



BRICS COOPERATION PROGRESS ACCORDING TO BTTC INDICATOR SYSTEM

Prepared by the BRICS Expert Council – Russia
with the Support of BRICS Think Tanks Council (BTTC)
2024



CONTENTS

INTRODUCTION2

PART I. FINANCE, BANKING, CURRENCIES, AND SETTLEMENTS 4

1. Financial Market Indicators4

2. Market Participants and Their Influence 10

3. Financial and Investment Market Instruments 14

4. Interstate Support for BRICS Business Entities and Investment Activities..... 24

5. Harmonization of Regulation, Financial Cooperation, and Protection Against Unfair Practices..... 28

6. The Role of the New Development Bank (NDB) in Financing Infrastructure, Sustainable Development, Consumption, and Reproduction29

7. Settlements in National Currencies 35

8. Conclusions and Recommendations..... 43

PART II. ECONOMICS AND TRADE 46

1. The Role of the BRICS Countries in the Global Economy 46

2. Trade and Investment 49

3. BRICS Energy 53

4. Complementarity Index 55

5. The Exporting Partner Significance Index (EPSI).....57

6. Conclusions and Recommendations..... 61

PART III. SUSTAINABLE DEVELOPMENT AND RESOURCE ABUNDANCE 65

1. Progress Towards the Achievement of all SDGs..... 65

2. Environmental Safety and Resource Abundance.....67

Exposure to PM2.570

3. Climate Change71

4. Food Security75

5. Conclusions and Recommendations 80

PART IV. SCIENCE, TECHNOLOGY, AND INNOVATION (STI), EDUCATION, TOURISM, SPORTS, AND HEALTHCARE 83

1. Cooperation in the Field of Science, Technology, and Innovation (STI)..... 83

2. Intellectual Property and Technology Transfer..... 84

3. Digital and Innovation-Driven Development 86

4. Cooperation in the Field of Education 95

5. Tourism and Sports..... 98

6. Healthcare 99

7. Conclusions and Recommendations 101

Conclusion..... 104

List of Acronyms 109

List of References 110

INTRODUCTION

Over the 15 years of its existence, BRICS has experienced a remarkable transformation, emerging as a formidable force in international relations and global governance. This evolution mirrors the global shift toward multipolarity and reflects the interests and aspirations of the majority of the world's population.

First, the BRICS nations have intensified their cooperation across a broad spectrum of areas, which can be grouped into three main pillars: Economy and Trade, International Peace and Security, and Humanitarian Sphere and People-To-People Contacts. In each of these areas, progress has been substantial. The member states have developed diverse formats of interaction at every level, including expert communities and civil societies, and have established influential institutions like the New Development Bank.

Second, BRICS has extended its reach by forging ties with numerous developing countries and formalizing these relationships through initiatives like BRICS Plus and Outreach programs. Many of these nations share the group's core values and goals, such as advocating for a multipolar world order free from domination and striving for a more fair and equitable global governance system, which would favor the interests of developing world, putting an end to neocolonialism and other unfair practices.

Third, the BRICS countries have significantly bolstered their political and economic influence. Their combined contributions to the global economy, trade, investment, and technological innovation have grown considerably.

These advancements, alongside the growing prominence of BRICS in global politics and economy, inspired the BRICS Think Tanks Council (BTTC) to develop a comprehensive system of indicators. These indicators aim to illustrate the group's progress and collaboration across various domains, spotlighting key achievements and identifying areas that require further cooperation. Adopted during the BRICS Academic Forum in 2020, the indicators focus on three primary areas aligned with BRICS' main pillars: Politics and Global Governance; Economic Growth and Cooperation, Finance and Sustainable Development; and Humanitarian Cooperation and People-To-People Contacts. These indicators are collected and analyzed to provide an in-depth evaluation of the group's accomplishments. This includes assessing its impact on the global political influence of the five member nations, their socio-economic development, and the quality of life for their populations. Additionally, the framework serves to explore pathways for BRICS' future development and bolstering its systemic influence on the global agenda.

The evolution of BRICS and the broader world stage have rendered this endeavor increasingly critical. First, the escalating US confrontation against Russia and China has jeopardized global governance, hindered international cooperation on shared challenges, and heightened the risk of polarization between opposing blocs—not only in security but also within the economic realm. This has created an urgent demand for new economic and financial architecture, one not reliant on Western systems, alongside a push for more effective global governance. Second, this geopolitical tension, combined with the notable political empowerment and growing influence of developing nations across Asia, Africa, the Middle East, and Latin America, has accelerated the global shift toward multipolarity. The vast majority of countries outside the Global West have refused to align with the confrontation against Russia and China. Instead, they have intensified their calls for greater inclusion in global decision-making and agenda-setting. This has given rise to the concept of the «Global Majority» that refers to developing nations across Eurasia (including Russia), Asia, the Middle East, Africa, and Latin America. These countries champion multipolarity, advocate for fairer global governance, and seek to enhance the role of the developing world in international affairs while rejecting the Western bloc policies. Third, BRICS has increasingly been recognized by the Global Majority states as a champion of the developing world's interests. It embodies the principles of multipolarity and serves as a model of cooperation that advances its members' interests and bolsters

their global standing. This perception has sparked significant interest, with around 30 nations expressing a desire to join the group, which culminated in the decision to expand BRICS in 2023.

With this latest wave of expansion, BRICS has solidified its role as a pioneer representing the interests of the Global Majority, enhancing its capacity to advocate for a more fair and equitable global governance system. The group exemplifies multipolarity and multilateralism, fostering collaboration among nations with diverse civilizations, political systems, and foreign policy approaches. Within BRICS, members operate as equals, eschewing hegemony, supremacy, or subordination. The very existence of BRICS, along with its growing ties to other developing countries, challenges efforts to polarize the world into rigid blocs. By promoting cooperation and adherence to international law, BRICS brings the global community closer to a multipolar world order.

These developments call for a deeper exploration of BRICS as a global player: its essence, its contributions to global progress, its role in addressing shared challenges and development issues, and its key achievements across various domains. A thorough understanding of the group's progress in advancing its priorities and promoting a fairer global governance system is essential, as is identifying areas with untapped potential for further improvement. Such analyses are crucial for optimizing the group's evolution and pinpointing areas where deeper collaboration is needed.

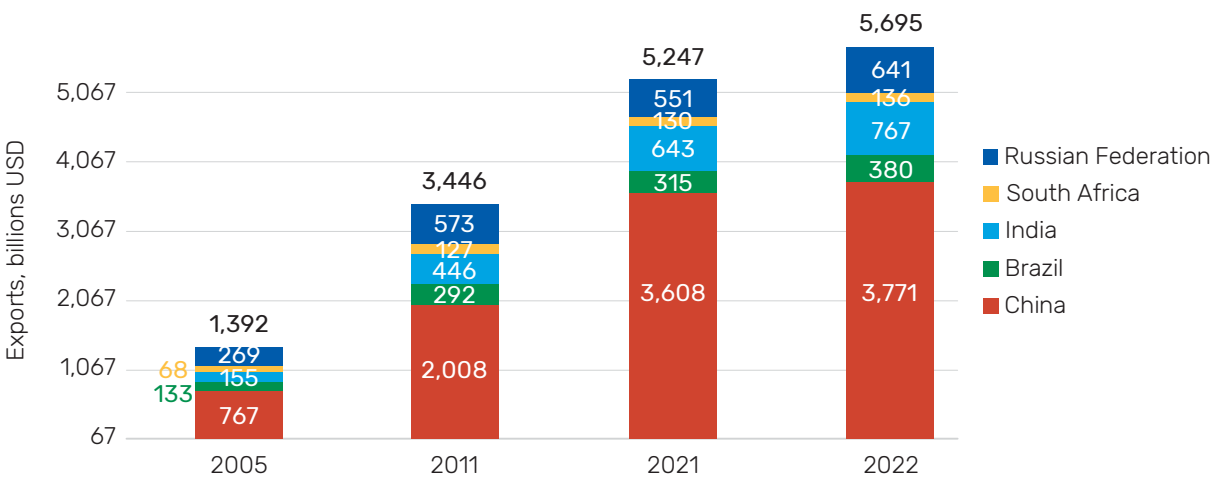
This report examines BRICS' accomplishments across several critical areas: Economic Development and Trade; Sustainable Development and Resource Abundance; Financial Indicators and Cooperation in Finance; Climate and Sustainable Development; Education and Technologies.

PART I. FINANCE, BANKING, CURRENCIES, AND SETTLEMENTS

1. FINANCIAL MARKET INDICATORS

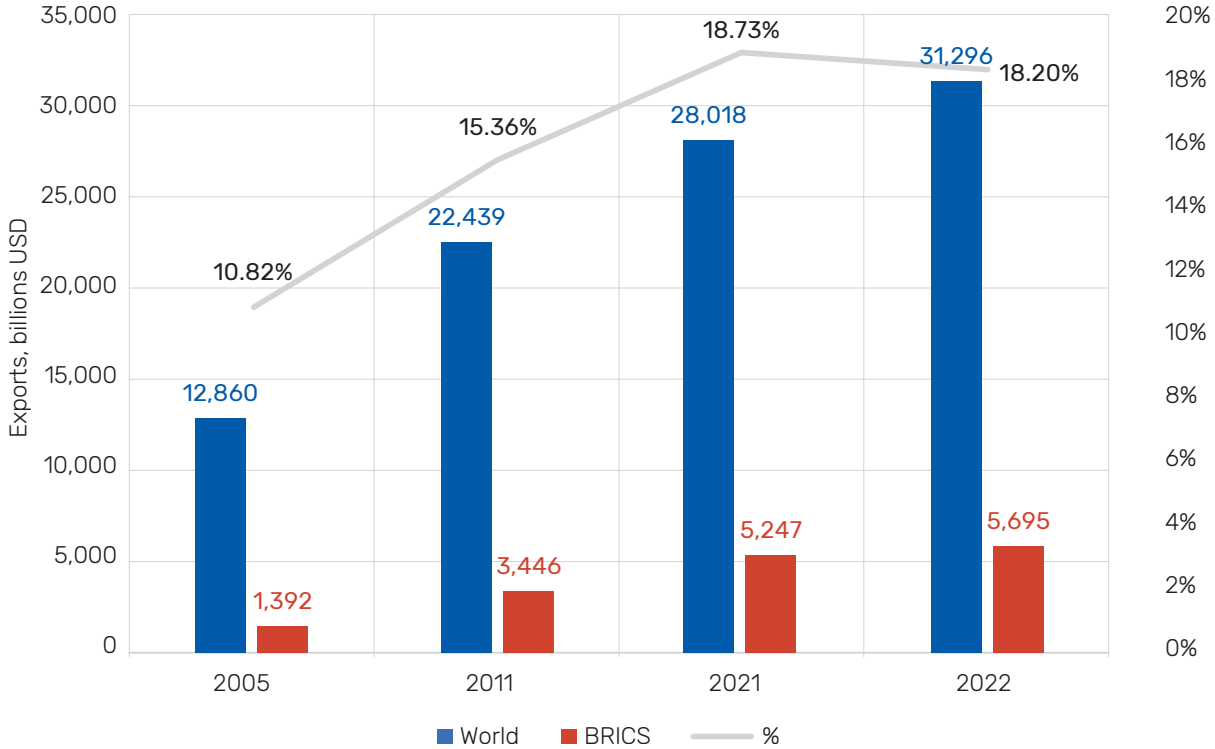
The steady growth of the BRICS economies has significantly changed the structure and flows of investments and settlements in the global economy over the past decade. According to UNCTAD and the World Bank, the BRICS countries' share of global GDP increased from 18% in 2010 to 26% in 2022, while growth remained stable each year. This upward trend is primarily driven by China, which accounted for 69% of BRICS GDP in 2022. The BRICS countries, as a group, had a nominal GDP per capita of USD 9,217 in 2022, against a global GDP per capita of USD 12,688 in the same year (UNCTAD, 2024). Due to global trends over the past five years, economic growth in BRICS countries has been inconsistent. Factors such as the COVID-19 pandemic and its aftermath, as well as the deterioration of the global geopolitical landscape, have had a significant impact on economic conditions. Considering the BRICS global collaboration, global risks remain a significant deterrent. The deterioration of the geopolitical situation has a negative impact on the commodity markets in the short and possibly long term; inflationary pressures will exist in all BRICS countries and efforts to overcome inflation will take longer than expected. These factors tighten financial conditions, making debt servicing more challenging for some member states (UNCTAD, 2024). In terms of trade finance, the BRICS countries represent 18% of global export settlements (Figure 1a), with a growing share that exceeds the global average (UNCTAD, 2024). Increased exports within BRICS support the view that expanding economic cooperation yields tangible benefits, driving growth in settlements and investments within the group (see Figures 1 and 2).

Figure 1. The total volume of export settlements within BRICS (in billion USD)



Source: UNCTAD.

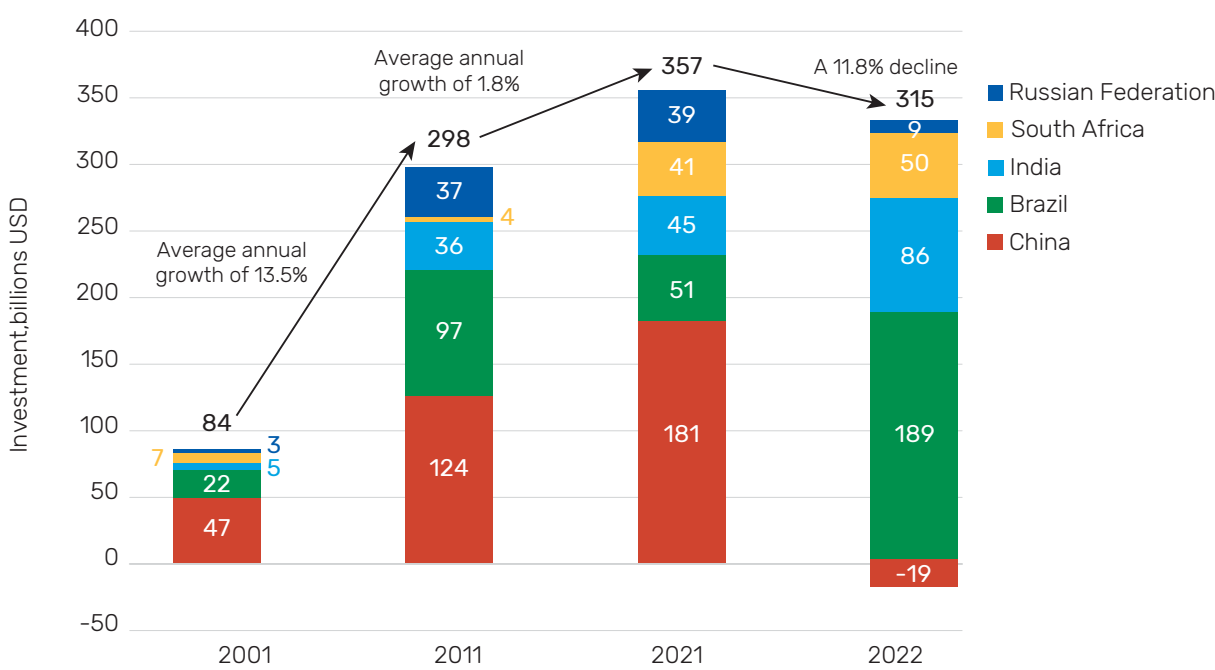
Figure 2. Global exports and BRICS exports (in billion USD and %)



Source: UNCTAD.

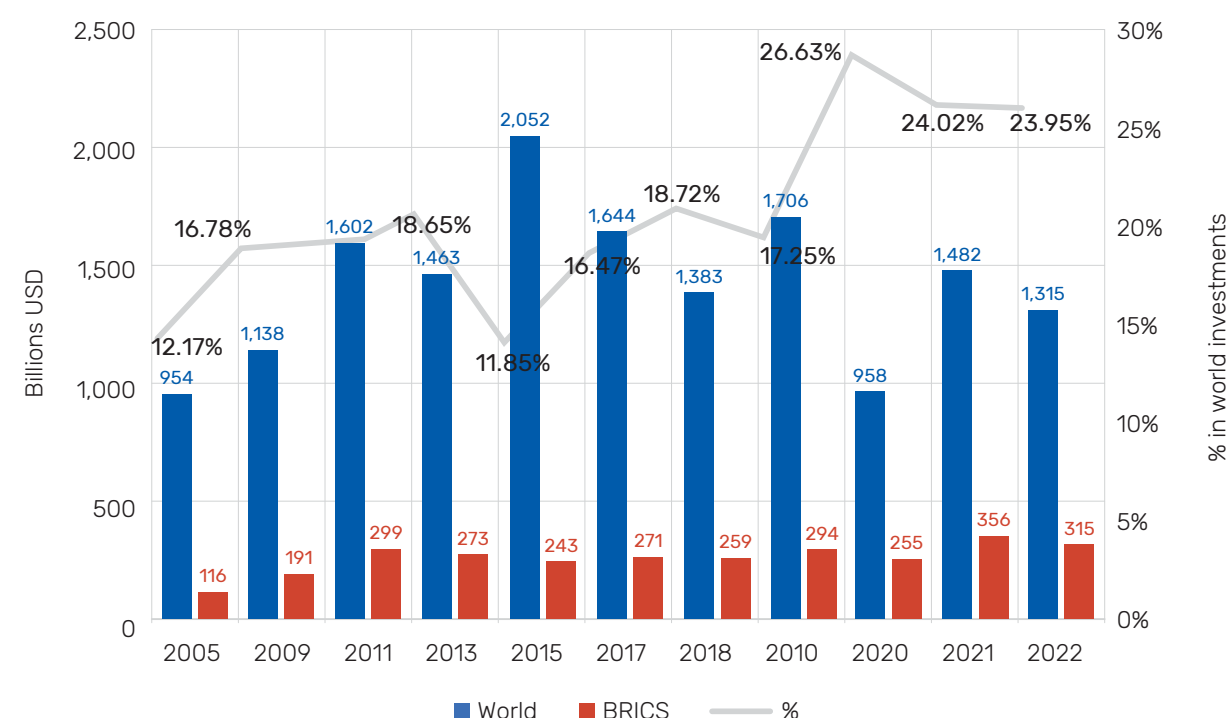
Foreign direct investment (FDI) inflows to BRICS countries have risen more than fourfold, from USD 84 billion in 2001 to USD 357 billion in 2021 (Figures 3 and 4). Additionally, the BRICS countries' share of global FDI inflows has doubled, increasing from 11% in 2001 to 22% in 2021.

Figure 3. Inflow of foreign direct investment, in billion USD (South Africa is included in the 2001 data for comparison. South Africa joined BRICS in 2011)



Source: UNCTAD.

Figure 4. The inflow of foreign direct investment to the BRICS countries and their share in global investment, 2005–2022 (in billion USD and %)



Source: UNCTAD.

The analysis revealed that the first decade of this century was marked by rapid growth in FDI inflows to BRICS countries. This upward trend continued until 2022—the most recent year for which official data is available—when annual growth exceeded 12%. While such rates are characteristic of periods of increasing foreign investment, the BRICS countries’ growth rate almost doubled the global average of 7.6 (UNCTAD, 2020), (UNCTAD, 2022). From 2011 to 2021, the inflow of foreign direct investment into the BRICS countries slowed down sharply. This reflects the state of stagnation in the international investment market when the average annual growth rate of foreign direct investment over the decade turned negative. Meanwhile, some BRICS economies exhibited varying dynamics. The inflow of foreign direct investment to China increased by more than 10% annually in 2001–2011, after which it dropped to 4% in 2011–2021. In Russia and India, exceptionally high annual growth rates were observed from 2001 to 2011—approximately 30% for Russia and over 20% for India. However, from 2011 to 2021, Russia’s FDI growth rate dropped to slightly above zero, turning negative by 2022, while India’s rate declined to 2%. Following the high growth rates of the early 21st century, Brazil experienced negative annual growth in foreign direct investment during the second decade, although a recovery began around 2015. In contrast, South Africa’s FDI inflow trends diverged significantly from the broader BRICS pattern. While the country faced negative annual growth rates from 2001 to 2011, it recorded remarkable growth of over 25% annually between 2011 and 2021. That said, this growth was followed by a sharp decline in 2022. Despite the fluctuations and slowdown in FDI growth rates across the BRICS countries during 2011–2021, their collective performance outpaced the global average, leading to an increased share of global FDI flows over the decade (Figure 2a).

Even in the face of geopolitical challenges, including significant FDI outflows from Russia in 2022, the BRICS countries collectively maintained their position as key destinations for foreign investment, accounting for 24% of global FDI flows in 2022. Beyond being major recipients of investment, the BRICS countries also emerged as prominent investors in the global market, underscoring their integral role in the international investment landscape. On average, the share of FDI stock in their GDP rose from 20% in 2011 to 27% in 2021, reflecting their growing integration into international investment flows. However, significant disparities

exist among individual economies. China’s FDI stock-to-GDP ratio stands at 12%, and India’s at 16%, underscoring their comparatively larger domestic economies and reduced reliance on foreign investment. Meanwhile, Brazil and South Africa show much higher ratios—37% and 41%, respectively (UNCTAD, 2023). In 2022 and 2023, emerging economies faced a decline in direct and portfolio investments, driven by shifting market conditions linked to geopolitical factors. However, the downturn was less severe than anticipated, and investment volumes began to recover in the second half of 2023. Despite the challenges faced in 2022 and early 2023, most developing countries, including the BRICS nations, encountered minimal balance of payments pressures, even as many currencies and debt markets experienced declines in value.

The impact of changing global market conditions on the balance of payments and financial accounts varied across BRICS countries, influenced by domestic factors. China, for instance, saw a decline in foreign direct investment inflows from Q2 2022 to Q2 2023, coupled with increased capital outflows. Consequently, the net investment balance was negative, reaching USD -56 billion in Q1 2023.

In contrast, India maintained a positive financial account in fiscal year 2023, bolstered by substantial FDI inflows amounting to USD 28 billion, although lower than the USD 39 billion recorded in 2022. These inflows positioned India as the seventh-largest recipient of FDI globally, with the majority of investments directed toward the services sector.

Net FDI inflows to Brazil surged to a record high of USD 91 billion (4.8% of GDP) in 2022, significantly exceeding the current account deficit. However, during the first half of 2023, net FDI inflows declined compared to 2022, largely due to reduced lending by corporate (non-government) institutions.

In South Africa, the current account deficit was modest at 0.5% of GDP in 2022. Rising interest rates and a decline in investor risk appetite reduced the demand for external financing by local institutions. While the financial account recorded a positive balance for direct investments, portfolio investments experienced a net outflow as non-residents sold off debt securities. This trend was driven by deteriorating domestic financial indicators and persistent core inflation.

In Russia, geopolitical tensions and sanctions prompted the implementation of special measures to mitigate risks to financial stability, including restrictions on capital transactions involving non-residents. These sanctions also curtailed the movement of capital by residents. As a result, Russia’s financial account balance has been shaped more by domestic factors than by global trends (South African Reserve Bank, 2023).

At the same time, according to the available official information, the volume of loan transactions is as follows:

Brazil: Credit growth in Brazil refers to the monthly change in the total volume of loans issued, including public and private lending, current values, previous values, forecasts, charts, and an economic calendar. The size of Brazil’s retail banking market is estimated at USD 141.72 billion in 2024 and is expected to reach USD 235.60 billion by 2029, with an average annual growth rate of 10.70% over the forecast period (2024–2029).

Russia: The volume of mortgage loans amounted to RUB 322.8 billion (USD 3,383 billion) in February 2024 (Bank of Russia, 2024). The figures for February 2024 are 16.88% higher than in January 2024. The average amount of the loan issued, for the second month in a row, showed a decrease and amounted to RUB 3.89 million (USD 39,546) in February 2024. Loans provided to foreign countries reached RUB 124,650.9 billion (USD 1,267.21 billion) as of January 1, 2024. The share of loans and other funds (in rubles and foreign currency) provided to corporate clients for more than one year in the total volume of loans and other funds allocated to them by maturity as of January 1, 2024 amounted to 74.6% versus 75.0% as of December 1, 2023.

Forecast: The growth rate of lending to small and medium-sized businesses is expected to slow down slightly in 2024, projected to reach 18–22%, down from over 29% in the previous year, according to bankers and analysts.

Trend: The lending segment for small and medium-sized businesses will experience a moderate deceleration compared to 2023, as the low base effect dissipates. Central Bank data reveals that the average loan provided by banks in January amounted to RUB 3.5 million (USD 35,581), reflecting a decrease of RUB 400 billion (USD 4.07 billion) compared to January 2023. This was the second consecutive year of decline, with the average loan size in 2022 being RUB 4.4 million (USD 44,730).

India: After a sharp decline in economic activity in 2021, GDP growth rebounded to 9.1% and 7.2% over the next two years. For FY 2023–24, GDP growth is projected at 8.2%, while inflation remains within the Reserve Bank of India's (RBI) target range, recorded at 4.85% in May 2024. Furthermore, India's fiscal deficit has decreased significantly, from 9.2% of GDP to 5.8% over the last four fiscal years, with a goal to reduce it below 4.5% by 2026.

China: In January 2024, new bank loans in China reached 4.92 trillion yuan (USD 692.6 billion), a sharp increase from Chinese yuan 1.17 trillion (USD 167.472 billion) in the previous month, according to the People's Bank of China. This marks the highest monthly loan issuance since 2004 when such statistics began. By the end of Q1 2024, the total outstanding loans issued by Chinese financial institutions amounted to Chinese yuan 251.8 trillion (approximately USD 35.46 trillion), representing a 9.2% year-on-year growth. These loan and deposit activities have also contributed significantly to the volume of BRICS transactions and settlements.

In general, interest rates by country showed the following dynamics.

Brazil: As of August 2023, the average interest rate on loans in Brazil dropped to 57.71%, with a maximum rate of 254% and a minimum of 37.01%.

Russia: By the end of 2023, consumer loan rates in Russia rose to 27.4%, increasing by three percentage points over the final quarter. Experts predict that loans will remain costly in the current year, with rates potentially rising further for consumer, mortgage, and car loans. Additionally, the approval rate for loan applications is expected to decrease due to new regulations introduced by the Central Bank. Lending activity surged in the previous year, driven by deferred demand, prompting the regulator to intervene and cool the market. The key interest rate was raised multiple times, climbing from 7.5% to 16%, resulting in significantly tighter conditions for borrowers, particularly those accessing loans and mortgages from the open market.

India: In September 2023, the interest rate on loans in India remained stable at 10.1%, with a maximum rate of 20% and a minimum of 8%. The Monetary Policy Committee decided to maintain the policy rate at 6.5%, emphasizing the need to consolidate inflation expectations and manage price stability. Historically, India's average loan rate during this period was 13.15%, with a low of 8.33% in 2010 and a high of 18.92% in 1992.

China: The People's Bank of China (PBoC) increased the interest rates on loans and deposits for a one-year period by 25 basis points. However, the central bank kept its key one-year and five-year loan rates steady at 3.45% and 3.95%, respectively (Global-rates.com, n.d.). The People's Bank of China has set base deposit rates at 2% for one-year deposits, 2.6% for two-year deposits, and 3.25% for three-year deposits. In December 2023, China's major state-owned commercial banks—Industrial and Commercial Bank of China, Agricultural Bank of China, Bank of China, and China Construction Bank—further reduced nominal deposit rates. The one-year fixed-term deposit rate was lowered by 0.1 percentage points, the two-year rate by 0.2 percentage points, and both the three-year and five-year rates by 0.25 percentage points. This marks the third deposit rate cut for these banks in 2023, following reductions in

June and early September. It is also the fourth round of active adjustments since September 2022, as banks adapt deposit interest rates to their operational needs and market conditions. Economist Liu Ting from Nomura noted that lowering deposit rates could ease pressure on net interest margins and open the door for the PBoC to further reduce lending rates.

South Africa: In September 2023, the average interest rate on loans in South Africa reached 11.75%, with a maximum of 25.5% and a minimum of 5.5% during the assessed period.

At the same time, the following deposit rate trends were observed:

Brazil: The average deposit interest rate fell to 9.48% in July 2023, with a maximum of 254% and a minimum of 0.24%.

Russia: Deposit rates experienced growth, particularly in July 2023.

Forecast: In the coming months, deposit rates in Russia are expected to remain near current highs of 15–16%. However, banks may gradually lower rates later in the year if inflation stabilizes and trends downward. A reduction in rates is anticipated primarily in the second half of the year, as credit institutions await signals from the Central Bank to ease monetary policy. For 2023, the growth of the ruble-denominated liabilities market is estimated at 21%, while 2024 is expected to see slower but still double-digit growth.

China: "The reduction in deposit rates should help ease the pressure on net interest margins and provides an opportunity for the People's Bank of China to reduce interest rates", noted Liu Ting, economist at Nomura.

South Africa: In July 2023, the average interest rate on deposits in South Africa rose to 6.81%, with a maximum rate of 21.6% and a minimum of 3.74% recorded in March 2021. This growth highlights positive developments in the BRICS financial markets, alongside favorable changes in loan rates, despite ongoing volatility and uncertainty in the global financial landscape.

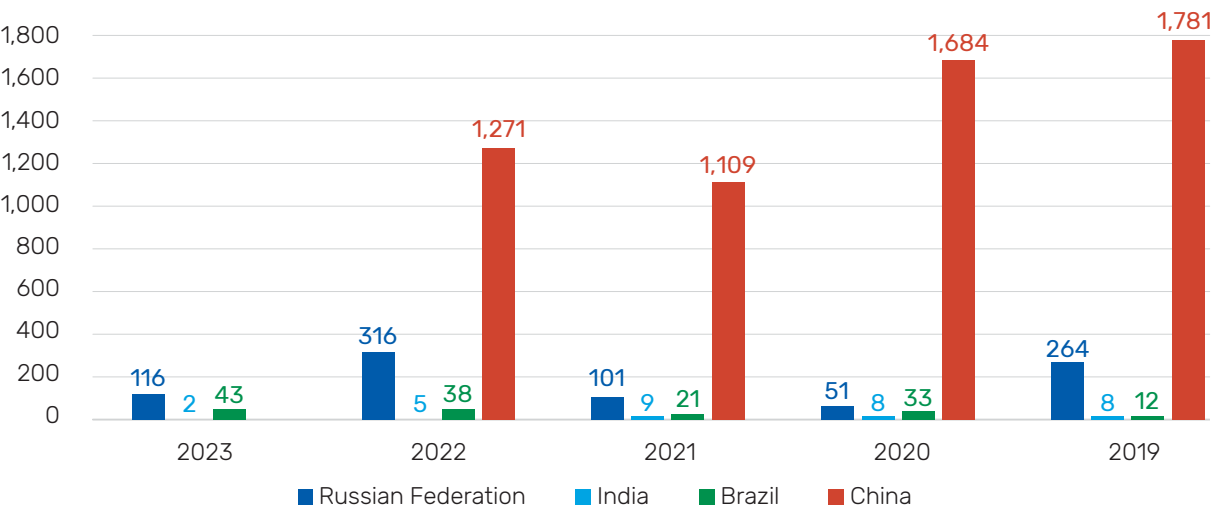
2. MARKET PARTICIPANTS AND THEIR INFLUENCE

The BRICS nations, united by common strategic goals and vibrant economies, play a pivotal role in the global financial system. Their active engagement across financial markets, including investments, trade, financial instruments, banking operations and settlements, is reshaping the global financial dynamic.

A crucial element driving this transformation is the active role of public institutions, which support development projects and programs, being significant players in the BRICS markets. Public-private partnerships (PPPs) have become a key mechanism for financing these initiatives, offering numerous advantages. By facilitating access to finance and infrastructure, public institutions not only help reduce the burden on public budgets but also create opportunities for greater private-sector involvement.

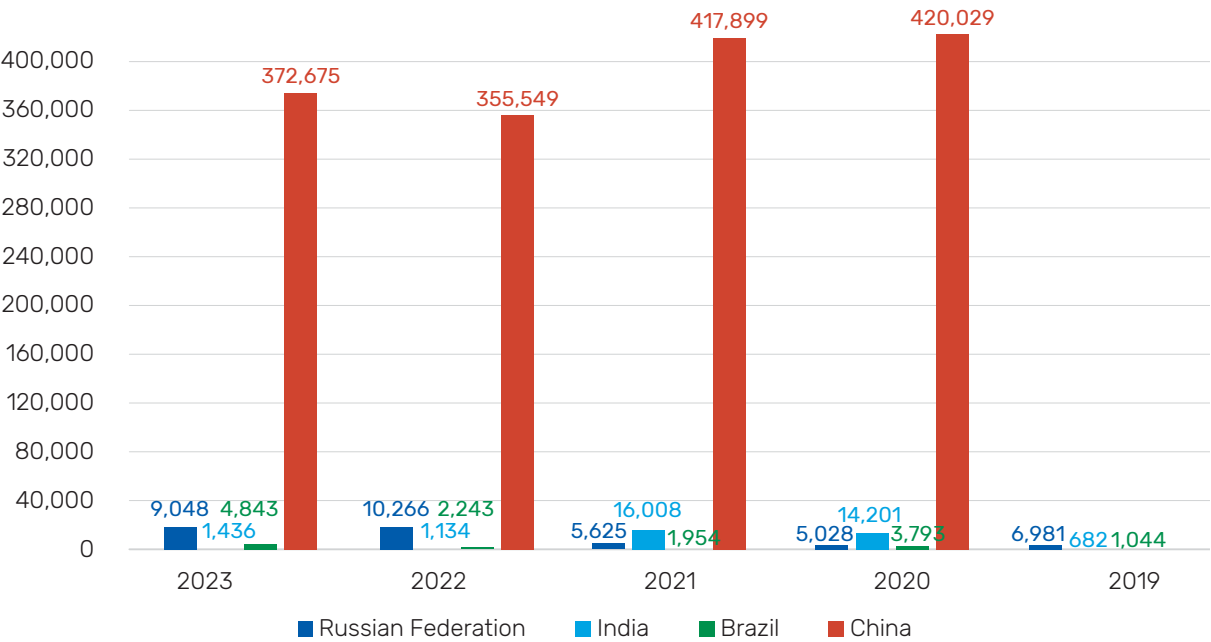
Figures 5 and 6 provide insights into the number of PPP projects approved by BRICS nations, showcasing the potential for expanding this financing mechanism in future development efforts.

Figure 5. Number of approved PPP projects



Source: UNCTAD.

Figure 6. Funds allocated for PPP projects, in million USD



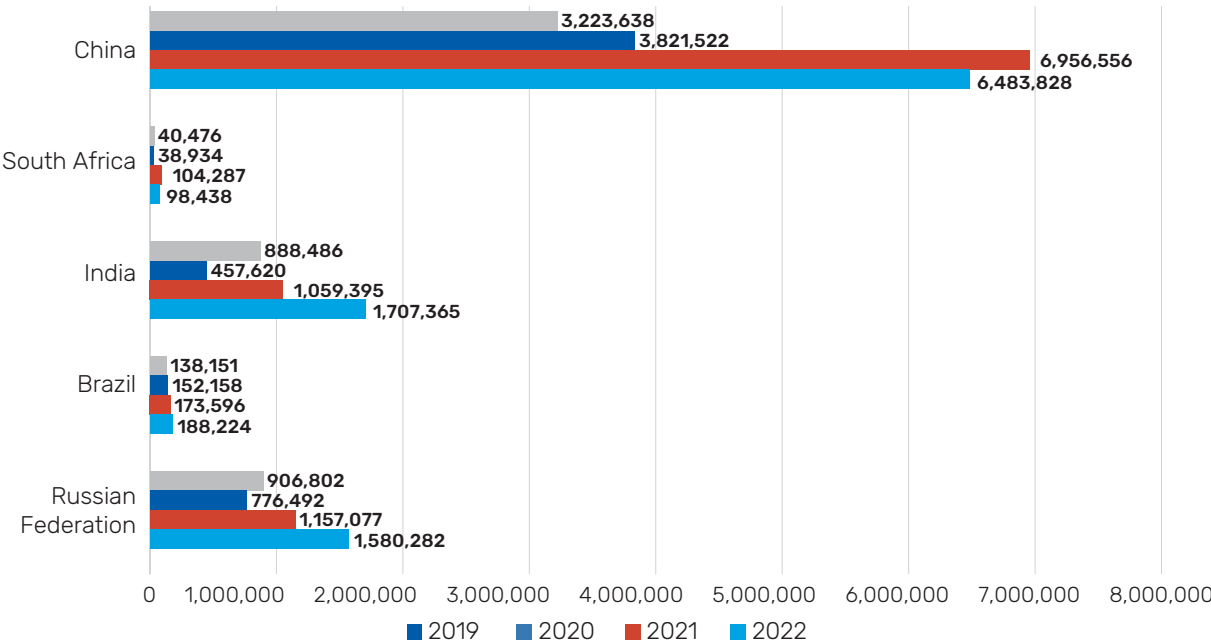
Source: UNCTAD.

BRICS private institutions are also vital players in the financial markets, contributing significantly to their development and integration. However, they face shared challenges, including the need to attract foreign investment, manage foreign exchange risks, and adhere to international financial reporting standards. In the evolving context of globalization and the integration of global financial systems, these challenges are increasingly pertinent. Addressing them effectively requires coordinated efforts at both national and international levels. Detailed data on the volume of financial transactions conducted by BRICS private companies is provided in Table 1 and Figure 7.

Table 1. Volume of financial transactions of private companies, in million USD

Year/Country	Russian Federation	Brazil	India	RSA	China
2022	1,580,282	188,224	1,707,365	98,438	6,483,828
2021	1,157,077	173,596	1,059,395	104,287	6,956,556
2020	776,492	152,158	457,620	38,934	3,821,522
2019	906,802	138,151	888,486	40,476	3,223,638

Figure 7. Amount of allocated funds for PPP projects, USD million



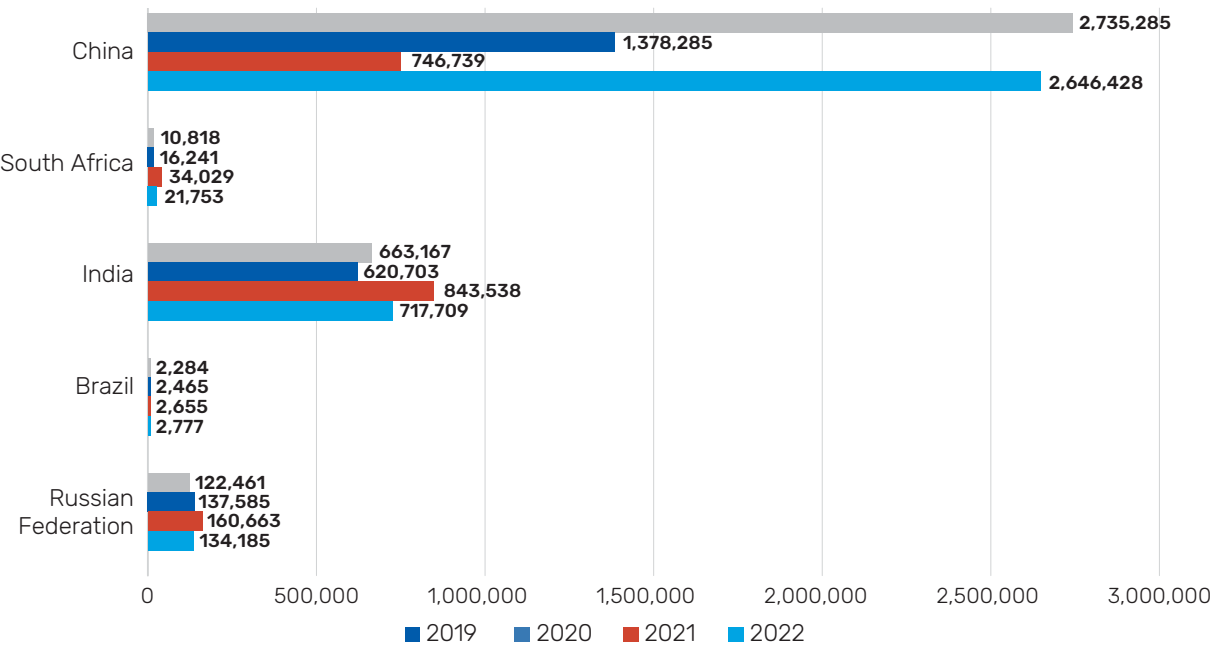
Source: UNCTAD.

China is expected to lead in private financial transactions, according to data from the world’s largest banks and technology corporations. In 2020, Russia, South Africa, and India experienced a decline in financial transactions due to challenges posed by the COVID-19 pandemic, disruptions in trade logistics and financial strains. However, by 2021 and 2022, all BRICS countries not only recovered but also surpassed their pre-COVID transaction volumes. Among the BRICS countries, South Africa has the lowest volume of financial transactions. Nevertheless, it managed to double its transaction volume within four years. Meanwhile, private companies in Russia, despite facing sanctions, have increased their financial transaction volumes by establishing new business partnerships in African and Asian markets (see Table 2 and Figure 8).

Table 2. Volume of financial transactions of state-owned companies, in million USD

Year/Country	Russian Federation	Brazil	India	RSA	China
2022	134,185	2,777	717,709	21,753	2,646,428
2021	160,663	2,655	843,538	34,029	746,739
2020	137,585	2,465	620,703	16,241	1,378,285
2019	122,461	2,284	663,167	10,818	2,735,285

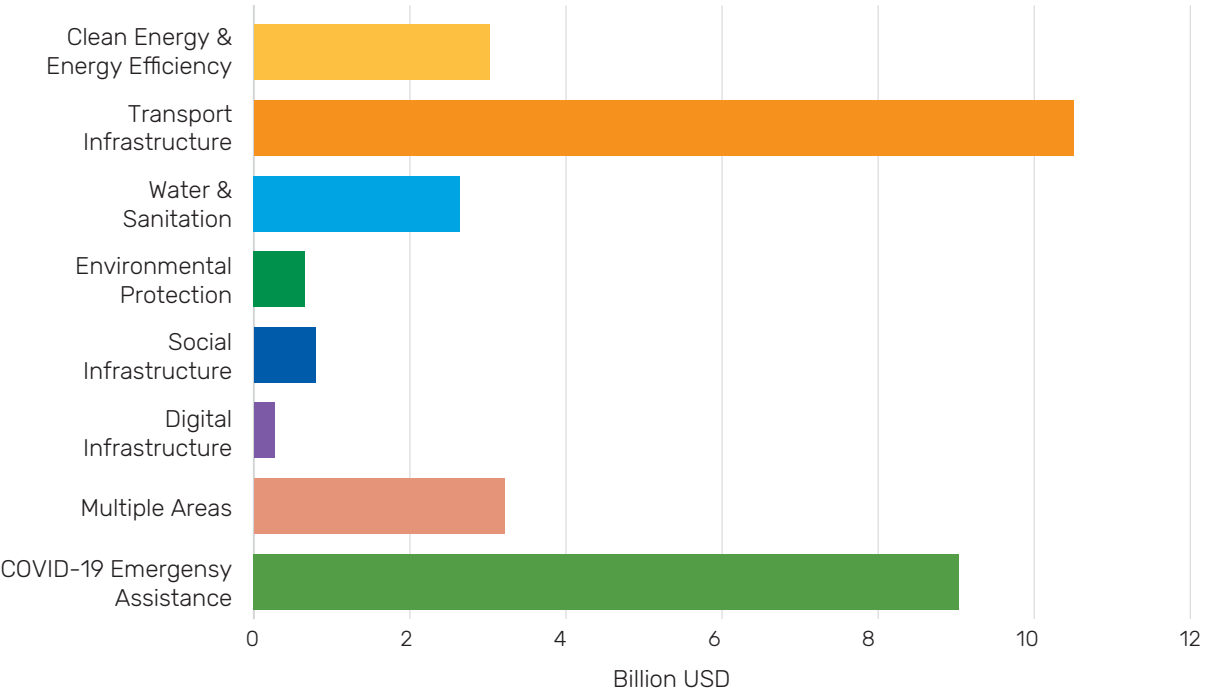
Figure 8. Volume of financial transactions of state-owned companies in million USD



Source: UNCTAD.

BRICS public institutions remain active and continue to participate in projects focused on fostering national economic development. The following are examples of such initiatives.

Figure 9. Interrelation of BRICS projects, supported by public institutions



Source: UNCTAD.

The prospects for financial operations by both private and public companies in BRICS countries are closely tied to global economic and political changes, as well as domestic reforms. Private companies are expected to continue investing in new technologies and innovations to enhance their competitiveness in the global market. Expanding international markets could present new opportunities for BRICS countries to grow and diversify.

