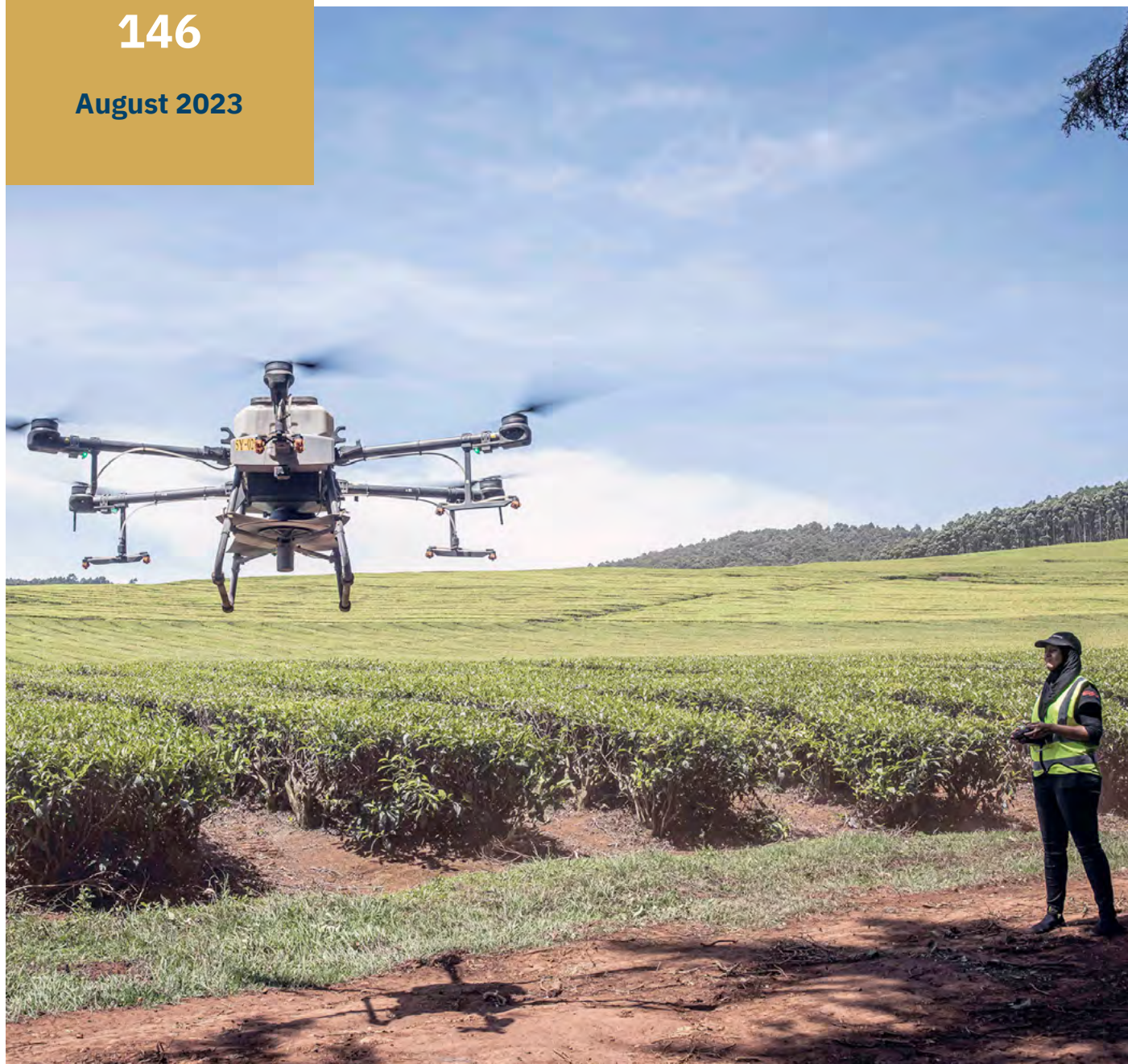


Policy Insights

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Digitisation of African Agriculture Through BRICS Partnerships

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African perspectives
Global insights

Executive summary

The BRICS bloc of middle-income developing countries, which supports and encourages South-South relations, is seen as an alternative to western programmes of economic support and advancement. As South Africa takes the chair of the BRICS bloc, it is an opportunity for Africa to align some of its developmental goals with the programmes of the group. This could be through investments, partnerships, trade and technical assistance to address the challenges that countries across the continent face.

The African agricultural sector is seen by most countries as the driver of economic growth and development. This sector accounts, on average, for a quarter of continental gross domestic product, and employs about two-thirds of the economically active population. Digitisation in the agricultural sector will be critical in overcoming challenges of weak coordination within continental institutions, poor coordination between regions and countries, weak policy and regulatory reforms and unlocking financial resources to support the strategy.

BRICS countries have, in various ways, faced and dealt with similar challenges to those in Africa. They can be part of the solution if partnerships are forged. BRICS can be used for resource mobilisation by drawing investments into the continent and directing it to areas of benefit to the continent such as agricultural infrastructure, roads and logistics that facilitate movement of products from the source to various markets.

