya	0.319	22	0.439	12	0.167	21	0.382	21	0.651	4	0.000	29
Sao Tome & Principe	0.318	23	0.239	25	0.341	8	0.458	17	0.146	21	0.389	20
Guinea-Bissau	0.317	24	0.343	16	0.150	22	0.477	14	0.128	24	0.475	17
Liberia	0.309	25	0.268	23	0.412	3	0.195	28	0.123	25	0.518	15
Sierra Leone	0.309	26	0.385	14	0.273	11	0.528	6	0.151	20	0.187	23
Chad	0.285	27	0.270	22	0.097	25	0.475	15	0.092	27	0.482	16
Sudan	0.250	28	0.162	26	0.265	15	0.211	27	0.234	16	0.377	21
Eritrea	0.157	29	0.320	17	0.179	20	0.194	29	0.060	29	0.011	28
Average	**0.377**		**0.377**		**0.256**		**0.441**		**0.302**		**0.508**	
Standard deviation	**0.084**		**0.161**		**0.147**		**0.150**		**0.210**		**0.308**	

Table 5 Scores and ranks for COMESA

Country	Regional integration	Rank	Trade integration	Rank	Productive integration	Rank	Macroeconomic integration	Rank	Infrastructural integration	Rank	Free movement of people	Rank
Kenya	0.596	1	0.571	4	0.663	2	0.389	9	0.616	2	0.734	5
Rwanda	0.556	2	0.631	2	0.371	8	0.589	2	0.273	11	0.884	4
Zambia	0.517	3	0.951	1	0.829	1	0.147	19	0.380	8	0.361	10
Egypt	0.483	4	0.487	6	0.586	3	0.669	1	0.661	1	0.056	15
Djibouti	0.456	5	0.423	12	0.257	10	0.352	12	0.186	15	1.000	1
Uganda	0.447	6	0.604	3	0.585	4	0.364	10	0.259	12	0.447	7
Somalia	0.426	7	0.267	19	0.273	9	0.364	11	0.150	19	1.000	1
Comoros	0.423	8	0.250	20	0.148	18	0.441	7	0.192	14	1.000	1
Mauritius	0.399	9	0.395	14	0.246	13	0.502	4	0.470	7	0.374	9
Madagascar	0.373	10	0.330	17	0.205	15	0.414	8	0.154	18	0.715	6
Seychelles	0.354	11	0.445	10	0.093	19	0.336	13	0.565	3	0.330	11
D. Rep. of the Congo	0.343	12	0.477	8	0.569	5	0.142	20	0.156	16	0.393	8
Tunisia	0.323	13	0.149	21	0.443	6	0.471	5	0.514	4	0.052	16
Zimbabwe	0.316	14	0.481	7	0.168	16	0.327	14	0.291	9	0.322	12
Ethiopia	0.297	15	0.382	15	0.066	21	0.554	3	0.484	5	0.017	20
Libya	0.282	16	0.462	9	0.407	7	0.119	21	0.476	6	0.000	21
Malawi	0.258	17	0.527	5	0.247	12	0.174	18	0.201	13	0.177	13
Burundi	0.243	18	0.434	11	0.155	17	0.451	6	0.155	17	0.052	16
Sudan	0.230	19	0.362	16	0.248	11	0.268	17	0.284	10	0.019	19
Eswatini	0.202	20	0.405	13	0.083	20	0.304	15	0.117	20	0.122	14
Eritrea	0.183	21	0.306	18	0.243	14	0.289	16	0.069	21	0.037	18
Average	**0.367**		**0.445**		**0.328**		**0.365**		**0.317**		**0.385**	
Standard deviation	**0.114**		**0.162**		**0.207**		**0.145**		**0.176**		**0.352**	

Table 6 Scores and ranks for ECCAS

Country	Regional integration	Rank	Trade integration	Rank	Productive integration	Rank	Macroeconomic integration	Rank	Infrastructural integration	Rank	Free movement of people	Rank
Rep. of the Congo	0.619	1	0.890	1	0.429	2	0.770	7	0.431	4	0.535	3
Gabon	0.612	2	0.504	2	0.391	3	0.793	5	0.827	1	0.535	3
Cameroon	0.599	3	0.383	4	0.871	1	0.813	2	0.793	2	0.156	10
Rwanda	0.594	4	0.296	8	0.356	5	0.923	1	0.407	5	1.000	1
Equatorial Guinea	0.453	5	0.372	6	0.322	6	0.804	3	0.373	6	0.380	8
Sao Tome & Principe	0.422	6	0.192	9	0.130	10	0.803	4	0.507	3	0.473	6
Central African Rep.	0.404	7	0.307	7	0.166	9	0.753	8	0.152	9	0.629	2
Chad	0.385	8	0.409	3	0.176	8	0.781	6	0.000	11	0.535	3
D. Rep. of the Congo	0.304	9	0.080	11	0.270	7	0.600	9	0.111	10	0.473	6
Angola	0.273	10	0.374	5	0.359	4	0.000	11	0.260	7	0.380	8
Burundi	0.201	11	0.118	10	0.080	11	0.489	10	0.245	8	0.062	11
Average	**0.442**		**0.357**		**0.323**		**0.684**		**0.373**		**0.469**	
Standard deviation	**0.141**		**0.208**		**0.205**		**0.243**		**0.251**		**0.234**	