Public companies will play a pivotal role in executing large infrastructure projects, which will demand substantial financial investments. State-owned enterprises may also receive additional support to advance industries of strategic importance to national economies. All companies – private and public – will be impacted by various factors such as inflation, exchange rates, economic growth, international sanctions, and overall economic stability. These factors can affect investment attractiveness and the ability of companies to operate successfully.

Financial operations in BRICS countries will need to adapt to a dynamic global economic environment. Success will depend on companies’ ability to innovate, remain flexible, and plan strategically. Notably, the outlook for public-private partnerships in BRICS countries is promising, supported by current trends and government efforts to foster favorable conditions for joint projects. However, the success of PPPs will hinge on factors such as political stability, economic conditions, and the commitment of both parties to long-term, mutually beneficial cooperation.

An evaluation of economic entities’ participation in BRICS financial markets has shown positive dynamics, with public support contributing to economic development in partner states.

3. FINANCIAL AND INVESTMENT MARKET INSTRUMENTS

Financial market participants in BRICS countries, like those in other economies, utilize various financial instruments, including derivatives. To assess the volume of investments between BRICS member states, the International Monetary Fund (IMF) provides statistics on inward and outward direct investment positions, including equity and debt exposures among BRICS 5 partner states (see Table 3).

Table 3. Inward and outward direct investment positions of the BRICS 5 countries with BRICS 5 counterparties in million USD (2009 and 2022)

	Inward Direct Investment Positions		Inward Equity Positions (Net)		Inward Debt Instruments Positions (Net)	
	2009	2022	2009	2022	2009	2022
Brazil	945*	1,953	834*	1,574	111*	379
China	1,555	1,877	1,555	1,821	n.a.	n.a.
India	622*	1,851	376*	1,259	247*	592
Russia	1,421	3,936**	635	2,574**	786	1,362**
South Africa	5,785	6,102	5,492	5,678	294	424

	Outward Direct Investment Positions		Outward Equity Positions (Net)		Outward Debt Instruments Positions (Net)	
	2009	2022	2009	2022	2009	2022
Brazil	193*	870	185*	395	8*	475
China	17,785***	22,537	17,785***	15,489	9,354****	7,048
India	2,580*	1,693	2,021*	1,340	559*	354
Russia	1,997	492**	1,952	331**	44	20**
South Africa	14,006	1,319	14,001	1,284	5	35

Notes: * - 2010; ** - 2021; *** - 2018; **** - 2020.

Source: Calculations based on the IMF Coordinated Direct Investment Survey (CDIS) database.

Between 2009 and 2022, the total investment exposure of BRICS 5 countries to one another represented a small fraction of their total investment positions (see Figure 10). Specifically:

- **Inward positions:**
 - Russia: 0.79% (2021)
 - China: 0.05% (2022)
 - India: 0.31%
 - Brazil: 0.32%
 - South Africa: 3.54% (Figure 10.1)
- **Outward positions:**
 - Russia: 0.13% (2021)
 - China: 0.82% (2022)
 - India: 1.54%
 - Brazil: 0.29%
 - South Africa: 0.63% (Figure 10.4)
- **In absolute terms, inward positions grew significantly:**
 - Russia: 2.8x (2009–2021)
 - China: 1.2x (2009–2022)
 - India: 3x
 - Brazil: 2.1x
 - South Africa: 1.1x
- **Outward positions increased only for:**
 - China: 1.3x (2018–2022)
 - Brazil: 4.5x

An exception is South Africa, which reported an outward direct investment position to China exceeding 50% of its total by 2017–2018. However, this equity position was re-registered as exposure to the Netherlands by 2019, returning South Africa's BRICS investment indicator to below 1%.

Impact of new BRICS members

As of January 1, 2024, Egypt, Ethiopia, Iran, and the UAE joined BRICS. Their inclusion has had a modest impact on the six key investment indicators, with inward positions for all BRICS 5 countries remaining below 1% by 2022. The exception is India, which had a substantial outward exposure to the UAE, accounting for 9.7% of its total outward direct investment by the end of 2022, split relatively evenly between equity and debt (see Table 4 and Figure 11). South Africa ranked second among BRICS members for outward exposure to the new members, primarily to the UAE, at 2.3% by 2022.

Details are presented in Figures 10.1–6 and 11.1–6.

Table 4. Inward and outward direct investment positions of the BRICS 5 countries to the new BRICS member states (Egypt, Ethiopia, Iran, the UAE), in million USD (2009 and 2022)

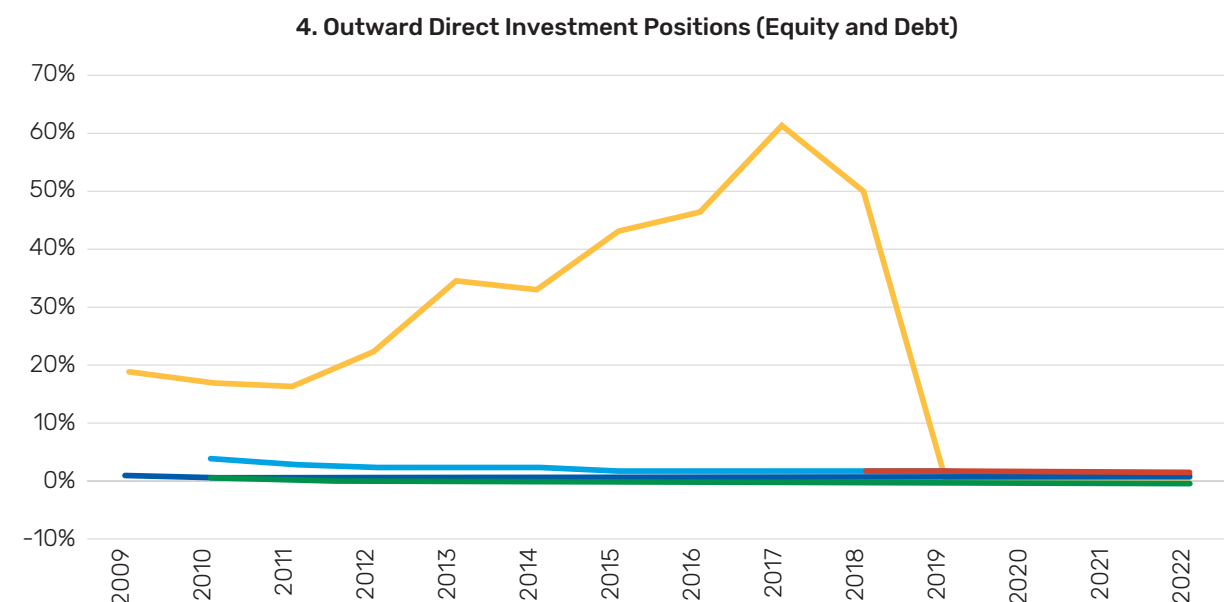
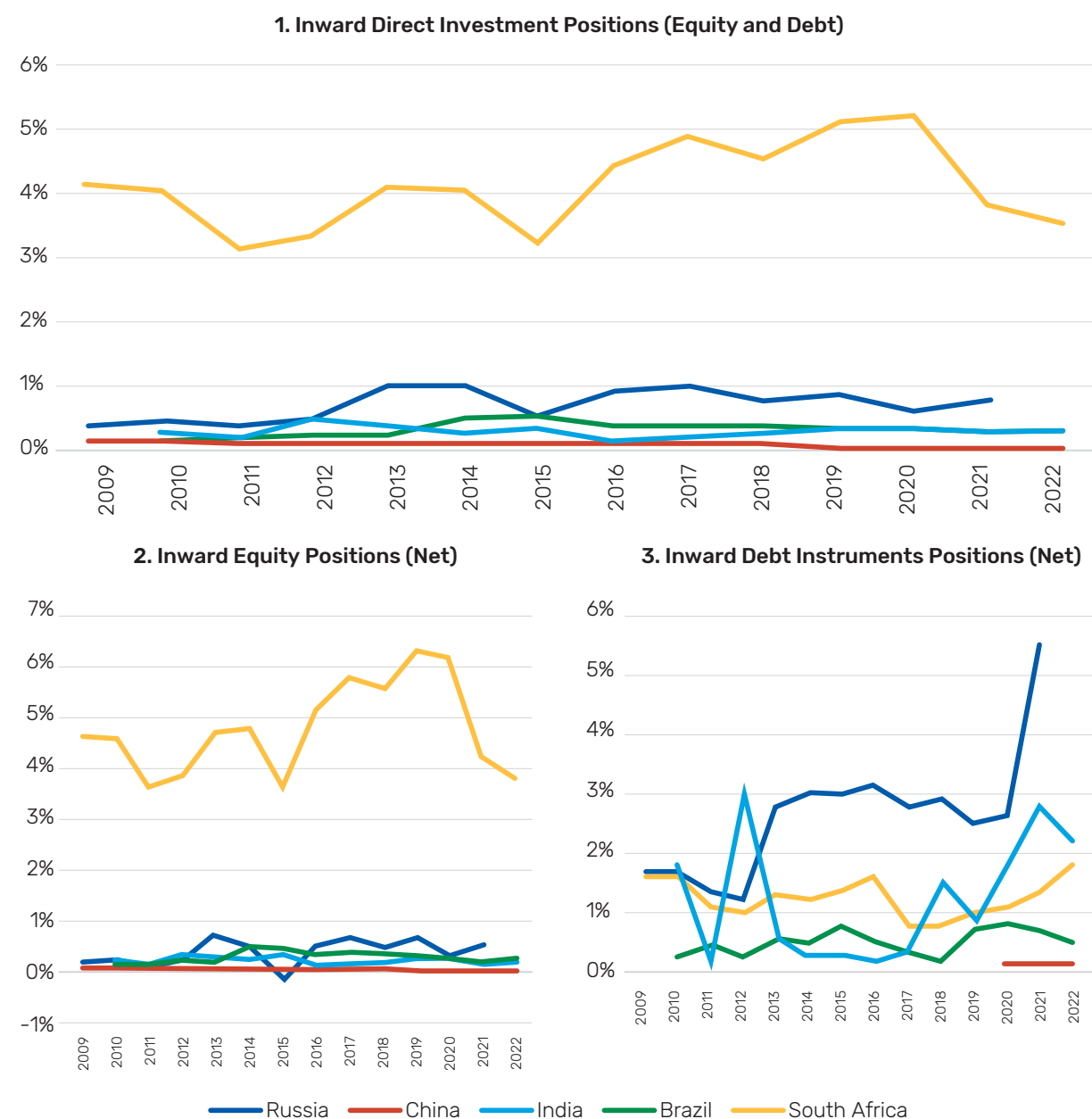
	Inward Direct Investment Positions		Inward Equity Positions (Net)		Inward Debt Instruments Positions (Net)	
	2009	2022	2009	2022	2009	2022
Brazil	241*	1,105	226*	149	15*	955
China	754	1,183	754	730	91****	453
India	1,131*	4,641	1,045*	4,187	86*	455
Russia	178	1,507**	158	1,364**	20	130**
South Africa	1,670	1,261	489	1,191	1,181	70

	Outward Direct Investment Positions		Outward Equity Positions (Net)		Outward Debt Instruments Positions (Net)	
	2009	2022	2009	2022	2009	2022
Brazil	22*	-345	19*	41	3*	-386
China	7,956***	19,102	7,956***	13,226	6,918****	5,876
India	3,444*	10,666	2,344*	6,647	1,100*	4,019
Russia	1,230	1,739**	1,219	1,731**	11	8**
South Africa	3,115	4,859	3,095	4,773	20	86

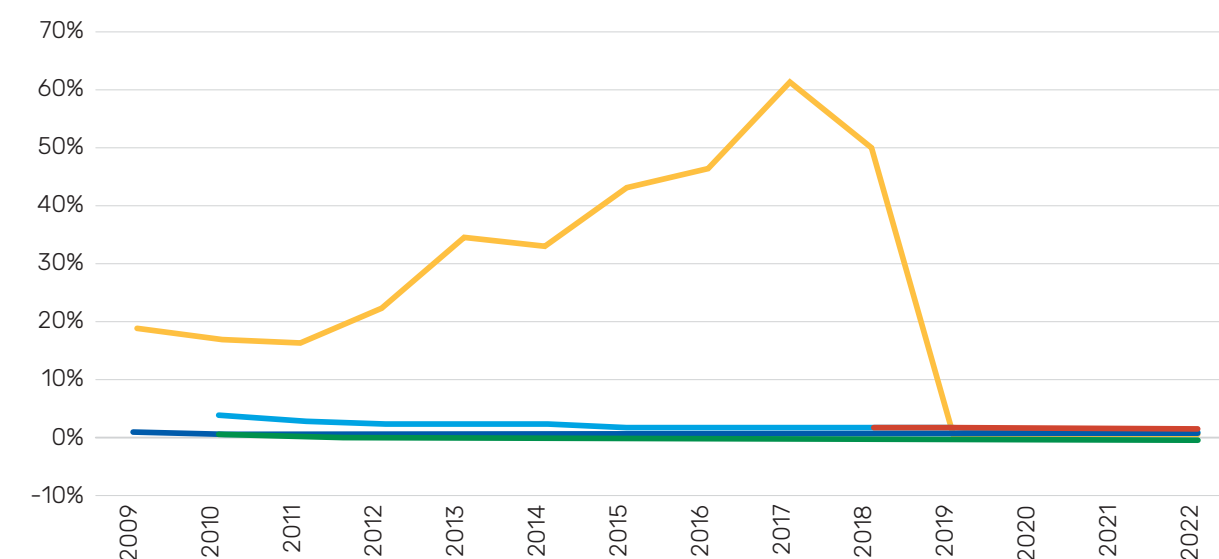
Notes: * - 2010; ** - 2021; *** - 2018; **** - 2020.

Source: Calculations based on the IMF Coordinated Direct Investment Survey (CDIS) database.

Figure 10.1-6. Inward and outward direct investment positions of the BRICS 5 countries to BRICS 5 counterparties, % of total investment positions of the BRICS 5 countries (2009–2022)

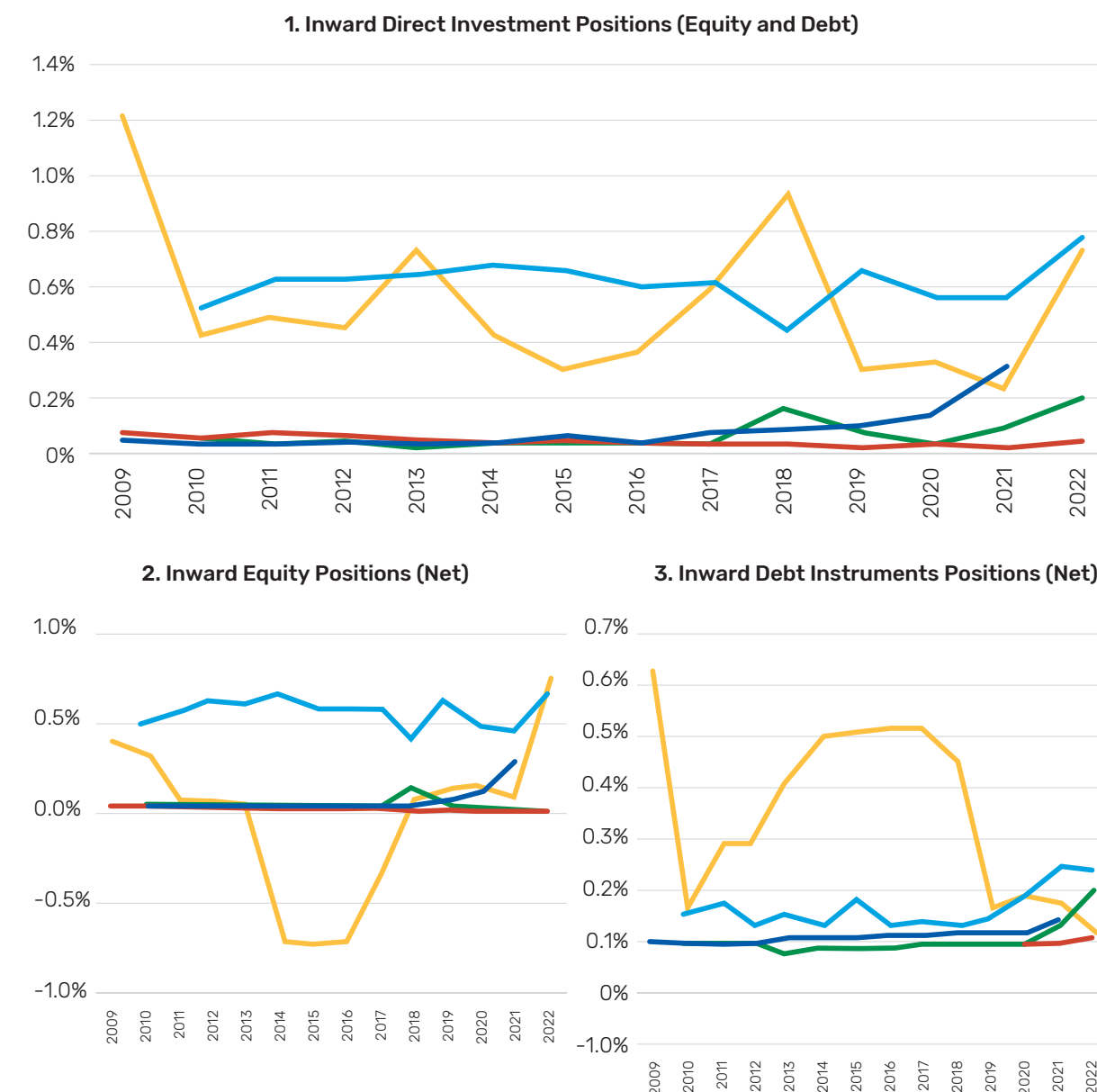


4. Outward Direct Investment Positions (Equity and Debt)

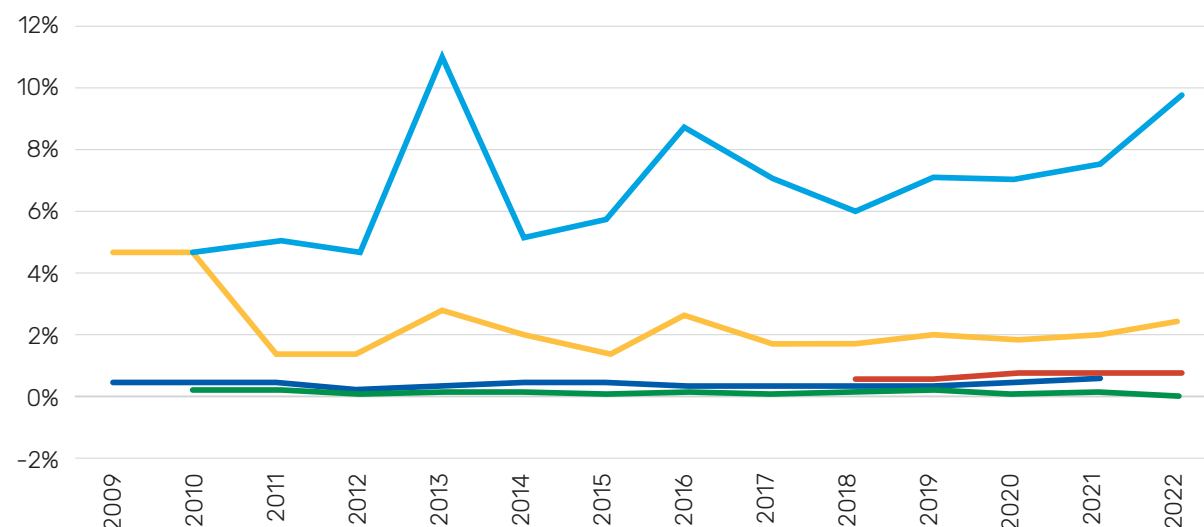


Source: Calculations based on the IMF Coordinated Direct Investment Survey (CDIS) database.

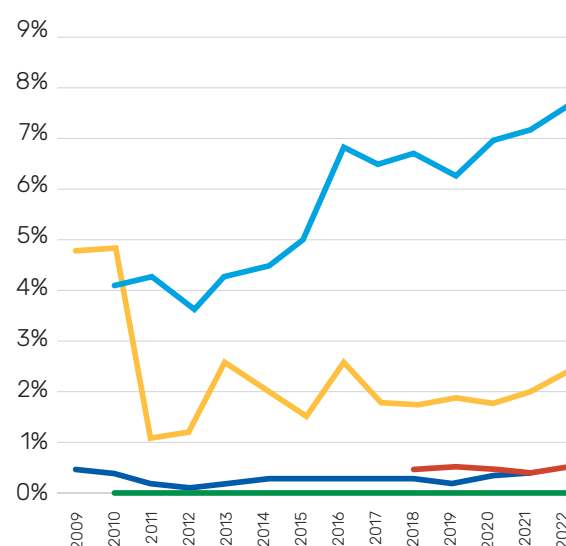
Figure 11.1-6. Inward and outward direct investment positions of the BRICS countries to the new BRICS member states (Egypt, Ethiopia, Iran, the UAE), % of total investment positions of BRICS 5 countries (2009–2022)



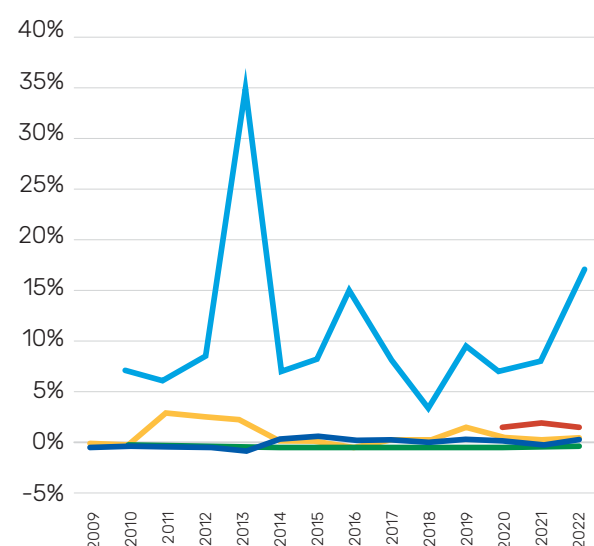
4. Outward Direct Investment Positions (Equity and Debt)



5. Outward Equity Positions (Net)



6. Outward Debt Instruments Positions (Net)



Source: Calculations based on the IMF Coordinated Direct Investment Survey (CDIS) database.

Since 2009, average lending rates in all BRICS countries, except China, have consistently remained significantly higher than those in the United States, where the average rate was 4.02% in 2009–2023 (Table 5). China managed to maintain its average lending rate close to the US level, averaging 4.96% over the same period. Notably, in 2023, China's average lending rate (4.35%) was lower than that of the United States (8.13%).

Brazil's much higher average lending rate compared to other BRICS nations can be attributed to elevated interest rates on consumer loans, which disproportionately inflate the overall average. The standard deviation of average lending rates among the BRICS countries, indicating the convergence of rates, decreased from 15.43% in 2009 to 8.57% in 2013, before rising to 19.39% in 2016. It later declined to 10.01% in 2020. However, the COVID-19 pandemic and global events in 2022 contributed to increased volatility in average interest rates (Table 5).

Table 5. Average lending rates in the economies of the BRICS member states, in % (2009–2023)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brazil	44.65	39.99	43.88	36.64	27.39	32.01	43.96	52.10	46.92	39.08	37.48	29.04	30.02	39.40	43.60
China	5.31	5.81	6.56	6.00	6.00	5.60	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35
India	12.19	8.33	10.17	10.60	10.29	10.25	10.01	9.67	9.51	9.45	9.47	9.15	8.70	8.57	9.32*
Russia	15.31	10.82	8.46	9.10	9.47	11.14	15.72	12.60	10.56	8.87	8.75	6.78	7.18	11.46	11.62
South Africa	11.71	9.83	9.00	8.75	8.50	9.13	9.42	10.46	10.38	10.08	10.13	7.71	7.04	8.79	11.50
Convergence (Std Dev)	15.43	14.12	15.86	12.64	8.57	10.49	15.77	19.39	17.28	14.00	13.30	10.01	10.49	14.14	15.66
USA	3.25	3.25	3.25	3.25	3.25	3.25	3.26	3.51	4.10	4.90	5.28	3.54	3.25	4.85**	8.13*

* As of December 2023 (the data from the Reserve Bank of India);

** Calculations based on the data from Statista.

Source: Calculations based on the IMF International Financial Statistics (IFS) database.

China stood out in terms of average deposit rates, maintaining an average of 2.05% during 2009–2023 and 1.5% during 2015–2023. These rates were three to four times lower than those in Brazil (8.76% on average), Russia (6.11%), and South Africa (6.14%) (see Table 6). The standard deviation of average deposit rates among the four BRICS countries (excluding India due to unavailable data), reflecting the convergence of deposit rates, decreased from 3.29% in 2009 to 1.97% in 2013. It then increased to 4.72% in 2015, lowered to 1.27% in 2021, and rose again to 4.36–4.42% in 2022–2023.

The accession of new members to BRICS is likely to increase this dispersion. For example, Egypt's deposit rate was 12.65% in 2023, and its lending rate stood at 17.76%. Comparable statistics for Ethiopia, Iran, and the UAE are unavailable since 2016 (see Table 6).

The main reason for differences in lending and deposit rates among BRICS member states is the varying levels of inflation (Table 7). Cumulative inflation from 2009 to 2023 was 36% for China, whereas consumer prices increased by 2.17 times in South Africa, 2.36 times in Brazil, 2.69 times in India, and 2.86 times in Russia. China's inflation level was comparable to that of the euro area during the same period (cumulative 35%) and was lower than in the USA (41%) and the United Kingdom (46%). Among developed nations, only Japan had a lower level of inflation (cumulative 12% during 2009–2023).

A convergence trend in inflation rates among BRICS member states was observed from 2009 to 2011, with standard deviation values decreasing from 5.02% in 2009 to 1.73%. Another convergence occurred from 2015 to 2019, with standard deviation values reducing from 5.44% to 0.59%. However, in 2022–2023, the standard deviation rose to 2.72–3.68% due to a turbulent external environment (Table 7).

Table 6. Average deposit rates in the economies of the BRICS member states, in % (2009–2023)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brazil	9.28	8.87	10.99	7.91	7.81	10.02	12.62	12.45	8.51	6.87	5.43	2.20	4.35	12.00	12.14
China	2.25	2.75	3.50	3.00	3.00	2.75	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
India	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Russia	8.58	6.01	4.44	5.53	5.59	6.04	9.20	6.97	5.86	5.36	5.40	3.77	3.79	7.60	7.57
South Africa	8.54	6.47	5.67	5.44	5.15	5.80	6.15	7.17	7.25	7.00	7.01	4.88	3.82	5.07	6.63
Convergence (Std Dev)	3.29	2.52	3.35	2.00	1.97	2.98	4.72	4.47	3.05	2.57	2.35	1.53	1.27	4.42	4.36

Source: Calculations based on the IMF International Financial Statistics (IFS) database.

With the accession of Egypt, Ethiopia, Iran, and the UAE, the standard deviation of inflation rates rose to 14.72% in 2023. This increase was driven by high inflation levels in Egypt (24.4%), Ethiopia (30.2%), and Iran (41.5%), while the UAE maintained a comparatively low Consumer Price Index (CPI) of 1.6% in the same year.

Over the period spanning 2009–2023, consumer prices increased significantly in these new BRICS members – Egypt (5.62 times), Ethiopia (10.07 times), Iran (26.18 times), UAE (mere 22%). These inflation trends have had a notable impact on BRICS financial markets and their associated instruments.

Table 7. Annual inflation rates across the BRICS countries (2009–2023)

Annual inflation, CPI, %																Cum.
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
Brazil	4.89	5.04	6.64	5.40	6.20	6.33	9.03	8.74	3.45	3.66	3.73	3.21	8.30	9.28	4.73	2.36
China	-0.73	3.30	5.40	2.62	2.62	2.00	1.44	2.00	1.59	2.07	2.90	2.50	0.90	1.97	0.23	1.35
India	10.88	11.99	8.91	9.48	10.02	6.67	4.91	4.95	3.33	3.94	3.73	6.62	5.13	6.70	5.46	2.69
Russia	11.65	6.85	8.44	5.07	6.75	7.82	15.53	7.04	3.68	2.88	4.47	3.38	6.69	11.94	7.42	2.86
South Africa	7.22	4.09	5.00	5.72	5.78	6.13	4.54	6.57	5.18	4.52	4.12	3.21	4.61	7.04	6.00	2.17
Convergence (Std Dev) BRICS 5	5.02	3.50	1.73	2.46	2.64	2.25	5.44	2.55	1.28	0.95	0.59	1.64	2.74	3.68	2.72	--
New BRICS members																Cum.
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
Egypt	11.76	11.27	10.06	7.11	9.47	10.07	10.37	13.81	29.51	14.40	9.15	5.04	5.21	13.90	24.39	5.62
Ethiopia	8.48	8.15	33.25	23.60	7.46	6.89	9.57	6.63	10.69	13.83	15.81	20.36	26.84	33.89	30.22	10.07
Iran	13.55	10.09	26.29	27.26	36.60	16.61	12.48	7.25	8.04	18.01	39.91	30.59	43.39	43.49	41.5	26.18
UAE	1.56	0.88	0.88	0.66	1.10	2.35	4.07	1.62	1.97	3.07	-1.93	-2.08	-0.01	4.83	1.62	1.22
Convergence (Std Dev) BRICS 9	4.92	3.84	10.75	9.33	10.54	4.34	4.56	3.64	8.76	6.17	12.54	10.45	14.39	14.22	14.72	4.92
USA	-0.36	1.64	3.16	2.07	1.46	1.62	0.12	1.26	2.13	2.44	1.81	1.23	4.70	8.00	3.40	1.41
Euro area	0.37	1.53	3.29	2.49	1.22	0.24	0.04	0.18	1.38	1.70	1.45	0.29	2.45	8.47	5.55	1.35

UK	1.96	2.49	3.86	2.57	2.29	1.45	0.37	1.01	2.56	2.29	1.74	0.99	2.52	7.92	4.20	1.46
Japan	-1.35	-0.73	-0.27	-0.04	0.34	2.76	0.80	-0.13	0.48	0.99	0.47	-0.02	-0.23	2.50	5.60	1.12

Source: The World Bank’s World Development Indicators database, Statista.

One of the critical factors influencing the success of transitioning to settlements in national currencies is the volatility of exchange rates among BRICS member states. The cumulative volatility of most BRICS currency pairs has been higher than that of major hard currencies (as shown in Table 8). From January 2009 to March 2024, only a few pairs—such as the Brazilian real to the Russian ruble, the South African rand to the Russian ruble, and the Chinese yuan to the Indian rupee—exhibited volatility levels comparable to the British pound to the US dollar, the most unstable pair among the four major hard currencies.

When compared to the Euro to US dollar pair, all BRICS currency pairs showed higher volatility. The most unstable pairs were the South African rand to the Chinese yuan, the Chinese yuan to the Brazilian real, and the Chinese yuan to the Russian ruble.

Another significant challenge is the depreciation of BRICS currencies relative to each other, which is closely tied to inflation differentials among these countries. From January 2009 to March 2024:

- The Russian ruble depreciated against all other BRICS 5 currencies.
- The Brazilian depreciated against all currencies except the Russian ruble.
- The South African rand depreciated against the Chinese yuan and the Indian rupee.

Five currency pairs experienced depreciations comparable to those of the Euro to US dollar and British pound to US dollar pairs. However, five other BRICS currency pairs underwent much deeper depreciations (see Table 8).

Table 8. Volatility of exchange rates across the BRICS currencies (January 2009 – March 2024)

	Unit	01.01.2009	31.03.2024	Change, %	Max	Min	Max/Min	St. dev.	Volatility, %	Ratio to EUR/USD
BRICS currencies 31.03.2024 > Mar 31, 2024										
BRL/RUB*	1	17.05	18.49	8%	26.68	9.80	2.72	2.25	12.2%	1.40
CNY/RUB	1	4.31	12.67	194%	19.04	4.20	4.54	2.84	22.4%	2.58
INR/RUB*	10	6.49	11.08	71%	15.77	4.88	3.23	1.88	16.9%	1.95
ZAR/RUB*	10	40.11	48.63	21%	79.84	30.52	2.62	6.09	12.5%	1.44
ZAR/CNY	1	0.72	0.38	-47%	1.00	0.36	2.79	0.18	47.9%	5.52
ZAR/INR	1	5.17	4.39	-15%	6.95	3.96	1.75	0.73	16.7%	1.92
ZAR/BRL	1	0.25	0.26	7%	0.39	0.20	1.93	0.04	15.8%	1.81
INR/BRL	1	0.05	0.06	24%	0.08	0.03	2.34	0.01	20.8%	2.40
CNY/BRL	1	0.34	0.69	103%	0.90	0.24	3.78	0.19	27.7%	3.19
CNY/INR*	1	6.82	11.64	71%	12.21	6.34	1.92	1.48	12.7%	1.47
RUB against hard currencies										
USD/RUB	1	29.39	92.37	214%	120.38	27.26	4.42	19.89	21.5%	2.48
EUR/RUB	1	41.43	99.53	140%	132.96	37.42	3.55	19.33	19.4%	2.23
GBP/RUB	1	42.49	116.65	175%	158.33	42.49	3.73	22.73	19.5%	2.24
JPY/RUB	100	32.57	61.07	87%	99.45	10.05	9.89	13.18	21.6%	2.48

For comparison: hard currencies										
EUR/USD	1	1.39	1.08	-22%	1.51	0.96	1.58	0.12	8.7%	1.00
GDP/USD	1	1.45	1.26	-13%	1.72	1.07	1.60	0.15	12.2%	1.40
USD/JPY	1	92.02	151.34	64%	151.74	75.84	2.00	17.82	11.8%	1.36

* Data covers the period from January 1, 2010, to March 31, 2024.

Source: Bank of Russia, the Central Bank of Brazil, the Reserve Bank of India, the South African Reserve Bank, the European Central Bank, the Bank of England, the Bank of Japan.

The annual volatility of BRICS currency pairs (Table 9) was generally higher than that of the euro to US dollar pair. Notably, BRICS currency pairs exhibited heightened volatility during the years 2012, 2013, 2015, 2016, 2019, 2020, 2023, and January–March 2024.

Among BRICS currency pairs:

- The Brazilian real to Chinese yuan showed higher volatility than the Euro to US dollar in 14 out of 16 years.
- The Chinese yuan to Russian ruble and South African rand to Russian ruble pairs were more volatile in 13 years.
- The South African rand to Chinese yuan and Indian rupee to Brazilian real pairs demonstrated higher volatility in 12 of the 16 years analyzed.

Table 9. Annual volatility of exchange rates of BRICS currencies, in % (January 2009 – March 2024)

	2009	2010	2011	2012	2013	2014	2015	2016
BRICS currencies								
BRL/RUB	--	3.60	2.03	5.36	4.04	8.63	13.11	3.34
CNY/RUB	6.74	2.72	5.21	3.49	3.76	11.47	7.79	10.04
INR/RUB	--	2.19	2.83	2.89	4.26	10.94	7.95	7.97
ZAR/RUB	--	4.39	3.69	4.00	3.01	10.25	9.02	4.25
ZAR/CNY	9.80	3.05	9.49	5.28	7.30	3.46	7.95	6.50
ZAR/INR	8.33	2.99	2.55	3.35	3.21	1.81	6.68	5.32
ZAR/BRL	3.13	1.86	3.29	3.34	2.78	3.17	6.57	3.95
INR/BRL	9.96	2.45	2.37	3.01	2.24	3.99	9.40	8.39
CNY/BRL	12.94	2.27	5.68	6.05	6.57	5.50	10.34	10.38
RUB against hard currencies								
USD/RUB	6.79	2.17	4.52	3.80	3.12	11.42	8.42	8.26
EUR/RUB	2.33	3.78	2.65	1.90	3.92	9.49	9.00	9.14
GBP/RUB	3.91	3.50	3.18	3.25	4.36	10.06	8.53	15.08
JPY/RUB	5.92	5.52	6.45	5.84	2.80	8.33	8.68	7.09
For comparison: hard currencies								
EUR/USD	5.07	4.49	3.56	2.48	1.89	4.34	2.64	2.37
GBP/USD	5.85	3.02	1.94	1.49	2.60	2.83	1.83	6.87
USD/JPY	3.91	4.93	3.24	2.30	3.54	4.82	1.69	4.93
	2017	2018	2019	2020	2021	2022	2023	Jan.–Mar. 2024

BRICS currencies								
BRL/RUB	2.86	3.14	5.26	4.91	4.11	21.67	11.42	1.26
CNY/RUB	2.93	3.59	3.30	7.62	1.58	24.70	7.97	1.55
INR/RUB	2.42	2.95	2.06	5.81	2.41	23.12	9.90	1.76
ZAR/RUB	3.05	3.27	3.80	6.55	4.60	26.30	8.68	1.71
ZAR/CNY	3.67	5.06	2.03	6.41	4.54	2.92	2.58	0.93
ZAR/INR	3.09	4.51	3.02	5.54	3.94	3.85	3.19	1.07
ZAR/BRL	3.13	3.92	2.50	6.48	3.47	6.30	5.52	1.00
INR/BRL	3.04	4.71	3.47	7.81	3.67	5.36	3.27	0.79
CNY/BRL	3.04	5.54	2.68	9.25	3.81	5.67	5.28	0.62

RUB against hard currencies

USD/RUB	2.10	5.85	1.91	6.60	1.89	19.46	10.19	1.68
EUR/RUB	5.04	3.81	2.55	8.36	3.46	22.91	9.95	1.49
GBP/RUB	3.46	3.60	3.13	6.82	2.59	25.28	10.74	1.60
JPY/RUB	2.16	4.70	2.47	7.59	4.00	26.99	6.59	1.21

For comparison: hard currencies

EUR/USD	4.27	3.21	1.22	3.63	2.50	4.72	1.49	0.59
GBP/USD	2.74	3.85	2.52	2.91	1.75	6.36	2.10	0.53
USD/JPY	1.54	2.12	1.44	1.93	2.60	7.92	4.79	1.34

Source: Bank of Russia, the Central Bank of Brazil, the Reserve Bank of India, the South African Reserve Bank, the European Central Bank, the Bank of England, the Bank of Japan.

Based on our research, we conclude that BRICS business entities employ a variety of financial instruments recognized in global practice to safeguard their economic interests. While inflationary pressures influence financing choices, they do not significantly hinder the execution of strategic development programs, which benefit from multilateral and predominantly intergovernmental support. This support is especially critical in the context of high global financial volatility.

4. INTERSTATE SUPPORT FOR BRICS BUSINESS ENTITIES AND INVESTMENT ACTIVITIES

The BRICS nations have confirmed their intention to make a significant contribution to the development of humanity and to use the intergovernmental platforms for dialogue and cooperation in the fields of economics, finance, and development. Ethiopia's commitment to this initiative since the Non-Alignment Movement, South-South cooperation, the peacekeeping mission in different countries in Africa and beyond, and the interest to multipolar world represents a valuable experience. The BRICS have set goals, including ensuring global security, which are closely linked with the key priorities, such as:

- enhancing the system of global economic governance, sustainable economic growth, and the prevention of financial crises – the transition of the BRICS countries to national currencies in mutual trade, cooperation through the Group of Twenty;
- strengthening collective principles in international relations and the building of a democratic world order;
- solving the problem of poverty within the framework of BRICS at the country level through the South-South and South-North lines.

These guidelines were reflected, among other things, in the BRICS Joint Statement on Strengthening and Reforming the Multilateral System (adopted in 2021). This statement indicates that the task of strengthening and reforming the multilateral system includes the following:

- to make global governance tools more inclusive, involving a wider range of stakeholders, in order to promote more active and meaningful participation of developing and least developed countries, especially Africa, in global decision-making processes and structures, increasing their adaptation to modern realities;
- to use as a basis comprehensive consultations and cooperation for the benefit of all, while respecting sovereign independence;
- to make multilateral organizations more flexible, effective, transparent, democratic, objective, action-oriented and solution-seeking, as well as credible, in order to promote cooperation in building international relations based on the norms and principles of international law, cooperation, and collective decision making.

The XI BRICS Summit, held in Brazil in 2019, adopted the motto “BRICS: Economic Growth for an Innovative Future.” The Brazilian Chairship focused on six key areas: financing for development, trade and investment, science, technology and innovation, energy and development, transnational crime, and agriculture.

The establishment of the BRICS Women's Business Alliance aimed to strengthen the role of women as drivers of economic growth and to promote their economic empowerment across member countries (Article 39). The Alliance held its first meeting in 2020, marking the beginning of collaborative efforts to support women in business.

Progress has been achieved by the customs services of BRICS countries in drafting the Agreement on Mutual Assistance in Customs Matters. The declaration highlights the success of initiatives like the establishment of BRICS Customs Training Centers (Article 59). Cooperation in areas such as trade facilitation, compliance monitoring, adoption of modern technologies, and capacity building remains active. Member states also reaffirmed their commitment to implementing the 2030 Agenda for Sustainable Development, pledging to intensify efforts for its timely realization.

The XII BRICS Summit, held in Moscow in 2020, was conducted under the theme “Partnership in the Interests of Global Stability, Common Security, and Innovative Growth.” From the very start, 2020 was a year of “black swans,” including the COVID-19 pandemic, which accelerated globalization processes and exposed weaknesses in leading international organizations. The summit declaration emphasized, “We will step up our efforts to accelerate the transition of

the BRICS countries to dynamic, sustainable, balanced, and inclusive economic development and growth in the post-COVID-19 pandemic period and note the adoption of significant measures in our countries to ensure fiscal, monetary, and financial stability in order to maintain economic growth” (Article 47).

A major milestone was the adoption of the BRICS Economic Partnership Strategy 2025 (Article 55), the approval of the Roadmap for Energy Cooperation among BRICS Countries, and the initiation of practical collaboration through the BRICS Energy Research Platform (Article 68).

BRICS has strongly endorsed international efforts to support low-income countries, including the initiative for debt service deferral and its six-month extension. BRICS called on multilateral development banks, including the World Bank, to continue their collective efforts to support this initiative (Article 52). Additionally, BRICS expressed support for the African Union's Agenda 2063 and its initiatives to enhance integration and development across the continent, particularly through the implementation of the African Continental Free Trade Area Agreement.

BRICS acknowledges the progress made by the African Union in addressing infrastructure gaps, particularly under the framework of the New Partnership for Africa's Development (NEPAD). The association recognizes the importance of stimulating investment to promote industrial development, job creation, poverty reduction, food security, and sustainable development in Africa. BRICS reaffirms its readiness to deepen cooperation with the African continent.

To meet infrastructure investment needs, BRICS is strengthening the exchange of data on infrastructure projects to better identify investment opportunities and mobilize private sector investment (Article 57). As noted in the declaration: “We note the initiative to share, on a voluntary basis, relevant and already available national data on infrastructure investment projects within a common database. We also recognize the progress made by the BRICS Task Force on Public-Private Partnerships and Infrastructure Development and look forward to continued cooperation within the association, including exploring a possible format for the New Development Bank's participation in this initiative.”

Collaboration also continues in the area of national payment systems, including the creation of a BRICS Payment Task Force to enhance financial cooperation (Article 62).

BRICS confirmed its commitment to strengthening intra-BRICS collaboration to advance the BRICS Partnership on the New Industrial Revolution (PartNIR), collectively fostering new development opportunities. In support of this, BRICS encourages human resource development through initiatives such as the BRICS Centre for Industrial Competences, the BRICS PartNIR Innovation Centre (BPIC), and BRICS Start-up Events. These mechanisms aim to deliver training programs and address the challenges of the New Industrial Revolution, ensuring inclusive and sustainable industrialization (Article 65).

The XIII BRICS Summit, hosted by India in 2021, was held under the theme: “The 15th Anniversary of BRICS: Five-Party Cooperation for Continuity, Strengthening Interaction, and the Principle of Consensus.” A key focus of the summit was the long-standing proposal to reform the IMF. Despite discussions under the 15th General Review of Quotas, issues regarding quota calculation and the management system remain unresolved. BRICS emphasized the need for the timely completion of the 16th General Quota Review by December 15, 2023, to reduce the IMF's reliance on temporary resources and address the underrepresentation of emerging markets and developing countries in its management framework.

BRICS also welcomed the first joint research project conducted by the central banks, which analyzed changes in the balance of payments of BRICS countries during the COVID-19 pandemic. Additionally, the release of the BRICS Economic Bulletin 2021 was noted as a significant step in enhancing the analytical and research capabilities of the Contingent Reserve Arrangement (Article 58).

The XIV BRICS Summit, hosted by China in 2022, was themed: “Strengthening the High-Quality BRICS Partnership: Entering a New Era of Global Development.” The summit featured the BRICS High-Level Forum on Sustainable Development, which deepened cooperation on combating COVID-19, digital transformation, sustainability and resilience of industrial and supply chains, and low-carbon development (Article 59).