Introduction

In 2023, South Africa will take over the chair of Brazil, Russia, India, China and South Africa (BRICS) group. This bloc of middle-income developing countries is considered an alternative to economic opportunities offered by the western world. It is therefore pertinent that South Africa uses its new role as chair to advance the interests of Africa. As stated in the continental development blueprint of Africa's Agenda 2063, the economic advancement of most African countries is anchored in agriculture.¹ Support provided by the West has, however, been insufficient to overcome challenges in this sector.

Failure to develop solutions in the agriculture sector for current and future challenges – such as digitisation, decarbonisation and accelerated investment – imply that Africa will continue to lag behind the rest of the world

¹ African Union Development Agency (AUDA), 'Second continental report on the implementation of agenda 2063' (Johannesburg, 2022), https://au.int/sites/default/files/documents/41480-doc-2nd_Continental_Progress_Report_on_Agenda_2063_English.pdf.

Failure to develop solutions in the agriculture sector for current and future challenges – such as digitisation, decarbonisation and accelerated investment – imply that Africa will continue to lag behind the rest of the world.² This article discusses digitisation in the agricultural sector, focusing on how the BRICS experiences and lessons in this area can be used as a vehicle for economic progress and development of the continent.

African Union policies on the digitisation of agricultural extension services

The developmental aspirations of the continent are contained in Agenda 2063, a master plan for transforming Africa towards economic advancement. Agricultural programmes in the Agenda are coordinated under the Comprehensive Africa Agriculture Development Programme (CAADP), which has the broad objectives of eliminating hunger and reducing poverty.³ CAADP was adopted in 2003 and reinforced in 2014. It is implemented through the following priority pillars:⁴

- extending the area under sustainable land management and reliable water control systems;
- improving rural infrastructure and trade-related capacities for market access;
- increasing food supply, reducing hunger and improving responses to food emergency crises; and
- improving agriculture research, technology dissemination and adoption.

Extension services and agricultural innovation of the continental programmes fall under the fourth priority pillar. The main objective is to strengthen agricultural knowledge systems and provide sustainable technologies to enhance agricultural growth that are widely adopted, with an overall goal to increase agricultural productivity. Major reforms are required to achieve these at institutional level within member countries.

Besides the institutional reforms there is a need for a greater resource allocation and investment in agricultural research, development and innovation. This would need to happen through the knowledge value chain, ie, from input level to the end user (usually a farmer). Integration of agricultural research with extension services, training, capacity building and educational programmes are needed.⁵

2 UN Conference on Trade and Development (UNCTAD), 'The least countries report 2022: The low carbon transition and its daunting implication for structural transformation,' (Geneva: UNCTAD, 2022), https://unctad.org/system/files/official-document/lc2022_en.pdf.

3 AUDA, 'Second continental report'.

4 Forum for Agricultural Research in Africa (FARA), 'Framework for African Agricultural Productivity,' (Accra: FARA, 2006), <https://www.resakss.org/sites/default/files/pdfs/comprehensive-africa-agriculture-development-progr-39424.pdf>.

5 FARA, 'Framework for African Agricultural Productivity'.

The 2014 Malabo declaration prompted the formulation of the CAADP. The implementing agent for this pillar is the [Forum for Agricultural Research in Africa](#) (FARA). The continent will need partners and allies in addressing the challenges and realising the opportunities.

Challenges and opportunities towards coordinating agricultural extension across the continent

The agricultural sector accounts for about 25% of continental GDP.⁶ About 65% of Africa's economically active population works in this sector.⁷ Agriculture can be used as a springboard to harness opportunities in agribusiness entrepreneurship and innovations, including in information, communication, and technology (ICT) innovations, and attract young people to the sector, by using digital platforms as an instrument to engage them.⁸

The agricultural extension and advisory services available through digitisation platforms vary across the value chain. They include provision of information on productivity, inputs, market linkages, financial inclusion, intelligence, energy and others.⁹ The services that can be provided include linking farmers with experts or other services like tractor hire, real-time alert systems, or finding buyers and sellers, credit, insurance products or even portable testers. Some of the challenges in providing services that have been identified include:¹⁰

- weak coordination of the continental institutions pursuing a digitisation agenda;
- limited policy and regulatory reforms to facilitate the interconnection of networks across borders – this applies to both national and commercial nerve-centres with regards to supervisory frameworks, data protection, storage, processing and handling;
- inadequate financial resource flows to support digitisation in general;
- lack of role models when it comes to mentoring and training potential digital entrepreneurs; and
- low levels of education of most farmers,¹¹ which may impede adoption of technology or receipt of information.

6 World Bank, 'Scaling up disruptive agricultural technologies in Africa,' (Washington DC: World Bank, 2019), <https://documents1.worldbank.org/curated/en/427671593053909110/pdf/Scaling-Up-Disruptive-Agricultural-Technologies-in-Africa.pdf>.

7 UN Economic Commission for Africa, 'Digital transformation and economic diversification in Central Africa: Issues, challenges and opportunities,' (Malabo: UNECA, 2019), https://archive.uneca.org/sites/default/files/images/SROs/CA/ice_19_-_report_digital_economy_eng.pdf.