Table 7 Scores and ranks for IGAD

Country	Regional integration	Rank	Trade integration	Rank	Productive integration	Rank	Macroeconomic integration	Rank	Infrastructural integration	Rank	Free movement of people	Rank
Uganda	0.675	1	0.739	1	0.915	1	0.386	3	0.609	3	0.771	3
Kenya	0.674	2	0.566	2	0.813	2	0.377	4	1.000	1	0.654	4
Djibouti	0.537	3	0.549	3	0.200	3	0.309	7	0.718	2	1.000	1
Ethiopia	0.413	4	0.475	4	0.043	8	0.853	1	0.539	4	0.061	8
Somalia	0.404	5	0.297	7	0.175	4	0.352	5	0.279	6	1.000	1
Sudan	0.342	6	0.230	8	0.111	7	0.547	2	0.501	5	0.299	6
South Sudan	0.256	7	0.379	5	0.148	6	0.309	6	0.038	8	0.416	5
Eritrea	0.205	8	0.317	6	0.166	5	0.249	8	0.157	7	0.117	7
Average	**0.438**		**0.444**		**0.321**		**0.423**		**0.480**		**0.540**	
Standard deviation	**0.166**		**0.159**		**0.317**		**0.182**		**0.293**		**0.349**	

Table 8 Scores and ranks for EAC

Country	Regional integration	Rank	Trade integration	Rank	Productive integration	Rank	Macroeconomic integration	Rank	Infrastructural integration	Rank	Free movement of people	Rank
Kenya	0.792	1	0.628	2	0.822	2	0.814	4	1.000	1	0.657	3
Uganda	0.717	2	0.829	1	0.910	1	0.495	5	0.619	3	0.657	3
Rwanda	0.685	3	0.532	3	0.349	4	0.991	1	0.731	2	1.000	1
Utd Rep. of Tanzania	0.513	4	0.309	4	0.446	3	0.833	2	0.600	4	0.410	6
Burundi	0.380	5	0.223	5	0.003	6	0.827	3	0.378	5	0.668	2
South Sudan	0.134	6	0.117	6	0.073	5	0.000	6	0.000	6	0.590	5
Average	**0.537**		**0.440**		**0.434**		**0.660**		**0.555**		**0.664**	
Standard deviation	**0.226**		**0.246**		**0.342**		**0.330**		**0.309**		**0.175**	

Table 9 Scores and ranks for AMU

Country	Regional integratio n	Rank	Trade integratio n	Rank	Productiv e integratio n	Rank	Macroeconomic integration	Ran k	Infrastructura l integration	Ran k	Free movemen t of people	Ran k
Tunisia	0.780	1	0.790	1	0.796	1	0.623	3	0.906	1	0.665	2
Morocco	0.550	2	0.465	3	0.632	2	0.998	1	0.526	4	0.111	4
Algeria	0.547	3	0.507	2	0.604	3	0.404	4	0.550	3	0.665	2
Libya	0.307	4	0.390	4	0.211	4	0.167	5	0.561	2	0.000	5
Mauritania	0.255	5	0.253	5	0.000	5	0.667	2	0.000	5	0.750	1
Average	**0.488**		**0.481**		**0.449**		**0.571**		**0.509**		**0.438**	
Standard deviation	**0.189**		**0.177**		**0.295**		**0.278**		**0.290**		**0.316**	

Table 10 Weights obtained through PCA for Africa and the RECs

	Weights by region								
Indicators	**Africa**	**SADC**	**ECOWAS**	**CEN-SAD**	**COMESA**	**ECCAS**	**IGAD**	**EAC**	**AMU**
Tariff	0.249	0.193	0.220	0.285	0.256	0.320	0.277	0.000	0.236
Trade	0.144	0.291	0.274	0.286	0.267	0.295	0.220	0.434	0.257
Exports	0.221	0.251	0.272	0.181	0.227	0.304	0.224	0.345	0.253
Imports	0.224	0.265	0.234	0.248	0.250	0.081	0.279	0.222	0.253
ACFTA	0.161	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Intermediates import	0.320	0.244	0.311	0.303	0.318	0.320	0.306	0.340	0.330
Intermediates export	0.318	0.425	0.384	0.287	0.315	0.322	0.407	0.329	0.340
TCI	0.362	0.330	0.305	0.409	0.367	0.358	0.286	0.331	0.330
Inflation	0.360	0.340	0.288	0.287	0.352	0.500	0.309	0.500	0.500
Currency	0.266	0.326	0.322	0.362	0.248	0.500	0.382	0.500	0.000
Investment	0.374	0.334	0.390	0.351	0.400	0.000	0.309	0.000	0.500
AfDB Infrastructure Index	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
Connections	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
Required	0.327	0.299	0.333	0.316	0.330	0.311	0.364	0.325	0.332
Arrival	0.328	0.339	0.333	0.319	0.385	0.309	0.393	0.343	0.333
Protocol	0.345	0.362	0.333	0.366	0.285	0.380	0.243	0.332	0.335
Dimensions	**Weights by region**								
Trade	0.223	0.189	0.226	0.208	0.181	0.217	0.202	0.213	0.238
Productive	0.181	0.208	0.224	0.215	0.191	0.188	0.201	0.238	0.236
Macroeconomic	0.235	0.193	0.152	0.200	0.204	0.205	0.225	0.176	0.144