BRICS countries acknowledged the positive role of the digital economy in mitigating the impacts of the COVID-19 pandemic and facilitating global economic recovery. They also emphasized the importance of trade and investment in advancing sustainable development, promoting national and regional industrialization, and transitioning to sustainable consumption and production patterns. Recognizing the opportunities provided by emerging technologies, BRICS highlighted the importance of implementing R&D projects through the BRICS Institute of Future Networks and encouraged collaboration across sectors to drive innovation.

The summit also stressed the need to promote competition, lower artificial barriers to market entry, and strengthen regulatory coherence. These measures are seen as essential for building capacities and skills, diversifying the global ICT market, and fostering innovation. Notably, China hosted Buy BRICS, an online event to promote goods and services, supporting activities such as the BRICS Framework Agreement on Partnership in the Digital Economy, the BRICS Trade and Investment Initiative for Sustainable Development, and the BRICS Initiative to Expand Cooperation in Supply Chains.

Furthermore, BRICS countries welcomed the establishment of the Digital Economy Working Group, which replaced the former E-Commerce Working Group (Article 38), and the creation of the BRICS Finance Research Network. BRICS member countries aim to foster independent research and analytical support to facilitate the exchange of knowledge, experience, and best practices, as well as to strengthen financial cooperation among member states. These efforts are intended to address global challenges and advance the interests of emerging markets and developing countries (Article 40).

The XV BRICS Summit, held in South Africa in 2023, carried the theme: “BRICS and Africa: Partnership for Joint Accelerated Growth, Sustainable Development, and Inclusive Multilateralism.”

BRICS called on Multilateral Development Banks (MDBs) to voluntarily implement recommendations outlined in the G20 report on the Independent Review of Approaches to Capital Adequacy Assessments. These recommendations aim to enhance MDB credit potential while ensuring long-term financial stability, maintaining strong credit ratings, and preserving the MDBs’ status as preferred creditors.

BRICS countries also reaffirmed their commitment to discussions on establishing an Centre for Industrial Competencies in partnership with the United Nations Industrial Development Organization (UNIDO). This center would support the development of Industry 4.0 skills, promote partnerships, and enhance productivity in the context of the New Industrial Revolution (Article 36).

The Contingent Reserve Arrangement (CRA) continued to serve as a key mechanism for mitigating future crisis impacts, complementing existing international monetary and financial systems, and strengthening global financial security (Article 50).

In Article 37 of the XV BRICS Summit Johannesburg II Declaration, BRICS acknowledged the critical role of Micro, Small, and Medium-sized Enterprises (MSMEs) in unlocking the economic potential of BRICS economies. The declaration emphasized the importance of integrating MSMEs into production networks and value chains.

In recent years, significant attention has been given to MSME development, with traditional business metrics such as employment and access to financing taking center stage. However, the critical issue today is the integrated digitalization of business processes. While

digitalization has already transformed the corporate sector, its penetration into the MSME sector is under way.

In Article 33 of the XV BRICS Summit Johannesburg II Declaration, BRICS acknowledged the dynamic nature of the digital economy as a driving force behind global economic growth and welcomed the establishment of the BRICS Digital Economy Working Group. Digitalization is undoubtedly a key success factor for MSME development, and addressing this gap should be a priority in future initiatives.

BRICS plays a pivotal role in the multilateral system, actively contributing to its development and reinforcement. The initiatives driven by the group aim to broaden participation in global governance by integrating developing countries into decision-making processes and fostering more adaptable and efficient international organizations.

The group’s commitment to sustainable economic growth, the prevention of financial crises, and poverty alleviation reflects a collective aspiration for a more equitable and stable global order. Initiatives such as promoting the use of national currencies in trade and cooperation underscore BRICS’ dedication to strengthening collective principles in international relations.

BRICS actively engages in addressing critical global issues across various domains, including development, science, technology, innovation, energy, and agriculture. This work drives innovation and economic growth, as seen in initiatives like the establishment of the BRICS Women’s Business Alliance and advancements in customs cooperation, which highlight the countries’ resolve to expand and deepen international collaboration.

Through these efforts, BRICS significantly contributes to human development while striving to create a more equitable and stable global system. The active participation of all member nations underpins decision-making and fosters collaboration, aiming to ensure global security, sustainable economic growth, and resilience against financial crises. As such, BRICS has firmly established itself as a key player on the global stage.

5. HARMONIZATION OF REGULATION, FINANCIAL COOPERATION, AND PROTECTION AGAINST UNFAIR PRACTICES

Efforts in this area have yielded several significant outcomes:

- BRICS Interbank Cooperation Mechanism: Established in 2010, this mechanism links development banks, including the Brazilian Development Bank (BNDES), Vnesheconombank (Russia), the Export-Import Bank of India, the China Development Bank, and the Development Bank of Southern Africa (DBSA). Chaired by the development bank of the current BRICS chair country, the mechanism has been actively involved in developing trade financing instruments in local currencies.
- New Development Bank (NDB): Founded through an agreement signed by the BRICS 5 countries on July 15, 2014, in Fortaleza, Brazil, the NDB began operations in 2016. By 2023, the Bank had expanded its financing activities to Bangladesh, focusing on infrastructure and sustainable development projects in its member states.
- Contingent Reserve Arrangement (CRA): Created under the Treaty signed in Fortaleza in 2014, the CRA was initially envisioned as a Multilateral Clearing Union. However, it was implemented with IMF conditionality and currency swaps involving the US dollar and BRICS currencies, rather than intra-BRICS currency swaps. Despite six test runs, the CRA remains largely non-operational and requires amendments. To address these challenges, the CRA Standing Committee and Technical Group have been established.
- Task Forces and Expert Institutions:
 - The BRICS Payment Task Force works on initiatives such as the G20 Cross-Border Payments Roadmap.
 - The Task Force on Public-Private Partnerships and Infrastructure prepared a technical report on PPPs for sustainable development during China’s Chairship in 2022.
 - The BRICS Think Tank Network for Finance was established, with its operational guidelines endorsed in 2023.

Additional working groups include the BRICS Customs Cooperation Committee, the BRICS Heads of Tax Authorities and Tax Experts Meetings, and the BRICS Bond Fund Working Group.

In 2019, under Brazil’s Chairship, the BRICS Survey on International Payments Systems was proposed. In 2020, under Russia’s Chairship, the creation of a Joint Digital Platform (Data Room) to encourage infrastructure investments was discussed, facilitated through VEB.RF.

Since the late 2000s, BRICS member states have played a significant role in advocating for the reform of IMF quota distributions. Despite progress made during the 2006–2008 reforms and their implementation negotiations until 2010, no substantial changes have occurred since then. Following Article 45 of the 2023 BRICS Declaration, heads of the member states entrusted their ministers of finance “to consider the issue of local currencies, payment instruments, and platforms and report back at the next Summit.”

6. THE ROLE OF THE NEW DEVELOPMENT BANK (NDB) IN FINANCING INFRASTRUCTURE, SUSTAINABLE DEVELOPMENT, CONSUMPTION, AND REPRODUCTION

Under its 2022–2026 strategy, the NDB focuses on investments in infrastructure and sustainable development in emerging markets and developing countries. Its primary goal is to enhance welfare and create opportunities for long-term economic growth, ensuring the interests of BRICS countries are safeguarded. The Bank plays a critical role in financing projects that support sustainability, consumption, and economic reproduction, further solidifying BRICS’ collective economic resilience and developmental goals.

To achieve its strategic goals, the NDB has prioritized increasing the volume of financing in the national currencies of its member countries. This approach helps clients mitigate currency risks and enhances private sector access to project financing.

Between 2016 and May 2024, the NDB reviewed 124 projects submitted by its member countries for assessment and technical development. Of these, 110 projects were approved, 16 of which have been successfully completed. Additionally, 11 projects were canceled, while 20 remain under consideration as of this date.

Table 8. NDB Portfolio Parameters in the period from 2016 to 2024 (as of May 10, 2024)

Country	Portfolio volume		Type		Number of loans	Avg loan volume (USD bln.)	National currency use (%)
	USD bln	Growth rate (avg annual, %)	Sovereign (%)	Non-sovereign (%)			
Brazil	6.2	59%	82%	18%	21	0.30	-
China	9.0	68%	94%	6%	23	0.39	68%
India	8.9	65%	99%	1%	26	0.34	1%
Russia	4.3	93%	52%	48%	14	0.31	-
South Africa	6.0	78%	87%	13%	12	0.50	44%
Total	34.5	60%	87%	13%	96	0.37	26%

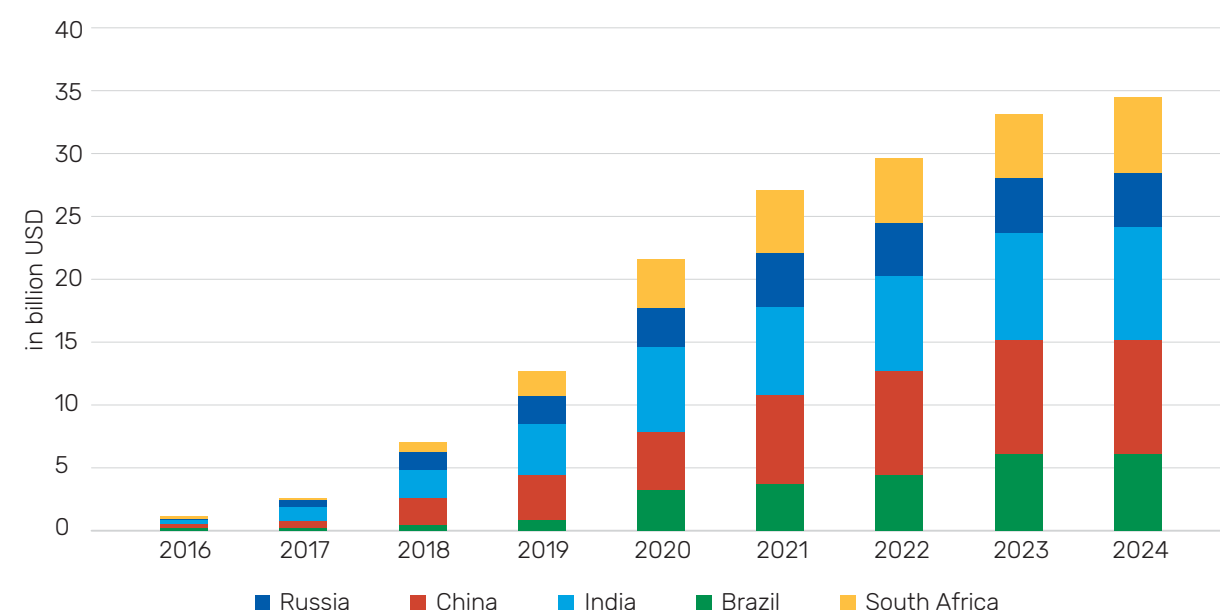
Source: Calculations based on NDB data.

According to NDB data¹, the NDB’s loan portfolio experienced its fastest growth between 2017 and 2022 (Table 8). The portfolio’s peak growth occurred in 2017–2018, with annual increases reaching triple-digit percentages. Although the growth rate began to slow down in 2019, it maintained a strong upward trend, ranging between 25% and 80% annually from 2019 to 2022.

Portfolio dynamics were significantly impacted by the socio-economic challenges arising from the COVID-19 pandemic and the geopolitical tensions stemming from sanctions imposed on Russia. Anti-COVID-19 loans accounted for 63% of the portfolio’s growth during 2021–2022, helping sustain its expansion despite global disruptions. From 2023 onward, the growth rate slowed to 4–12%, reflecting a cooling global economy and the Bank’s decision to cease financing new projects in Russia entirely.

¹ Reference: Here and further in Section 6, the NDB project portfolio indicators were assessed on the basis of NDB data. Source: New Development Bank (n.d.). Search Results For: #projects. All Results. URL: <https://www.ndb.int/?s=projects>.

Figure 12. Portfolio by country (as of May 10, 2024)



Source: Calculations based on NDB data.

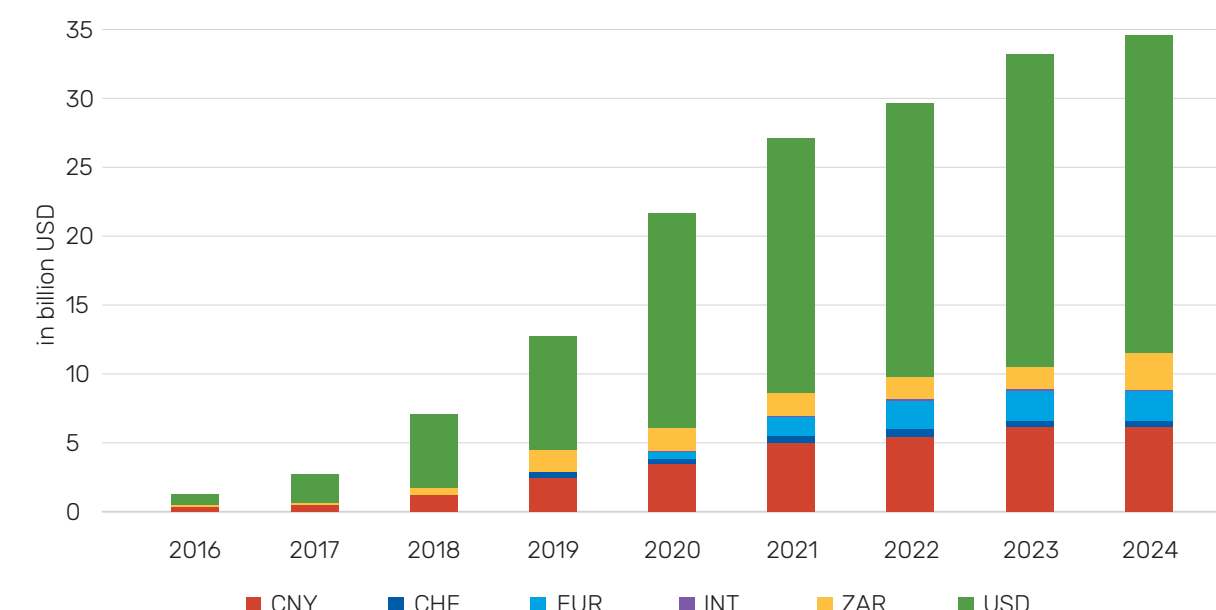
As of the end of July 2024, 22 of the 110 projects approved by the NDB were financed in the national currencies of its member countries. This included 16 projects denominated in Chinese yuan (approximately USD 5,971 million) and 6 projects denominated in South African rand (approximately USD 2,310 million). The NDB plans to increase the share of local currency financing to 30% of its total portfolio by 2026.

Approximately 68% of loans to China in the Bank's portfolio were denominated in Chinese yuan, while 44% of loans to South Africa were denominated in South African rand. In contrast, the share of loans denominated in INR was significantly smaller, at only 1%. No loans were denominated in Russian rubles from 2022 to 2024, as operations involving new projects in Russia were suspended².

In 2022 and 2023, the majority of the Bank's approvals, 53% and 81% respectively, were denominated in US dollar, followed by Chinese yuan at 17% and 19%. Euro accounted for approximately 30% in 2022, but no financing in this currency occurred in 2023. During the first five months of 2024, only two loans were approved, denominated in South African rand and US dollar. Consequently, US dollar and Chinese yuan remained the dominant currencies in the Bank's loan portfolio.

² BRICS bank NDB says not considering new projects in Russia. URL: https://www.reuters.com/business/finance/brics-bank-ndb-says-not-considering-new-projects-russia-2023-07-26/?trk=public_post_comment-text/

Figure 13. Portfolio by financing currency (as of May 10, 2024)



Source: Calculations based on NDB data.

Since 2019, the NDB has launched several bond programs in national currencies across the offshore and onshore markets of BRICS countries, including China, South Africa, and Russia. In addition to financing through loans, these programs have enhanced the Bank's ability to meet the diverse needs of its member countries.

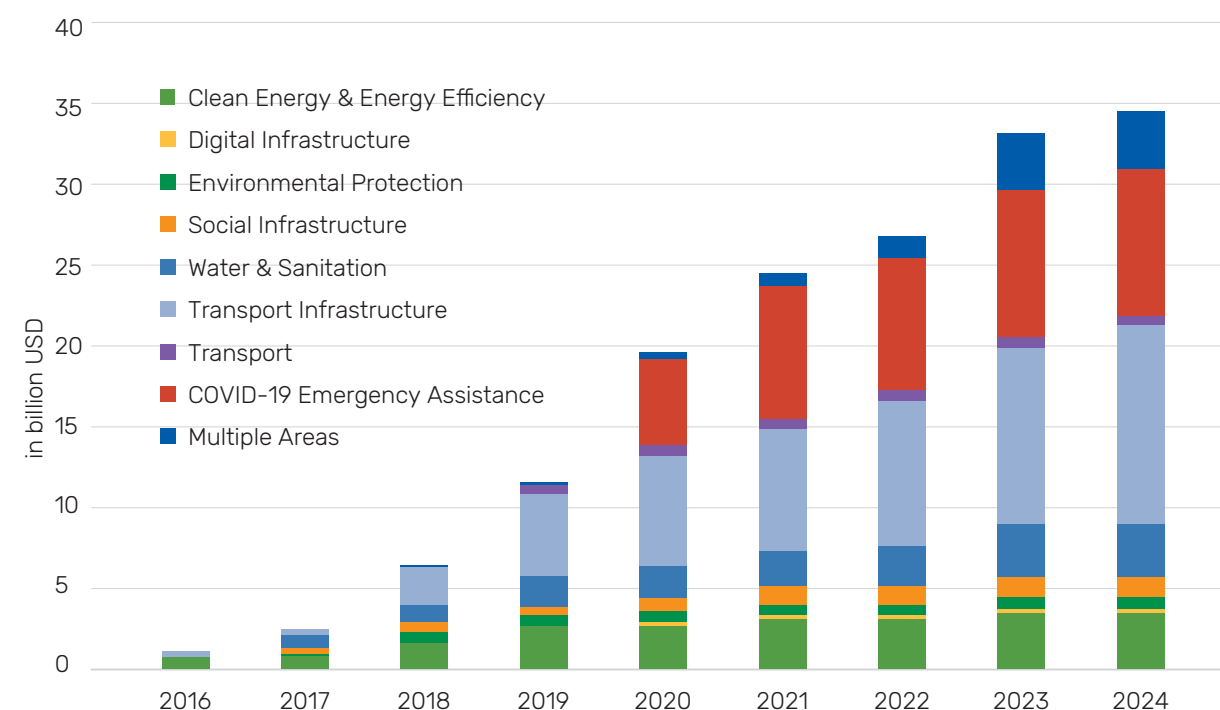
The NDB has demonstrated responsiveness to changing economic conditions and member needs, adapting the sectoral composition of its loan portfolio accordingly. For example, between 2021 and 2022, the Bank focused heavily on COVID-19 emergency assistance, approving pandemic-related loans totaling USD 9.1 billion, including two loans denominated in Chinese yuan worth USD 2.1 billion.

The steady population and economic growth within BRICS countries has sustained demand for development and infrastructure investment. As of 2023, the BRICS population had grown by 4% compared to 2016, driven by rising affluence in Brazil, India, South Africa, and China. According to IMF projections, the population is expected to grow by another 2% by 2029.

BRICS countries also experienced GDP growth of 4% in 2023, with an estimated growth rate of 2.9% by 2029. Simultaneously, urbanization continues to rise, with more than half of the BRICS population projected to reside in cities by 2029.

Through their national development programs, BRICS countries have reaffirmed strong commitments to the UN 2030 Agenda for Sustainable Development, the Sustainable Development Goals (SDGs), and the Paris Agreement. These commitments encompass a wide range of objectives, from energy transition and climate change mitigation to ensuring access to sanitation services and food security.

Figure 14. Portfolio by area of operation (as of May 10, 2024)



Source: Calculations based on NDB data.

The demand for modern transportation infrastructure, accessible and affordable clean energy, water resources, waste management, housing, and more has been steadily increasing in BRICS countries.

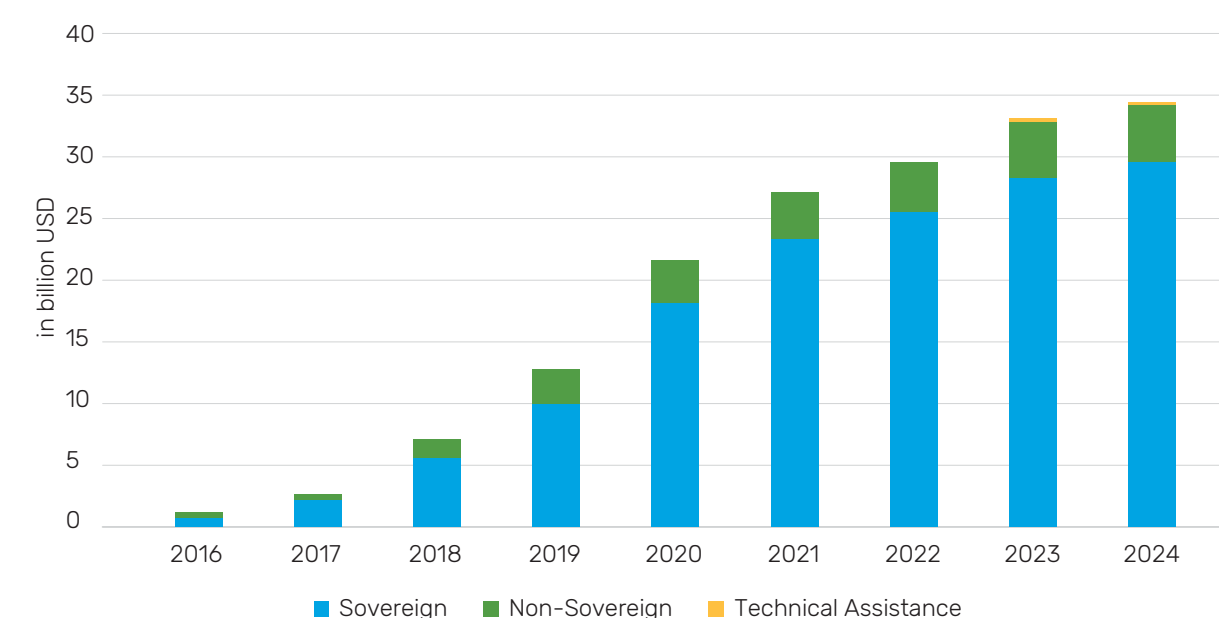
The NDB has made a significant contribution by financing infrastructure and sustainable development projects for its member countries. By 2024, the Bank had approved:

- 36 loans for transportation and transport infrastructure (37.4% of its total portfolio);
- 13 loans for clean energy and energy efficiency development (10.1%);
- 14 loans for water and sanitation construction (9.3%);
- 5 loans for social infrastructure (1.9%);
- 3 loans for environmental protection (2%); and
- 15 multi-sector projects related to sustainable development (10.3%);

Additionally, 27% of the financing for these projects was provided in member countries' national currencies: Chinese yuan (16%), South African rand (10.5%), and Indian rupee (0.4%).

The NDB has seen significant growth in its portfolio of projects focused on climate change mitigation and adaptation. By mid-2024, these projects accounted for 35% of the Bank's total portfolio. This figure encompasses not only explicitly environmental initiatives but also a diverse array of projects across various sectors, including transport infrastructure, clean energy, energy efficiency, and water and sanitation.

Figure 15. Portfolio by type of operation (as of May 10, 2024)



Source: Calculations based on NDB data.

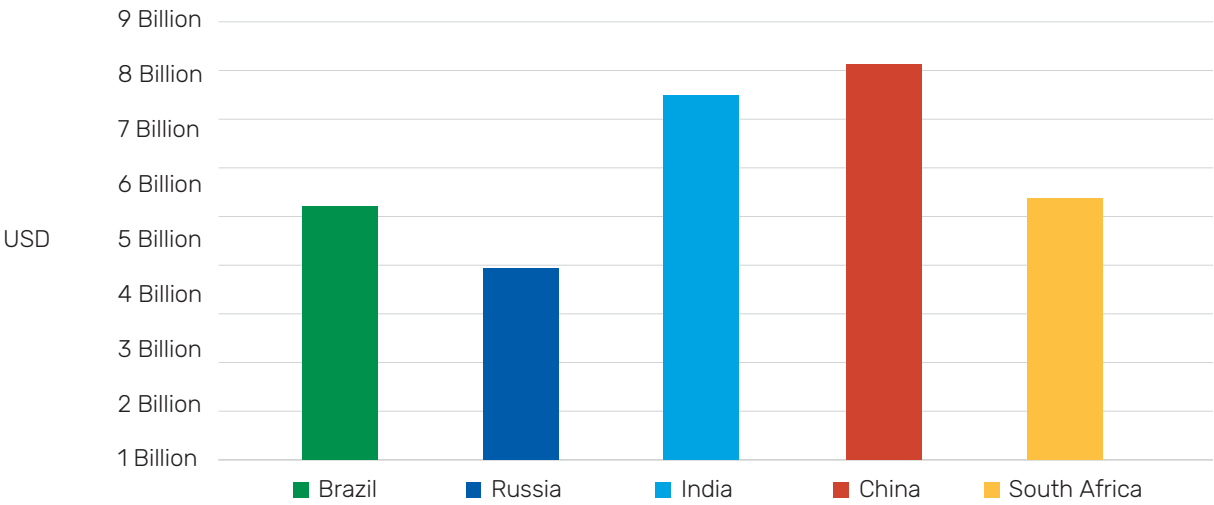
As part of its strategic cycle, the NDB aims to allocate 40% of its total financing to projects addressing climate change mitigation and adaptation by the end of 2026. This includes initiatives focused on energy transition and supporting member countries' transitions to sustainable development. The majority of these projects are geared toward mitigating negative effects rather than adapting to ongoing changes. Only 2% of the projects can be considered adaptation projects.

One of the emerging challenges in recent years has been the rapid digitalization of society and industry, partially accelerated by the pandemic. In this domain, the Bank has approved only one loan to date, representing 0.9% of its current portfolio.

In response to member countries' needs, the NDB plans to increase the share of non-sovereign operations to 30% of total financing by 2026 (New Development Bank, n.d.), up from the current 13%. As of 2024, the majority (87%) of the Bank's operations remain concentrated on sovereign loans and state-guaranteed loans.

An overview of the NDB's consolidated activities within BRICS is presented below (Figure 16).

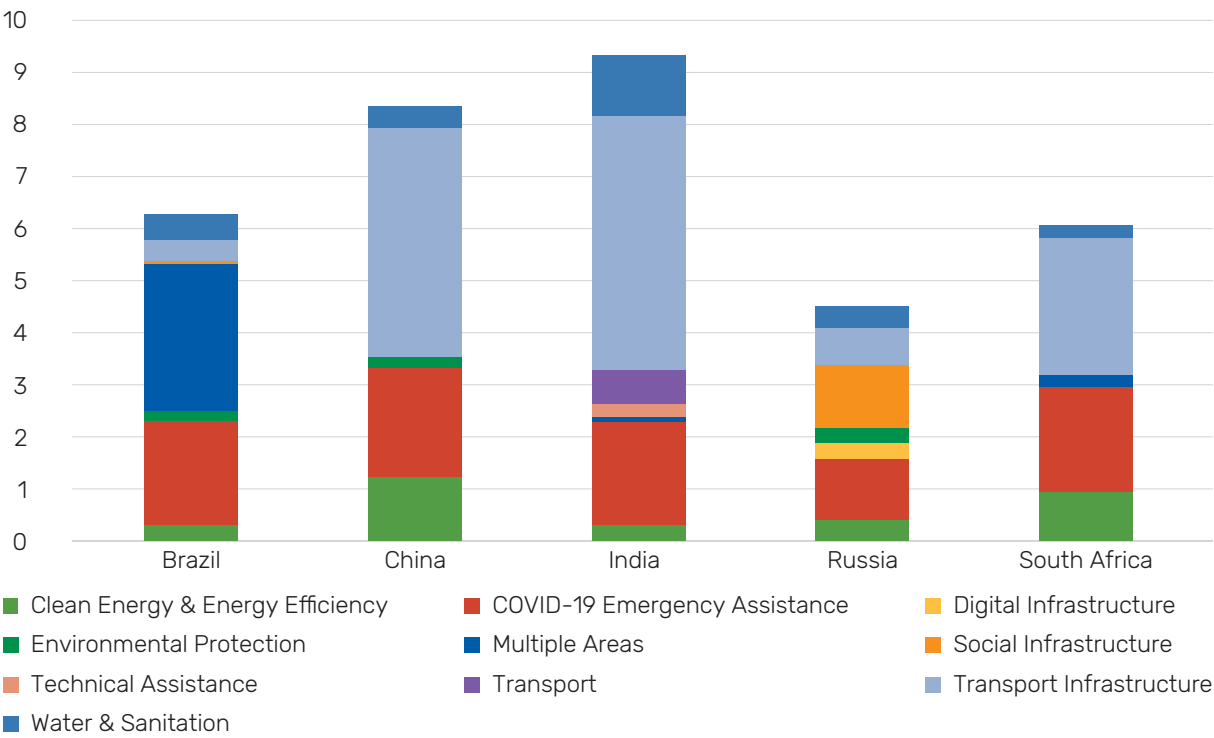
Figure 16. Consolidated numbers of the NDB activity by country



Source: NDB.

A sectoral assessment of the NDB activity in BRICS is presented below (Figure 16.1).

Figure 16.1. Project portfolio by country



Source: NDB.

In early February 2024, the New Development Bank (NDB) announced a new issuance of Panda Bonds valued at USD 845 million. These bonds, worth 6 billion Chinese yuan (approximately USD 845 million), were issued on the Chinese interbank bond market to finance sustainable development projects. This marks the largest five-year bond issuance denominated in Chinese yuan in the Bank's history. The net proceeds will be used as general corporate resources to finance various projects in member countries. Up to 100% of the proceeds may be utilized abroad in Chinese yuan or converted into other currencies.

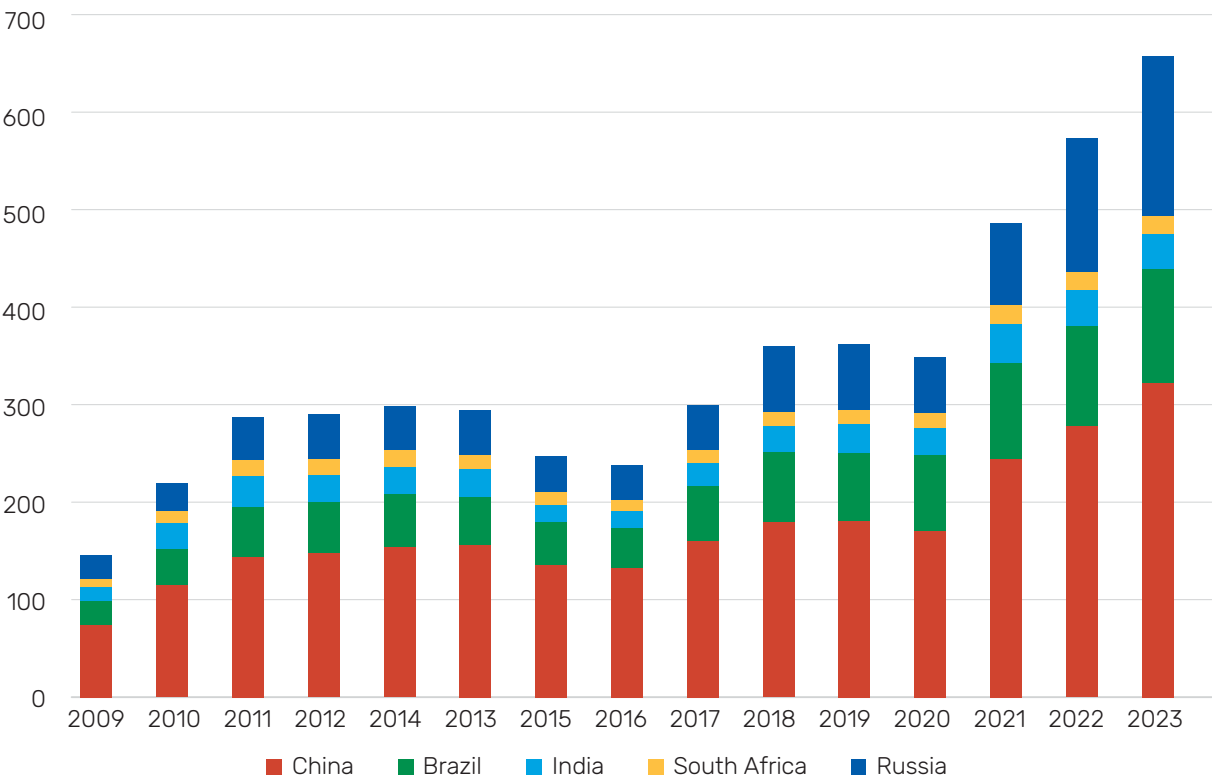
This issuance reflects the NDB's commitment to fostering cooperation and mutual support among its member countries by providing financial assistance for infrastructure and sustainable development projects.

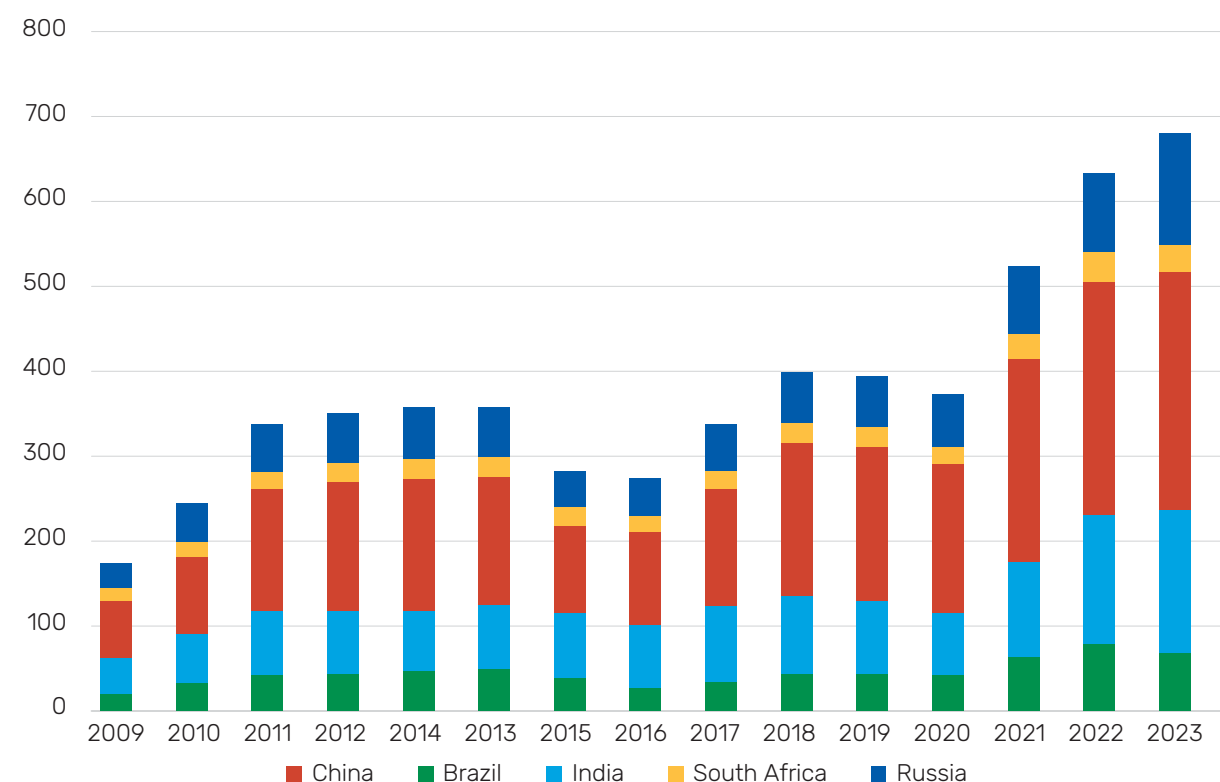
7. SETTLEMENTS IN NATIONAL CURRENCIES

Evolving macroeconomic conditions and heightened geopolitical tensions have driven a structural transformation in global trade patterns. A notable consequence of the financial and trade sanctions imposed by Western nations has been Russia's large-scale pivot towards emerging markets, particularly within the BRICS countries. This shift has significantly accelerated mutual trade among BRICS countries, with a marked intensification since 2022. Trade cooperation processes initiated prior to these sanctions have only strengthened, gaining renewed momentum for development.

Trade volumes within BRICS have experienced unprecedented growth, with exports increasing on average by fivefold and imports tripling between 2009 and 2023. Russia and China have been the primary drivers of this robust growth, underscoring their pivotal role in deepening intra-BRICS trade relationships.

Figure 17. Export and import transactions between the BRICS partners (in million USD)





Source (Figures 17&18): Calculations based on ITC and Russian Federal customs service data.

The trend toward de-dollarization and the adoption of national currencies for economic transactions has gained significant momentum. However, the lack of detailed data on cross-border transactions for most BRICS countries poses challenges to conducting a comprehensive analysis of their currency structures. Consequently, the analysis primarily focuses on Russia, complemented by available data on the use of national currencies in exports and imports, as derived from official statistics of China, India, and South Africa.

According to the Bank of Russia, the share of national currencies in export transactions with friendly countries, primarily BRICS members, increased significantly over the past five years, rising from 16% in 2019 to 68% in 2023 and further to 76% by early 2024³. Similarly, for imports, the share grew from 34% in 2019 to 66% in 2023 and 73% by early 2024³.

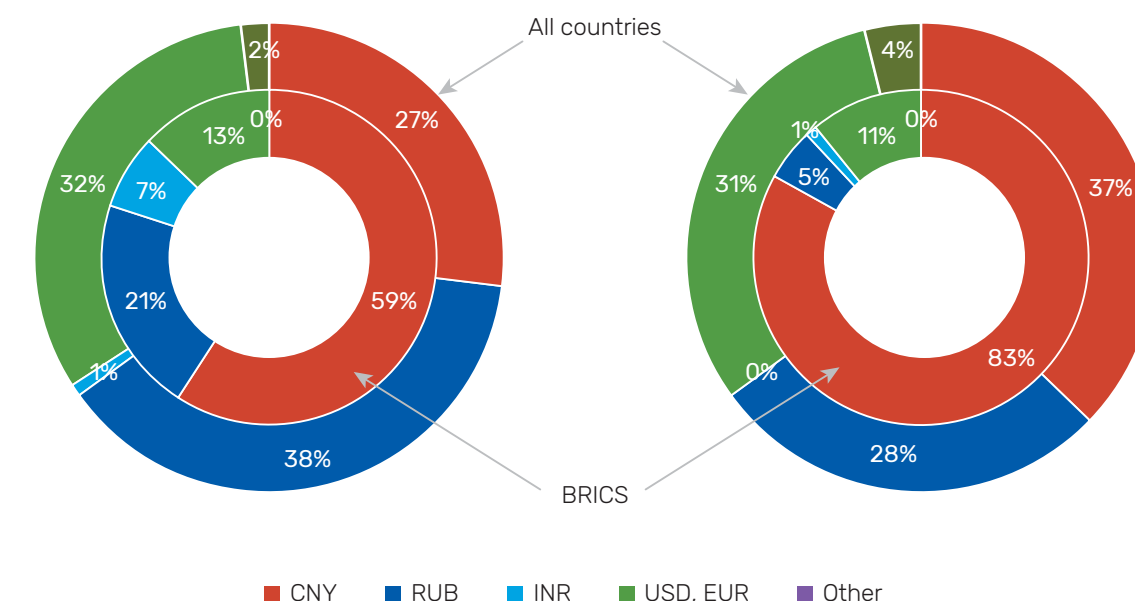
The Russian ruble has become the dominant currency in Russia's foreign trade settlements with BRICS countries and globally. In 2023 and 2024, it accounted for approximately 40% of Russia's overall foreign trade. Within BRICS, the Russian ruble was used in over 20% of export transactions but had a much smaller share in imports, at only 5%.

According to the Bank of Russia, the Chinese yuan has established itself as the second most widely used currency. It accounted for 84% of Russia's trade turnover with China and 20% of Russia's global trade. Yuan-denominated payments for Russian export and import transactions within BRICS were also significant, making up 59% of exports and 83% of imports.

Although progressing at a slower pace, settlements in other BRICS currencies, such as the Indian rupee, the UAE dirham, and the South African rand, are gradually increasing. The Indian rupee, for example, accounted for around 6% of Russian exports to BRICS countries and about 1% to other countries, while rupee-based payments for imports remained below 1%.

³ Calculations based on the Bank of Russia data. Source: Bank of Russia (n.d.). Macroeconomic Statistics. URL: https://cbr.ru/eng/statistics/macro_itm/

Figure 18. Currencies of Russia's exports and imports in 2023



Source: Cenral Bank of Russia.

National currencies are increasingly being utilized not only in foreign trade but also in financial market transactions. For example, the average trading turnover of the RUB/Chinese yuan currency pair has grown more than 100-fold in recent years, and 55 yuan-denominated bond issues have been listed on the Moscow Exchange.

This shift towards transactions in national currencies has been accompanied by a significant decline in the use of the US dollar and Euro. In 2019, approximately 84% of Russian export transactions were conducted in these currencies; by 2023, their share had dropped to 32% and stabilized around this level. For imports, the share of US dollar and Euro transactions fell from 66% in 2019 to 27% by early 2024. Specifically, in settlements with BRICS countries, the use of the US dollar and Euro decreased to 13% for exports and 11% for imports.

Table 9-10. Russia's exports and imports currency structure

		2019	2020	2021	2022	2023	Jan. 2024	Feb. 2024
All Countries	RUB	15.0	14.8	14.3	27.8	39.0	33.5	40.5
	USD, EUR	83.9	83.8	84.6	63.6	31.6	23.9	23.6
	Other	1.1	1.3	1.0	8.6	29.4	42.6	36.0
Asia	RUB	23.5	19.7	20.3	28.3	36.1	28.7	38.7
	USD, EUR	74.3	77.7	77.3	55.3	28.2	21.0	20.0
	Other	2.2	2.6	2.5	16.4	35.8	50.3	41.2
America	RUB	17.8	17.2	14.2	14.4	22.8	33.5	27.7
	USD, EUR	82.2	82.8	85.8	85.3	74.8	65.3	71.6
	Other	0.0	0.0	0.0	0.3	2.4	1.2	0.7
Africa	RUB	2.7	1.9	1.7	14.5	38.1	12.9	10.7
	USD, EUR	75.0	85.4	83.1	71.9	14.0	9.7	84.0
	Other	22.3	12.7	15.2	13.6	47.8	77.4	5.3

EU	RUB	11.5	12.3	11.6	27.2	49.7	53.6	48.8
	USD, EUR	88.2	87.3	88.3	69.9	42.9	35.0	34.4
	Other	0.3	0.4	0.1	2.4	7.4	11.4	16.8
Caribbean region	RUB	7.2	13.8	35.0	57.0	77.8	93.7	96.2
	USD, EUR	90.2	81.6	61.0	41.6	19.9	5.0	2.4
	Other	2.6	4.6	4.1	1.3	2.4	1.3	1.4
Oceania region	RUB	9.2	11.0	13.8	23.3	25.7	33.6	51.5
	USD, EUR	90.8	89.0	86.2	62.7	18.6	32.5	48.5
	Other	-	-	-	14.0	55.7	33.9	0.0

Source: Bank of Russia.

		2019	2020	2021	2022	2023	Jan. 2024	Feb. 2024
All Countries	RUB	30.7	28.5	28.1	28.1	30.0	30.4	37.6
	USD, EUR	66.2	68.0	67.6	56.6	34.0	28.1	26.8
	Other	3.0	3.5	4.3	15.2	36.0	41.4	35.7
Asia	RUB	24.4	20.5	19.7	18.5	22.4	22.2	31.5
	USD, EUR	66.9	69.0	68.6	53.5	26.6	22.4	17.8
	Other	8.7	10.5	11.6	28.0	51.0	55.4	50.6
America	RUB	21.3	21.0	18.8	22.0	25.8	28.6	31.6
	USD, EUR	78.7	79.0	81.2	77.7	69.6	63.8	63.0
	Other	0.0	0.0	0.0	0.3	4.6	7.5	5.4
Africa	RUB	3.6	3.9	3.5	21.8	34.2	39.9	49.1
	USD, EUR	96.1	95.6	95.7	73.7	45.3	37.2	36.6
	Other	0.3	0.5	0.8	4.5	20.5	23.0	14.3
EU	RUB	35.1	33.6	34.1	40.5	47.9	53.0	51.3
	USD, EUR	64.6	66.3	65.7	58.4	48.4	41.4	44.6
	Other	0.3	0.1	0.3	1.1	3.8	5.6	4.1
Caribbean region	RUB	9.6	6.3	13.3	7.1	22.4	20.2	35.5
	USD, EUR	9.8	92.9	86.4	91.9	36.2	16.4	10.2
	Other	0.6	0.7	0.3	1.0	41.4	63.5	54.4
Oceania region	RUB	1.7	4.2	1.7	8.9	27.0	26.3	21.5
	USD, EUR	98.2	95.8	98.3	81.0	51.4	44.5	23.8
	Other	0.1	-	0.0	10.1	21.6	29.2	54.7

Source: Bank of Russia.