8 World Bank, 'Scaling up,' XVI-XIX

9 FARA, 'Framework for African Agricultural Productivity'.

10 African Union Commission (AUC), 'The digital transformation strategy for Africa (2020- 2030)', (Addis Ababa: AUC, 2020), <https://au.int/sites/default/files/documents/38507-doc-dts-english.pdf>.

11 UNECA, 'Digital transformation and economic diversification'.

These challenges would need to be addressed to scale up digitisation in general and to extend extension and advisory services. This is primarily because the sector is viewed less favourably when it comes to allocation of resources.¹² It is also for this reason that CAADP recommends budgetary allocations for agriculture be set at 10% of national GDP.¹³

However, there is development of a continental digital transformation strategy,¹⁴ inclusion of e-commerce protocol in the African Continental Free Trade Area and coverage within the services protocol agreement. For example:

- Most members have developed or are developing ICT policies.
- Several countries have already identified barriers to harmonisation of laws and regulations in various sectors.
- Mobile phone availability and utilisation is increasing and becoming affordable.
- Internet availability, while it is still low, is rising.
- Young people are in the majority on the continent, and thus provides an opportunity to harness their energy, enthusiasm and interest in technology use.

Agriculture in Africa needs innovative digital solutions to attain some of the goals as contained in regional, continental programmes or international commitments. The provision of digital agricultural extension and advisory services can bridge the gap. The increased use of and access to mobile phones can be extended to provide agricultural information faster than traditional extension services, and the continent can learn from others' experiences.

Strengths of BRICS in investment, trade and potential knowledge transfer

BRICS includes middle-income nations. These countries share common aspects in terms of economic development, but also have vast differences in respect of agricultural technological advancement, trade policies and financial flows. They have economic, trade, and investment relations with Africa, either as a whole or with several member states. BRICS countries provide relevant experiences because they have gone through the digitisation phases that most African countries still must undertake.

12 AUDA, 'Second continental report on the implementation of agenda 2063', https://au.int/sites/default/files/documents/41480-doc-2nd_Continental_Progress_Report_on_Agenda_2063_English.pdf.

13 FARA, 'Framework for African Agricultural Productivity'.

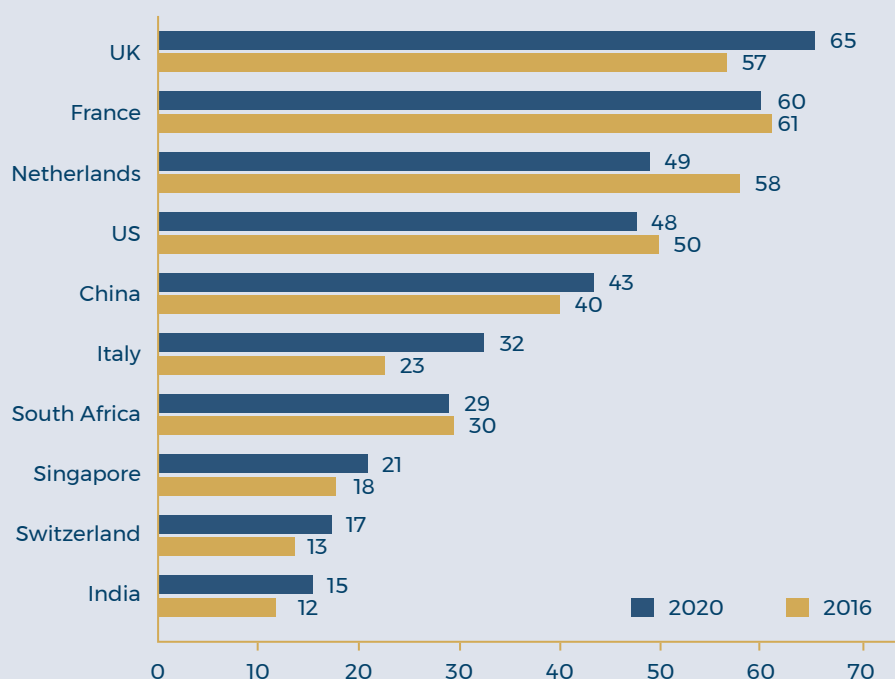
14 AU, 'The digital transformation strategy'.

BRICS investment on the continent

Investment and funding mechanisms in BRICS are conducted through the New Development Bank (NDB), formerly known as the BRICS Bank.¹⁵ The NDB's focus areas are in projects such as the development of energy, transport, water and sanitation, environmental protection and social and digital infrastructure. Africa especially requires investment to expand digital infrastructure development. Overall, funding increased from 2019 to 2020 following the effects of COVID-19.

In 2021, there were 116 project finance deals that targeted Africa with a total value of \$121 billion. The deals were mainly in energy and renewables as they accounted for nearly 70% of all investments.¹⁶ Agriculture deals accounted for 6% (\$7.2 billion). Investment stocks by source show the dominance of western countries ie, European Union (EU) member states, the UK and the US. BRICS countries like China, South Africa and India featured in the top 10 investors on the continent. Figure 1 shows that in 2020, China had the fifth largest investment stock valued at \$43 billion.