Infrastructural	0.213	0216	0.199	0.177	0.202	0.197	0.196	0.217	0.250
Free Movement	0.148	0.194	0.200	0.200	0.221	0.194	0.175	0.156	0.132

Table 11 Description of dimensions and indicators used in ARII 2019

Dimensions	**Indicators**	**Description**
Trade Integration	Average intra-regional import tariffs	This indicator measures the ad valorem equivalents of applied tariffs at minimum rates where applied tariffs refer to actual tariffs imposed by the importing country to each of the countries of the region.
	Share of intra-regional exports over GDP	This indicator measures the value of intra-regional goods imports as a percentage of the country's GDP
	Share of intra-regional imports over GDP	This indicator measures the value of intra-regional goods exports as a percentage of the country's GDP
	Share of intra-regional trade	This indicator is defined as the country's intra-regional trade (exports plus imports) as a proportion of the total intra-regional trade of the region.
	AfCFTA (Only at continental level)	This qualitative indicator measures whether the country has ratified, signed, or not signed the protocol on the agreement establishing the African Continental Free Trade Area (AfCFTA). Ratification = 2; Signed = 1, not signed = 0
Productive Integration	Share of intra-regional intermediate exports	Percentage of intra-regional exports of intermediate (semi-finished) goods compared to the total of intra-regional goods exports.
	Share of intra-regional intermediate imports	Percentage of intra-regional imports of intermediate (semi-finished) goods compared to total intra-regional goods imports.
	Merchandise trade complementarity index	This indicator is calculated as the sum of the absolute value of the difference between the import shares and the export shares of the countries under study vis-à-vis the region divided by two (Michaely 1996).
Macroeconomic Integration	Number of bilateral investment treaties	This indicator is the number of bilateral investment treaties that are in force, that is, the total number of bilateral investment treaties net of those that have not been ratified and/or have been terminated within the region.
	Regional convertibility of currency	This indicator measures the number of countries of the region with which the country shares a common currency or with which its currency is convertible.
	Regional inflation differential	The inflation rate differential is the difference between the inflation rate of the country and the target inflation rate of the region otherwise the minimum positive value of the region.
Infrastructural Integration	AfDB Composite Infrastructure index	This indicator is calculated by the Africa Infrastructure Development Index of the African Development Bank based on four main categories: transport; electricity; ICT; water and sanitation. These categories are divided into 9 indicators having a direct or indirect impact on productivity or economic growth.

Proportion of intra-regional flight connections	The number of intra-regional flight connections as a percentage of the total international flight connections of the country.
Free Movement of Persons Protocol (Kigali)	This indicator measures whether or not a country has ratified the AU Protocol on the Free Movement of Persons, Right of Residence and Right of Establishment (Kigali March 2018). Yes = 1; No = 0
Number of countries that may obtain a visa on arrival	This indicator measures the number of countries in the region whose citizens are granted visas on arrival when travelling to each country in the region. The data is obtained from the AfDB Visa Openness Index
Number of countries that require a visa	This indicator measures the number of countries whose citizens strictly require visas when travelling to each country in the region. The data is obtained from the AfDB Visa Openness Index

Box 2: Differences between the dimension Free Movement of People and the Visa Openness Index

The Visa Openness Index (VOI) and the dimension on the free movement of people are not measuring the same thing. VOI assesses the progress African countries have realized in relaxing their visa regimes, however, the Dimension on Free Movement of People in ARII assesses the effort and progress African countries have achieved in facilitating free movement of people, the Right of Residence and Right of Establishment.

In the ARII Report 2019, we are not using the Visa Openness Index in the Dimension of free movement of people so there is no room for comparability across the two measures. At the level of the Dimension free movement of people, we use 3 indicators namely (1) Ratification by the country of the Protocol on the Free Movement of Persons, Right of Residence and Right of Establishment, (2) Number of countries that may obtain a visa on arrival, (3) Number of countries that require a visa. As we are using the Principal Component Analysis, we are picking the 2 major indicators among the 3.