Regarding the distribution of currencies in various types of transactions and settlements, reference can be made to data from the Bank of Russia (Bank of Russia, n.d.). In trade with Asian countries, transactions are predominantly conducted in Russian rubles and the national currencies of partner countries, with imports primarily settled in the currencies of friendly

nations. In trade with Africa, exports are carried out in either local currencies or Russian rubles, while the US dollar and Euro still account for a significant share of imports. Trade with the Americas remains largely dollar-dominated; however, in 2023, the use of local Latin American currencies and the Russian rubles increased. These trends indicate a clear shift toward settlements in national currencies.

Table 11. Share of currencies in Russia's international payments

		% of payments, exports					% of payments, imports				
		2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
Total	RUB	15	15	14	28	39	31	28	28	28	30
	Hostile states currencies	84	84	85	64	32	66	68	68	57	34
	Other currencies	1	1	1	9	29	3	4	4	15	36
Asia	RUB	23	20	20	28	36	24	21	20	18	22
	Hostile states currencies	74	78	77	55	28	67	69	69	53	27
	Other currencies	2	3	2	16	36	9	10	12	28	51
America	RUB	18	17	14	14	23	21	21	19	22	26
	Hostile states currencies	82	83	86	85	75	79	79	81	78	70
	Other currencies	0	0	0	0	2	0	0	0	0	5
Africa	RUB	3	2	2	14	38	4	4	4	22	34
	Hostile states currencies	75	85	83	72	14	96	96	96	74	45
	Other currencies	22	13	15	14	48	0	1	1	5	21

Source: Bank of Russia.

Table 12. China's total export & import values by country/region (in Chinese yuan)

		Exports & imports (100 million CNY)		Exports (100 million CNY)		Imports (100 million CNY)		Total year-on- year (±%)
		October	Jan-Oct	October	Jan-Oct	October	Jan-Oct	Jan-Oct
2022	Russia	1,228.3	10,177.4	516.7	3,946.8	711.5	6,230.6	+ 35
	India	743.0	7,521.0	666.4	6,531.9	76.7	989.1	+ 13
	South Africa	299.2	3,210.7	135.0	1,322.9	164.2	1,887.8	+ 10
2023	Russia	1,420.6	13,793.0	623.6	6,329.2	797.1	7,463.8	+ 35
	India	789.7	7,896.9	681.0	6,820.4	108.7	1,076.5	+ 6
	South Africa	330.5	3,301.7	123.8	1,412.7	206.7	1,889.1	+ 4
2024	Russia	1,538.1	14,364.4	775.4	6,685.8	762.7	7,678.7	+ 4
	India	783.8	8,177.5	698.1	7,094.8	85.7	1,082.7	+ 3
	South Africa	299.8	3,098.2	136.0	1,275.5	163.8	1,822.6	- 6

Source: General Administration of Customs of the People's Republic of China.

Table 13. South Africa’s export & import values by country (in South African rand)

		Exports		Imports	
		million ZAR	Y to Y (%)	million ZAR	Y to Y (%)
2022	Russia	4,620	- 24	9,152	- 1
	China	187,620	- 5	368,040	+ 30
	India	89,840	+ 49	131,268	+ 66
	Brazil	8,264	+ 18	26,068	+ 36
2023	Russia	5,197	+ 12	9,663	+ 6
	China	226,505	+ 21	404,532	+ 10
	India	89,188	- 1	138,487	+ 5
	Brazil	8,323	+ 1	26,464	+ 2

Source: South African Revenue.

Table 14. India’s export & import values by country (in INR)

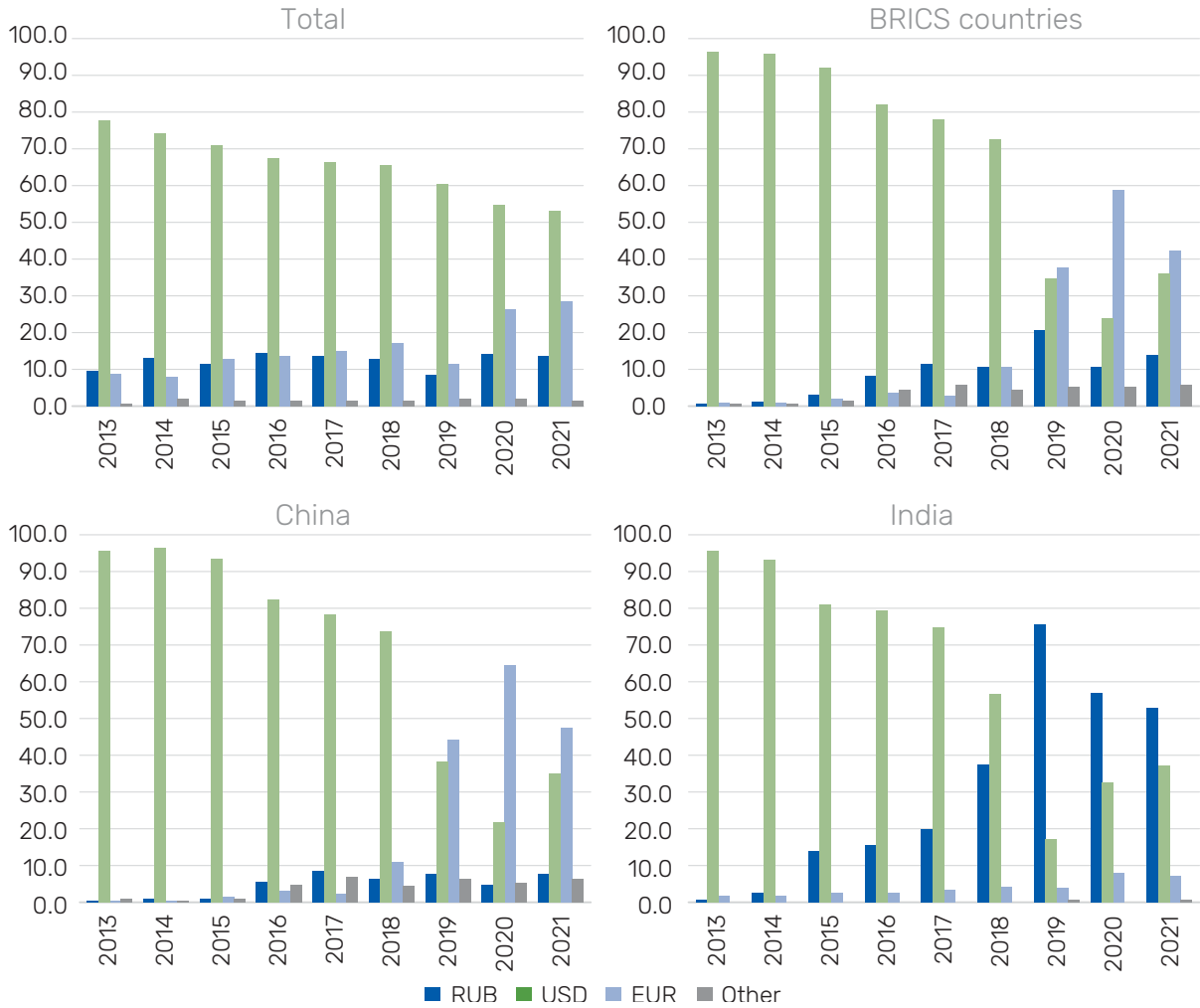
		Exports		Imports	
		million INR	Y to Y (%)	million INR	Y to Y (%)
2022	Russia	2,546	+ 5	37,400	+ 407
	China	12,277	- 22	79,093	+ 12
	South Africa	6,787	+ 49	8,311	+ 1
	Brazil	7,960	+ 64	5,377	+ 26
2023	Russia	3,528	+ 38	50,638	+ 35
	China	13,796	+ 12	84,238	+ 6
	South Africa	7,208	+ 6	8,725	+ 4
	Brazil	4,980	- 37	5,143	- 4

Source: Ministry of Commerce and Industry of India.

The dynamics of exports and imports among BRICS member countries reveal a clear trend toward increased foreign trade conducted in national currencies. A notable example is the sharp rise in imports from Russia to India, denominated in Indian rupees. In 2022, these imports grew at an extraordinary rate of 407%, followed by continued growth of 35%, reaching a volume of 50 billion rupees.

An analysis of the dynamics of incoming cash flows to Russia within BRICS reveals that, until 2016, settlements in national currencies, including Russian rubles, were nearly nonexistent, with the US dollar dominating transactions. Subsequently, the share of ruble-based settlements began to grow gradually, while the share of other BRICS currencies remained largely unchanged. According to the Bank of Russia, trade with China was primarily conducted in US dollars and Euros, whereas trade with India was predominantly settled in Russian rubles.

Figure 19. Russia’s currency inflow dynamics, % (2013–2021)



Source: Bank of Russia.

For outgoing flows, the situation presents a different picture. While the US dollar continued to dominate settlements with BRICS countries in 2021, the share of partner countries’ national currencies grew, driven primarily by an increase in yuan-denominated transactions. In trade with China, the gap between US dollar and Chinese yuan settlements began to narrow. However, India continued to prefer the US dollar as the primary currency for transactions.

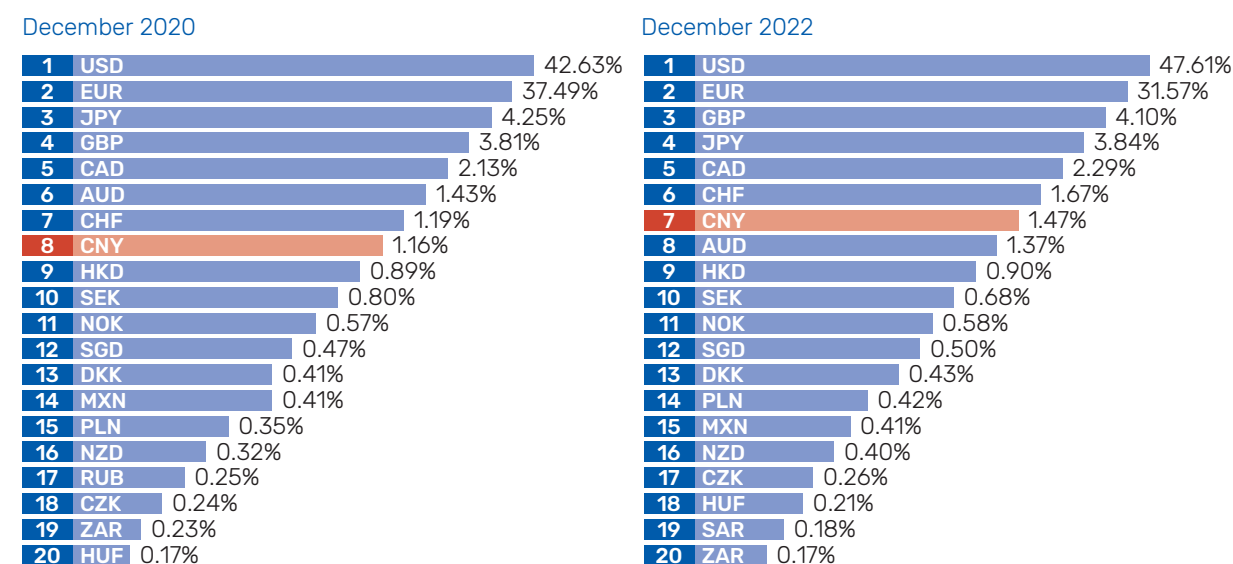
Figure 20. Russia's currency outflow dynamics, % (2013–2021)



Source: Bank of Russia.

It is worth noting that the Chinese yuan is steadily emerging as a global currency. While it still lags significantly behind the US dollar in terms of usage, its presence in international settlements is growing steadily. Figure 21 illustrates how the yuan's share evolved in 2022 compared to 2020, during which it rose to become the seventh most popular currency.

Figure 21. Chinese yuan share in international payments



Source: ITC and Russian Federal customs service data.

BRICS countries are actively cooperating in research and development (R&D) to enhance their payment systems. Various events are organized to facilitate collaboration, bringing together representatives from member states.

One key initiative is the formation of a unified technological space among BRICS countries, including advancements in artificial intelligence (AI). The nearly twofold expansion of BRICS membership strengthens the group's ability to address global issues, including AI regulation. BRICS nations have the potential and responsibility not only to establish legal frameworks for AI within the group but also to jointly advocate for international regulatory standards at the United Nations.

According to Russian publications and the Central Bank, in November 2022, Russian Prime Minister Mikhail Mishustin proposed the creation of a BRICS payment system similar to the Western SWIFT. This system would facilitate settlements in national currencies, reducing reliance on third countries in the financial sector. Mishustin suggested establishing a system for electronic financial information exchange and bank payments to accelerate the transition to national currency settlements.

Russia has already developed the Financial Message Transmission System (SPFS), a platform for transmitting electronic financial transaction messages in Russian rubles and foreign currencies. This system is operational and capable of interacting with foreign financial institutions. Similarly, China operates the Cross-border Interbank Payment System (CIPS), which facilitates yuan-based payments. By mid-2022, 25 Russian banks had joined CIPS. In 2021, the First Deputy Governor of the Bank of Russia Olga Skorobogatova announced the technical feasibility of integrating SPFS with CIPS via a gateway. However, this merger has not yet materialized.

An assessment of national currency usage in BRICS settlements indicates a positive trend, enhancing the security of economic cooperation among member countries.

8. CONCLUSIONS AND RECOMMENDATIONS

An analysis of key financial indicators from 2009 to May 2023 highlights the positive dynamics of the BRICS financial market, characterized by favorable loan interest rates despite significant global financial volatility and uncertainty. Furthermore, an assessment of the BRICS economies' role in global finance reveals positive trends, including public support for strategic projects that bolster economic growth among the BRICS member states.

We conclude that BRICS business entities utilize a variety of financial instruments, widely recognized in global practice, to safeguard their economic interests. While inflationary pressures influence financing choices, they do not significantly hinder the implementation of development programs supported by intergovernmental initiatives. Notably, BRICS initiatives play a positive role in protecting the economic interests of member countries amid the volatility of the global economy and financial markets.

The New Development Bank and other development banks with BRICS participation demonstrate a strong commitment to fostering cooperation and providing financial assistance for infrastructure and sustainable development projects that align with the interests of BRICS member countries.

Monitoring the use of national currencies in BRICS settlements indicates a positive trend aimed at reducing reliance on volatile global currencies and ensuring secure economic cooperation among member states. Introducing a unified digital currency to support the economic interests of member countries could further enhance the flexible mechanism for currency interaction between economic entities, strengthening BRICS' position in global finance.

The development of BRICS financial markets hinges on the establishment of a joint investment platform. In this regard, it would be beneficial to create a centralized database of BRICS

investment projects, featuring best practices and banking proposals. Additionally, enhancing BRICS' investment potential through joint efforts in strategic planning and forecasting resource consumption within a consensus-based investment strategy would help ensure the key strategic interests of member countries.

The development of digital services for consumers and suppliers of investment products is essential, along with the harmonization and protection of digital document management systems to enhance financial risk management.

It is equally important to strengthen cooperation with UN institutions whose activities align with achieving Sustainable Development Goals. Establishing specialized investment centers in BRICS countries could facilitate efforts in this area. Harmonizing investment methodologies and mutually recognizing key provisions governing business activities, including insurance and reinsurance, will further support the development of a unified BRICS investment platform.

A mutual stock market could also play a significant role in advancing BRICS financial relations. As an initial step, the establishment of a BRICS Grain Exchange should be considered, especially given the group's expansion on January 1, 2024, which is associated with substantial grain production. BRICS nations collectively produce 1.24 billion tonnes of grain annually (44% of global production), including 377 million tonnes of wheat (48% of global production) and 501 million tonnes of corn (40% of global production). A dedicated Grain Exchange could connect buyers and suppliers within BRICS while enabling settlements in national currencies. To ensure its effectiveness, transparency in exchange trading and robust clearing and depository services must be integrated into the broader approach to BRICS financial market development.

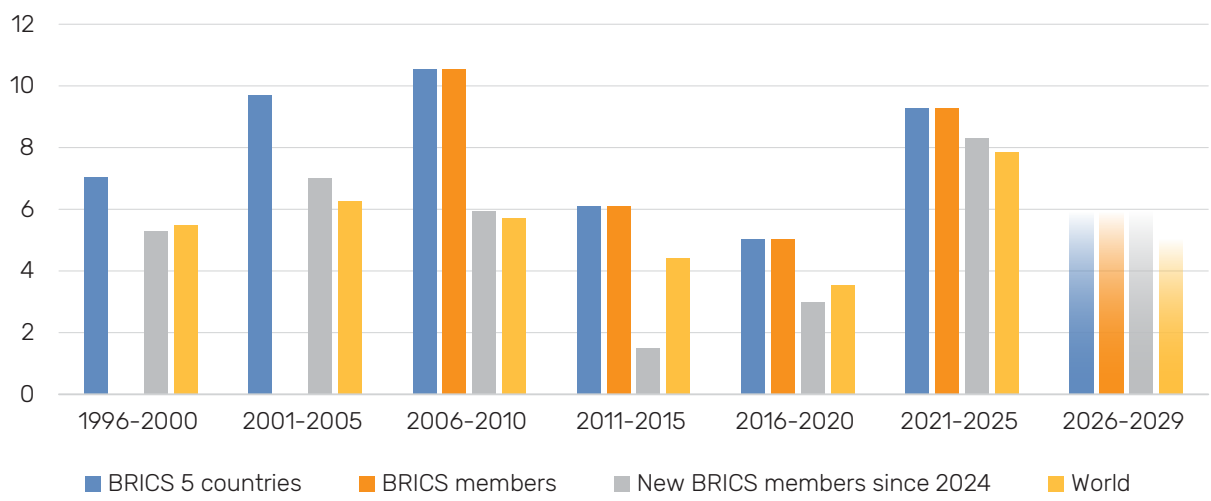
These recommended measures will strengthen the group's position as a key global supplier, enhance food security, and promote the growth of trade and financial relations in the interests of all BRICS member countries.

PART II. ECONOMICS AND TRADE

1. THE ROLE OF THE BRICS COUNTRIES IN THE GLOBAL ECONOMY

BRICS¹ represents the most dynamic and diversified group of economies accounting for a significant part of the world's population. The key development driver for BRICS is the economic growth of its member countries outpacing the global rate (Figure 1).

Figure 1. Average annual GDP growth rates of BRICS and the world, in % (in constant prices)

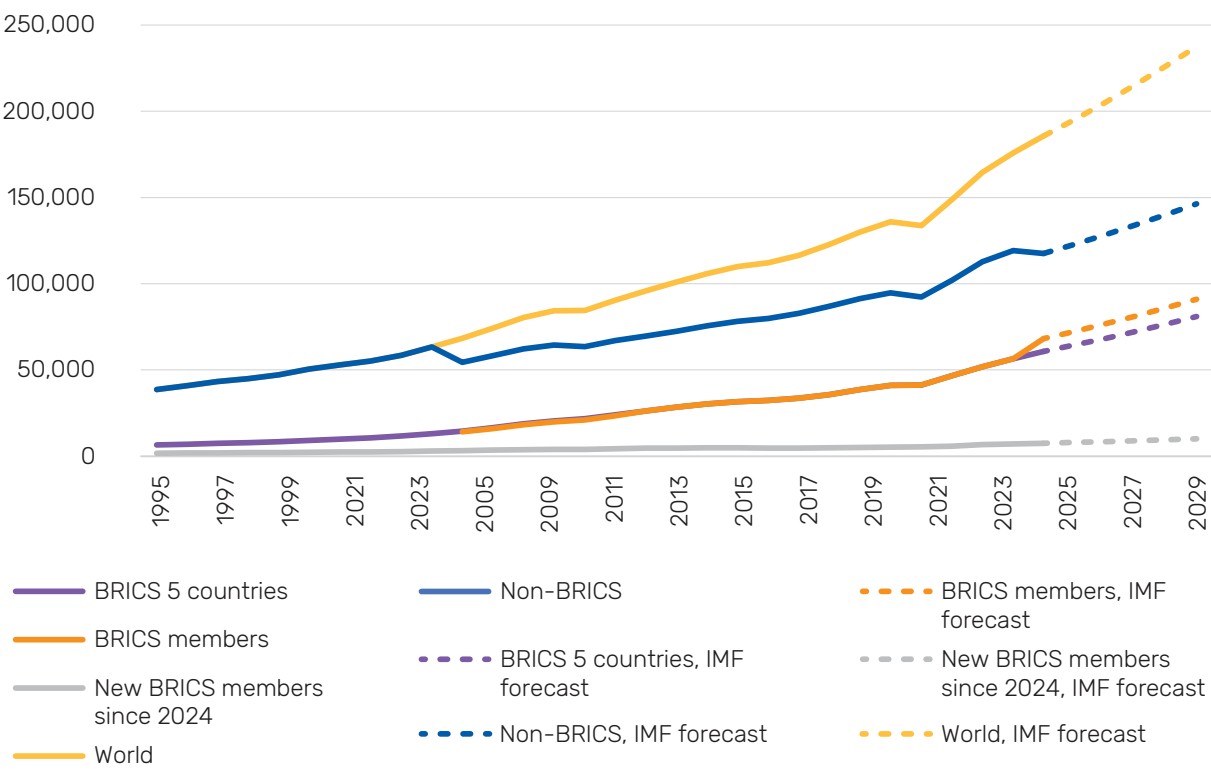


Note: The 2024–2025 and 2026–2029 data is based on the IMF's estimates and forecasts, respectively.
Source: IMF.

In the past 30 years, the average economic growth rates of BRICS 5 countries exceeded the global average. The picture would be different if the countries that joined BRICS in 2024 were included in the analysis. In some periods, their growth rates were either higher or lower compared to the rest of the world. For instance, before 2000 and in 2011–2020, the annual growth rates of the new BRICS members were below the world's level. It was mostly due to weak global demand for commodities and their high commodity exports dependence which was above that of the BRICS 5 countries although the latter were major commodity exporters, too. The overall economic performance of BRICS after enlargement did not deteriorate – the group continues to outpace the rest of the world in terms of economic growth.

¹ For purposes of Part II “the BRICS 5 countries” refer to Brazil, China, India, Russia, and South Africa; “BRICS members” refer to BRICS membership for the respective period (in projections, the new BRICS members are included: Egypt, Ethiopia, Iran, Saudi Arabia, and UAE). The use of these different categories allows for a more correct representation of changes in BRICS performance.

Figure 2. GDP (PPP) of BRICS and the world, in billion USD (in current prices)



Note: The 2024–2025 and 2026–2029 data is based on the IMF's estimates and forecasts, respectively.
Source: IMF.

Figure 2 compares the combined GDP of BRICS to that of the rest of the world and shows a gradual increase in the weight of BRICS in the global economy.

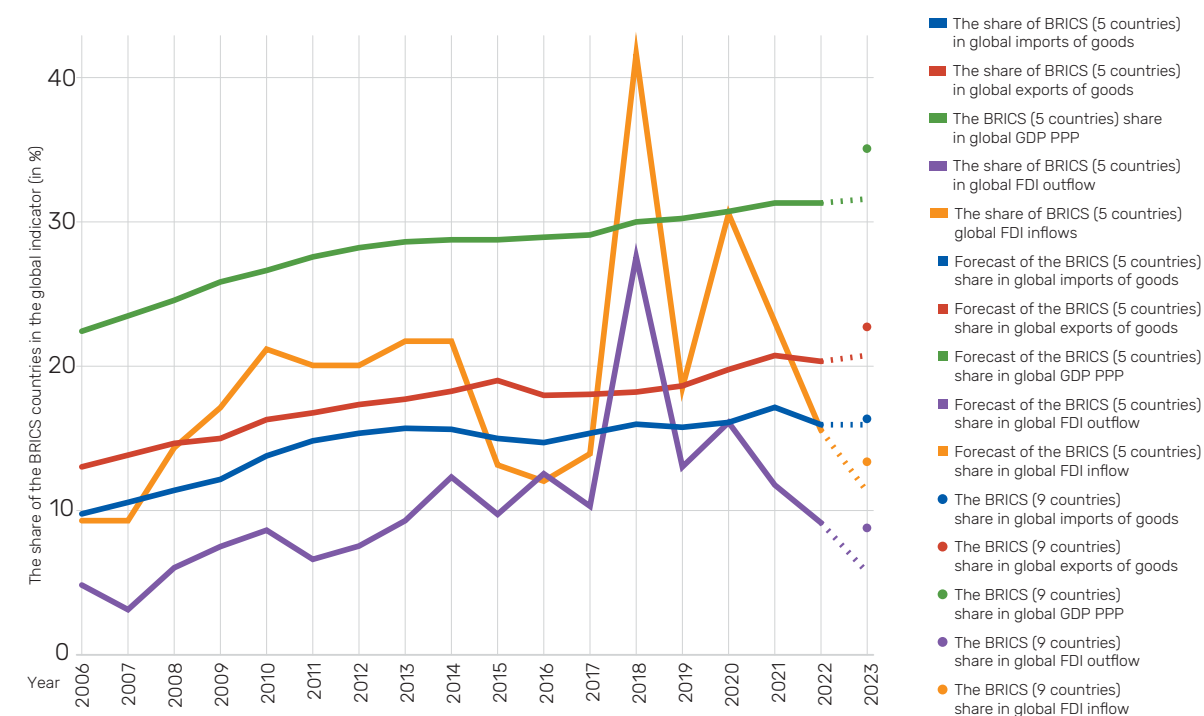
Figure 3. Global GDP share of BRICS and non-BRICS countries, in %



Note: The 2026–2029 data is based on the IMF forecasts.
Source: IMF.

The changes in the share of the BRICS countries in the global GDP (PPP) as shown in Figure 3 reflect both the steady increase in the weight of the BRICS economies globally as well as the stability of this trend.

Figure 4. Role of BRICS in the global economy: GDP, trade, FDI, contribution to global values, in %



Source: IMF.

Figure 4 combines five key economic indicators of BRICS: the group's share in the global GDP, trade, and FDI. The picture is very illustrative, as it shows the BRICS global GDP share (the green line) which surpassed 30% and steadily approached the 40% level (the green point is an estimate for 2023). Given the BRICS share in the global GDP, the importance of BRICS is difficult to overestimate.

Figure 4 also shows the BRICS share in global exports and imports (the blue and red lines). Imports and exports combined, the BRICS share in global trade looks less impressive, but remains significant at around 20% of the global volume and keeps growing.

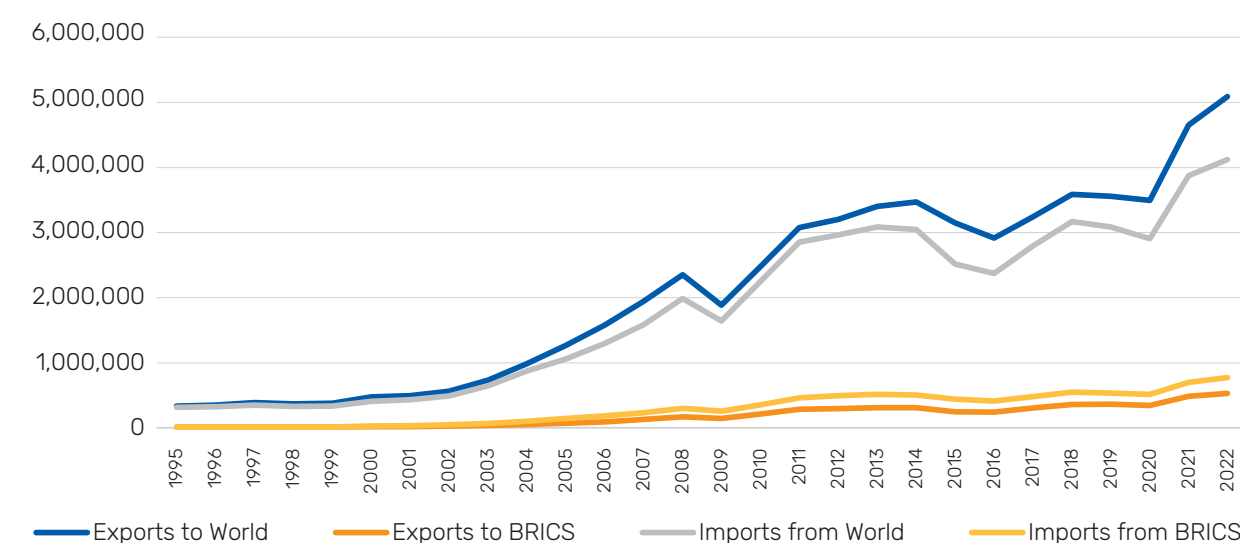
The BRICS economic importance in terms of the share in global FDI outflows and inflows (the orange and purple lines) is much more moderate (around 10%, on average) and shows that much remains to be done in order to attract international capital and strengthen the BRICS economic standing in the global economy.

It can be concluded from Figure 4 that while the importance of BRICS measured in terms of the share in global GDP is very impressive, the relative impact of BRICS on global trade and on global investments is more modest. This means that the BRICS agenda should focus on trade and investment related policies, enabling the group to become equally important in international trade and FDI global flows, similarly to its rising share of the global GDP.

2. TRADE AND INVESTMENT

The export and import trends in BRICS countries are shown in Figure 5.

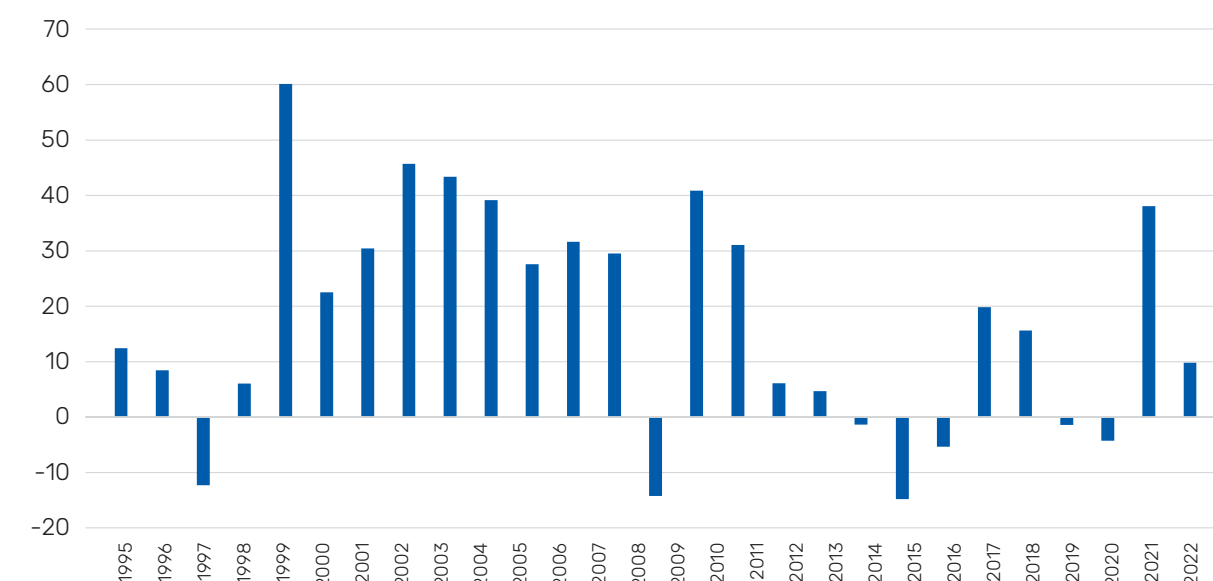
Figure 5. Trade of the BRICS countries, in USD (in current prices)



Source: UNCTAD.

Trade with third countries is much more important for BRICS than intra-BRICS trade (Figures 6, 10–11).

Figure 6. Intra-BRICS trade, annual percent change (in current prices)

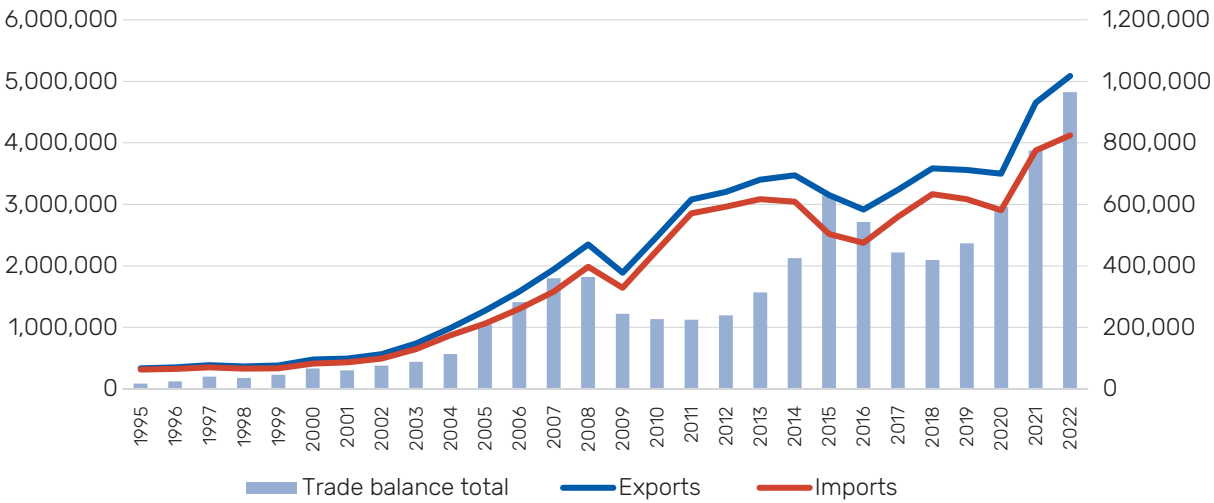


Source: UNCTAD.

The export nature of the BRICS trade looks typical for trade with the world – the trade balance is positive and continues to grow, which is explicitly shown in Figure 7. That said, the opposite situation is observed in intra-BRICS trade. Total mutual imports of the BRICS countries are higher than exports, making the total sum of trade balance of the BRICS countries for trade within the group passive due to the strong demand for energy and commodities, on the one hand, and manufactured goods (coming mostly from China), on the other hand. Thus, despite the prevalence of trade with third countries as compared to intra-BRICS trade, there

is a strong stimulus for developing mutual trade in commodity and energy sector and, at the same time, an obvious challenge from imbalanced trade both overall and for manufactures, in particular.

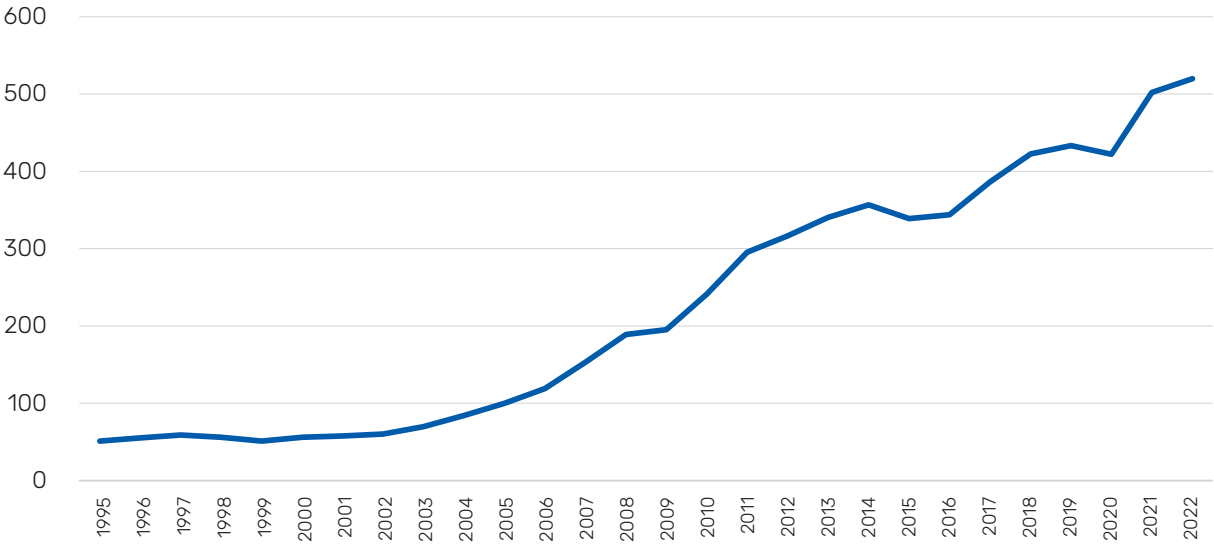
Figure 7. Trade and trade balance (right scale, yellow) of the BRICS countries in the world, in USD (in current prices)



Source: UNCTAD.

All BRICS countries have export-oriented economies; hence, their growth rates significantly depend on the global demand and economic growth. However, fast development of internal markets in the BRICS countries and income growth were important factors for high rates of the economic growth within the group (Figure 8).

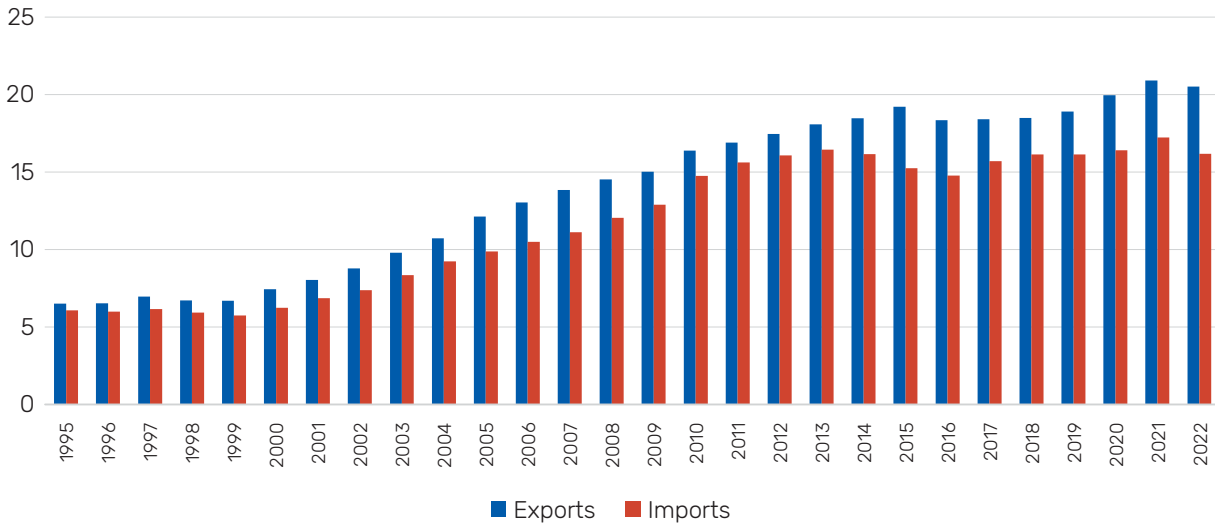
Figure 8. Domestic market capacity of BRICS 5 countries (in current prices), 2005=100



Source: UNCTAD.

The share of BRICS in the world trade has been increasing steadily for at least last 20 years (2014–2016 and 2022 were the only exceptions) as shown in Figure 9.

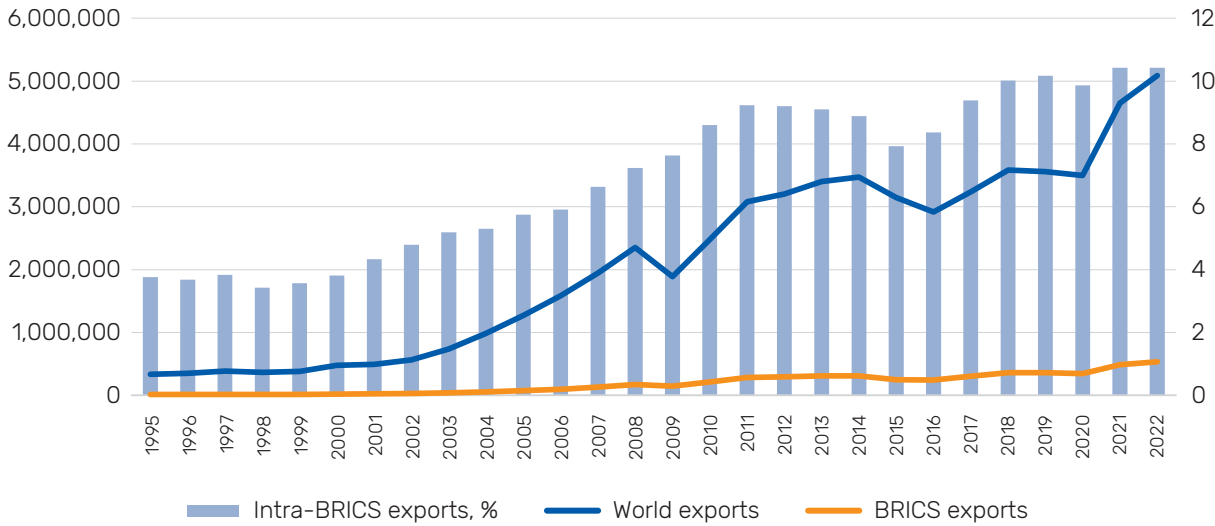
Figure 9. Share of BRICS in the world trade, in %



Source: UNCTAD.

As it was already mentioned, trade with third countries is more important for BRICS than intra-BRICS trade. Export trends are shown in Figure 10.

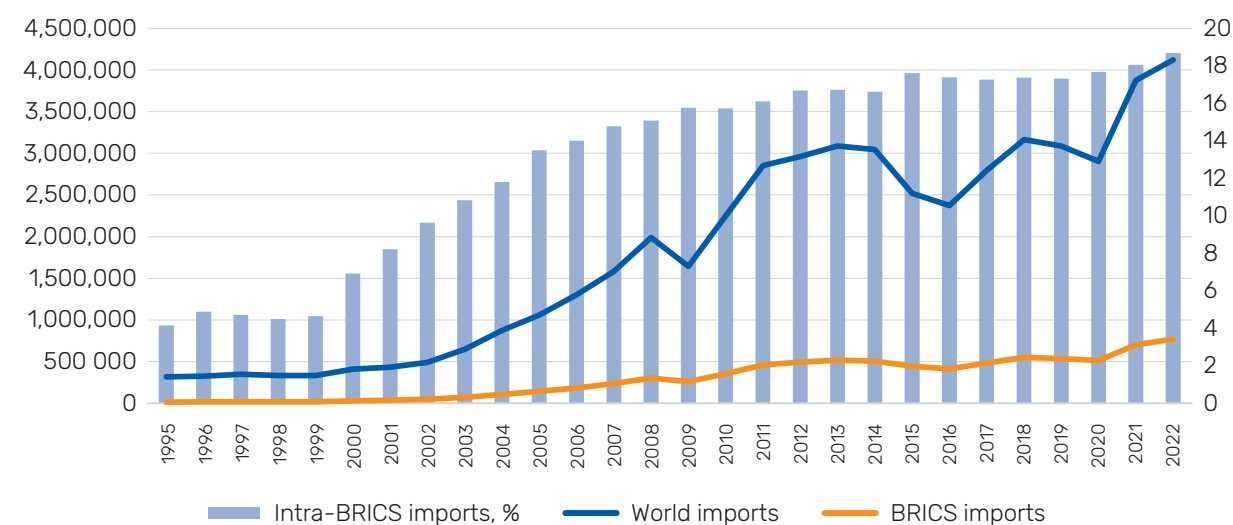
Figure 10. The BRICS exports and the share of intra-BRICS exports (right scale), in USD (in current prices)



Source: UNCTAD.

The statistical data on imports used in Figure 11 confirms that trade with third countries is more important for the BRICS countries as compared to intra-BRICS trade in value terms. However, intra-BRICS trade grew faster than the trade of the BRICS countries in aggregate, and even than the total world trade. Figures 10 and 11 demonstrate a considerable increase in the share of the mutual intra-BRICS trade (yellow bars) both exports and imports.

Figure 11. Imports of the BRICS countries and the share of intra-BRICS exports (right scale), in USD (in current prices)



Source: UNCTAD.

Countries that are most engaged in trade with other members of the BRICS group, as a general rule, are also involved in investment activities with the same partners, as it can be seen from Tables 1 and 2. Thus, China accounting for the major part of investments in the BRICS, is the most active trader within BRICS, too. Nevertheless, the volume of investments within the group stays at a significantly lower level compared to trade volumes.