Figure 1 Main investor countries in Africa by foreign direct investment (FDI) stock, 2016 and 2020



Source UN Conference on Trade and Development (UNCTAD), 'World Investment Report 2022: Regional trends – Africa' (Geneva, Switzerland, 2022), https://unctad.org/system/files/non-official-document/WIR2022-Regional_trends_Africa_en.pdf, 2010

15 New Development Bank (NDB), 'New Development Bank at glance', (Shanghai, 2022), <https://www.ndb.int/>.

16 UN Conference on Trade and Development (UNCTAD), 'World Investment Report 2022: Regional trends – Africa' (Geneva, Switzerland, 2022), https://unctad.org/system/files/non-official-document/WIR2022-Regional_trends_Africa_en.pdf.

India had the tenth largest investment stock with a value of \$15 billion in 2020,¹⁷ while Russia accounts for less than 1% of Africa's foreign direct investment (FDI).¹⁸ Brazil's investment in Africa is limited to a few countries, mainly Mozambique, Angola and the DRC.

The largest recipients of FDI are services while investment in telecommunication is growing.¹⁹ The latter is encouraging as it serves as a catalyst for digitisation. African countries need to make some improvements in developing policies that would attract investments, particularly in areas that would enhance investment in the agricultural and trade. The growing investment in telecommunications will provide infrastructure and platforms which would enhance provision of such services. The policies need to provide guidance and certainty for investors in the short and long term.

Africa-BRICS trade relations

Trade relations between the continent and BRICS reflect relative competitiveness. Developing countries are responsible for most of the growth of global trade since the WTO was formed in 1995.²⁰ The BRICS members dominate trade with African states. Table 1 shows the exports, imports and trade balance of BRICS with African countries. The last two columns show the share of agriculture.

TABLE 1 TOTAL TRADE BETWEEN BRICS AND [REST OF] AFRICA, AVERAGE OF 2019-2021					
Country/trade indicator	BRICS total trade with [rest of] Africa (\$ bn)			Share of agriculture trade (%)	
	BRICS exports	BRICS imports	Trade balance	Exports	Imports
China	125,0	91,8	33,2	7%	7%
South Africa	23,3	8,9	14,4	19%	16%
India	31,2	37,0	-5,8	19%	8%
Brazil	8,3	5,2	3,1	71%	6%
Russia	13,5	2,8	10,7	30%	61%
TOTAL BRICS	201,3	145,7	55,6	14%	9%

Source: International Trade Centre (ITC), 'Trademap and Bilateral trade', (List of exported products for the selected product)

Trade value is expressed as an average of three years, 2019-2021. BRICS exports to Africa amounted to \$201 billion, while imports reached \$145 billion. This shows that BRICS have a trade surplus with the rest of Africa. Individual BRICS members exhibited positive trade balances with the continent, except for India which had a deficit of \$5.8 billion. China

17 UNCTAD, 'World Investment Report 2022'.

18 Joseph, 'Why Russia is on a charm offensive in Africa: The reasons aren't so pretty', *The Conversation*, July 26, 2022, <https://theconversation.com/why-russia-is-on-a-charm-offensive-in-africa-the-reasons-arent-pretty-187711>.

19 EY, *Reset for growth: fast forward: Attractiveness report Africa 2021*, (November 2021), https://assets.ey.com/content/dam/ey-sites/ey-com/en_za/topics/attractiveness/reports/ey-aar-reset-for-growth-final.pdf

20 WTO, 'WTO's substantive input for the 2017 high level political forum on sustainable development', (Geneva: WTO, 2017).

dominated BRICS trade with more than 60% of both exports and imports. BRICS trade includes that with South Africa.

African agricultural trade accounts for 14% of exports and 9% for imports. A breakdown by member shows some diversity with respect to their shares of agricultural trade. On the export side, the shares range from 7% for China to 71% for Brazil. Globally, Brazil is the third largest exporter of agricultural products in the world after the EU and the US²¹. Import shares range from 6% for Brazil to 61% for Russia. This shows specialisation and focus by Brazil, and the growing demand for agricultural products by Russia. Figure 2 shows agriculture exports and imports by member states for the period 2019–2021.