Table 1. Mutual trade within BRICS, 2022–2023

Exporters and importers		Share in exports and imports of the BRICS states									
		Brazil	Russia	India	China	South Africa	UAE	Iran	Egypt	Ethiopia	Saudi Arabia
Brazil	Import		4.20%	2.90%	20.10%	0.20%	0.50%	0.10%	0.20%	0.01%	1.50%
	Export		0.40%	1.40%	30.80%	0.50%	1.00%	1.30%	0.70%	0.01%	0.90%
Russia	Import	0.47%		1.14%	29.80%	0.10%	1.30%	0.30%	0.30%	0.01%	0.10%
	Export	2.60%		6.80%	19.20%	0.10%	1.40%	0.30%	0.60%	0.01%	0.40%
India	Import	1.00%	5.50%		14.00%	1.50%	7.40%	0.10%	0.40%	0.01%	6.30%
	Export	2.20%	0.60%		3.40%	1.90%	6.40%	0.40%	0.90%	0.10%	2.20%
China	Import	4.80%	5.00%	0.70%		1.30%	1.50%	0.20%	0.10%	0.01%	2.50%
	Export	1.70%	3.30%	3.50%		0.70%	1.60%	0.30%	0.50%	0.10%	1.30%
South Africa	Import	1.30%	0.50%	7.00%	20.50%		3.70%	0.01%	0.10%	0.01%	2.90%
	Export	0.40%	0.30%	4.60%	11.30%		2.30%	0.01%	0.01%	0.01%	0.40%
UAE	Import	0.90%	1.90%	6.50%	16.00%	1.10%		0.10%	0.50%	0.10%	2.20%
	Export	0.10%	0.50%	4.90%	2.00%	0.40%		1.30%	1.10%	0.10%	5.40%
Iran	Import	1.10%	2.60%	4.60%	26.50%	0.01%	30.70%		0.01%	0.01%	0.01%
	Export	0.35%	1.10%	3.40%	37.00%	0.01%	9.20%		0.01%	0.01%	0.01%
Egypt	Import	3.60%	4.30%	4.40%	15.00%	0.16%	3.40%	0.01%		0.01%	9.00%
	Export	0.60%	1.20%	3.80%	3.70%	0.21%	4.00%	0.01%		0.21%	5.10%
Ethiopia	Import	0.12%	0.27%	14.00%	30.00%	1.00%	3.40%	0.01%	3.50%		3.20%
	Export	0.01%	0.45%	3.00%	4.30%	0.60%	6.70%	0.08%	0.11%		8.80%
Saudi Arabia	Import	1.90%	1.10%	5.50%	21.00%	0.60%	6.30%	0.01%	3.50%	0.01%	

Source: UNCTAD.

The green and yellow highlights in the table are used to mark leaders by share of exports and imports, and the countries ranking second, respectively. China apparently ranks first most frequently in a majority of cases.

Intra-BRICS trade has experienced significant growth, outpacing the overall trade expansion of BRICS nations and even surpassing the growth of global trade. This trend highlights the substantial potential for further mutual trade enhancement among these economies. China continues to play a central role in BRICS trade, while India's influence remains significant. Russia is likely to continue shifting its trade towards BRICS markets. Given the positive momentum in economic collaboration among BRICS members, it is crucial to sustain and intensify joint efforts in order to establish unified approaches to trade regulation and to deepen economic ties. Coordinated and harmonized trade policies could both facilitate smoother trade and ensure a more equitable distribution of benefits from enhanced cooperation. By developing comprehensive and unified trade measures, BRICS nations can maximize the advantages from deepening their trade ties to increase their joint economic strength. A strong foundation has already been established for expanding mutual trade, particularly in the commodity and energy sectors, which could help address imbalances in mutual trade and accelerate its growth.

Table 2. Mutual current direct investments within BRICS, 2022, in million USD

Investors	Recipients									
	Brazil	Russia	India	China	South Africa	UAE	Iran	Egypt	Ethiopia	Saudi Arabia
Brazil		0	-3	24	-3	-379	0	0	0	0
Russia	-6		16	-8	-3	0	0	0	0	0
India	295	2		-13	-56	3.08	-3	-4	-48	-18
China	-40	1,135	-166		-538	2.04	-26	-191	-70	-516
South Africa	212	0	47	-1		-145	213	0	0	0
UAE	674	926	1,119	477	858		0	0	0	0
Iran	0	0	0	-1	0	0		0	0	0
Ethiopia	0	0	0	12	0	0	0		0	0
Egypt	0	0	0	2	-3	0	0	0		0
Saudi Arabia	-2	63	-60	-403	-106	0	0	0	0	

Source: UNCTAD.

The potential of strengthening trade and investment ties among BRICS members is sufficient to stimulate the development of their internal markets and, therefore, significantly contribute to the economic growth of the BRICS nations.

3. BRICS ENERGY

Table 3 below highlights the significance of energy sources within BRICS economies. Each source is represented as a percentage, contributing to the total 100% of energy utilized across the respective economies.

Table 3. BRICS energy mix

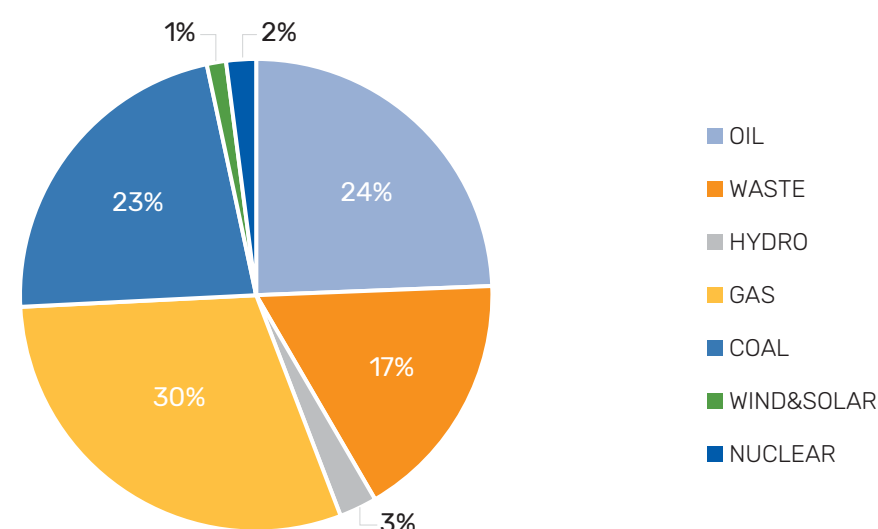
ENERGY MIX	OIL	WASTE	HYDRO	GAS	COAL	WIND & SOLAR	NUCL	%	TOT (TJ)
BRAZIL	37.2%	31.7%	12.3%	9.4%	4.7%	3.5%	1.2%	100	12,531,920
RUSSIA	19.3%	1.3%	2.2%	54.8%	15.3%	0.1%	7.0%	100	34,938,174
INDIA	23.7%	21.6%	1.4%	5.8%	44.6%	1.6%	1.3%	100	39,529,092

CHINA	18.1%	3.9%	2.9%	8.0%	60.6%	3.6%	2.9%	100	156,562,993
SOUTH AFRICA	18.1%	4.8%	0%	3.0%	70.1%	1.4%	2.6%	100	5,206,322
UAE	29.7%	0%	0%	63.5%	3.0%	0.7%	3.1%	100	3,590,808
EGYPT	36.9%	3.5%	1.1%	55.1%	2.4%	1.0%	0%	100	4,080,393
ETHIOPIA	8.5%	88.1%	2.8%	0%	0.6%	0%	0%	100	1,937,015
IRAN	27.9%	0.1%	0.5%	70.7%	0.5%	0%	0.3%	100	12,310,227
AVERAGE MIX	24.4%	17.2%	2.6%	30.0%	22.4%	1.3%	2.0%	100	30,076,327

Source: International Energy Association.

The significance of various energy sources for BRICS nations is also illustrated in Figure 12, which presents a percentage breakdown of energy sources utilized within their economies. While the data mirrors that of Table 3, the visual representation in Figure 12 provides a more illustrative perspective.

Figure 12. BRICS energy mix



Source: International Energy Association.

Oil maintains a prominent position in the energy mix of most BRICS members. On average, it constitutes 24.4% of the energy mix, with Russia, China, India, and South Africa aligning closely with this figure. Conversely, Egypt, Brazil, Iran, and the UAE surpass this average, illustrating a heavy reliance on oil across eight of the BRICS 10 members. Such dependence reflects traditional economic practices, which conflict with contemporary climate neutrality goals.

South Africa (70%), China (60%), and India (45%) continue to heavily rely on coal. These three major economies represent significant coal consumption, posing an obstacle to achieving climate neutrality. Nonetheless, the reliance on coal is limited to these nations within the BRICS framework.

BRICS members could learn from each other in order to select the most rational policy change options regarding the energy mix.

For instance, waste utilization constitutes a significant share of the energy mix in Ethiopia (88%), Brazil (32%), and India (22%), aligning with the principles of a circular economy. Additionally, hydroelectric power in Brazil, accounting for 12.3%, underscores the country's status as a global leader in water power. However, the adoption of wind and solar energy remains low across the group. Only China and Brazil have managed to elevate their shares to a modest 3.5%. Therefore, based on statistical findings and goals in line with inclusive

development goals, BRICS nations must prioritize scaling up renewable energy generation in their energy strategy.

Conventional thinking holds that natural gas is a more efficient and climate-neutral energy resource compared to oil. Among BRICS members, the highest shares of gas in the energy mix are recorded in Iran (71%), the UAE (63.5%), Russia, and Egypt (both 55%). This suggests that the other six BRICS countries could explore increasing their use of natural gas, particularly given the rising availability of LNG supply.

Finally, the nuclear energy's share in the energy mix of a majority of the BRICS countries remains relatively low except for Russia (7%) and China (around 3%). However, nuclear power is now increasingly recognized as both a safe and climate-neutral energy source, with new nuclear plants offering high efficiency. Russia, with its advanced technology and leading position in global nuclear installation contracts, is well-positioned to support other BRICS nations in developing nuclear capabilities. China has been implementing an ambitious strategy as it plans to build more than 100 new nuclear installations. Other BRICS members are considering greenfield nuclear projects or expanding their existing nuclear capacities. The current low share of nuclear energy within BRICS highlights a substantial opportunity to increase its contribution within the group. To fully leverage these resources, BRICS should place nuclear energy projects on its list of strategic priorities, ensuring that all members can benefit from this advanced technology.

4. COMPLEMENTARITY INDEX

To evaluate the extent to which export supplies from one BRICS country align with the import demand of another, it is essential to analyze the complementarity equation within intra-BRICS trade. This approach helps assess how well the export specialization—or export supply capabilities—of BRICS members aligns with their import specialization—or demand needs. In other words, it examines the degree of alignment between the product export structures and import product structures across BRICS nations. A useful tool for this analysis is the Trade Complementarity Index².

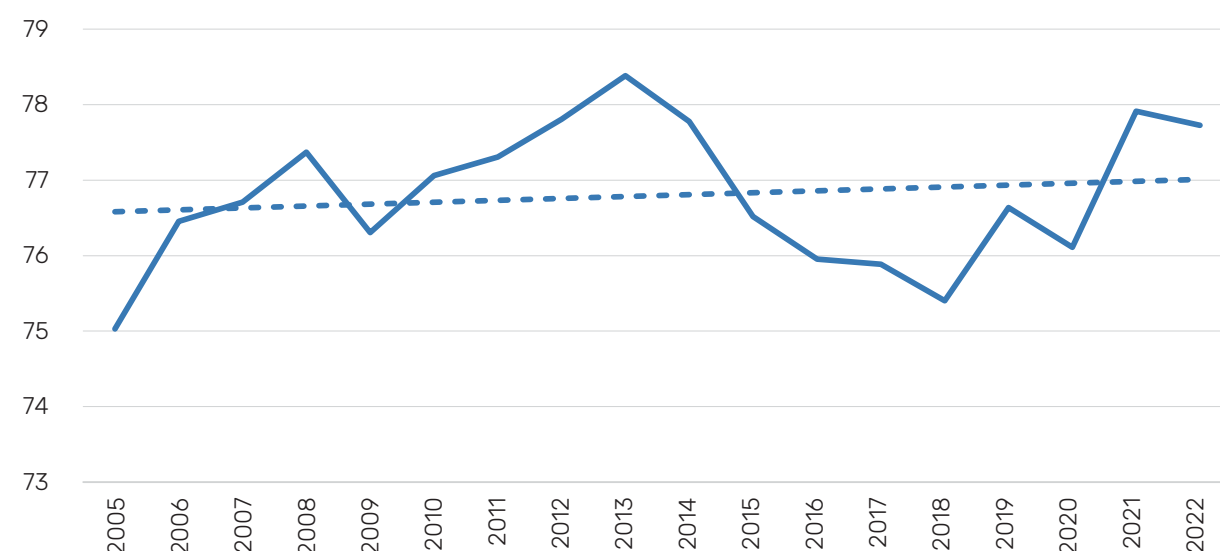
The index values can range from 0% to 100%. 0% indicates no overlap in the commodity structure of exports and imports between two trading partners, signifying no complementarity. 100% represents complete alignment, where the export structures of one partner perfectly match the import needs of the other.

The complementarity index thus reflects the degree to which the economies of BRICS nations align based on their import/export profiles. However, the sensitivity of this indicator depends on the level of detail in the product groups analyzed. More nuanced distinctions in the product range tends to result in lower index values.

The complementarity index for intra-BRICS trade is shown in Figure 13 (calculated for 85 product groups). The level of complementarity is rather high, indicating that the export product structure the BRICS counties for this level of detail corresponded to their import product structure by around 77% in 2005–2022. Approximately the same level was observed in 2018–2022, though with slight overall growth since 2005 as shown in Figure 13. Thus, the level of complementarity of mutual trade is rather high but stable, showing no significant increase.

² Complementarity = $(1 - (\sum |m_i, dM_d - x_i, sX_s|) \times 12) \times 100\%$, where:
i is a set of goods;
d is the importing country (from among the 5 BRICS member countries);
s is the exporting country (from among the 5 BRICS member countries);
m_i, *d* is the import of goods 'i' by country 'd' from all countries of the world;
M_d is import of all goods by country 'd' from all countries of the world;
x_i, *s* is export of goods 'i' by the country 's' to all countries of the world;
X_s is export of all goods by country 's' to all countries of the world.

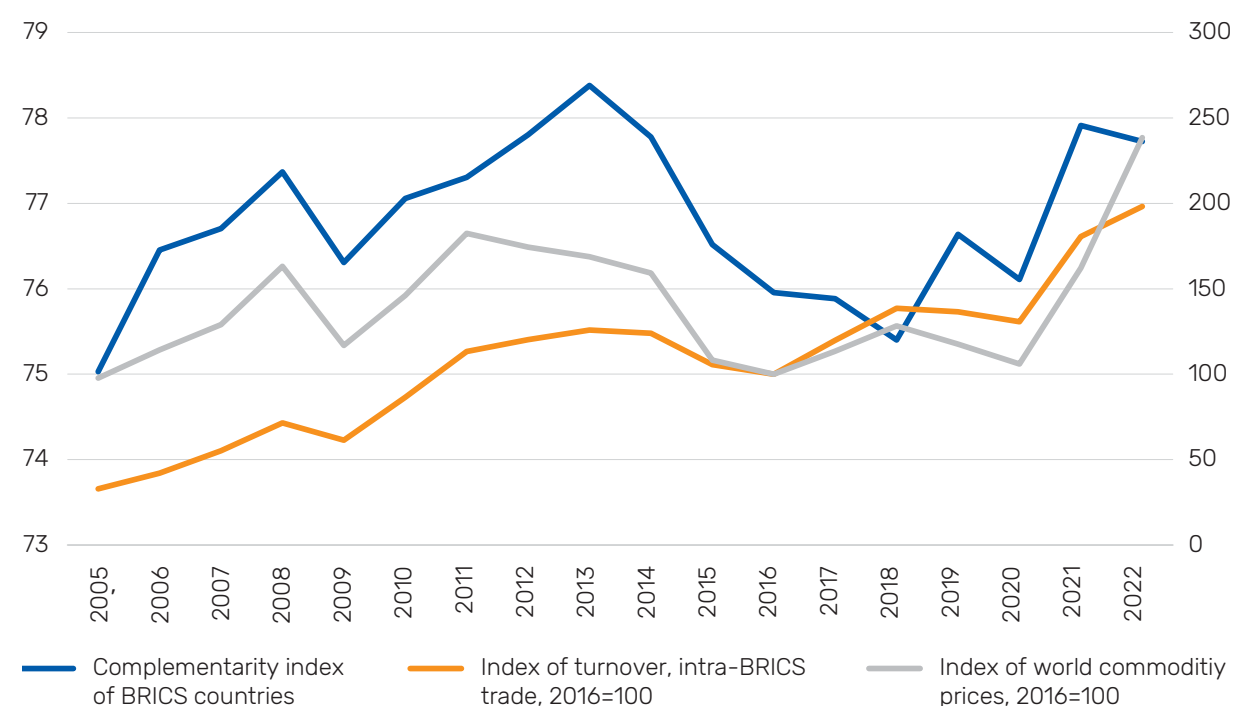
Figure 13. Complementarity index for intra-BRICS trade, 2005–2022, %



Source: UNCTAD.

The complementarity index in Figures 13 and 14 changed from year to year due to the dynamics of mutual trade and unstable commodity prices affecting the value of trade. After 2005, higher commodity prices and trade policies of the BRICS countries aimed at closer cooperation pushed the index higher. Importantly, the complementarity index was on the rise until 2013 despite the economic crisis of 2008–2009 causing a decline in commodity prices. We register a rapid increase in the turnover of mutual intra-BRICS trade at that time. A sharp fall of commodity prices after 2013 resulted in lower values of the complementarity index. However, the latter resumed growth after 2018.

Figure 14. Complementarity index for intra-BRICS trade 2005–2022 (left scale), the trade turnover growth index for intra-BRICS trade, 2016 =100 (right scale) and the world commodity price IMF index, 2016=100 (right scale)



Source: UNCTAD.

The complementarity index mirrors the evolution of the mutual trade of the BRICS countries toward greater alignment with partner needs. This trend persists even during periods of slowing mutual exports, driven by a stable rise in mutual imports. Notably, the index increased between 2020 and 2022, demonstrating resilience despite pandemic-related disruptions and significant fluctuations in commodity prices. The index changes also reflect the high significance of commodities and energy in mutual BRICS trade.

5. THE EXPORTING PARTNER SIGNIFICANCE INDEX (EPSI)

The Exporting Partner Significance Index (EPSI) measures the importance of trade partners within BRICS, highlighting whether a partner's significance is increasing or decreasing. By tracking changes in this index, BRICS countries can cluster their trade partners based on varying levels of trade engagement. Such analysis helps shape foreign trade policies by identifying opportunities to strengthen ties with partners showing rising trade interest, while addressing challenges and seeking opportunities with those experiencing a decline. Export trends play a key role in illustrating these dynamics, forming the basis for calculating the EPSI.

The mathematical definition of EPSI is as follows:

$$\frac{X_{sd}}{X_{sw}} \cdot \frac{X_{wd}}{X_w}$$

where

X_{sd} is the amount of the observed country's export to a particular partner;

X_{sw} is the total export of the observed country;

X_{wd} is the total world export to a chosen partner;

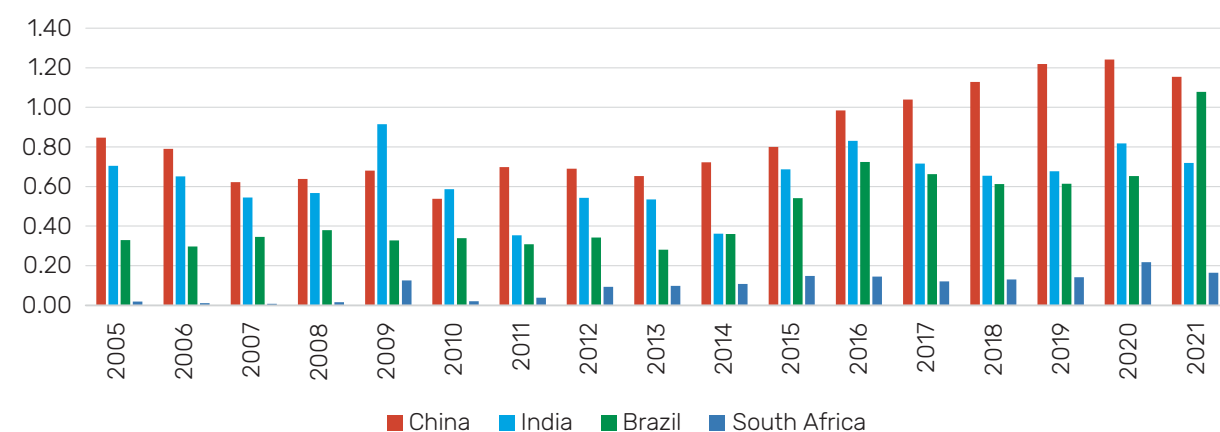
X_w is the total world export.

EPSI was developed by a team led by V. Zuev (2021) and inspired by the idea of the revealed comparative advantage index (RCA) [Mikic, Gilbert, 2007]. This index is designed to assess the interest levels of countries in exporting goods to specific partners. The index begins at zero, and a value of 1 signifies a sufficient level of export orientation toward a particular partner. Higher EPSI values indicate a stronger interest in exporting goods to the specified partner.

The index is a useful tool for comparing BRICS countries and identifying the most attractive trade relationships within the group. By examining EPSI values from 2005 to 2022, it becomes possible to track whether a country's interest in exporting to other BRICS members has grown or diminished over time. Growth in EPSI reflects an increasing export orientation and rising trade potential.

The index was computed using trade data from each of the BRICS members: Brazil, Russia, India, China, and South Africa and open data from the International Trade Center to ensure reliable results. The observation period for Russia varied due to limitations in data availability from a verified open source (the International Trade Centre).

Figure 15. Russia's EPSI with respect to other BRICS nations

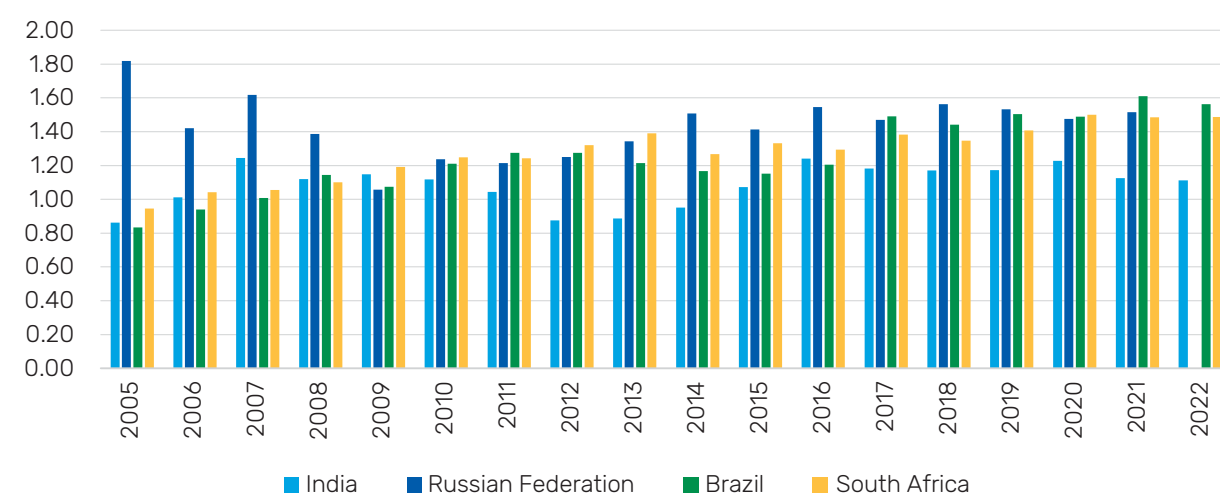


Source: ITC³.

Figure 15 shows significant exports from Russia to two BRICS members in 2021 (China and Brazil). The index values for China and Brazil have been growing since the creation of BRICS in 2009. For China, it went up from 0.68 in 2009 to 1.15 in 2021, while for Brazil it grew from 0.33 to 1.08, surpassing the export significance level. A similar trend can be observed for South Africa, where the EPSI growth is stable but remains at relatively low levels compared to other BRICS members. Russia's EPSI for India reflects greater variability. After reaching a peak in 2009, it experienced a decline and had not fully recovered until 2021.

The conclusion is that the exporting partner significance was sufficient and mostly on the rise for Russia with respect to China and Brazil. India's share was not stable as it was either on the rise or falling down. The exporting partner significance for Russia with respect to South Africa was much lower than for China, India and Brazil. Fostering trade with South Africa could be part of the bilateral agenda between these countries.

Figure 16. China's EPSI with respect to other BRICS nations

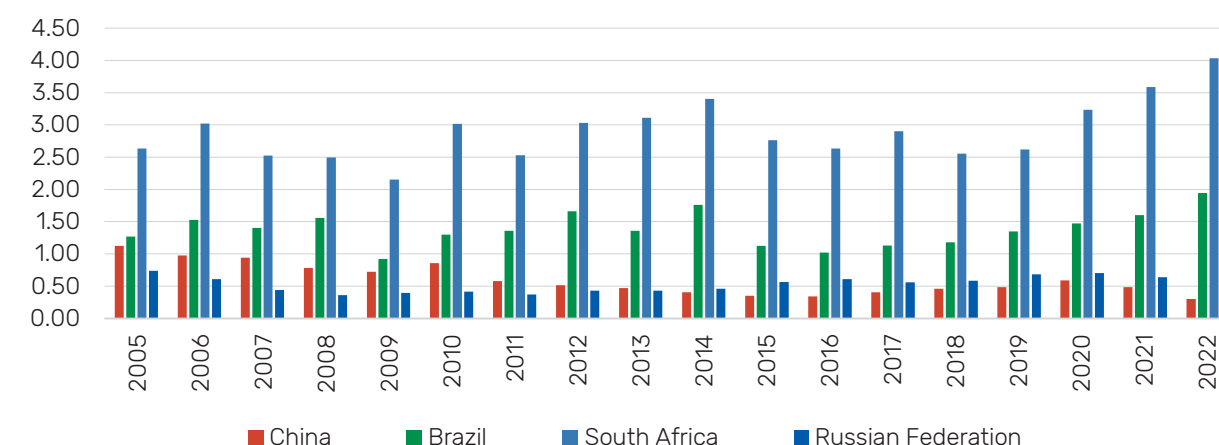


Source: ITC.

China's EPSI for other BRICS countries shows notable variation. All partners reached the level of significance after 2009. The EPSI for Russia declined before the creation of BRICS but exhibited sustainable growth after 2009, reaching 1.52 in 2021. A similar trend was observed for Brazil and South Africa, with the significance of Chinese exports to these countries increasing from 1.08 and 1.19 in 2009 to 1.56 and 1.49 in 2022, respectively. In contrast, India experienced a noticeable decline in China's EPSI between 2010 and 2013, followed by a growth trend. Overall, it appears that the significance of BRICS countries for China has been consistently growing.

³ For Figures 15-19 all the data was obtained from official national and trusted international sources (ITC), no estimates and projections were used.

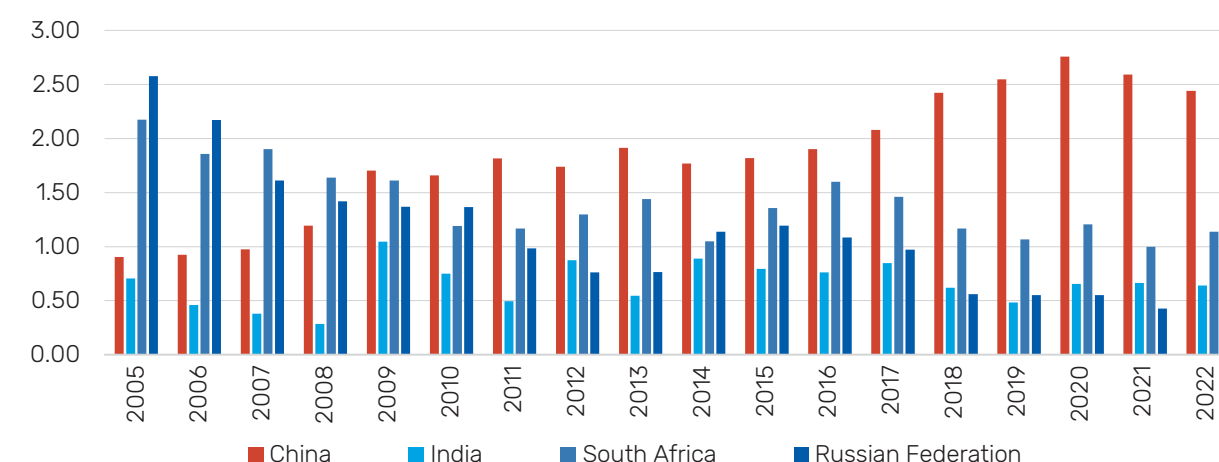
Figure 17. India's EPSI with respect to other BRICS nations



Source: ITC.

India has the most significant EPSI level within BRICS. Among India's partners, EPSI peaked at 4.03 for South Africa in 2022. The index reflects a significant increase in India's exports to Brazil from 0.92 in 2009 to 1.95 in 2022, surpassing the significance level established after the creation of BRICS. Although trade with Russia also showed an upward trend, it did not reach the significance remaining at 0.64 in 2021. Further growth was observed after 2022. China exhibited growth within the index from 2016 to 2020 but posted the lowest result at 0.3 in 2022.

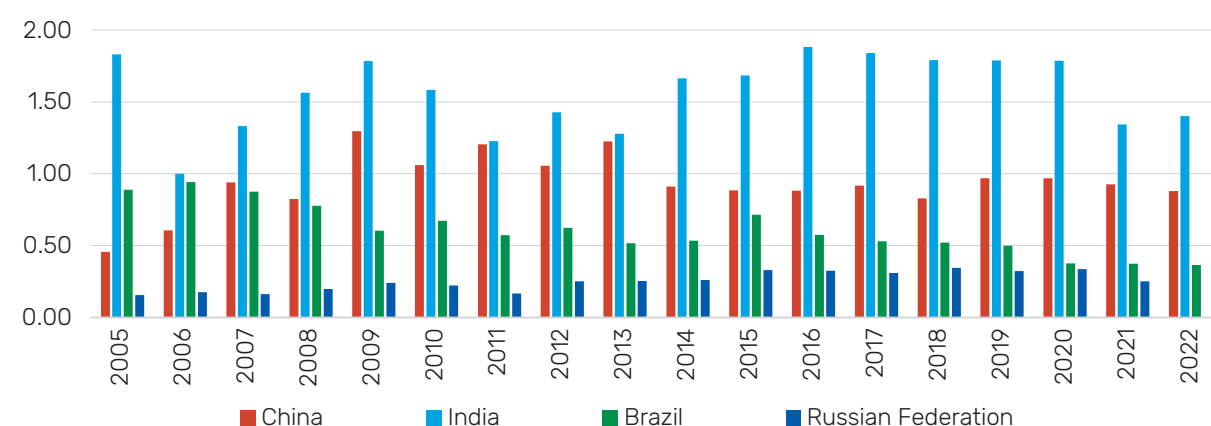
Figure 18. Brazil's EPSI with respect to other BRICS nations



Source: ITC.

China has solidified its position as Brazil's most significant export partner within BRICS, with the EPSI for China increasing rapidly since the group's inception, reaching 2.44 in 2022. Conversely, Brazil's exports to Russia have steadily declined, with the EPSI for Russia dropping below the significance threshold to 0.43 in 2021, indicating diminished interest in exporting to Russia during 2005-2021. The index trends for India and South Africa have also shown instability. However, the EPSI for South Africa has consistently remained above the export significance level, reaching 1.14 in 2022. Meanwhile, Brazil's EPSI for India decreased after 2009 and failed to recover to the level of significance. To strengthen its trade relationships within BRICS, Brazil may benefit from exploring tools to enhance cooperation with Russia, India, and South Africa.

Figure 19. South Africa's EPSI with respect to other BRICS nations



Source: ITC.

India stands out as South Africa's most significant export partner within BRICS, with its EPSI reaching 1.4 in 2022. The EPSI for China has remained stable over the past nine years, showing recovery after a decline in 2014, and is currently at 0.88.

In contrast, South Africa's EPSI values for the remaining BRICS countries fall below the significance threshold. Brazil's index shows a declining trend, dropping to 0.36 in 2022. Similarly, the EPSI for Russia remains stable but low, at 0.25 in 2021. To enhance its trade position within BRICS, South Africa should focus on leveraging export opportunities with Russia and Brazil.

A summary of these findings is presented in the table below for a clearer comparison.

Table 4. The potential for strengthening trade ties within BRICS based on the EPSI performance

BRICS members	Export partners showing strong growth	Export partners with high index values and stable positive export dynamics	Export partners to consider
Russia	China, Brazil	India	South Africa
China	All the members		
India	South Africa, Brazil		China, Russia
Brazil	China		Russia, India, South Africa
South Africa	India	China	Russia, Brazil

Source: Analysis by the authors.

EPSI serves as a useful tool for analyzing trade relationships within BRICS, enabling the following: 1) outlining the pace and the direction of exports dynamics between members of the organization; 2) predicting, to a certain extent, the future evolution of trade between partners based on their preferences. In 2022, EPSI data indicated significant opportunities for strengthening bilateral trade relationships between Russia and India, Russia and South Africa, and Brazil and South Africa. To capitalize on these findings, member states should conduct analyses of trade preferences to enhance export activities. Specific recommendations include bolstering exports from India to China, from Brazil to Russia and India, and from South Africa to China.

6. CONCLUSIONS AND RECOMMENDATIONS

The BRICS 5 nations have consistently outpaced global average economic growth rates over the last three decades. For the past 17 years (in 2005–2022) the significance of BRICS countries increased considerably in terms of their share in global production and trade. According to IMF data, the share of BRICS countries in the world's GDP (measured by PPP) increased from 20.8% in 2005 (for four founders – Brazil, India, China, Russia) to 32.2% in 2023 (for BRICS 5 countries: Brazil, India, China, Russia, South Africa), and is expected to reach 38.3% by 2029 (for BRICS 10 countries: Brazil, India, China, Russia, South Africa, Egypt, Ethiopia, Saudi Arabia, Iran, the UAE). Between 2005 and 2023, BRICS' share in global GDP grew by 1.54 times, and by 2029, it is expected to increase by 1.84 times compared to 2006, when the group began systematically recognizing shared interests.

However, a comparative analysis of BRICS' shares in global GDP, imports, exports, and FDI flows reveals an imbalance. While BRICS has significantly increased its contribution to the global economy, its relative impact on global trade and investment remains limited. To achieve a balanced global presence, BRICS must emphasize trade and investment-related policies on its current agenda. This focus is essential to attaining a level of significance in international trade and FDI flows that matches its remarkable contribution to the global GDP.

The BRICS countries are export-oriented economies – their growth rates strongly depend on the global demand and economic growth. That said, the rapid expansion of internal markets and rising income levels within BRICS have also played a crucial role in driving their robust economic growth.

Between 2006 and 2023, intra-BRICS trade grew faster than trade with external partners. Bilateral goods exports within the group increased annually by at least 12%, compared to a 7% yearly rise in exports to non-BRICS countries. Despite this rapid growth, trade with external markets remains higher in absolute value than intra-BRICS trade. From 2019 to 2023, intra-BRICS exports constituted 10% of the group's total exports, while intra-BRICS imports accounted for 19% of its overall imports.

To stimulate mutual trade within BRICS, several instruments of trade facilitation could be utilized. One of the most effective measures could be the development of trade infrastructure, particularly in logistics and transport facilities, which would help to accelerate delivery times and reduce transportation costs. Another important step would be the simplification of trade procedures. Additionally, the effective use of modern information and communication technologies, the promotion of paperless trade, and the implementation of advanced e-commerce technologies would also contribute to enhancing intra-BRICS trade.

It is critical to understand whether the trade within BRICS is sufficiently balanced. With this aim in mind, we can look into the complementarity equation for the mutual intra-BRICS trade to see to what extent the export specialization (the export supply capabilities of the BRICS countries) aligns with their import specialization (the import demand needs of the BRICS countries). In other words, it measures how well the export product structure of BRICS nations corresponds to the import product structure, providing insights into the potential for further developing mutual trade.

The complementarity index for intra-BRICS trade, calculated across 85 product groups, has consistently remained at a high level. This indicates that the product structure of BRICS exports aligned with their import product structure by approximately 77% between 2005 and 2022. However, the index growth has not been rapid, suggesting that achieving a swift structural transformation within the large economies of key BRICS members would be challenging. To meet the group's objective of fostering balanced and complementary trade, it is essential to focus both on the development of mutual trade within the group and on active participation in global trade.

Some other important observations on trade within BRICS are as follows:

1. It seems premature, and perhaps even impossible, to put the issue of creating a free trade zone within BRICS on the agenda. The same holds true for FTAs between the customs unions, where Russia, Brazil, and South Africa are members. The most viable approach appears to be the format of bilateral agreements on trade and investments. This approach is more acceptable as it allows to factor in the varying interests and priorities of the participants. It is a flexible, yet highly effective tool for mutual trade liberalization, especially given the “interlacing” of these agreements (often referred to as the “spaghetti bowl”).
2. The expansion of the BRICS membership and partnerships opens up new horizons for cooperation and networking between entrepreneurs of the BRICS nations within the framework of the BRICS Business Council. The members can promote the expansion of entrepreneurial initiatives by introducing various economic and administrative incentives, including tax incentives, transport cost subsidies provided in compliance with the WTO rules, mutual participation in public procurement, and removal of bureaucratic barriers.
3. The broader utilization of the North-South International Transport Corridor and the implementation of China’s Belt and Road Initiative, alongside similar endeavors, could significantly reduce transportation costs and streamline customs and border procedures. These measures are expected to have positive effects on the business environment and economic cooperation among the participating nations. Moreover, these initiatives can pave the way for the development of a continent-wide transport infrastructure linking China, Russia, Iran, and countries of the Persian Gulf and the Middle East and offering promising prospects for economic growth in African nations as well.
4. The expansion of BRICS membership and partnerships enhances coordination among member countries in international organizations, particularly within the WTO and IMF. A unified stance by BRICS countries on key issues in the WTO agenda could help resolve controversial issues, such as the unblocking of the WTO Appellate Body.
5. The broader BRICS framework includes countries that account for a significant share of global oil and gas production, positioning the group as a major player in the global energy market. Members such as Russia, Saudi Arabia, and the UAE bring valuable experience in energy policy coordination, especially through their involvement in OPEC+. Their inclusion in BRICS facilitates deeper policy alignment and supports the development of unified strategies.
6. BRICS brings together some of the world’s largest producers and consumers of energy resources. This synergy promotes mutual trade and encourages infrastructure and investment initiatives, driving trade growth across member states. Beyond energy, sectoral cooperation holds the potential to extend into various other domains.
7. BRICS countries are actively involved in the development of progressive trade instruments, including paperless trade projects. This experience could be instrumental in developing collaboration with third countries, a strategy that all BRICS members have already embraced.
8. At the start of joint paperless trade projects, it is advisable to identify the individual components of foreign trade operations. One practical starting point could be implementing cross-border paperless exchange systems for certificates of origin. Additionally, agreements on the mutual recognition of AEO status, following the expanded framework proposed by the WTO, would significantly support the implementation of these projects.

In the energy dimension, oil maintains a significant presence in the energy mix for the majority of the BRICS member states, with eight out of ten members continuing to heavily rely on it. This predominant dependence on oil is often characteristic of traditional economies.

However, BRICS members have the opportunity to exchange experiences and collaborate on implementing modern, forward-looking energy policies aimed at diversifying their energy portfolios. The extensive use of waste in the energy mix, as observed in Ethiopia and Brazil, aligns with the principles of the circular economy and deserves greater attention. To date, only China and Brazil have managed to slightly increase their share of renewables, reaching a modest 3.5%. Given the statistical findings and the goals of inclusive development, prioritizing a larger share of renewable energy generation should become a clear objective within the BRICS energy strategy. Six BRICS countries could also explore increasing their use of natural gas, particularly given the rising availability of LNG supplies.

The nuclear energy’s share in most of the BRICS members remains relatively low except for Russia (7%) and China (around 3%). However, nuclear power is now increasingly recognized as both a safe and climate-neutral energy source, with new nuclear plants offering high efficiency. Russia, with its advanced technology and leading position in global nuclear installation contracts, is well-positioned to support other BRICS nations in developing nuclear capabilities. China has been implementing an ambitious strategy as it plans to build more than 100 new nuclear installations. Other BRICS members are considering greenfield nuclear projects or expanding their existing nuclear capacities. The current low share of nuclear energy within BRICS highlights a substantial opportunity to increase its contribution within the group. To fully leverage these resources, BRICS should place nuclear energy projects on its list of strategic priorities, ensuring that all members can benefit from this advanced technology.

The Exporting Partner Significance Index (EPSI) serves several key functions: it measures the importance of trade partners within BRICS; evaluates the comparative significance of exports to BRICS partners relative to global exports; categorizes trade partners by their levels of mutual trade interest; and provides general guidelines for member countries to enhance trade relationships within the group. To explore the evolving dynamics of intra-BRICS trade, the EPSI performance for China, Brazil, Russia, India, and South Africa from 2005 to 2022 was analyzed, highlighting shifts in export interest among key partners.

Our findings indicate that each BRICS nation shows a substantial trade interest in at least one counterpart from the group. China emerged as a particularly strong case, consistently building balanced trade relationships with all BRICS members and reinforcing these ties over time. The analysis also revealed significant opportunities for enhancing bilateral trade between Russia and India, Russia and South Africa, and Brazil and South Africa. Based on these results, targeted strategies could be implemented to strengthen exports, such as increasing trade flows from India to China, from Brazil to Russia and India, and from South Africa to China.

PART III. SUSTAINABLE DEVELOPMENT AND RESOURCE ABUNDANCE

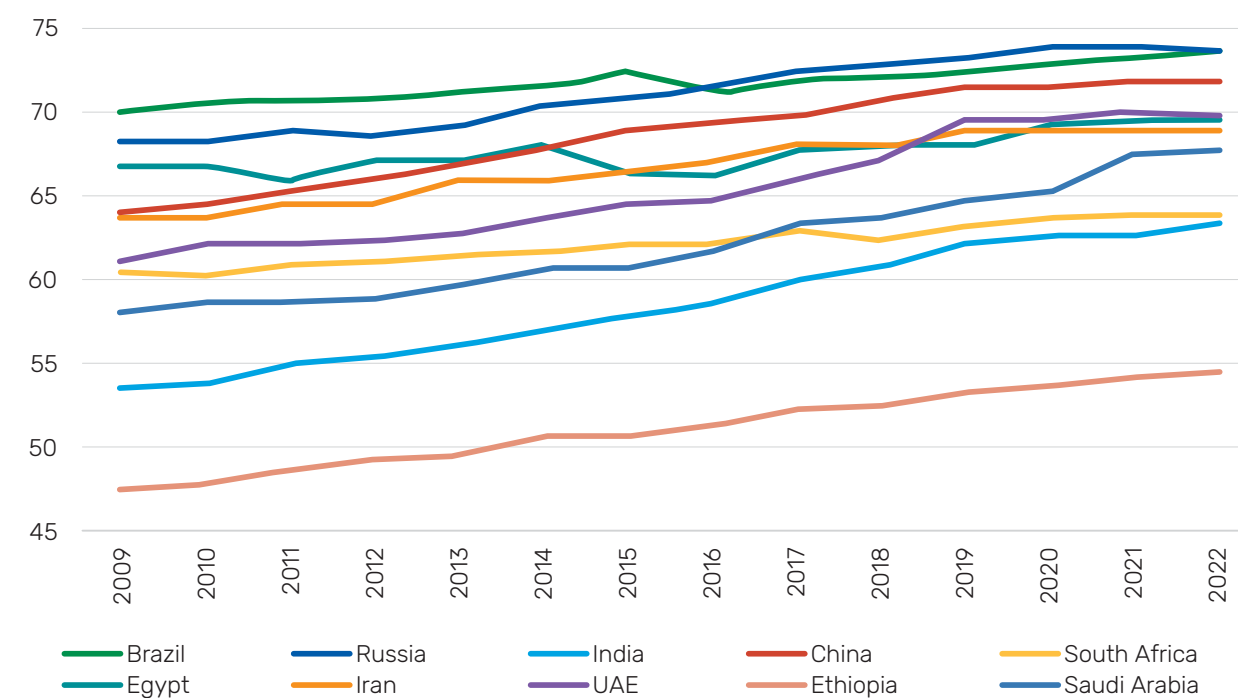
Since the first meeting in 2009, and especially during the period of the first and second Strategies for BRICS Economic Partnership, the BRICS countries have made significant progress in the field of sustainable development. Although member countries are still on their way to achieve Sustainable Development Goals (SDGs), common priorities and joint cooperation allow to boost their progress. Progress in BRICS countries is the backbone of the global path to a sustainable future.

1. PROGRESS TOWARDS THE ACHIEVEMENT OF ALL SDGS

In 2009, the BRIC countries' leaders issued a joint statement emphasizing their commitment to sustainable development and the achievement of the Millennium Development Goals. In 2013, the group agreed to establish the New Development Bank (NDB), with a mandate to finance sustainable development projects. This was further reinforced in 2015 when BRICS countries reaffirmed their dedication to the post-2015 agenda, including Sustainable Development Goals. Since then, BRICS countries have consistently underscored their commitment to sustainable development every year. The same year marked the first BRICS Environment Minister Meeting. In 2020, national leaders adopted the Strategy for BRICS Economic Partnership 2025, which includes a special section on sustainable development. The Strategy aims to facilitate interactions between member states in such areas as climate change, sustainable energy consumption and generation, and food security.

While the overall progress towards achieving Agenda 2030 remains insufficient globally, by 2024, BRICS countries rank among the leading developing economies in terms of Sustainable Development Goal (SDG) progress, as indicated by the SDG index¹. India and Ethiopia have demonstrated particularly notable advancement since 2009, while Russia holds a strong position within the group, showing high levels across many indicators (Sustainable Development Report, 2024) (Figure 1).

Figure 1. Progress towards the achievement of all SDGs within BRICS (2009–2022), out of 100 points

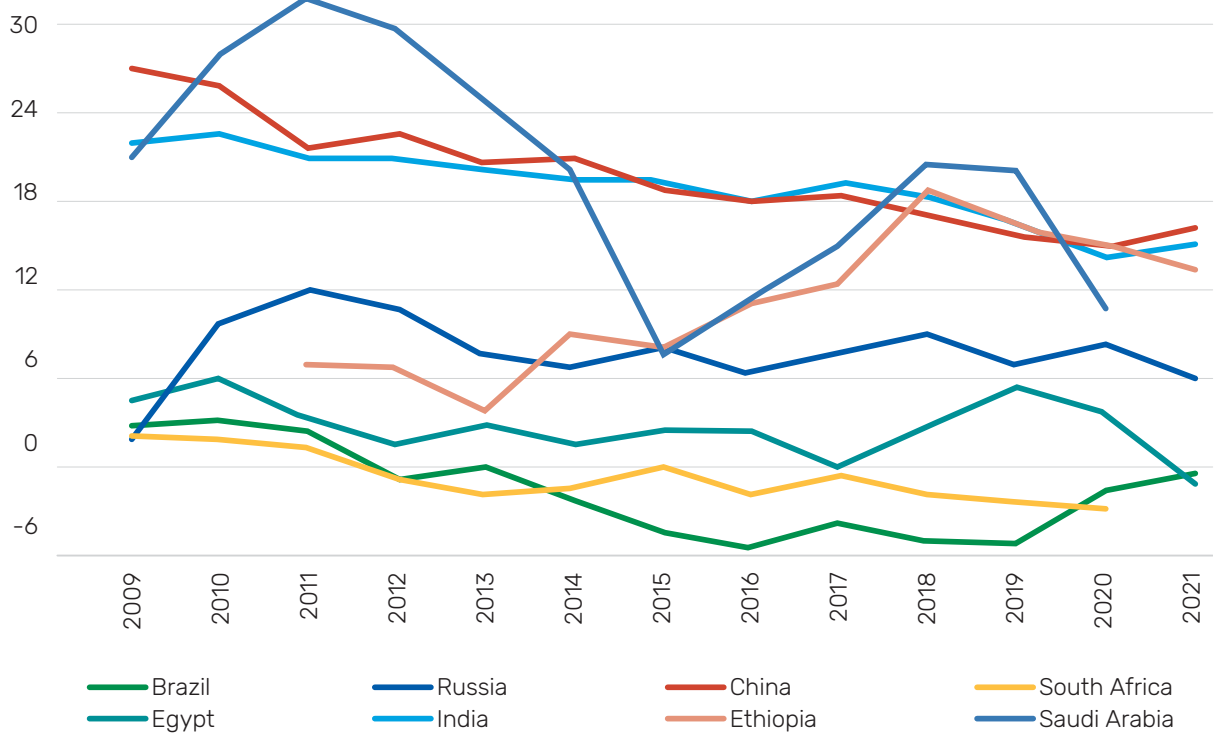


Source: Sustainable Development Report.

¹ The SDG Index is a composite index that synthesizes various SDG indicators. It is published annually by the Sustainable Development Solutions Network in the Sustainable Development Report. The methodology used to calculate the index is detailed in Schmidt-Traub et al. (2017). The index measures progress on a scale from 0 (indicating no progress) to 100 (indicating full achievement of the SDGs).

BRICS countries consistently emphasize their commitment to the central role of the UN in global governance, in line with Our Common Agenda Policy Brief which calls for moving beyond GDP in evaluating the socio-economic progress of nations. Hence, the BRICS nations also assess their progress using the Adjusted Net Savings (ANS) rate. This metric reflects the rate of accumulation of national savings, factoring in the depletion of natural resources and the damage caused by environmental pollution. A positive ANS indicates that a country is increasing its social welfare, while a negative ANS signals that the economy is on an unsustainable path. Among the BRICS countries², South Africa and Brazil have seen a level of resource consumption that exceeds their investment in physical, human, and natural capital, leading to a negative adjusted net savings rate over the past decade. The highest rate is recorded in China and India, which is 2.3 times higher than in Russia. For Saudi Arabia, the dynamic is nonlinear: the rate dropped by 24% in the period between 2011 and 2015, grew by 13% by 2018, and decreased again in 2020. In Ethiopia, the level of adjusted net savings has increased by 13% since 2009 (Adjusted Net Savings. World Development Indicators, n.d.) due to increased natural resource conservation rate and low consumption rate (Figure 2). Overall, there is a noticeable decline in the ANS rate over the period, highlighting the importance of growth quality and its trends as critical issues globally and particularly for BRICS countries.

Figure 2. Adjusted net savings (2009–2021), % of GNI



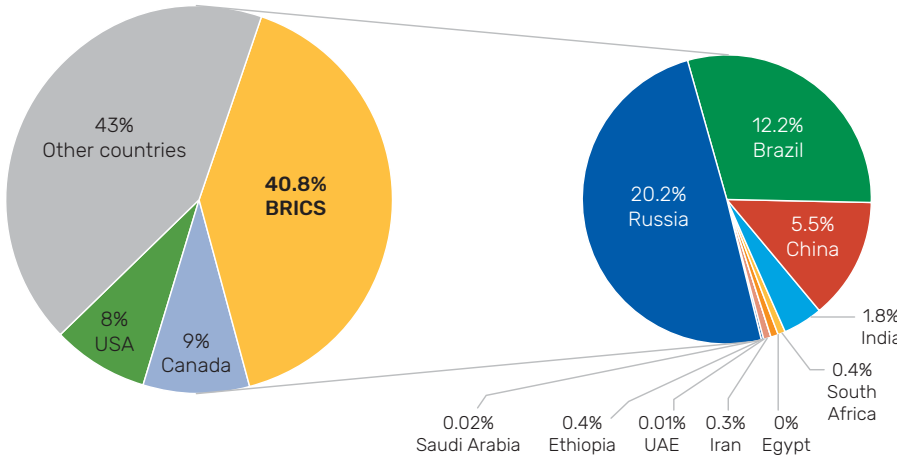
Source: World Development Indicators.

2 Data is unavailable for UAE and Iran.

2. ENVIRONMENTAL SAFETY AND RESOURCE ABUNDANCE

In 2024, BRICS held its first discussions on global forest issues during the Environment Ministers' meeting. BRICS countries collectively account for around 40% of the world's forest cover as of 2021 (Figure 3). Russia holds the largest portion, covering approximately 20% of global forested areas, followed by Brazil with 12%, China with 5%, and India with 2% (Forest Area, World Development Indicators, n.d.). The remaining BRICS nations contribute around 1% of global forest area.

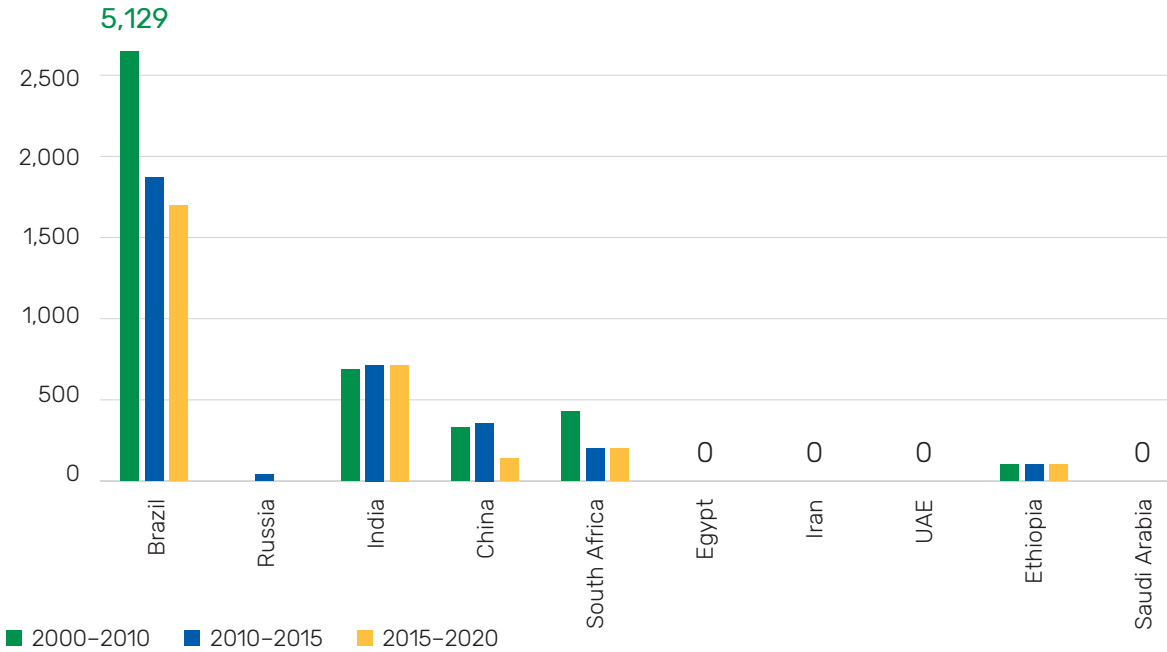
Figure 3. Share of global forests located in the country in 2021, % of total



Source: World Development Indicators.

Since the 2000s, deforestation rates in Brazil, Russia, India, and China have significantly slowed down (Figure 4). Further discussions on deforestation and reforestation as well as sharing best practices within BRICS could support further advancements in this area. For example, Brazil has made the most notable effort to halt the downsizing of tree cover and to conserve tropical rainforests and, therefore, can share its experience. Russia, China, and South Africa have managed to minimize the removal of tree cover, while India's deforestation rate remains at the level of 670 thousand hectares yearly since the 2000s (Global Forest Resource Assessment 2020, n.d.).

Figure 4. Deforestation rate (2000–2020), thousand ha/year

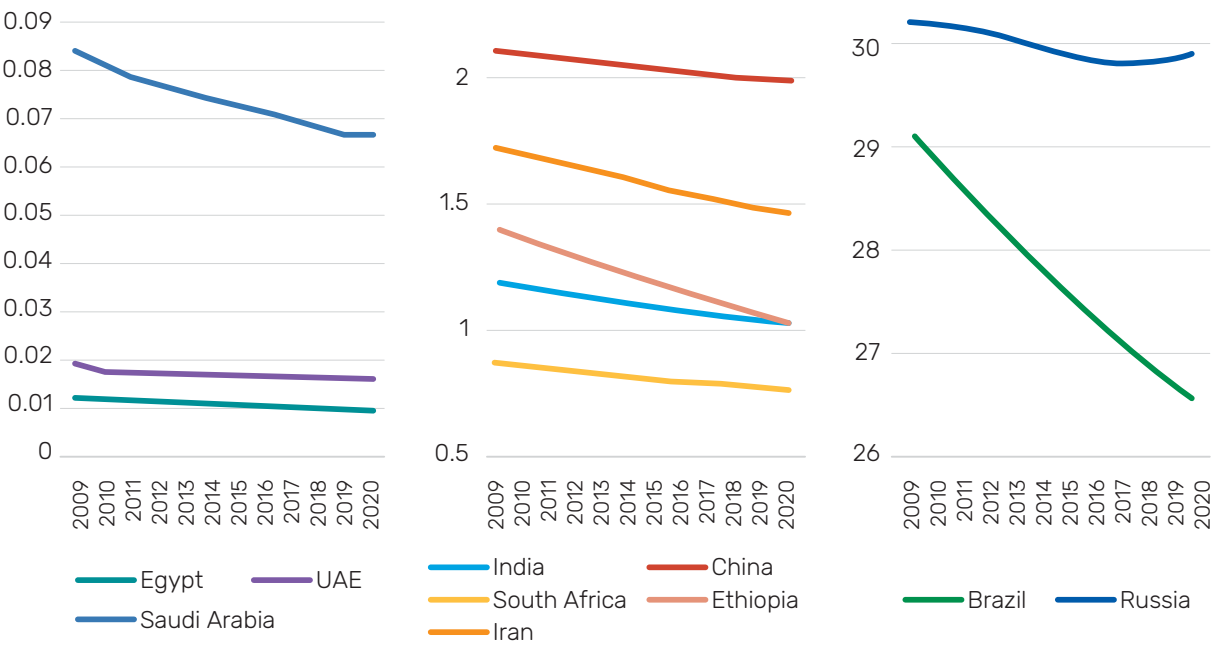


Source: Global Forest Resource Assessment.

In 2018, BRICS countries established the BRICS Environmentally Sound Technology (BEST) Cooperation Platform aimed at facilitating the exchange of experience in the sustainable development sphere. One of the programs initiated on the platform – BRICS Clean Rivers – allows to identify best practices and implement them in order to preserve renewable internal freshwater resources³ in BRICS countries.

BRICS nations possess the largest reserves of renewable water sources in the world. Over the last decade, the overall volume of freshwater resources in the BRICS countries has been decreasing. Notably, Russia and Brazil are the world’s most water abundant countries, accumulating the highest levels of per capita freshwater since the 2000s (29 and 26.5 thousand cubic meters per capita in 2020 respectively) (Renewable Internal Freshwater Resources Per Capita. World Development Indicators, n.d.). China, India, South Africa, as well as Ethiopia and Iran, face greater water scarcity, with only 1,000–1,500 cubic meters of renewable internal freshwater per capita. Saudi Arabia, Egypt, and the UAE, remain especially vulnerable to water issues, with less than 80 cubic meters per capita, due to climatic constraints and rapid population growth in recent years (Figure 5). Therefore, the BRICS nations have an opportunity to discuss different aspects of freshwater problems, from pollution and preservation to efficient management of scarce water resources.

Figure 5. Renewable internal freshwater resources per capita (2009–2020), thousand cubic meters



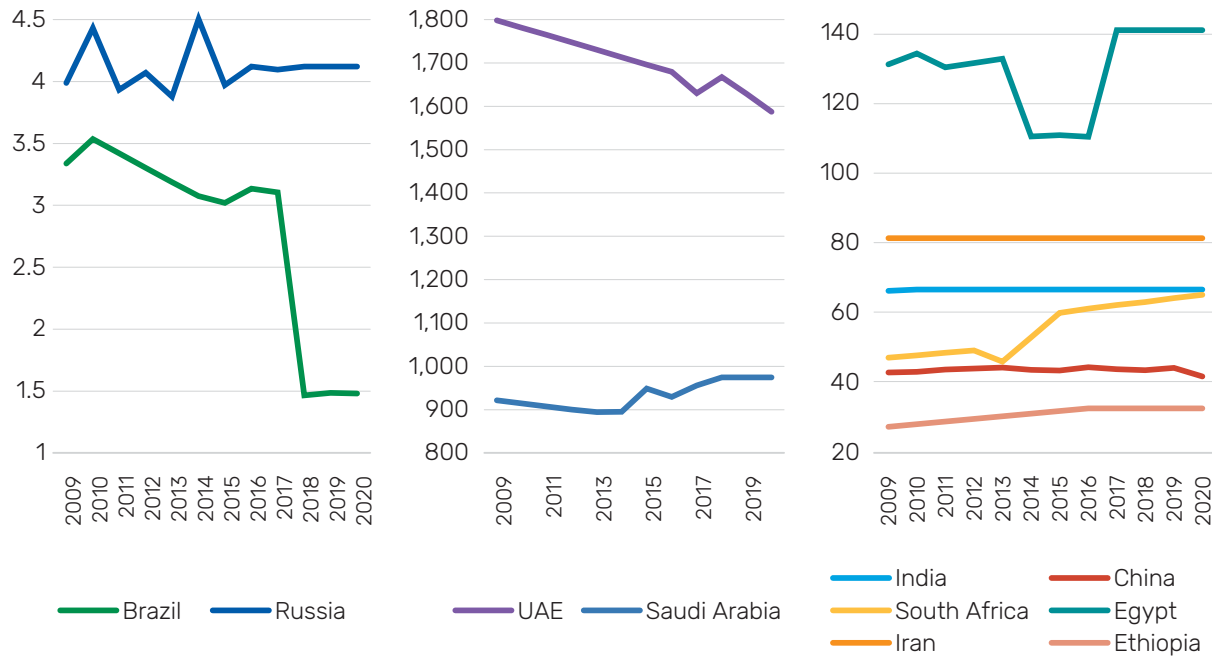
Source: World Development Indicators.

3 Renewable internal freshwater resources refer to the quantity of internal freshwater from inflowing river basins and recharging groundwater aquifers.

Rational use of water resources is one of the priorities highlighted in the Strategy for the BRICS Economic Partnership 2025. Within BRICS, Russia and Brazil have the most secure water supplies, while other member states experience significant water shortages. South Africa, in particular, faces a marked increase in water stress⁴, which has increased by almost 10% since 2009. Among the newer BRICS members that joined the group in 2023 water scarcity is even more severe. The UAE experiences the highest level of water stress, which is exacerbated by the rise of temperature in 2020. It is followed by Saudi Arabia, where the level of water stress grew by 53% over the last decade due to similar challenges.

Iran and Egypt experience lower levels of water stress than the other BRICS members joining the group in 2023, although their stress levels are still higher than those of India and South Africa. Ethiopia is less exposed to water stress compared to the other new BRICS members. However, while Ethiopia’s water stress has remained steady at 27% since 2009, the country is likely to see a rise in water demand in the near future due to rapid population growth and increasing economic needs (Figure 6).

Figure 6. Level of water stress (2009–2020), in %



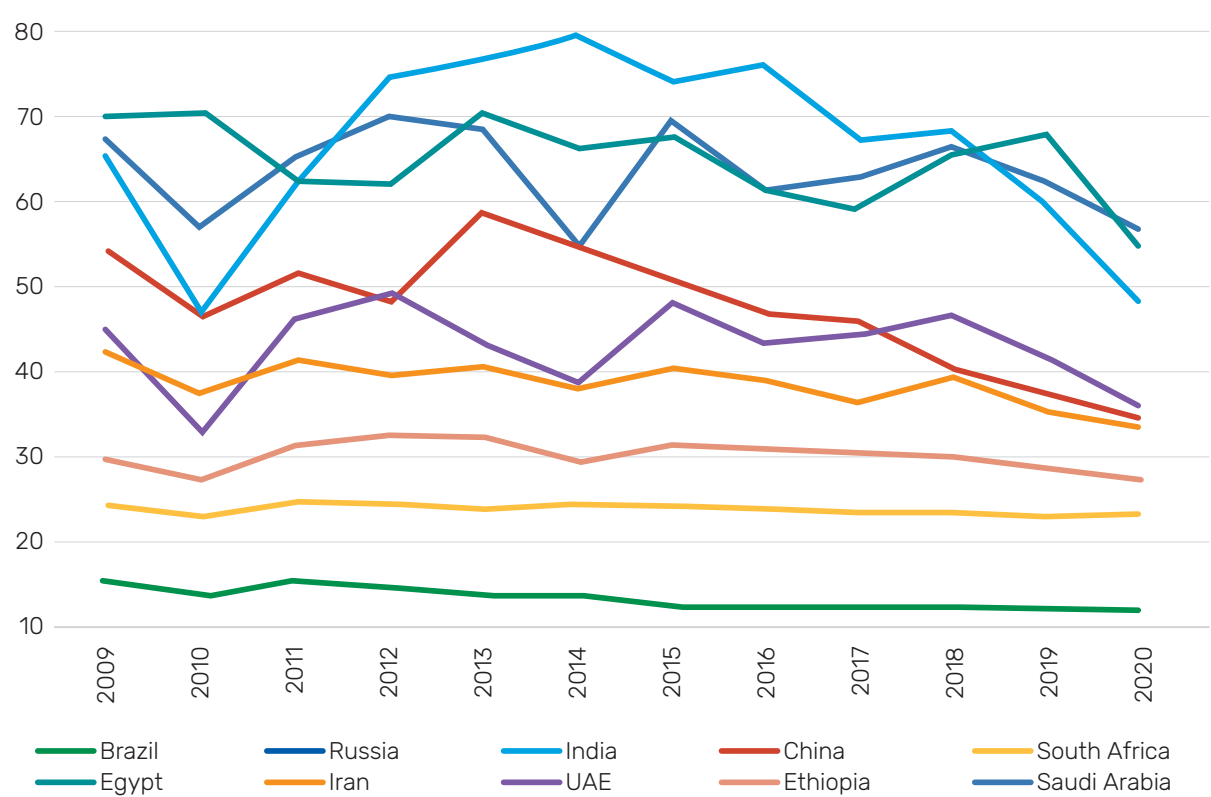
Source: World Development Indicators.

4 Level of water stress indicates freshwater withdrawal as a proportion of available freshwater resources.

EXPOSURE TO PM2.5

In 2019, during the Brazilian Chairship, the Ministerial Meeting on Environment held under the theme “Contribution of Urban Environmental Management to Improving the Quality of Life in Cities” stressed the importance of knowledge sharing in the field of air quality. In recent years, due to the emergence of new technologies, the overall exposure of the BRICS members to PM2.5⁵ has been declining. Brazil and Russia are comparatively less affected by air pollutants, while China and India have achieved significant improvements, reducing PM2.5 concentrations in the air by 36% and 39% since 2014, respectively. However, the new BRICS members continue to face high levels of PM2.5 exposure. Saudi Arabia and Egypt record annual PM2.5 concentrations of 56.78 and 54.75 mg per cubic meter, respectively (PM2.5 air pollution, mean annual exposure. World Development Indicators, n.d.), which is approximately 1.6 times higher than in China. In Saudi Arabia, the primary sources of air pollution are emissions from vehicles and industry, alongside dust storms common to the region. The UAE, Iran, and Ethiopia report moderate air quality levels (Figure 7).

Figure 7. Exposure to PM2.5 (2009–2020), mg per cubic meter



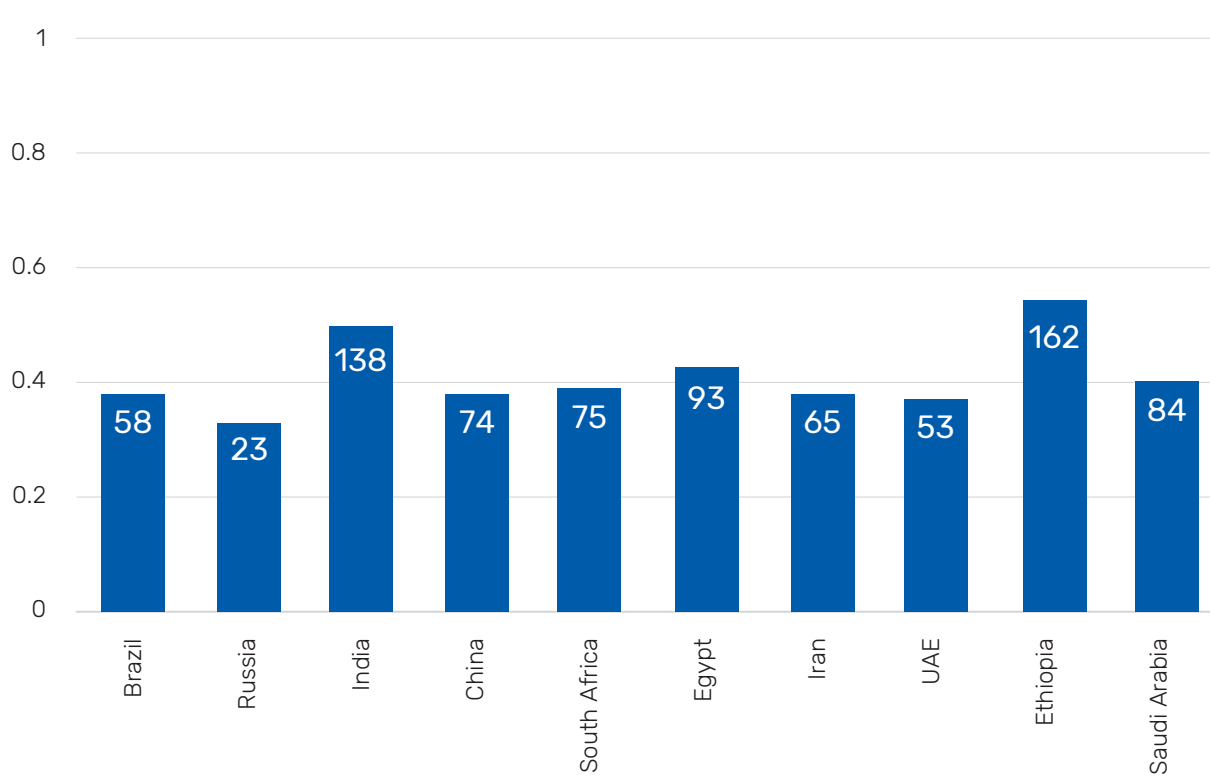
Source: World Development Indicators.

5 Exposure to PM2.5 illustrates the air quality indicating the pollutant levels outdoors and indoors. PM 2.5 refers to fine particulate matter that is 2.5 micrometers or smaller in diameter. PM 2.5 is often found in the air due to emissions from vehicles, industrial processes, power plants, and wildfires.

3. CLIMATE CHANGE

Enhancing cooperation in the field of climate change has been highlighted in the Strategy for BRICS Economic Partnership in 2025 as all members are highly vulnerable to climate change according to the assessments included in the ND-GAIN Index⁶ (Figure 8). Russia stands out as the least vulnerable BRICS member; however, due to its vast territory, national averages may not fully capture regional disparities, such as the Arctic’s heightened vulnerability from permafrost melting (ND-GAIN Country Index Scores, n.d.). Ethiopia and India rank highest on vulnerability within BRICS, while other member countries show comparable levels. BRICS countries face different types of vulnerabilities, from permafrost melting to rising water stress, which allows them to cooperate and develop technologies in different spheres and could position BRICS as a hub of expertise for developing countries facing various climate issues. That said, addressing the vulnerabilities of BRICS nations effectively will necessitate not only their own efforts but also broader international collaboration.

Figure 8. ND-GAIN index (vulnerability to climate change) in 2021, out of 1 point



Source: ND-Gain Country Index Scores.

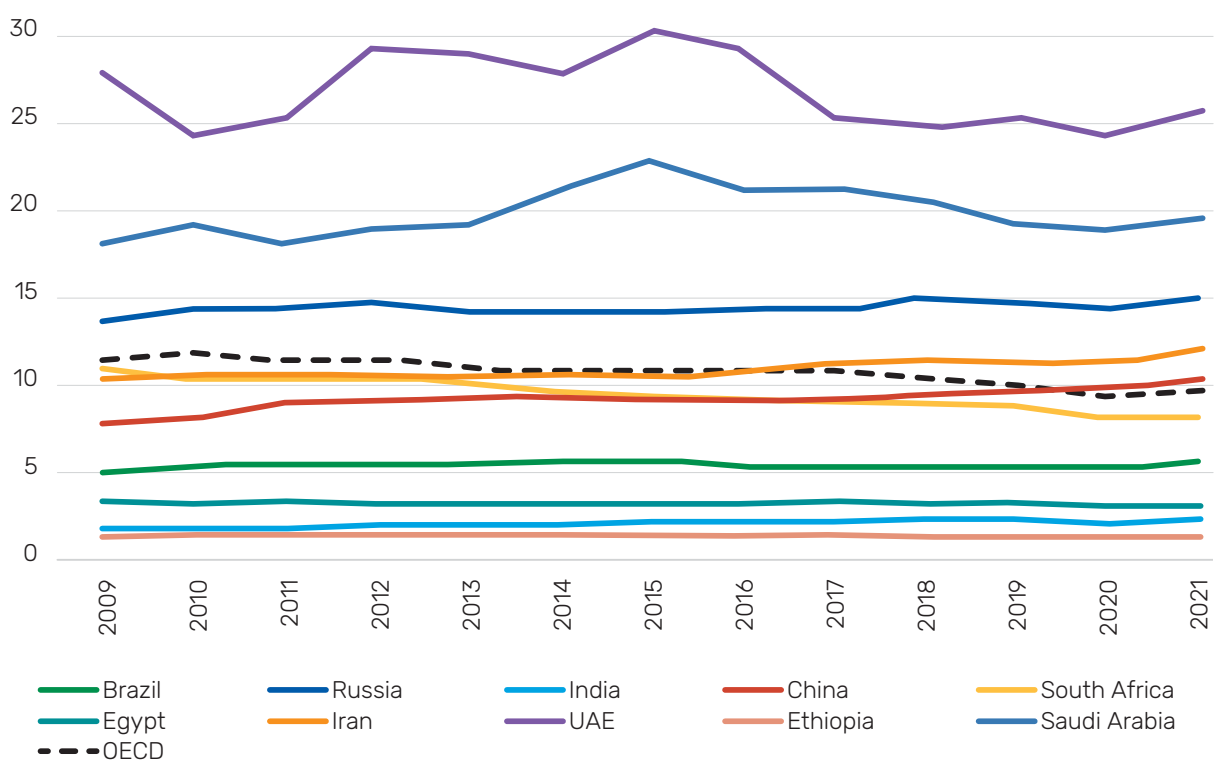
Greenhouse gas emissions present a critical challenge for BRICS countries, which include some of the world’s largest emitters. Accounting for emissions from the LULUCF sector, China, India, Russia, and Brazil rank among the top five global emitters, while Iran and Saudi Arabia are also positioned among the top ten. Furthermore, BRICS nations have played a major role in shaping global emissions trends over the last three decades.

However, if we consider GHG emissions per capita, only a few BRICS countries surpass the OECD average. Some nations, like South Africa, have managed to reduce their carbon footprint per capita since 2009, while others, such as Brazil, Egypt, and Ethiopia, have shown little progress on this indicator during the same period. Iran has slightly exceeded the emissions average of developed economies, while Russia, Saudi Arabia, and the UAE have significantly higher per capita emissions, which have only increased since 2009 (UNFCCC,

6 The index estimates vulnerability and readiness of each country to climate change. For this analysis, we only considered vulnerability indicators, which estimate countries’ exposure, sensitivity and adaptation capacities across six key dimensions that constitute vulnerability: food, water, health, ecosystem service, human habitat, and infrastructure. The resulting index varies from 0 to 1, where 0 means the lowest possible vulnerability and 1 stands for the highest possible vulnerability.

2021; GHG Emissions. ClimateWatch, n.d.). This trend is particularly evident among major oil and gas exporters, though most coal-rich members, excluding China, have not demonstrated similar increases (Figure 9). It is important to note that Figure 9 does not take into account the LULUCF sector, which, if included, would slightly improve Russia's performance and significantly worsen Brazil's (UNFCCC, 2021). That said, reliable comparative data on LULUCF-related emissions across countries remains unavailable.

Figure 9. Production-based emissions (2009–2022), tonnes of CO₂ equivalents



Source: UNFCCC.

The trends in GHG emissions among BRICS countries are not the same if we consider consumption-based emissions instead of production-based emissions. Many BRICS nations are major exporters of carbon-intensive goods and fossil fuels, meaning much of their GHG emissions are embedded in products consumed abroad, primarily in developed countries. This is why studies of two-way accounting should be widely integrated in carbon-free strategies. Collaborative efforts by BRICS countries in developing a consistent method for accounting emissions could influence global policies and international commitments.

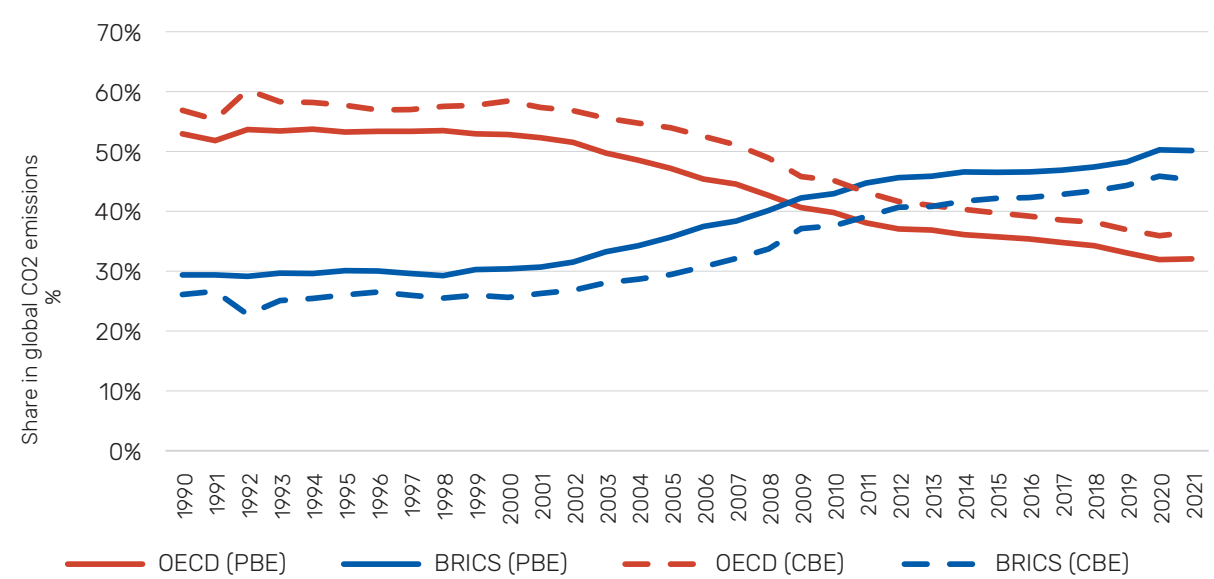
All BRICS members, except for Egypt, Ethiopia, and the UAE, show a smaller share of global consumption-based emissions compared to production-based emissions. For South Africa, the difference stands at around 30%, and for Russia, it is approximately 20% (Table 1). China, Russia, India, South Africa, and Iran are among the five largest global exporters of emissions embodied in trade (net emissions embodied in trade (NEET) are production-based emissions (PBE) minus consumption-based emissions (CBE)) (Global Carbon Project, 2023). The data below does not include emissions from land-use change, but if it did, Brazil would likely rank among the top four countries.

Table 1. Production-based, consumption-based emissions and net emissions embodied in trade in BRICS countries compared to OECD in 2021 (in million tonnes of CO₂)

Country	PBE	CBE	NEET	NEET/PBE
Brazil	497	462	35	7%
Russia	1,712	1,360	352	21%
India	2,674	2,448	226	8%
China	11,336	10,320	1,016	9%
South Africa	426	298	128	30%
Egypt	247	265	-18	-7%
Ethiopia	19	23	-4	-20%
Iran	688	619	69	10%
Saudi Arabia	631	622	9	1%
UAE	237	241	-4	-2%
BRICS	18,468	16,658	1,810	10%
OECD	11,801	13,443	-1,642	-14%

BRICS countries demonstrate a notable contrast with the OECD, where consumption-based emissions are higher than production-based emissions (Figure 10). This asymmetry highlights the special role of BRICS countries in the future of global climate and underscores the importance of calculating both consumption-based and production-based emissions to gain a deeper understanding of decarbonization prospects worldwide.

Figure 10. PBE and CBE in the OECD and BRICS Countries (1990–2021)

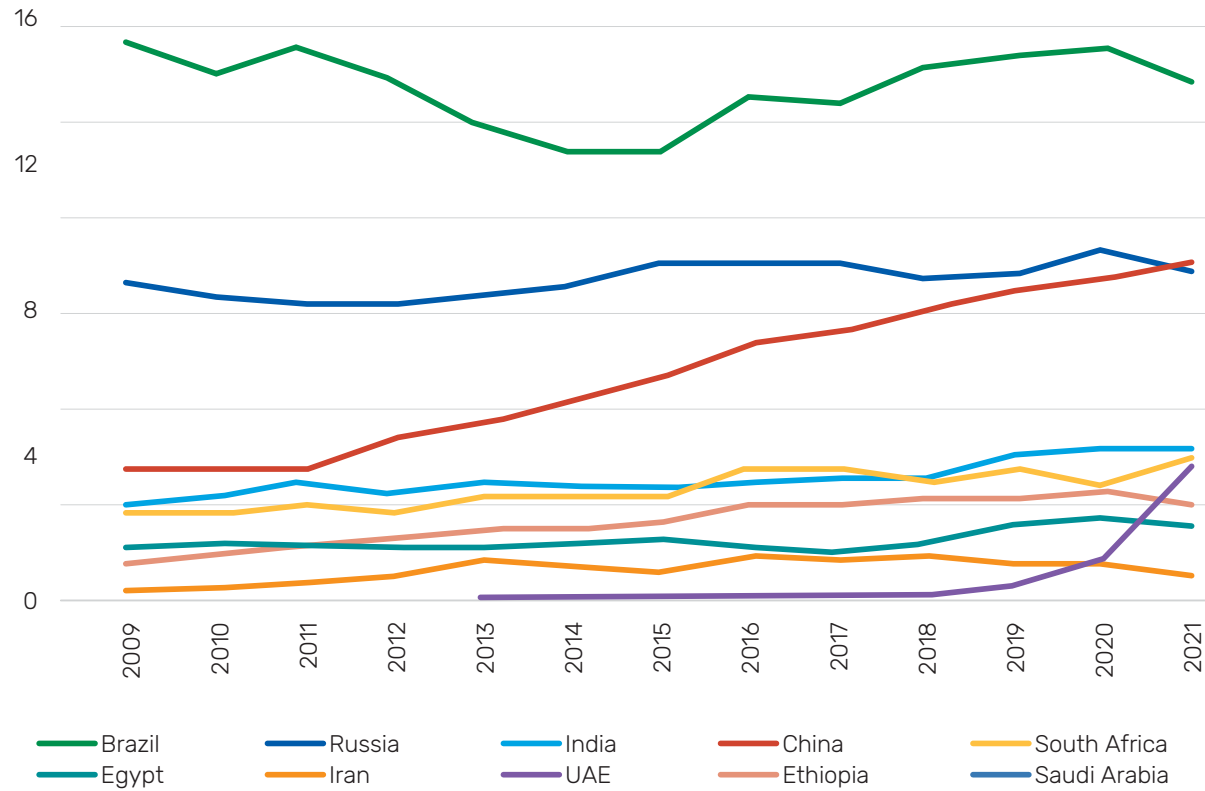


Source: Earth System Science Data.

In 2018, BRICS agreed on the establishment of the BRICS Energy Research Platform aimed at promoting sustainable energy development through cooperation in energy research, technology, policy, and innovation. In 2020, BRICS published a Roadmap for the BRICS Energy Cooperation up to 2025, which included joint analysis of the energy sector, exchange of best practices, and promoting joint projects. Member countries have already

shown progress in adding clean energy to their energy mix⁷, and cooperation can facilitate this process. China has demonstrated the most consistent long-term progress, increasing its renewable and nuclear energy shares by nearly 6% from 2009 to 2021 (Renewables, IEA, n.d.). However, the fastest growth was seen in the UAE, where the use of renewable energy increased by about 4% between 2017 and 2021. Brazil leads with 15% renewable energy, with even higher figures when biofuels are considered. India and South Africa have nearly doubled their clean energy shares, and Ethiopia has almost tripled its share during the analyzed period, though these numbers remain relatively low. Strengthening cooperation in the energy sector and implementing practical mechanisms could further promote sustainable energy generation and consumption (Figure 11).

Figure 11. Clean energy share (incl. nuclear and hydropower and excl. biofuel and waste) (2009–2021), % of energy mix



Source: IEA.

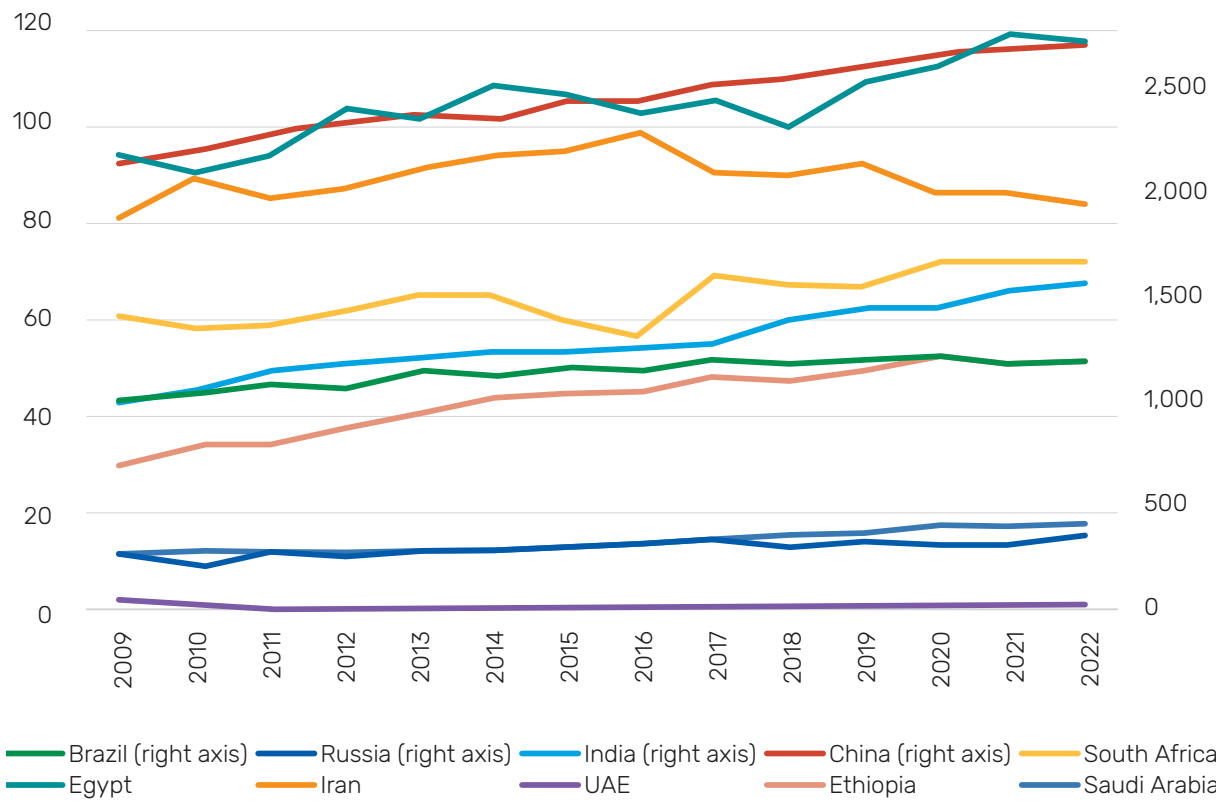
⁷ Clean energy refers to wind, solar, hydro, and other renewable sources, as well as nuclear energy. Biofuels and waste were excluded from the analysis to avoid including traditional biomass, which, although still widely used in developing countries, cannot be considered modern renewable energy. When traditional biomass is included, India, for instance, has 26% clean energy in its mix, while Ethiopia reached 91% in 2021.

4. FOOD SECURITY

BRICS have been working together on agriculture and food security issues since the first meeting in 2009. In 2021, they adopted the second BRICS Agricultural Cooperation Action Plan 2021–2024, which aims to accelerate agricultural development, strengthen food supply capacity within BRICS, and promote the exchange of information and best practices through the BRICS Agricultural Research Platform.