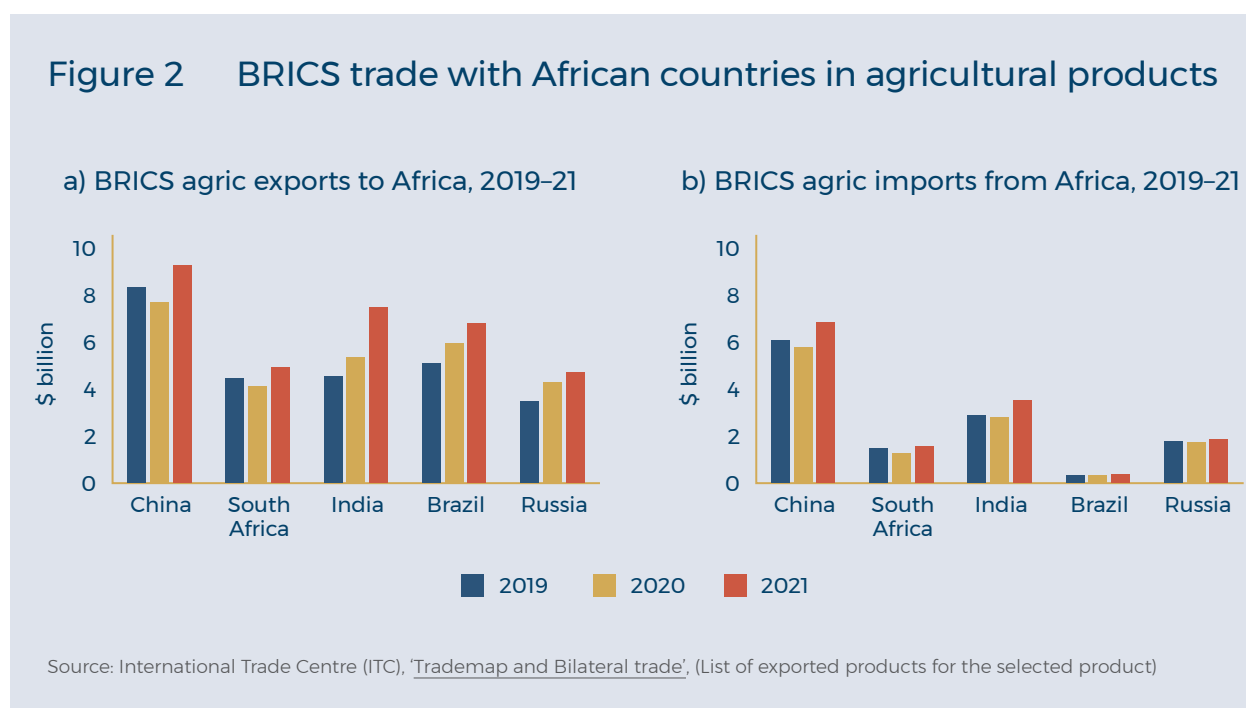


Figure 2 shows that China is the leading exporter to Africa of agricultural products (see Figure 2a). The value of Chinese exports reached \$9 billion in 2021. BRICS is showing recovery from Covid-19. China is the largest importer while Brazil's imports are the lowest (see Figure 2b). Overall, BRICS has a positive trade balance with Africa on agricultural trade.

While BRICS dominates most aspects of trade, there is potential to cooperate with Africa and exploit the opportunities. Some BRICS countries are markets for key agricultural products from the continent. The continent is in the process of implementing the AfCFTA, which can be used to harness the complementarity that is apparent with BRICS members.²²

21 Organisation for Economic Co-operation and Development, 'Going Digital in Brazil', OECD Publishing, (Paris, 2020).

22 African Continental Free Trade Area (AfCFTA) Secretariat, 'African Continental Free Trade Area (AfCFTA) Factsheet', (Accra, 2022), <https://au-afcfta.org/>.

Most African agricultural production is provided by smallholders from remote rural areas who produce relatively low volumes. Farmers must overcome domestic challenges before accessing trade opportunities. Therefore, digitisation ambitions in the sector should make information about trade opportunities created by BRICS complementarity accessible to these farmers and their agents. Furthermore, agents and aggregators would be able to increase volumes to meet minimum export requirements by reaching various farmers using information on digital platforms.

Digitalisation of the agricultural sector in BRICS countries

China

Like most African countries, the Chinese model of agricultural production is largely household-based.²³ Yet it can feed 22% of the global population on 10% of the world's cultivable land. China managed to achieve this by adopting digitalisation²⁴ reforms that impacted agriculture, rural areas and farmers thereby improving high-quality development and green growth in the agricultural sector. The country expanded internet provision and digital technology was used to promote sustainable development in agriculture.

Internet development in the country also brought changes through combining internet ICT and internet platforms with other industries to create a new industry ecology. China continues to increase investment in agricultural research, using emerging technologies such as the Internet of Things (IoT), cloud computing and blockchain to endorse the renewal of agricultural development.²⁵ The use of the internet and digital technologies contributed positively to agricultural growth.

Brazil

Agricultural growth in Brazil is driven by an innovation ecosystem, which is led by research institutions.²⁶ The Brazilian Agricultural Research Corporation leads the scientific and technological co-operation and collaborates with academic institutions such as the Luiz de Queiroz College of Agriculture and the private sector. The role of the private sector is

23 Zhiyang Shen et al, *Digital transition and green growth in Chinese agriculture*, (Working Paper Series, 2022-EQM-01, Beijing Institute of Technology, Beijing, 2022), https://www.researchgate.net/publication/360483697_Digital_transition_and_green_growth_in_Chinese_agriculture.