Collectively, BRICS nations produce over 6 billion tonnes of agricultural products, showing a positive growth trend since 2009. The most significant increase in production, around 74%, has been observed in Ethiopia. Agricultural production in Egypt began to grow significantly in 2018, driven by increased rice and non-cereal crop production. However, UAE, Saudi Arabia, and South Africa have limited agricultural output, with production in the UAE reaching 2.5 million tonnes in 2022, Saudi Arabia at 18 million tonnes, and South Africa at 72 million tonnes (FAOSTAT, n.d.). Nevertheless, these countries have seen slight increases in agricultural production as well (Figure 12).

Figure 12. Agricultural sector output (2009–2022), million tonnes

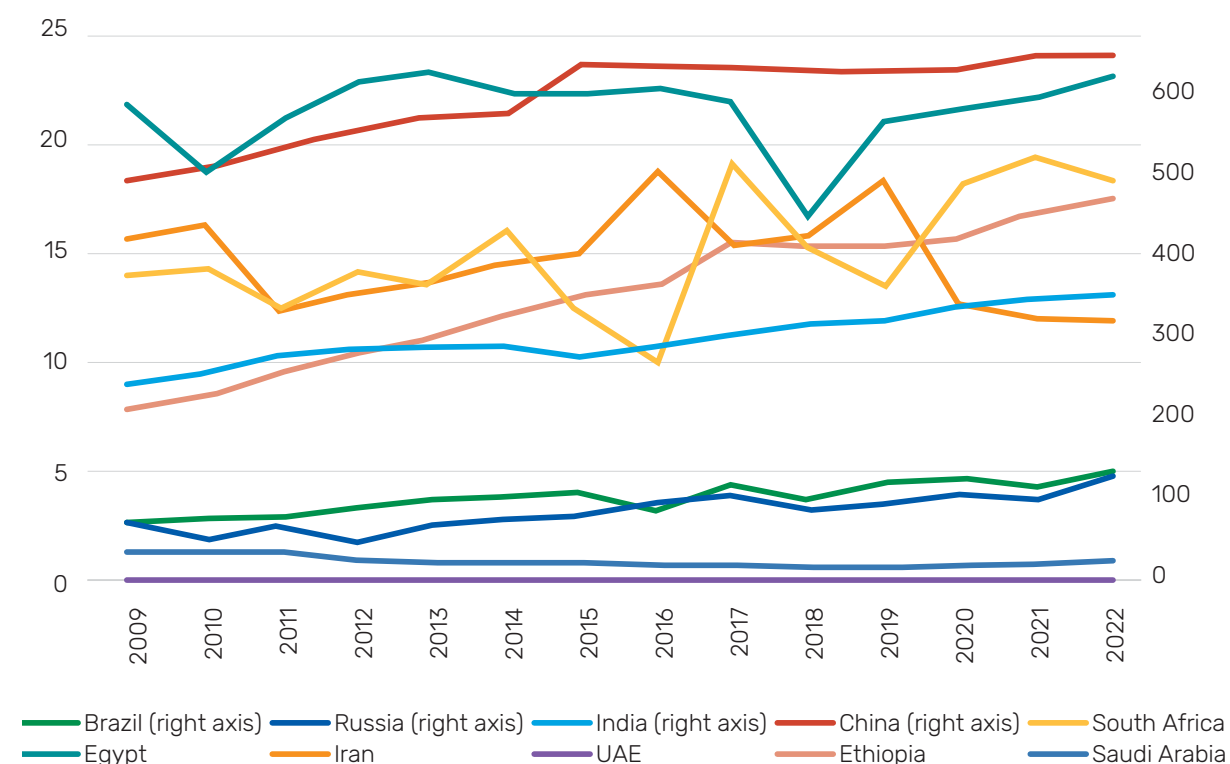


Source: FAOSTAT.

Production of major cereal crops and self-sufficiency level

BRICS countries account for about one-fifth of global cereal exports, a key component of food security according to the FAO. As major suppliers of cereals, BRICS nations collectively produce over 1.1 billion tonnes of cereals annually, with the largest producers in the group showing steady positive growth (FAOSTAT, n.d.) (Figure 13).

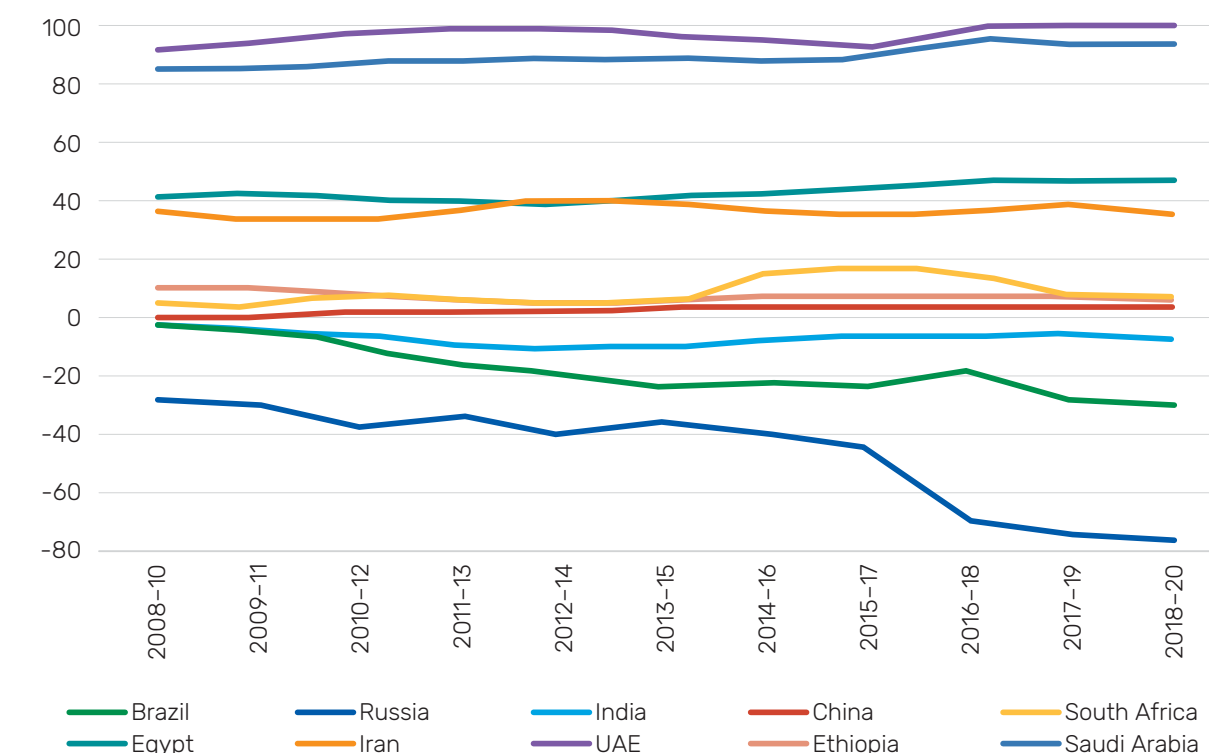
Figure 13. Production of major cereal crops (2009–2022), million tonnes



Source: FAOSTAT.

The Strategy for BRICS Economic Partnership places a strong emphasis on food security, including increasing agricultural productivity. The BRICS Agricultural Cooperation Action Plan also highlights the need to strengthen the food supply capacity of the group. Additionally, Russia's proposal to create a BRICS Grain Exchange, introduced during its Chairship, aims to provide a stable and accessible platform for trading essential grains like wheat, corn, soybeans, and rice. This initiative would help boost food security, stabilize prices, and reduce dependency on Western-dominated markets. Among the BRICS countries, three are net exporters of cereal products. In 2019, India had a cereal import dependence of -6%, Brazil showed -28% dependence, and Russia had a -74% dependence on cereal imports. The other BRICS countries are net importers, though their dependence on imports varies significantly. Some countries like China, South Africa, and Ethiopia have low levels of dependence, while the UAE and Saudi Arabia remain highly dependent (FAOSTAT, n.d.). In 2019, Saudi Arabia's dependence on cereal imports stood at 94%, while the UAE was 100% dependent (Figure 14).

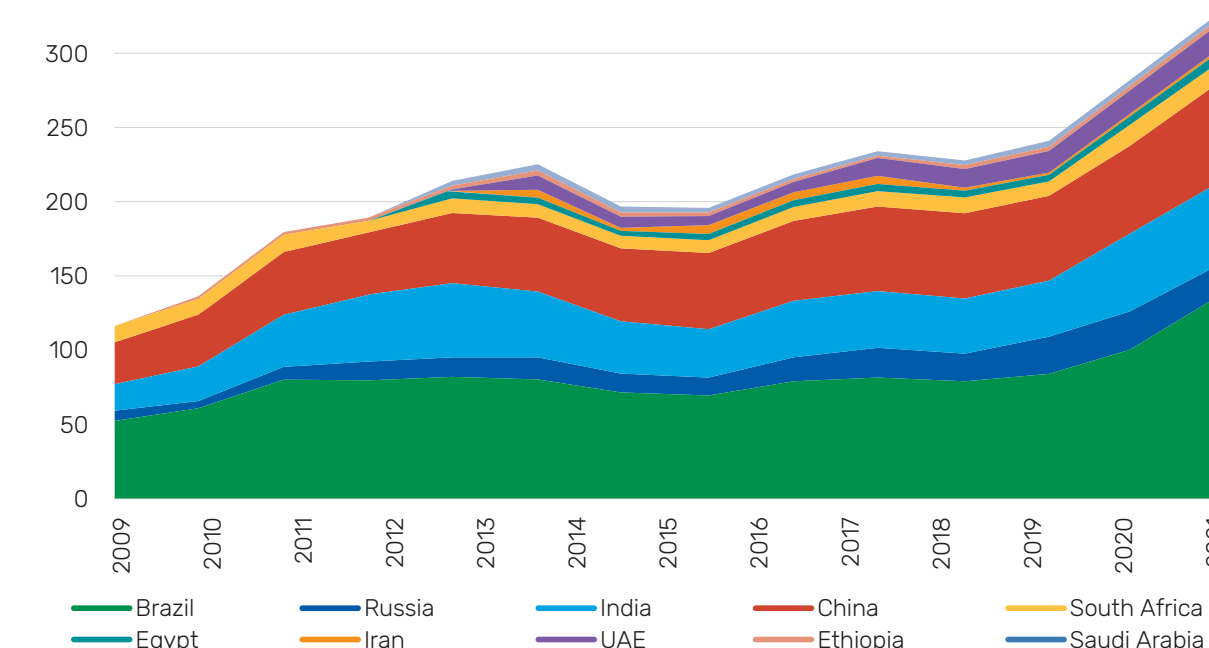
Figure 14. Dependence on imports (2008–2018), %, 3-year average



Source: FAOSTAT.

Given the dependence on imports for certain BRICS countries, intensifying agricultural trade is a key priority for developing sustainable agriculture markets and ensuring food security. BRICS has significant potential to promote international trade in agricultural products, as the group now includes four major food exporters. The total export value of agricultural products from BRICS has shown an upward trend, rising from USD 119 billion to USD 329 billion in 2022 (Figure 15) (FAOSTAT, n.d.). From 2020 to 2022, the total agricultural exports from BRICS grew by 20%, a trend partly driven by rising food prices but also reflecting increasing agricultural production and the growing role of BRICS in the global food market.

Figure 15. Total exports of agricultural products by BRICS (2009–2022), in billion USD

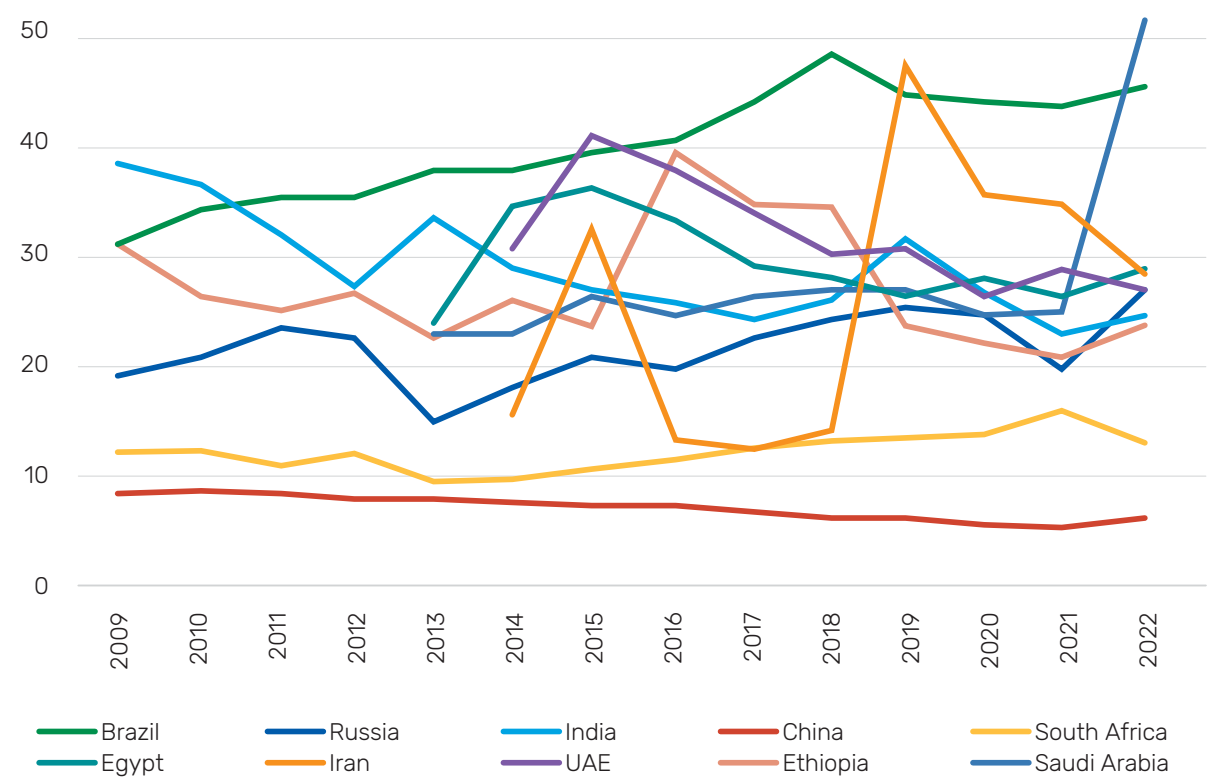


Source: FAOSTAT.

As cooperation and mutual trust between BRICS countries continue to grow, building on a rising number of joint projects, mutual trade, especially in agriculture, also increases. For example, Brazil's agricultural exports to other BRICS countries increased from 31% in 2009 to 46% in 2022, while Russia's share grew from 19 to 27% (FAOSTAT, n.d.). The dynamics for the other BRICS countries are more volatile (Figure 16).

BRICS countries represent a large share of global agricultural trade and are focused on ensuring a stable, transparent, and unobtrusive institutional environment to maintain global effectiveness and stability in personal consumption.

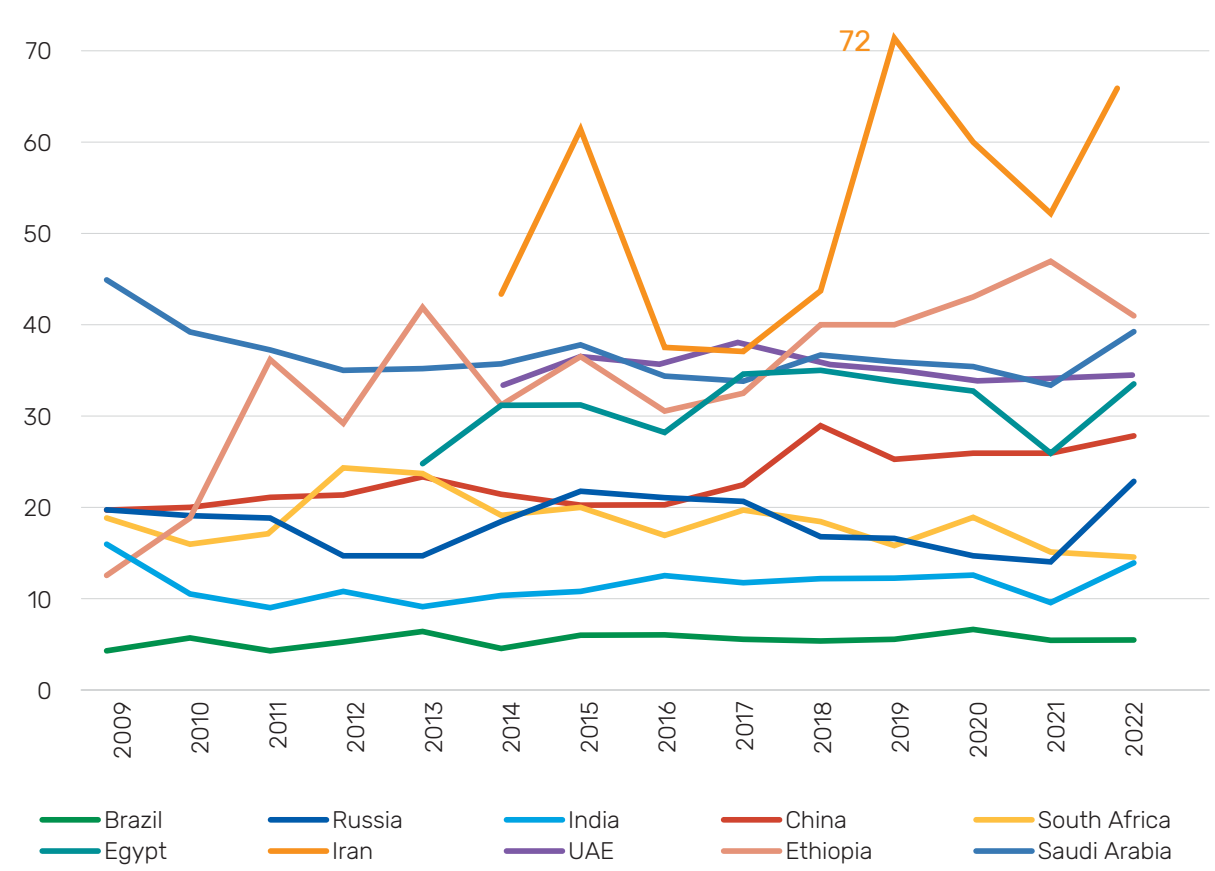
Figure 16. Share of agricultural exports to BRICS countries (2009–2022), in % of total agricultural exports



Source: FAOSTAT.

Iran stands out as a significantly integrated country in intra-BRICS trade, particularly as a large food importer, with 69% of its imports coming from other BRICS countries as of 2022. China's imports from BRICS have also grown considerably, rising from 20% in 2009 to 28% in 2022 (FAOSTAT, n.d.) (Figure 17). At the same time, the trade structure within BRICS highlights the potential for further expanding mutual trade in agricultural products.

Figure 17. Share of agricultural imports from BRICS countries (2009–2022), in % of total agricultural imports



Source: FAOSTAT.

5. CONCLUSIONS AND RECOMMENDATIONS

The growing number of initiatives and activities in the field of sustainable development reflects the BRICS members' interest in advancing progress in this area. There is a general shift from broad agreements to the establishment of practical cooperation mechanisms, the implementation of joint programs, and the formation of common information and technology platforms.

Nevertheless, sustainable development has a substantial unrealized potential in the existing cooperation, as well as in the relatively new fields such as waste management, sustainable infrastructure, and just transition. Additional practical tools are necessary to support activities in all areas of sustainable development. Collective efforts should be intensified in the fields of food security, sustainable energy, sustainable production and consumption, and urban development. These efforts will help strengthen the voices and roles of developing countries in shaping a sustainable future.

This can be achieved by working out a joint BRICS Sustainable Development Roadmap, which will comprise the vision of all BRICS countries on the steps required on national and international levels to achieve the SDGs, as well as joint indicators of their implementation, a list of proposed common projects, and mechanisms for mutual accountability. Moreover, increased cooperation can be proposed in urban development, including the creation of a knowledge-sharing platform for cooperation between local-level representatives on sustainable cities and related aspects, as well as the elaboration of common targets on mitigating city air pollution levels.

Furthermore, all BRICS members are vulnerable to negative consequences of climate change, even though the manifestations of these are highly divergent. While progress on adding clean energy to the energy mix remains insufficient in almost every BRICS country, production-based emissions appear to surpass consumption-based ones in most member states, making them net exporters of emissions. In addition to this, the BRICS' per capita emissions demonstrate slower growth than their absolute amounts and not always exceed the OECD average, which, in turn, is hardly declining despite ambitious climate policies. The latter two arguments support the notion that developed economies often cut emissions by consuming more imported carbon-intensive goods while maintaining consumption patterns, which does not actually favor global emissions reduction.

With respect to climate change, it is paramount for BRICS to clarify that, despite differences in national circumstances, all members share fundamental interests which can be summarized in joint aspirations to achieve just transition, the necessity to align climate change mitigation with other SDGs, the technological neutrality of the global green transition, etc. These unifying principles could be laid out in a separate document which would solidify the BRICS' international stance in international climate politics. Additionally, there is an increasing need for BRICS countries to start systematic and reliable accounting of consumption-based emissions apart from production-based ones, which will support their position against trade barriers and other forms of trade protectionism emerging under the banner of combating climate change. The accounting, as well as the independent collection and analysis of data on challenges, risks, policies, and other areas related to climate change and energy transition can be conducted by the newly created BRICS Climate Research Platform. It may gradually evolve into the BRICS Climate Research Center which could pose as an alternative to North-centric institutions such as the IEA or OECD which currently provide the majority of policy-relevant information in these areas. It is also advisable for BRICS nations to negotiate the convergence of their voluntary carbon market and green finance infrastructures in order to remove barriers to attracting finance into the green transition throughout the format. It may be done within the BRICS Carbon Markets Partnership, a platform created in 2024.

On the food security problem, which remains one of the most urgent ones faced by humankind, the BRICS nations also demonstrate differences. While some are net exporters of cereal products, others are highly import-dependent. However, food security depends on a

complex set of factors beyond just production capacity. Effective logistics, robust insurance systems, reliable transportation infrastructure, and access to technology all play critical roles in ensuring food availability and affordability. This calls for enhanced cooperation to ensure that BRICS countries always maintain high levels of food security as well as manage to assist other nations in need of international aid.

The creation of the BRICS Grain Exchange proposed in the Kazan Declaration may become a key step in ensuring BRICS food security through building new and independent infrastructure for international trade in cereals. Moving forward, BRICS can address food security on an even larger scale. Most BRICS countries are currently among the donors and active participants of the World Food Program, which is currently highly North-dominated; others, such as Ethiopia, are recipients of its assistance. BRICS members have the potential to play a significant and meaningful role in helping ensure global food security. To develop and apply this potential, as well as to enhance their leadership as a voice of developing countries' problems and needs, BRICS could establish a joint Food Security Fund for the purpose of accumulating financial and food resources and directing them to nations in need of such. The Fund could be comprised not only of BRICS members, but also of third countries willing to join. Creating the Fund would not only augment the overall assistance which BRICS nations provide in terms of food security, but also support the member states' own agricultural producers by creating additional opportunities.

Since the BRICS countries' collaboration on sustainable development, natural resource management, climate change, and food security can take various other forms, the proposed list of suggestions cannot be considered exhaustive. Nevertheless, relying on the analyzed indicators and the identified points of possible alignment, it can be assumed that the suggestions mentioned above could serve as starting points for cooperation and convergence of positions in these crucial areas.

PART IV. SCIENCE, TECHNOLOGY, AND INNOVATION (STI), EDUCATION, TOURISM, SPORTS, AND HEALTHCARE

1. COOPERATION IN THE FIELD OF SCIENCE, TECHNOLOGY, AND INNOVATION (STI)

Cooperation on the STI track is being implemented on an annual basis, including through meetings of the BRICS STI Ministers, the BRICS STI Senior Officials, and the Working Groups in 13 priority areas. The BRICS STI Architecture, adopted by the BRICS STI Ministers in 2019 in Campinas, Brazil, identifies four pillars of cooperation: Research Collaboration, Innovation Collaboration, Research Infrastructure, and Sustainability.

The BRICS countries hold forums, conferences, and roundtables on an ongoing basis, including the meetings of the Heads of BRICS Academies of Sciences, the BRICS Academic Forum, the BRICS Conference on Technological Foresight and STI Policy, and the BRICS Young Scientist Forum, among others. These initiatives help facilitate the formalization of cooperation and the further development of joint scientific and educational projects.

Key initiatives launched by the BRICS Working Groups include the BRICS Advanced Network of Global Research Infrastructures (BRICS GRAIN); the BRICS Network Centre for Materials Science and Nanotechnology (BRICS NCMSN); the BRICS Virtual Institute of Photonics (BRICS VIP); the BRICS Integrated Centre for Innovative Cooperation in Information and Communication Technologies (ICT) and High-Performance Computing Systems (BRICS ICT HPC); the BRICS Network of Science Parks, Technological Business Incubators, and Small and Medium Enterprises (iBRICS); and the BRICS Technology Transfer Network (BRICS TechTransfer); as well as joint polar and oceanic research expeditions.

The group has also established the BRICS Young Innovator Prize, for which six competitions have been held to date. This initiative is aimed at supporting promising young researchers from the BRICS countries and expanding the expert network for evaluating projects.

BRICS pays particular attention to supporting joint scientific and technological projects. The network of National Contact Points (NCPs) was established in 2016. It encompasses STI funding agencies within the BRICS STI Framework Program (BRICS STI FP), according to the BRICS STI FP Call Secretariat (BRICS STI FP Call Secretariat, n.d.). Currently, 12 NCPs representing five member countries are active:

- Brazil – the National Council for Scientific and Technological Development (CNPq) and the Brazilian Innovation Agency (Finep), both under the Brazilian Ministry of Science, Technology and Innovation (MCTI);
- Russia – the Foundation for Assistance to Small Innovative Enterprises (FASIE), the Ministry of Science and Higher Education of the Russian Federation (MSHE), Russian Centre for Science Information (RCSI);
- India – the Department of Biotechnology (DBT) and the Department of Science and Technology (DST), both under the Indian Ministry of Science and Technology;
- China – the Ministry of Science and Technology (MOST) and the National Natural Science Foundation of China (NSFC);
- South Africa – the Department of Science, Technology and Innovation (DSTI), the National Research Foundation (NRF), and the South African Medical Research Council (SAMRC).

From 2016 to 2024, six calls were launched for multilateral scientific and technological projects. BRICS STI FP calls require the participation of representatives of three or more BRICS countries. Competitions have encompassed 11 priority areas of research (Aeronautics; Astronomy; Biotechnology and Biomedicine, including Human Health and Neuroscience;

Geospatial Technology and its Applications; ICT and High-Performance Computing; Materials Science, including Nanotechnology; New and Renewable Energy, and Energy Efficiency; Ocean Exploration and Polar Research and Technology; Photonics; Prevention and Elimination of Natural Disasters; Water Resources and Pollution Control).

Since the launch of the BRICS STI FP, more than 1,600 applications for BRICS STI FP calls have been accepted from 5,000 research teams within the BRICS countries. Altogether, 157 projects were supported in the period 2016–2023 (including 19 projects that resulted from the sixth call in 2023) (BRICS STI Framework Program Call Secretariat, n.d.).

It is imperative to ensure not only the monitoring of the number of implemented projects, but also their further development after the completion of the BRICS STI FP calls or other competitions. Monitoring of the current status of collaboration of the project teams from the BRICS countries that applied for international calls or competitions has produced promising results, especially in terms of the analysis of those applications that did not receive financial support. Such projects and teams could be further encouraged to continue and expand their collaboration with partners from the BRICS countries.

A number of patents and publications issued under the BRICS STI Framework Program, and/or in the respective priority areas of this Framework, may prove difficult to aggregate. However, analysis of the number and share of such documents seems promising for further annual monitoring. Cooperation within BRICS is showing steady growth. The citation of relevant articles and the industrial application of patents should be considered as well.

2. INTELLECTUAL PROPERTY AND TECHNOLOGY TRANSFER

In the field of intellectual property, BRICS is showing promising results. In 2012, the BRICS Cooperation Mechanism in the Field of Intellectual Property (IP BRICS) (IP BRICS, n.d.) was launched to intensify cooperation between the respective intellectual property (IP) authorities of the BRICS countries in order to increase the value of IP and ensure its contribution to economic development across the BRICS countries. IP BRICS grew out of informal consultations among the heads of national departments of the BRICS countries in Geneva, Switzerland. Originally, it included representatives of the national departments of five countries (Brazil, Russia, India, China, South Africa). It should be noted that the Federal Service for Intellectual Property of the Russian Federation (Rospatent) serves as the competent authority for search and international preliminary examination for 28 countries (including Iran and Saudi Arabia from among the BRICS 10) and two regional organizations: the African Intellectual Property Organization (OAPI) and the European Patent Office (EPO). In 2023, the IP authorities of the BRICS countries resumed the coordination of their positions within the World Intellectual Property Organization (WIPO) and issued a joint statement at the opening of the 64th series of WIPO Assemblies, thus demonstrating the BRICS’ determination to enhance multilateral cooperation in the field of IP management and making it more efficient. In 2024, Egypt, Ethiopia, Iran, and the United Arab Emirates (UAE) joined the IP BRICS cooperation mechanism. Although most countries in the group already have memoranda of bilateral interagency cooperation (for instance, Russia has signed documents with organizations from nine other BRICS countries), further development of multilateral cooperation in the IP field is needed. In 2021, following the IX BRICS STI Ministerial Meeting, the Enabling Framework for the Implementation of BRICS Technology Transfer Centre Cooperation was adopted (based on a proposal by China in 2018 for the establishment of BRICS technology transfer centers). The Chinese node of BRICS Technology Transfer was then inaugurated in Kunming, China. The BRICS Innovation Cooperation Action Plan 2021-2024 highlighted the importance of support and encouragement for BRICS countries to participate in building the BRICS Technology Transfer Network (BRICS TechTransfer), which serves as an official cooperation mechanism for technology transfer among the BRICS countries. Further cooperation in this field includes fostering IP protection measures, expanding opportunities for technology transfer, and implementing capacity-building initiatives (including educational and training programs, as well as the formulation of technology transfer metrics).

Since 2009, the BRICS countries have shown rapid growth in terms of publishing and patenting. From 2009 to 2022, more than 16 million invention patent applications were filed in the BRICS countries, with over six million being granted. As a group overall, the original BRICS 5 accounted for 42% of all patents in the world during this period (43% for BRICS 10). China, India, and Russia maintain places in the ranking of the world’s top 20 countries by number of patent applications. China, Russia, India, Brazil, and Iran ranked among the top 20 by the number of trademark applications filed in 2022, according to WIPO data (see Table 1) (WIPO, 2023).

Table 1. The BRICS countries ranked by number of patent and trademark applications by national IP office in 2022

Country	Number of patent applications by national IP office in 2022		Number of trademark applications by national IP office in 2022	
	Total	Resident	Total	Resident
China	1,619,268	1,464,605	7,513,504	7,304,080
India	77,068	38,551	500,305	448,911
Russia	26,924	18,970	421,140	375,771
Brazil	24,759	4,398	404,209	355,877
South Africa	13,990	1,651	39,120	22,297
Iran	8,681	8,267	363,922	352,891
Saudi Arabia	5,837	2,606	40,287	25,303
UAE	2,848	112	40,344	8,159
Egypt	1,914	589	54,610	37,867
Ethiopia	64	16	2,752	1,876

Source: WIPO.

From 2009 to 2023, more than 13 million scientific publications (journal articles and conference proceedings) from the BRICS 10 (Brazil, Russia, India, China, South Africa, Egypt, Ethiopia, Iran, Saudi Arabia, UAE) were indexed in international databases (according to the lens.org database of scholarly literature), which accounts for approximately 18% of such publications worldwide in the same period. Altogether, 90% of the relevant articles were published by scholars in the BRICS 5 (Brazil, Russia, India, China, South Africa), representing 11.8 million publications, or 16% of the global total. On average, more than 10,000 articles were published in collaboration with partners from each of the BRICS countries (from 6,000 to 24,000 publications on a bilateral basis) from 2010 to 2022, according to the authoritative Scopus database. China, India, and Russia have the largest number of co-authored publications within BRICS. It is noteworthy that from 2000 to 2010, the relevant numbers of co-authored publications within BRICS 5 were around 600 publications, which demonstrates an approximately tenfold increase in the number of publications as a result of the active collaboration of joint research teams from the BRICS countries, according to Scopus. Such cooperation has become a prerequisite for further successful innovation-driven development, given that there are more than 3,600 institutions from across the BRICS 10 countries whose research results are indexed in the Scopus database.

The BRICS countries have significant global potential and influence in scientific research and innovation. More than 41,000 scientists from the BRICS 10 rank among the top 2% of the world’s most cited scientists (based on the Stanford/Elsevier Top 2% Scientist Rankings 2024) (Elsevier, 2024), which accounts for 18.6% of all leading researchers worldwide, while 16.1% of all leading researchers worldwide hail from the BRICS 5. The distribution of BRICS scientists (by number) who rank among the world’s top 2% is as follows: China: 27,165; India: 5,351; Iran: 2,327; Saudi Arabia: 1,684; Brazil: 1,340; Egypt: 1,001; Russia: 969; South Africa: 902; UAE: 528; and Ethiopia: 149.

One of the most promising areas for cooperation within the BRICS, particularly within the context of developing “open science,” is the analysis of national scientific databases and the potential establishment of a joint database or digital platform that would provide data on publications, citations, collaboration, including co-authored publications, etc., from the BRICS countries, without any limitations due to external factors on the representation of individual countries in such an international database. Such a digital platform could serve as an effective additional tool for finding new partners for scientific collaboration within BRICS.

3. DIGITAL AND INNOVATION-DRIVEN DEVELOPMENT

Digital development is one of the most promising areas for cooperation within BRICS. The annual BRICS Communications Ministers’ Meeting addresses the issues of expanding sectoral cooperation between the BRICS countries in the field of digital economy and information and communication technologies (ICT). Following the inaugural meeting in 2015, the ministers announced the priorities for multilateral cooperation in the field of ICT. This was followed by further discussions at the IV BRICS Communications Ministers’ Meeting in Durban, South Africa, in 2018, which resulted in the establishment of the BRICS Institute of Future Networks (BIFN) and the Digital BRICS Task Force (DBTF) under the Working Group on ICT Cooperation. Among other goals, the BIFN and the DBTF were charged with enhancing participation in the BRICS Partnership on the New Industrial Revolution (PartNIR), which was also proposed in 2018, and was followed by the creation of the BRICS PartNIR Innovation Centre (BPIC). In turn, PartNIR and BPIC serve as key platforms for cooperation in the field of digital transformation within BRICS. In 2018, the CyberBRICS research project was launched to facilitate the analysis of digital policies in the BRICS 5, including mapping existing regulations, identifying best practices, and drafting policy recommendations. It should be noted that the BRICS Digital Economy Partnership Framework (FINAL) was adopted in 2022 to expand bilateral and multilateral cooperation in the field of digital governance within BRICS, and to promote the development of a transparent and fair environment for digital economy cooperation within the greater context of the development of the global digital economy and digital trade.

The Global Innovation Index (GII) for the BRICS 5 countries on average shows a positive trend (moving up by around 14 places in the ranking on average) (Global Innovation Index (GII), n.d.). In 2023, China posted the highest ranking within BRICS (12th place, up 23 places since 2013), while India ranked in 40th place (up 26 places since 2013), Brazil ranked 49th (up 15 places), Russia ranked 51st (up nine places), and South Africa ranked 59th (down one place since 2013).

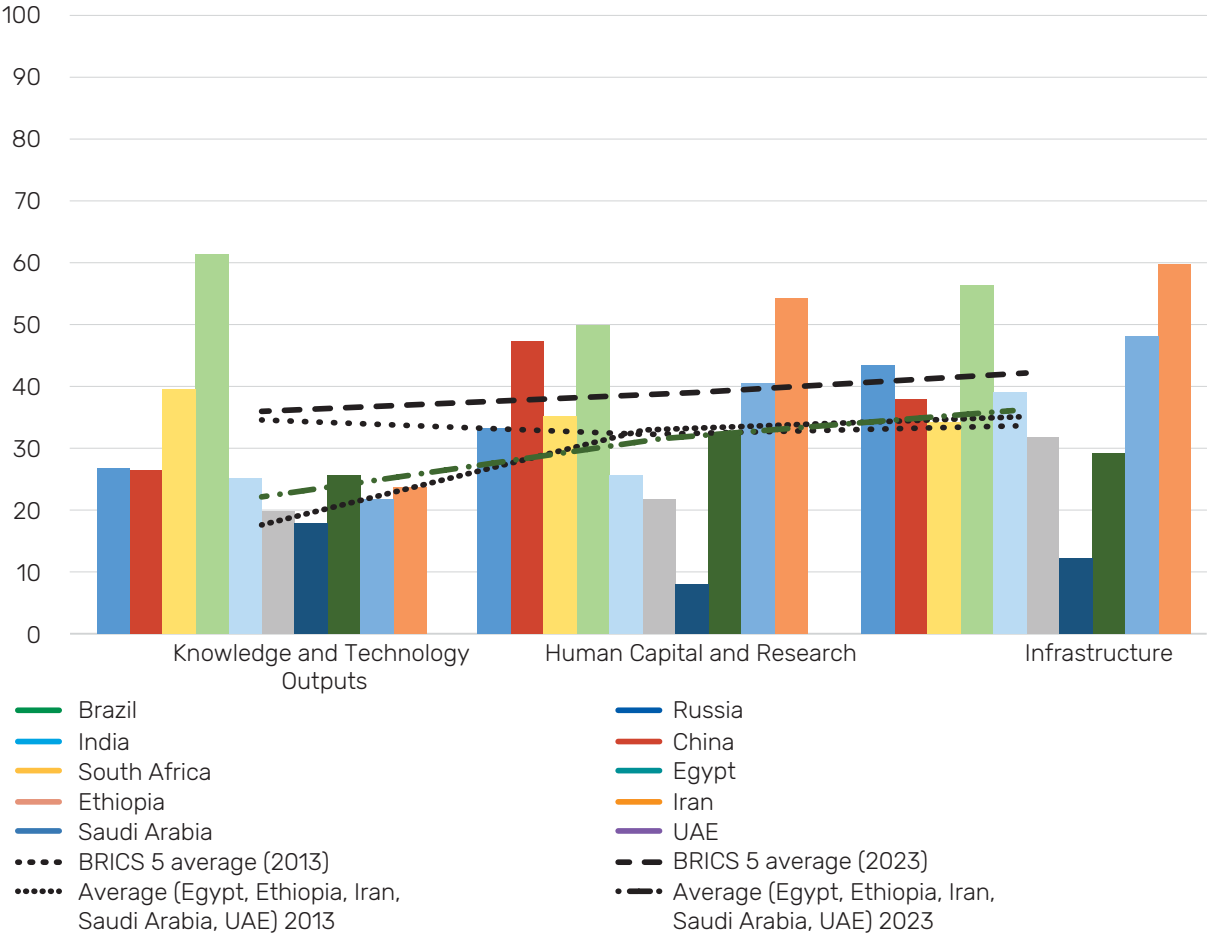
The GI is based on a dataset of 81 indicators from international public and private sources and goes beyond traditional innovation metrics as its definition has broadened. Based on the average value of the BRICS countries from 2013 to 2023, there was a 4% rise in scores in the “Knowledge and Technology Outputs” group of indicators and increases of 20% in “Human Capital and Research” and of 25% in “Infrastructure,” according to WIPO data (see Figure 1).

In “Knowledge and Technology Outputs,” the average BRICS 5 score is 35.87, in which China took the lead with both the highest rank (6) and score (61.5) within BRICS, followed by India (rank: 22; score: 39.7), Brazil (rank: 52; score: 26.8), Russia (rank: 54; score: 26.4), and South Africa (rank: 56; score: 25). The average score for Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE is 21.92, where Iran took the lead with both the highest rank (55) and score (25.9), followed by the UAE (rank: 59; score: 23.9), Saudi Arabia (rank: 68; score: 22), Egypt (rank: 77; score: 19.9), and Ethiopia (rank: 84; score: 17.9).

In “Human Capital and Research,” the average BRICS 5 score is 38.36, wherein China again took the lead with both the highest rank (22) and score (49.8) within BRICS, followed by Russia (rank: 26; score: 47.2), India (rank: 48; score: 35.5), Brazil (rank: 56; score: 33.5), and South Africa (rank: 84; score: 25.8). The average score for Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE is 31.48, wherein the UAE took the lead with both the highest rank (16) and score (54.3), followed by Saudi Arabia (rank: 35; score: 40.6), Iran (rank: 60; score: 32.6), Egypt (rank: 95; score: 21.9) and Ethiopia (rank: 131; score 8).

In “Infrastructure,” the average BRICS 5 score is 42.3, wherein China took the lead with both the highest rank (28) and score (56.4) within BRICS, followed by Brazil (rank: 58; score: 43.5), South Africa (rank: 68; score: 39.3), Russia (rank: 72; score: 38), and India (rank: 84; score: 34.3). The average score for Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE is 36.38, wherein the UAE was the leader with both the highest rank (15) and score (59.8), followed by Saudi Arabia (rank: 48; score: 48.3), Egypt (rank: 90; score: 31.9), Iran (rank: 97; score: 29.3), and Ethiopia (rank: 132; score: 12.1).

Figure 1. Global Innovation Index (GII) 2023 scores by country



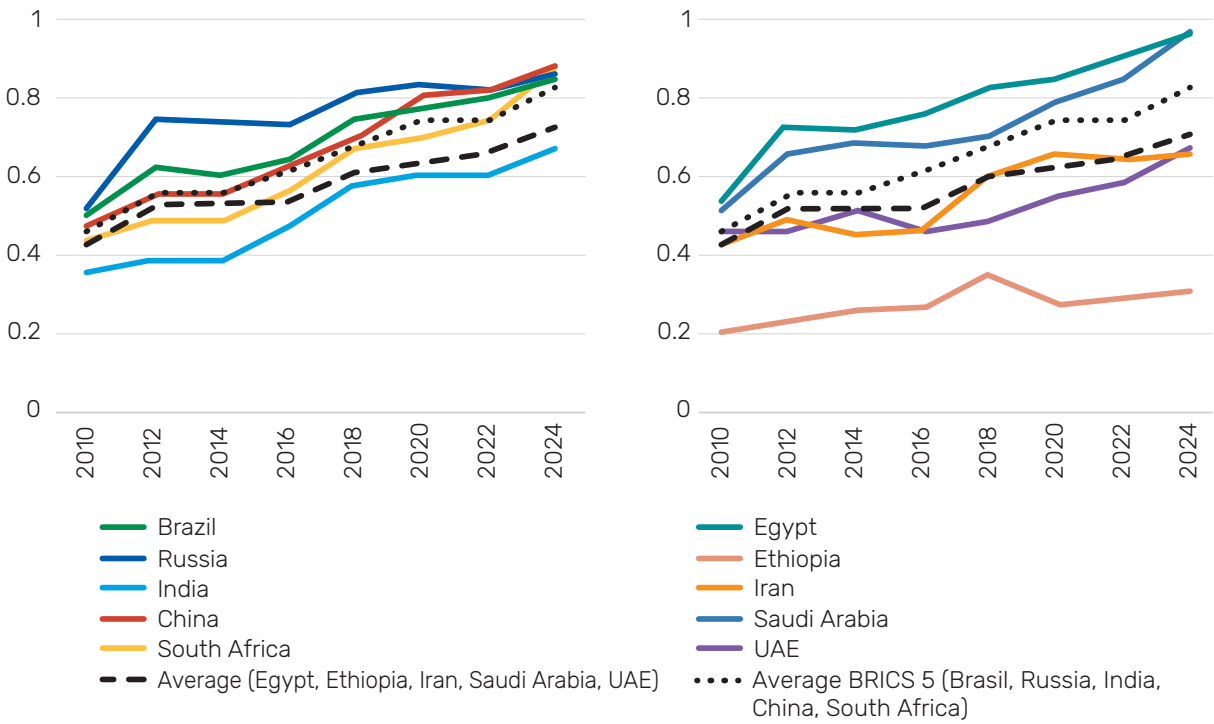
Source: WIPO.

According to the E-Government Development Index (EGDI), which is compiled every two years by the United Nations Department of Economic and Social Affairs, the BRICS countries are demonstrating stable growth in their readiness, capacity and progress in using e-government for the provision of public services (E-Government Development Index, 2020). The EGDI is a weighted average of the Online Services Index, Telecommunications Infrastructure Index, and Human Capital Index.