24 "If digitization is a conversion of data and processes, digitalization is a transformation. More than just making existing data digital, digitalization embraces the ability of digital technology to collect data, establish trends and make better business decisions." From TruQC, 'Digitization vs. digitalization: Differences, definitions, and examples', <https://www.truqcapp.com/digitization-vs-digitalization-differences-definitions-and-example>

25 Zhiyang Shen, 'Digital transition'.

26 OECD, 'Going Digital in Brazil'.

to drive the start-up scene, fostered by several incubators and accelerators like *ESALQTec*, *Pulse*, *ScaleUp Endeavour*, and *Wayra*. Most of these accelerators have emerged near research hubs.

The country has developed an encompassing strategy for digital transformation, with a focus on new, data-driven business models in agriculture, industry and services. Investments in IoT solutions increased substantially and it is considered a key enabler in precision agriculture. The emergence of IoT in connecting devices to the internet and between each other is bringing radical changes to all economic sectors. Modern sensors generate vast amounts of data which is transformed into information by smart devices and fed into decision-making processes. The IoT carries significant potential for process innovation and energy efficiency. The resulting big data sets create further benefits, including the insertion of new services and service providers into the value chain.

At the institutional and policy level, Brazil's government created the IoT Chamber in 2014.²⁷ The chamber is a multi-stakeholder forum encompassing participants from government, the private sector and academia. The development of the plan involved several stakeholders such as the Ministry of Science, Technology, Innovations and Communications (MSTIC), the Brazilian Development Bank (BNDES), and others. The procedure involved MSTIC putting out a call for studies on Brazil's IoT environment, the identification of key sectors and the formulation of policy proposals. The national IoT plan was built following rounds of stakeholder interactions, and the BNDES enabled it with funding instruments.

The funding was used to expand investment in an IoT solution. For example, precision agriculture was engaged using satellite imagery, sensors and drones to monitor fields. Big data and machine learning were applied to monitor crop performance and to enhance efficient use of inputs, ie, fertilisers, chemicals, water and seeds. This is reported to have reduced fertiliser use by 10% and chemicals by 3% while maintaining the same yield levels.²⁸

India

Personalised digital services are used in India to improve sectoral performance.²⁹ India is similarly structured to most sub-Saharan Africa (SSA) agriculture in that landholdings are small and often fragmented.³⁰ Twenty years, India began improving the delivery of market and weather information to farmers using the rapid spread of mobile phones. This involved using ICTs such as text messages, training videos and interactive voice response services to distribute information to farmers. In recent years, India has switched to the use of new digital extension approaches through cloud services, low-cost open-source software and

27 OECD, "Going Digital in Brazil".

28 OECD, "Going Digital in Brazil".

29 Manjula Upadhyay, *Digitalisation of agriculture in India: Challenges and hopes*, International Journal of Innovative Social Science and Humanities Research, 6 No 1 (2019):5-12.

30 Pallavi Rajkhowa, 'Personalised digital extension services, electronic marketplace, and mobile phones: Implications of digital technology for rural development in India,' (PhD Dissertation, Bonn University, 2021), 159.

big data analytics.³¹ The rapid rise of high-speed internet connections and smartphones has made it possible to invest in pioneering ‘agriculture technology platforms’ that can tailor extension information to a farmers’ individual needs and conditions.

Digital extension service platforms enable the provision of real-time agricultural extension services and a marketplace for seeds, fertilisers and pesticides.³² Furthermore, they enable users to plan seasonal cropping activities and provide information on best practices for growing specific crops. They can also make recommendations on the types and quantities of inputs to use and provide information on relevant pests and diseases and how to control them. Farmers benefit from reduced information barriers, personalised advice and a variety of options on inputs.³³ Services can also link farmers to input markets by giving transparent information on prices, brands, and suppliers.

Russia

Technology adoption in Russia has led to increasing yields and production over the last three decades. The Russian agricultural sector has similarities with many African countries in that household plots contribute more than 50% of production.³⁴ Russia adopted new technologies in the early 1990s including new machines and seed varieties, allowing farms to gradually leverage big data, remote sensing, the IoT and artificial intelligence (AI).³⁵ As a result, national wheat yields increased by a third from about two tonnes per hectare in the early 1990s to about three tonnes. These technological applications allowed Russia to advance knowledge and distribute information much better.

These platforms – as used in Russia – allow the capture of information from farms and agribusiness that is faster, cheaper and more user-friendly. This assists in information and farm management using cloud-based data platforms. Information availability and accessibility encourage entrepreneurship and agri-tech start-ups.³⁶ On the side of market opportunities, the platforms link participants with markets and facilitate financial transactions. In brief, the digital platforms have empowered farmers through information accessibility, thereby enabling decision making while reducing both barriers and costs.

South Africa

Some of the main barriers affecting digitisation in South Africa include data, device affordability and internet access. In 2018, over 50% of South Africans were reported to have internet connectivity.³⁷ More than 40% of the population is not connected to the

31 Upadhyay, “Digitalisation in agriculture”.

32 Rajkhowa, “Personalised digital”.

33 Rajkhowa, “Personalised digital”.

34 World Bank, ‘Unleashing the power of digital on farms in Russia – and seeking opportunities for small farms’ (Washington, DC: World Bank, 2018), <https://openknowledge.worldbank.org/server/api/core/bitstreams/eb568a88-b432-53af-97c0-2a95f123dfee/content>.

35 World Bank, “Unleashing the power”.

36 World Bank, “Unleashing the power”.

37 Research ICT Africa, *After access: The state of ICT in South Africa – Series 5*, (Cape Town, 2020), <https://researchictafrica.net/publication/state-of-ict-in-south-africa/>.

internet due to cost of data and internet-enabled devices. This is despite mobile ownership reaching 85% of the population. In 2020, South Africa ranked poorly in terms of data on the continent, with costs up to four times that of Egypt and three times that of Kenya.³⁸

In such a high-cost environment, within agriculture it is mainly commercial farmers that have adequate access to the internet. Nevertheless, there are initiatives that use technology to connect small, informal farmers and enterprises with formal markets. Khula, a private platform, provides solutions for emerging farmers by connecting them to the formal marketplace using a mobile application/app. The app functions provide a virtual crowdsourcing marketplace, connecting multiple farmers for the delivery of large orders, or the purchase of inputs in bulk. The platform also provides farmers with real-time inventory, access to a cold chain for deliveries, expert advice, and production forecasts. In 2022 there were more than 170 000 subscribers to the platform.

Another use of technology that can assist many households and small farmers in South Africa is the development of the digital livestock identification and traceability system (LITS). Livestock contribute more than 40% of agricultural value added.³⁹ About 45% of the cattle herd is held by households and small farmers. However, less than 25% participate in the market due to several challenges, including lack of information, losses and diseases. LITS is a national IT database system that will be used to trace animals and products from farm to fork.⁴⁰ The system traces the origin of animals, their feed and medication. It helps disease control as one can prevent or know the disease status of animals ahead of time. The system can reduce response times to the spread of contagious diseases. It can reduce stock theft by tracking the animals in transit. Overall, the LITS will improve marketability of livestock and increase transparency and compliance with various regulations. These two examples are some of the digital solutions and experiences that South Africa has available and accessible to smallholder farmers.

There are a host of experiences, lessons and examples that African countries can take from BRICS nations when it comes to digitalisation-linked solutions

There are a host of experiences, lessons and examples that African countries can take from BRICS nations when it comes to digitalisation-linked solutions. In some cases, suitable models may involve combinations of experiences from several countries. African countries

38 RIA, "The state of ICT in South Africa".

39 Bureau for Food and Agricultural Policy, 'BFAP Baseline 2022: An agricultural outlook for the period 202 - 2031.' (BFAP, 2022), <https://www.rpo.co.za/wp-content/uploads/2018/06/November-2017.pdf>.

40 Redmeat Producer Organization, 'Livestock ID and Traceability System,' (Pretoria, 2017).

must be willing to adopt and adapt policies that can enhance application of digitalisation-linked solutions. Policies provide guidance and vision upon which such digital solutions can be applied.

Areas for AU and BRICS to enhance agricultural innovation

Africa and the BRICS have several areas where they can partner to enhance economic growth and agricultural advancement. BRICS have an investment vehicle through the NDB that assists with the resources that the African continent needs.⁴¹ The bank finances projects in infrastructure. Focus areas that match the needs of African countries include transport infrastructure, environmental protection, and digital infrastructure. The AU and BRICS can use this opportunity as the demand and supply fit. African countries must first become shareholders in the NDB – this is possible as bank membership is not limited to BRICS members only. Countries such as Bangladesh, Egypt and the United Arab Emirates are shareholders in the NDB. The AU can encourage countries to join and use such funding to help improve continental infrastructure.

Infrastructure development in Africa is critical in realising the objects of AfCFTA.⁴² It enables movement of goods and exchange of services. This investment can also be contributed to by the BRICS; however, it must be channelled to critical areas like agriculture. Investment in infrastructure such as transport and logistics will improve connectivity between agricultural production and markets. For agriculture in particular, investment in rural roads and digital infrastructure such as physical hardware, transmission media and software to expand access to remote areas are crucial for production. Currently FDI inflows into the continent are very low for the sector despite being the one that affects most people.

If investment in the sector is improved, then trade is likely to follow. A way of accelerating this would be engagements for trade arrangements between BRICS through AfCFTA. While AfCFTA is still undergoing negotiations, provisions can be made to engage partners in future. Similar trade arrangements with the likes of the EU (eg, Economic Partnership Agreements) and the US (eg, African Growth Opportunities Act) have shown progress in the areas of trade and investment, even though they were not negotiated at continental level. Future engagements may also use digital trade to boost intra-Africa trade.⁴³

Finally, BRICS can assist the continent by increasing connectivity and enabling digitisation. BRICS members have cases where their respective agricultural sectors have benefitted from adopting and using these technologies. The areas where the continent can be supported

41 NDB, "NDB at glance".

42 African Continental Free Trade Area (AfCFTA) Secretariat, 'Creating One Market - AfCFTA Factsheet' (Accra, 2022).

43 AfCFTA Secretariat, "Creating One Market".

include capacity building, sharing expertise, strengthening digital innovation, increasing knowledge transfer between the sector and academia and supporting entrepreneurship and start-ups.

South Africa's influence on BRICS in enabling digitalisation of agricultural extension services

As South Africa assumes the BRICS chair in 2023, some of its energy should be used to pursue continental developmental goals. During this period, there must be initiatives to transform agriculture into a digitally empowered knowledge sector. This can involve formation of partnerships with BRICS institutions to improve rural digital infrastructure. This should lead to fostering of competition in the telecommunications industry to boost rural coverage and lower costs.

More BRICS investment should be directed towards the agricultural sector, which currently attracts little interest. The types of FDI needed must boost agricultural production and productivity, distribution and transportation further to digital services. BRICS states must be encouraged to invest through NDB provisions.

BRICS states have experienced varying levels of success using digital platforms to improve provision of financial services. On the other hand, the finance sector in most African countries does not have sufficient coverage in rural areas. It will be beneficial to create partnerships for developing or supporting digital agri-finance services such as e-vouchers (for direct benefit transfers and incentives for farmers and other agribusiness SMEs), and improved access to finance for startup and early-stage enterprises. The support must include the use of mobile phones for sending and saving money as this enables farmers to have autonomy over their finances. This should lead to development of databases, for both stakeholders and service-providers.

The databases can be used to address data availability challenges and weak record-keeping by agricultural stakeholders of their activities. The lessons from other BRICS countries can be used to improve while building own capacity. The datasets should cover digital farm registries, digital marketing platforms and agricultural observatories. Such records enable monitoring and evaluation of progress towards continental goals.

Focus should be placed on the institutional support needed to enhance agricultural digital skills and literacy. This should include training of farmers, particularly women, youth and extension agents. This would be possible through provision of universal phone connectivity and access to broadband in rural areas. High connectivity and efficiency in agricultural governance can be enhanced using digital literacy and electronic delivery of services.

Finally, South Africa can use this opportunity to bring BRICS and Africa together to work on trade beginning with addressing the trade imbalance and utilising complementarities.

The continent is moving a step closer to becoming a free trade area through the conclusion of the AfCFTA agreement, and BRICS can be the first bloc to negotiate suitable trade and investment matters.

Conclusions

BRICS includes middle-income developing countries that have used ICT to progress in other areas of the economy. The bloc can offer lessons and experiences to Africa. Both the AU and South Africa's chair can be used to improve the continent's development and economic progress. This will primarily be anchored by the agricultural sector - the mainstay of most African economies - as it is a relatively inclusive industry in terms of participation.

Continental programmes such as Agenda 2063, the Malabo Declaration, AfCFTA and others are clear on the role of agriculture. Progress is slowed by low FDI, low resource utilisation and slow transition to the digital economy. BRICS has ways to assist in bridging these challenges. The South African chairing of the bloc needs to be deliberate in creating opportunities and establishing the discussion.

Some of those areas include FDI flows from BRICS countries. The member states are not the largest contributors of global FDI, but they can channel certain types of investments to the continent. African states may need to gain shareholdings in the NDB to access such resources and direct the allocations. Trade complementarities between BRICS and Africa are limited by infrastructure challenges facing the continent, which must be resolved to enhance agricultural production, commodity distribution and access to markets.

BRICS offer lessons and experiences that can benefit small farmers through digital technology and platforms and to access expanded markets.

The South African chairing of BRICS must be seen as an African opportunity to advance South-South relationships. Some of these issues can be brought up at the BRICS Business Forum in August 2023. Most African businesses are related to agriculture, so the topic should get traction. The BRICS Young Diplomats Forum that will be held in November can be used to influence youth participation in agriculture and agribusiness. Ambassadors for the sector can be used to get young people interested. The other event of relevance is the BRICS Technology Transfer and Innovation Cooperation Forum. The date is yet to be determined, and this should allow African voices or ambitions to be considered as well as to adopt some of the technologies that were discussed.

It is recommended that African countries, in addition to learning from BRICS experiences, should

- develop policies that encourages uptake of digitisation;
- create educational programmes the encourage participation in the sector;

- use public private partnerships to develop and strengthen digital infrastructure;
- develop digital platforms for information sharing, market access, mentorship, input sources and creating overall transparent, vibrant, and competitive agribusiness;
- improve access to finance and use funding mechanisms that may be available through FDI by the BRICS; and
- conclude the AfCFTA negotiations to bring certainty to trade and allow the continent to move closer towards negotiating with third parties.

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Cover image

Kenya, 2022: An unmanned aerial vehicle a spreads fertilizer over a tea farm at Kipkebe Tea Estate in Musereita. The agricultural drone market is expected to grow in the coming years, with some reports suggesting it could reach \$10.5 billion by 2028. Kenya, a country vulnerable to drought and food insecurity in some areas, is investing in agricultural technology in the hope to reduce costs and increasing crop yields (Patrick Meinhardt/AFP)

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