The BRICS 5 countries on average moved up by 28 places in the EGDI from 2010 to 2024, with Brazil moving up from 61st place to 50th, Russia ascending from 59th place to 43rd, India rising from 119th place to 105th, China jumping from 72nd place to 35th, and South Africa rising from 97th place to 40th. South Africa, China, and India demonstrated the sharpest rises in the EDGI ranking. Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE also showed a mostly positive trajectory (moving up by around 22 places in the ranking on average), but with a slight decrease for Egypt (falling nine places to 95th in 2024), while stable growth was seen for Ethiopia (rising three places to 169th) and Iran (up one spot to 101st), and sharp rises were posted by both the UAE (up 38 places to 11th place) and Saudi Arabia (rising 52 spots to take 6th place). For the most part, the scores of the EGDI, as well the Online Government Services Index and Telecommunications Infrastructure Index rose significantly for the BRICS 5, which also posted stable growth in the Human Capital Index (see Figures 2-5 below).

On average, the EGDI score for the BRICS 5 rose sharply by 80% from 2010 to 2024. Over this period, South Africa doubled its score (with a 100% increase) from 0.43 in 2010 to 0.86 in 2024, India jumped 87% (from 0.35 in 2010 to 0.66 in 2024), China rose 86% (from 0.46 in 2010 to 0.87 in 2024), Brazil increased 68% (from 0.50 in 2010 to 0.84 in 2024), and Russia posted a 66% increase (from 0.51 in 2010 to 0.85 in 2024). China, South Africa, Russia, and Brazil have the highest scores in the E-Government Development Index among the BRICS 5. On average, Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE increased their score by 67%. Saudi Arabia and the UAE boast the highest scores among the BRICS 10 (0.96 and 0.95, respectively, in 2024).

Figure 2. The E-Government Development Index



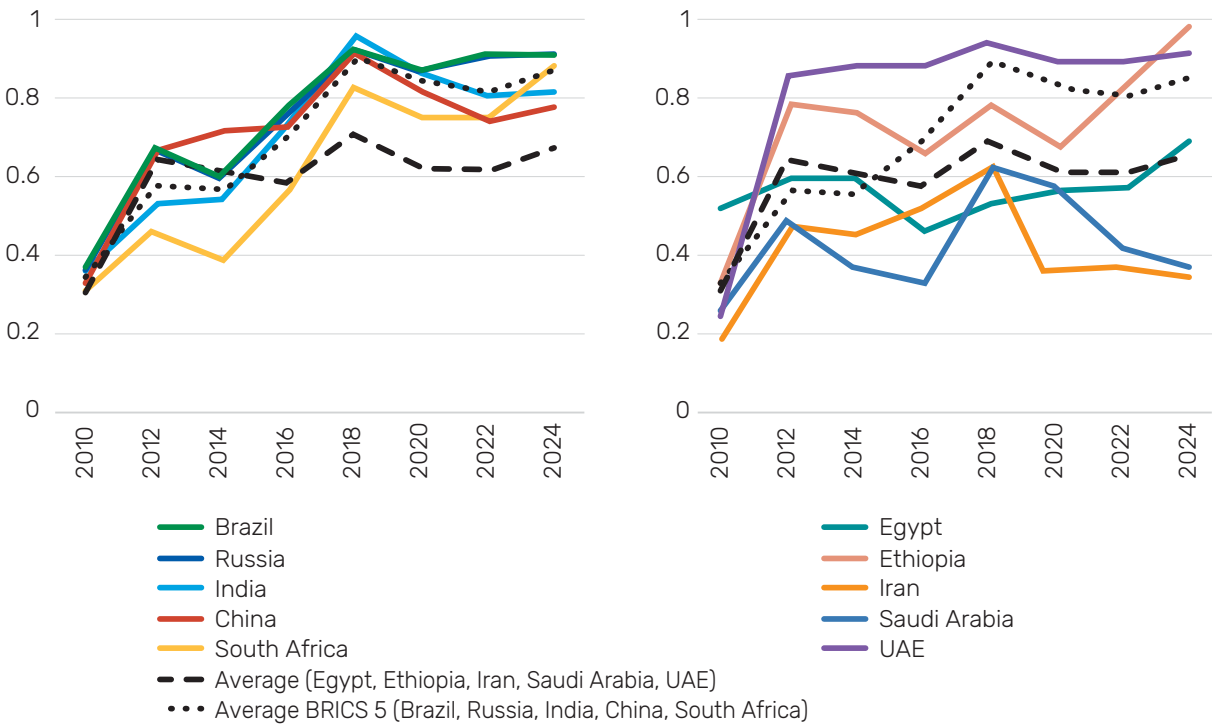
Source: EGD, the United Nations.

The BRICS 5 posted sharp growth in the Online Services Index (more than 148% on average). South Africa boosted its score dramatically by 188% (from 0.30 in 2010 to 0.89 in 2024), while China gained 151% (from 0.37 in 2010 to 0.92 in 2024), Brazil rose 146% (from 0.37 in 2010 to

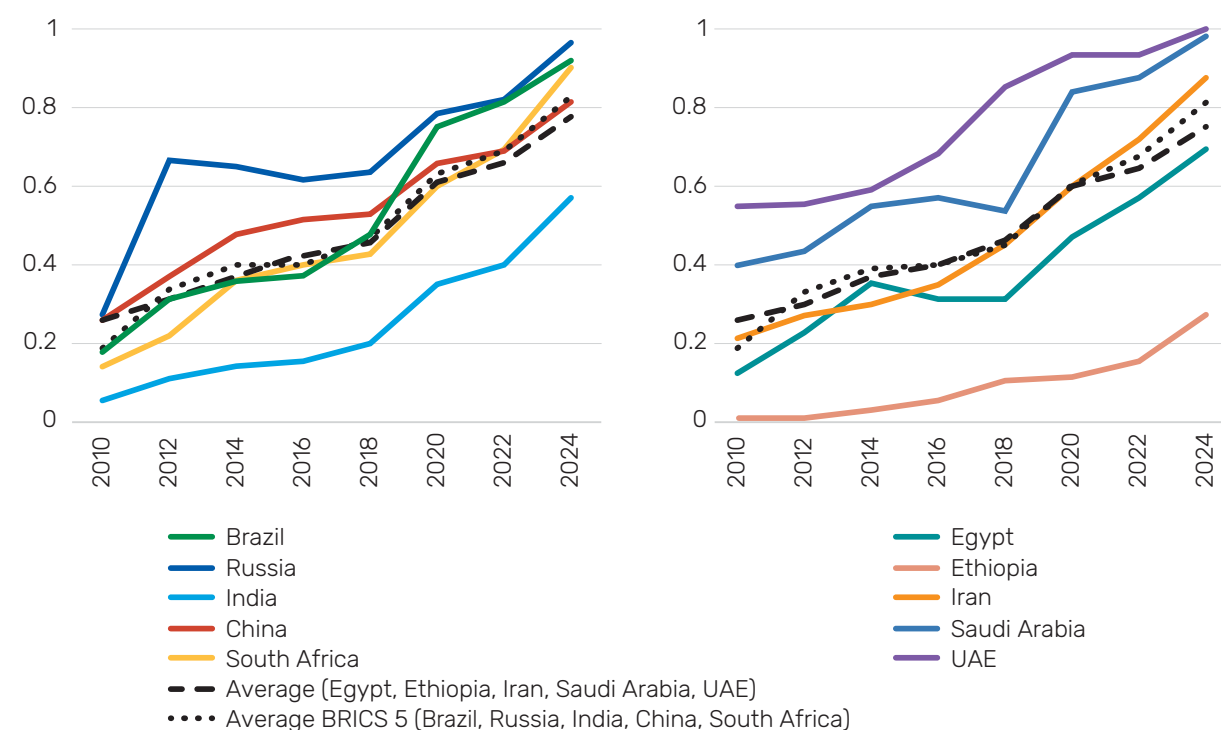
0.90 in 2024), and Russia and India posted increases of 135% and 146%, respectively (from 0.33 and 0.36 in 2010 up 0.77 and 0.81 in 2024, respectively). On average, Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE boosted their score in this indicator by 113%.

The BRICS 5 showed the most dramatic growth in the Telecommunications Infrastructure Index, with an aggregate increase of over 346% from 2010 to 2024. India boosted its score from 0.06 in 2010 to 0.57 in 2024, South Africa went from 0.14 in 2010 to 0.89 in 2024, China rose from 0.19 in 2010 to 0.90 in 2024, Russia went from 0.27 in 2010 to 0.95 in 2024, and Brazil jumped from 0.25 in 2010 to 0.80 in 2024. On average, Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE boosted their aggregate score in this indicator by more than three times, going from 0.25 to 0.77. Among other things, such growth indicates a significant focus among the BRICS countries on developing ICT infrastructure capacities and digital systems with the goal of expanding the direct involvement of the public in political and economic decisions.

Figure 3. Online Services Index

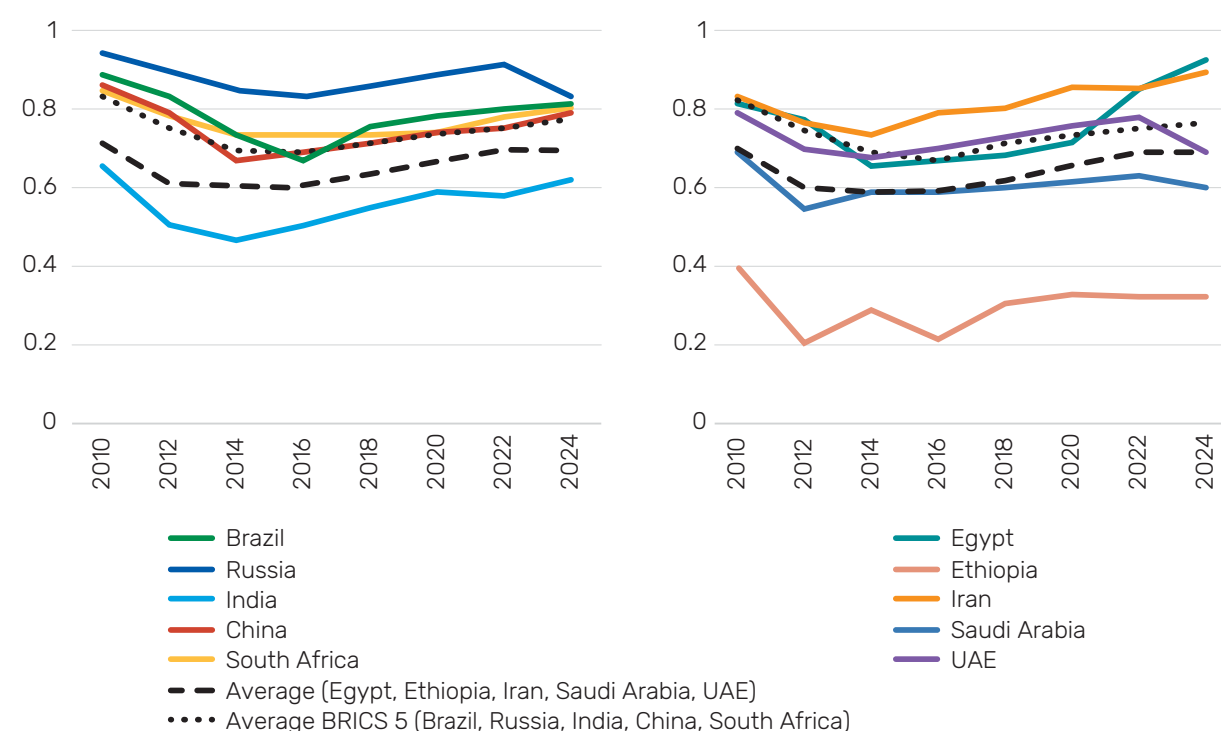


Source: EGD, the United Nations.
Figure 4. Telecommunications Infrastructure Index



Source: EGD, the United Nations.

Figure 5. Human Capital Index

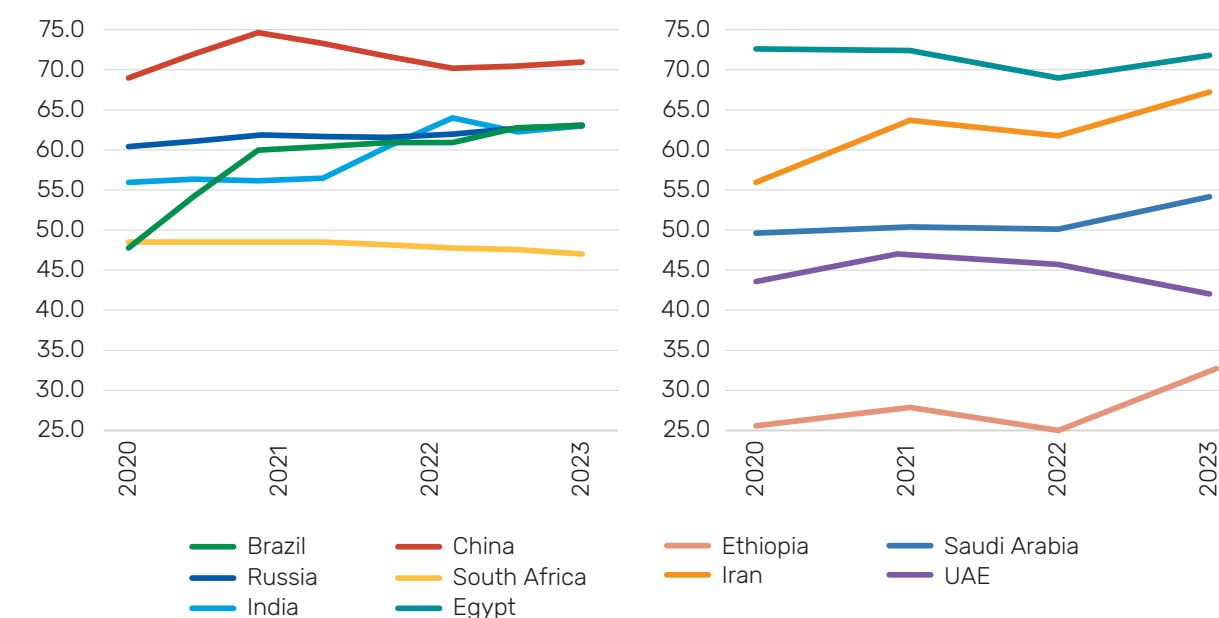


Source: EGD, the United Nations.

The Human Capital Index showed a decline until 2014 (-17%), followed by stable growth up to 12% in 2014-2022. Over this period (from 2014), India showed 31% growth (0.61 in 2024) and China's score increased by 17% (0.79), while South Africa and Brazil each posted 10% growth (0.80 in 2024), and Russia's score remained virtually constant at the same level even as it ranked highest among the BRICS 5 in 2024 (0.83) in this indicator. On average, Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE increased their aggregate score by 17%.

Along with human capital, the joint development of advanced technologies, including artificial intelligence and AI-based products and services, is of great importance for BRICS. This is one of the most promising areas of cooperation within the group. In recent years, the BRICS countries have been focusing on the development and application of AI. The Government AI Readiness Index (Government AI Readiness Index, 2023), based on 39 indicators within three pillars (Government; Technology Sector; Data and Infrastructure) shows 8.4% growth for BRICS on average since 2020 (see Figure 6).

Figure 6. Government AI Readiness Index total score

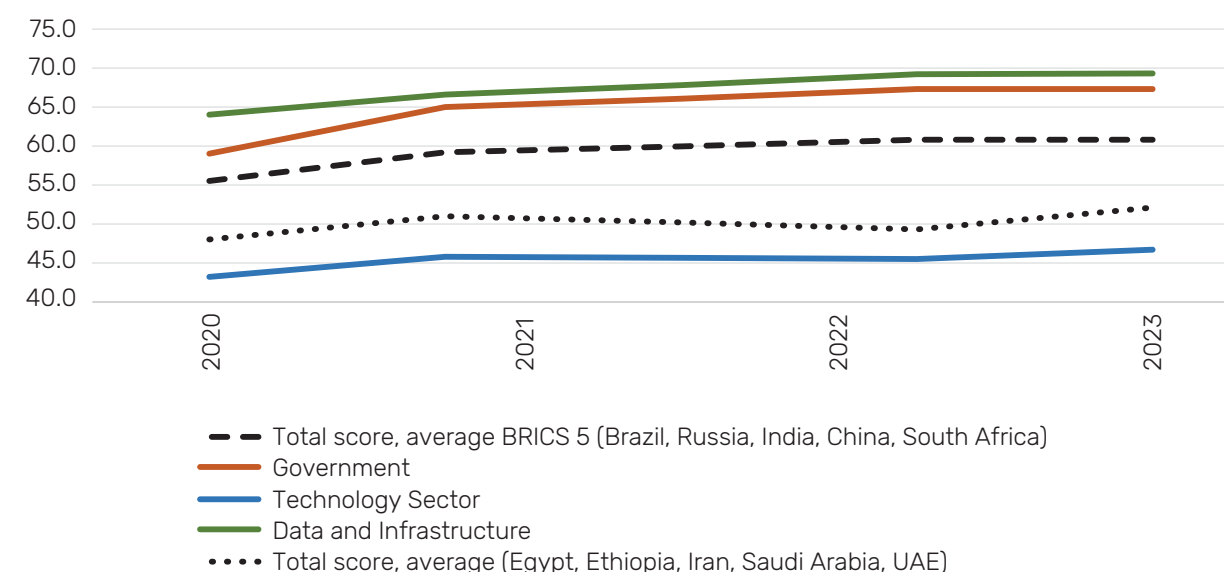


Source: Government AI Readiness Index.

The Government pillar encompasses four dimensions (Vision; Governance and Ethics; Digital Capacity; Adaptability) aimed at determining whether a given government has a vision for implementing AI, whether relevant regulations and ethical frameworks have been put in place, etc. The Technology Sector pillar encompasses three dimensions of indicators (Maturity; Innovation Capacity; Human Capital). Finally, the Data and Infrastructure pillar also features three dimensions (Infrastructure; Data Availability; Data Representativeness). According to the Government AI Readiness Index, Brazil demonstrated the most rapid development with 34.2% growth, followed by India with 11.8% growth and Russia at 3.4% growth.

Since 2020, for BRICS, on average, the Government pillar shows 12.4% growth, followed by Data and Infrastructure at 7.9% and the Technology Sector pillar at 6.6%. For the same period, the total aggregate score for Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE is around 7.3%, pointing to a high potential for further cooperation and development within BRICS (see Figure 7).

Figure 7. Government AI Readiness Index total score and main pillar scores, on average for BRICS 5 (Brazil, Russia, India, China, and South Africa)

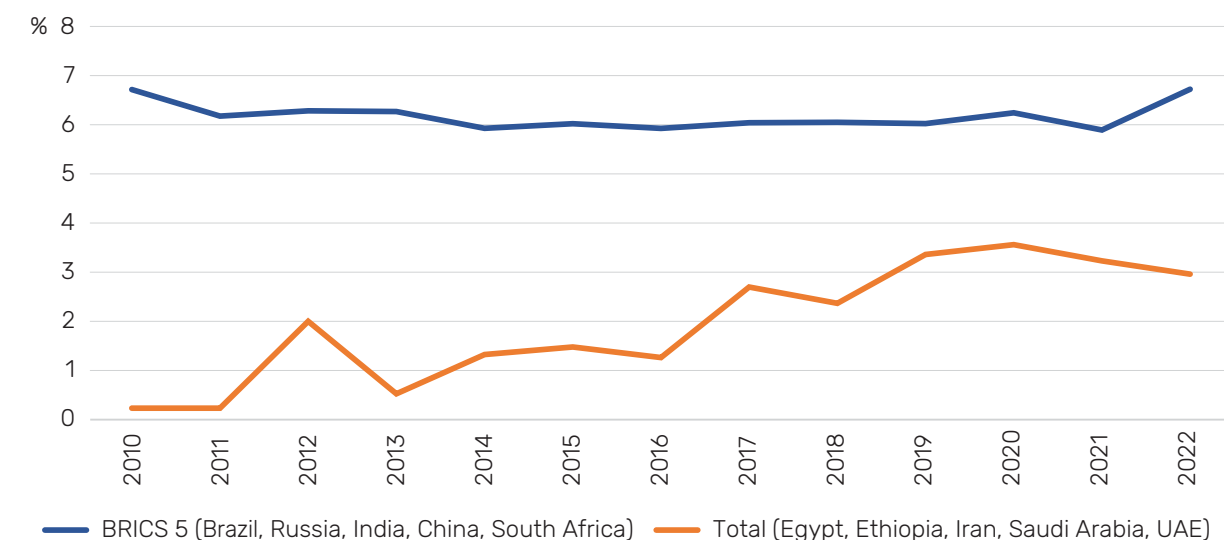


Source: Government AI Readiness Index.

The further development of national strategies and integration of digital policies and regulatory frameworks on AI within BRICS have the potential to significantly reshape the global regulatory landscape. Meanwhile, new high-tech goods and services based on AI, among other innovative technologies, and developed by joint enterprises, may help facilitate trade flows within BRICS, especially given the minor decline in the share of ICT goods as a percentage of total trade in the BRICS countries from 2010 to 2021, which was followed by a slight growth surge in 2022 (see Figure 8).

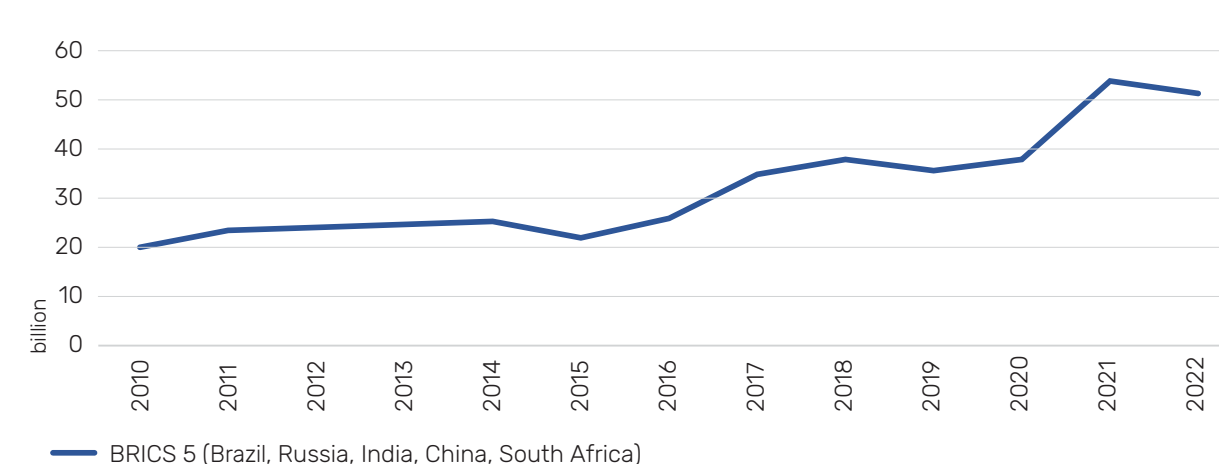
Since 2010, annual bilateral trade flows of ICT goods within BRICS 5 (Brazil, Russia, India, China, and South Africa) have increased dramatically, mainly due to China, which accounts for more than 97% of trade with other BRICS countries, according to the aggregate indicator of UN Trade and Development (UNCTAD) (UNCTAD, n.d.), which encompasses bilateral exports, imports, re-exports, and re-imports of information and communication technology (ICT) goods, according to the definition of the Organisation for Economic Co-operation and Development (OECD) of ICT goods (see Figure 9). China, India, and Russia have the highest volume of trade flows of ICT goods with other BRICS countries.

Figure 8. Average share of ICT goods as percentage of total trade, BRICS average value



Source: UNCTAD.

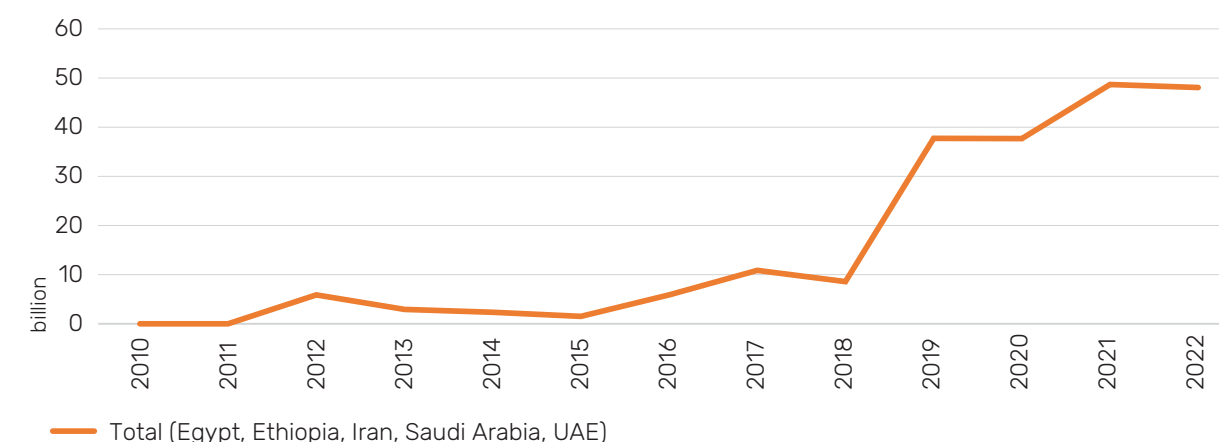
Figure 9. Annual bilateral trade flows by ICT goods categories of the BRICS countries (Brazil, Russia, India, China, South Africa) within BRICS 5, in billion USD



Source: UNCTAD.

It should be noted that the volume of bilateral trade flows by ICT goods categories of Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE with the BRICS 5 from 2010 to 2022 was relatively low, 10 times lower than the relevant indicators for Brazil, Russia, India, China, and South Africa within BRICS (see Figure 10). Therefore, there is a significant potential for further growth and cooperation given that these five countries joined BRICS as full-fledged members only at the beginning of 2024.

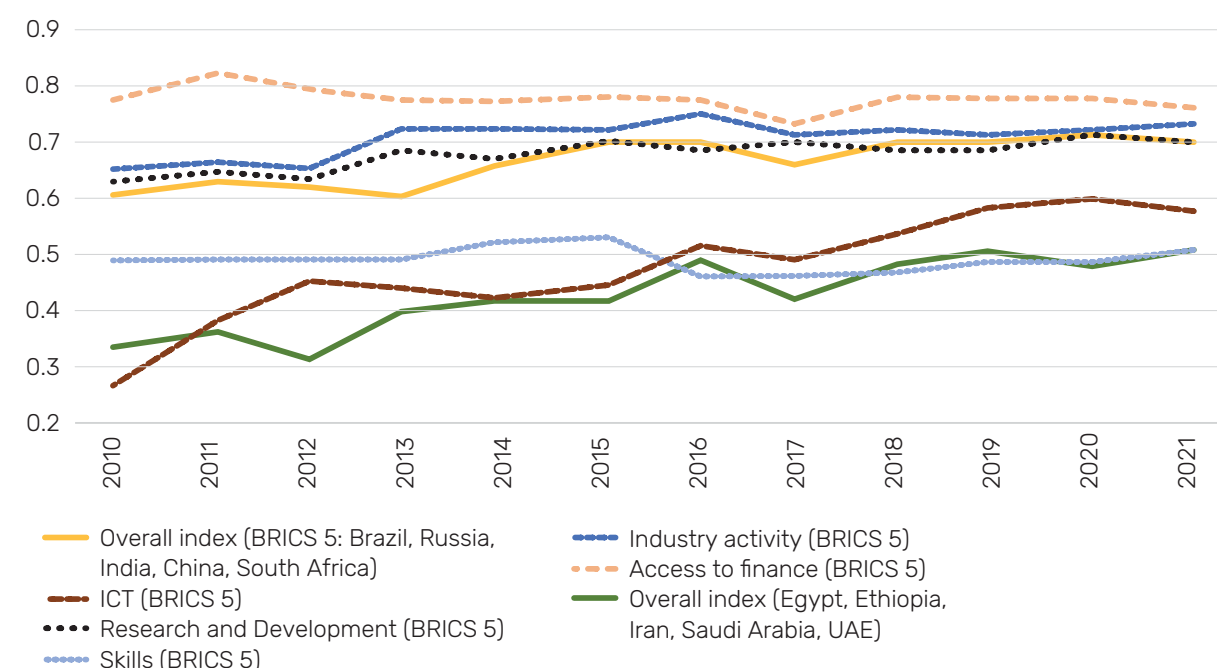
Figure 10. Annual bilateral trade flows by ICT goods categories of Egypt, Ethiopia, Iran, Saudi Arabia, and the UAE with BRICS 5 (Brazil, Russia, India, China, South Africa), in billion USD



Source: UNCTAD.

The UNCTAD Frontier Technology Readiness Index (FTRI) (UNCTAD, n.d.) shows 10% overall growth on average for the BRICS 5, but 26% growth at the level of ICT infrastructure for using, adopting, and adapting frontier technologies, and 8% growth in R&D capacity for using, adopting, and adapting frontier technologies in these BRICS countries. Meanwhile, the level of relevant skills for using, adopting, and adapting frontier technologies showed growth of only 2%, while the availability of finance for the private sector in this area declined by 2% (see Figure 11).

Figure 11. Frontier Technology Readiness Index (average score for BRICS from 2010 to 2021)



Source: UNCTAD.

Data shows mostly positive dynamics in the respective areas; however, further cooperation is required for developing R&D and innovation in line with the human capital and talent management needed within BRICS, including cooperation in education and strengthening ties between business, industry, and universities from the BRICS countries.

4. COOPERATION IN THE FIELD OF EDUCATION

Recent years have shown progress in the development of cooperation between the BRICS countries in the field of education, including the establishment of the BRICS Network University (BRICS NU) in 2015, as well as other initiatives. The BRICS NU is aimed at developing short-term bilateral and multilateral educational programs, as well as Master's and PhD programs in six priority thematic areas, including Energy, Computer Science and Information Security, BRICS Studies, Environment and Climate Change, Water Resources and Pollution Treatment, and Economics (with the option of updating these areas in the future). To date, the BRICS NU has successfully undergone the initial stage of establishing its legal and organizational framework. In 2020, the BRICS NU Concept of Functioning and Development and a BRICS NU Roadmap for both the short-term and medium-term periods, respectively, were adopted. In May 2024, the BRICS NU International Governing Council held a meeting at the Peoples' Friendship University of Russia (RUDN University) in Moscow, which resulted in support for an initiative to establish a BRICS NU certificate in addition to the BRICS countries' respective national diplomas in order to boost recognition of the BRICS NU brand. In 2024 Egypt, Iran, and the UAE joined this initiative by signing the Protocol of Accession to the Memorandum of Understanding on the Establishment of the BRICS Network University.

As of 2024, 11 meetings of the BRICS Education Ministers had been convened. The XI BRICS Education Ministers' Meeting resulted in an agreement to expand the list of priority areas for education and training within the BRICS Network University, as well as to increase the number of universities participating in the project up to 20 from each of the BRICS countries (the current number is 56); establish a working group on mutual recognition of qualifications; support Russia's proposals to strengthen joint work for improving eco-climatic literacy, including the launch of international eco-education programs; and further development of the BRICS NU.

The Johannesburg II Declaration, adopted at the XV BRICS Summit hosted by South Africa in August 2023, signifies the group's determination to facilitate mutual recognition of academic qualifications among BRICS countries to ensure the mobility of skilled professionals, scholars, and students, and the recognition of qualifications earned in each other's countries, subject to applicable domestic legislation (15th BRICS Johannesburg-II Declaration, 2023). It should be noted that, among the 10 BRICS countries, South Africa, India, the UAE, Saudi Arabia, and Ethiopia have adopted National Qualifications Frameworks (NQF). NQFs in Brazil and Egypt are now in the active development phase. China has established a National Vocational Qualifications System and is currently exploring options for a National Qualifications Framework. Iran established a National Classification of Vocational Training and plans to develop an NQF are also underway. In Russia, a National Qualifications Framework has not yet been established; however, qualification levels have been introduced for the purposes of developing draft professional standards, while sectoral qualifications frameworks have also been approved in a number of industries. Multilateral mutual recognition agreements within BRICS have not been introduced yet. It should also be noted that not all BRICS countries currently have bilateral agreements on the mutual recognition and equivalence of educational documents and academic degrees. Russia, however, currently has mutual recognition agreements with India, China, South Africa, and Ethiopia, and an agreement with Iran is now in the works.

This necessitates further cooperation for: developing standards and qualification frameworks within BRICS (among other things, as a tool for mutual recognition of qualifications); developing joint databases, registers, and digital platforms for assessing professional qualifications and selecting individual professional development trajectories; conducting joint research on qualifications system development and assessment; improving testing materials and systems for assessing knowledge and skills; implementing joint network educational programs, master classes, and summer and winter schools to develop young people's skills across BRICS for managing their own professional development and choosing their career

trajectories; and developing joint international qualifications councils (both professional and sectoral).

The development of educational programs for young professionals engaged in BRICS studies is another promising area of cooperation, especially for the BRICS Plus/Outreach format. One of the most successful examples of such projects is the BRICS International School, launched by the Russian Federation in 2017. It is a short-term, customized scientific and educational program aimed at training young experts specializing in BRICS-related studies in political, economic, and humanitarian fields, as well as other relevant areas of interaction within BRICS. From 2017 to 2023, the National Committee on BRICS Research and the Alexander Gorchakov Public Diplomacy Fund, with advisory support from the Ministry of Foreign Affairs of the Russian Federation, organized seven programs to expand the pool of young professionals specializing in BRICS-related topics. In 2021, on the occasion of the program's fifth anniversary, 200 candidates representing 22 countries (the BRICS 5—Russia, Brazil, India, China, and South Africa—as well as Armenia, Afghanistan, Bulgaria, Cameroon, Ecuador, Egypt, Indonesia, Kazakhstan, Kyrgyzstan, Mexico, Pakistan, Paraguay, the Philippines, Serbia, Sri Lanka, Uganda, and Zimbabwe) were selected to join the program. Leading Russian and foreign experts; representatives of state and non-governmental organizations; officials from ministries and government agencies; and scholars from research institutes with significant experience in studying BRICS issues serve as program mentors and lecturers. Each year, the pool of participants in the BRICS International School increases, with more than 50 young academics, diplomats, social activists, entrepreneurs, and journalists from different countries participating. In 2024, during the eighth session of the BRICS International School, an academic paper competition for young researchers was inaugurated. Participants representing India, Brazil, Russia, and South Africa were the winners of the first competition. Since 2024, the program has been hosted by the BRICS Expert Council—Russia, based at National Research University Higher School of Economics (HSE University), in partnership with the National Committee on BRICS Research and with support from the Alexander Gorchakov Public Diplomacy Fund, as well as the Moscow State Institute of International Relations (MGIMO University), which, among other programs, is in accordance with the Russian Federation Government's "Priority 2030" university support program.

Another example of cooperation in this field is the BRICS Educational Internship Program, which was one of the key initiatives under Russia's BRICS Chairship in 2020. The program was organized by the Far Eastern Federal University (FEFU) as a one-semester educational internship, designed to provide an environment for students from BRICS countries to study together in FEFU Bachelor's/Master's degree programs in those academic fields that are most popular and relevant for BRICS, as well as to promote academic and cultural exchanges aimed at humanitarian cooperation, dialogue, and mutual understanding within BRICS. Today, this initiative could be scaled up further to achieve wider implementation within BRICS. In general, BRICS universities have a high potential for cooperation in terms of implementing joint academic partnership and internship programs.

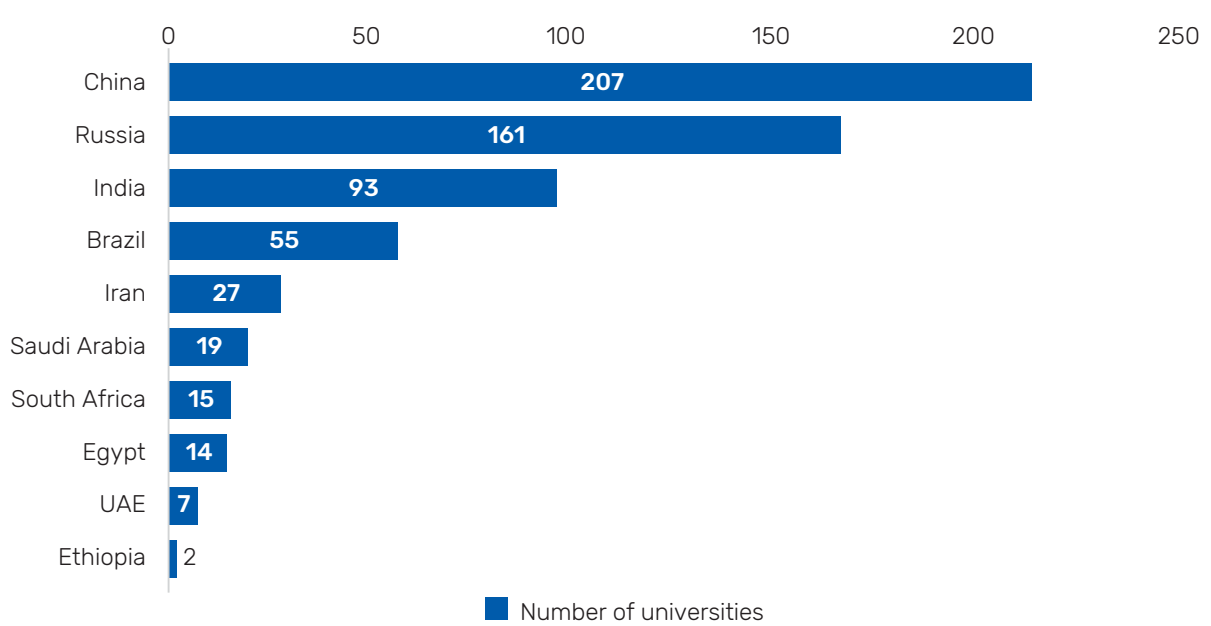
Recent plans to establish a BRICS scientific journal and expand the range of thematic areas of educational programs through the BRICS Network University in terms of sustainable agriculture, food security, mathematics, humanities, and health sciences are a sign of the BRICS members' determination to intensify cooperation in this field. However, systematic monitoring of the status of cooperation among universities (outside of the BRICS Network University) and innovation-driven companies within BRICS should be implemented on a permanent basis, given that the BRICS countries as a whole are home to over 11,000 universities.

Steady progress is being made toward developing a global system for ranking and evaluating universities in the BRICS countries. The idea to create a list of the leading BRICS universities was first proposed by South Africa at the 2023 BRICS Education Ministers' Meeting. The proposal has enjoyed active support by the international academic community, including the Russian Union of Rectors. During Russia's 2024 BRICS Chairship, the concept of establishing an official ranking of BRICS universities was initially discussed and approved at a meeting of

the Presidential Council for Science and Education, chaired by President Vladimir Putin, and subsequently a Pilot Ranking for BRICS Universities (Pilot Ranking for BRICS Universities, 2024) was presented at the first BRICS Rectors' Forum in October 2024. The methodology is based on the international Three University Missions Ranking, which encompasses indicators measuring the harmonious fulfilment of the educational, scientific, and social missions of the contemporary university and excludes subjective expert assessments. A modified ranking model factors in the distinctive national characteristics of educational institutions in the BRICS countries. The pilot ranking included 600 universities from the BRICS 10 (Brazil, China, Egypt, Ethiopia, India, Iran, Russia, Saudi Arabia, South Africa, and the UAE). China's Peking University topped the list, followed by Russia's Lomonosov Moscow State University, and China's Tsinghua University.

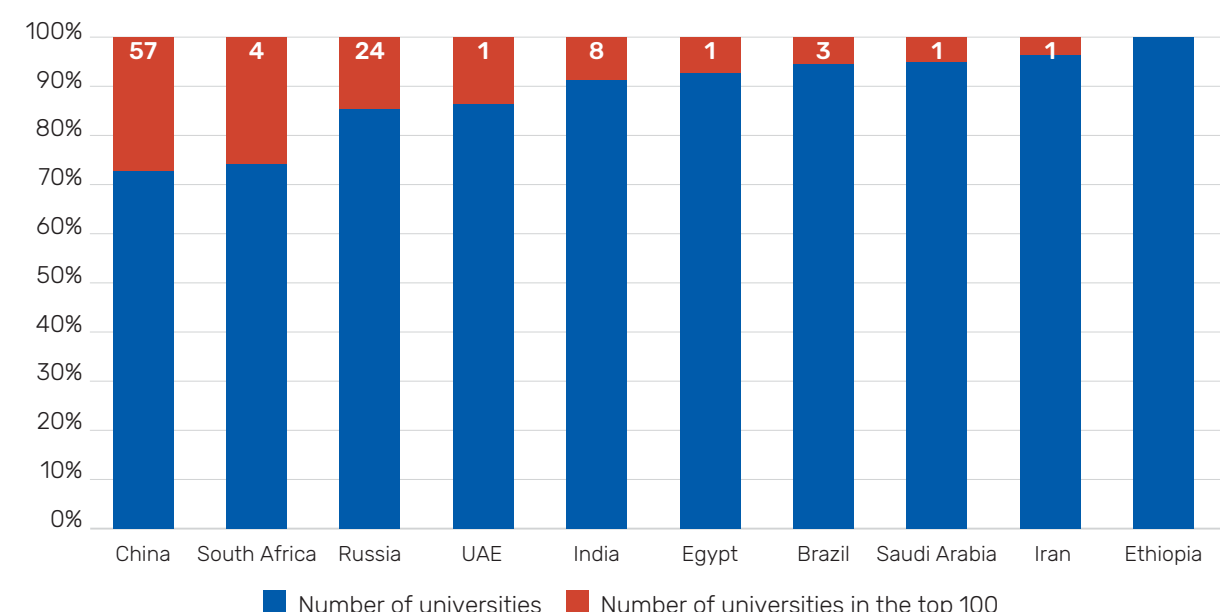
China, Russia, India, Brazil, and Iran are the top five countries in the pilot ranking in terms of the number of universities included, with China at 207 universities, Russia at 161, India at 93, Brazil at 55, and Iran at 27. Among the other BRICS countries, Saudi Arabia has 19 ranked universities, while South Africa has 15, Egypt has 14, the UAE has seven, and Ethiopia has two. Universities from nine countries out of 10 (all except Ethiopia) are represented in the ranking's top 100 (see Figure 12). Altogether, 89% of universities in the ranking are from the BRICS 5. China, South Africa, Russia, the UAE, and India have the highest shares of universities represented in the top 100 out of all universities included in the ranking at 28%, 27%, 15%, 14%, and 9%, respectively (see Figure 13).

Figure 12. Representation of the BRICS countries in the Pilot Ranking for BRICS Universities 2024 (by number of universities)



Source: Pilot Ranking for BRICS Universities.

Figure 13. Representation of the BRICS countries in the Pilot Ranking for BRICS Universities 2024 (by share of universities ranked among the top 100)



Source: Pilot Ranking for BRICS Universities.

During the BRICS University Rectors' Forum, which brought together more than 250 rectors and representatives of universities from 20 countries around the world (including the BRICS 10 and partner countries Belarus, Bahrain, Jordan, Iraq, Yemen, Lebanon, Libya, Mauritania, Palestine, and Sudan), the participants highlighted the importance of the ranking for BRICS universities and deemed it a significant step toward the creation of a common scientific and technological environment within BRICS. The XVI BRICS Summit Kazan Declaration spells out the necessity of further cooperation on issues pertaining to the quality of education and the assessment of universities, with due regard for the specific features of the BRICS countries' national educational systems, as well as the need for promoting the development of a regulatory framework for the mutual recognition of qualifications. Consistent policies and decisions in the field of educational cooperation reflect the BRICS countries' strategic intent to leverage their collective educational and human capital resources to drive economic development and competitiveness in the global knowledge economy.

5. TOURISM AND SPORTS

Since 2015, cooperation has expanded in tourism, mainly in a bilateral format, with several bilateral agreements signed to develop ties in tourism and hospitality among BRICS countries. However, the BRICS multilateral agenda has shown only limited progress. The 2015 Strategy for BRICS Economic Partnership highlighted the importance of enhancing cooperation in tourism, including the signing of a Memorandum of Understanding on Tourism. In 2016, the BRICS Tourism Convention was organized under India's Chairship in Khajuraho, India, which has become an additional tool for promoting tourism cooperation among the BRICS countries. In 2018, the South African Chairship organized the first BRICS Senior Tourism Officials' Meeting, but interactions under this format have yet to yield tangible results. No statements or concrete decisions on tourism cooperation were made as a result of the 2019 Brasilia Summit. During the 2020 Tourism Ministers' Meeting, a proposal was again put forward for the BRICS 5 to sign a Memorandum of Understanding on Tourism Cooperation and establish a BRICS Tourism Working Group to exchange information and implement joint projects in tourism and hospitality. In the same year, a draft Memorandum of Understanding on Tourism was presented. The final communiqué of the 2022 BRICS Tourism Ministers' Meeting, held under China's Chairship, notes the need to strengthen the BRICS Alliance for Green Tourism and establish a working mechanism for its implementation, as well as explore the potential for cooperation on green growth and sustainable tourism development.

Following the 2023 Tourism Ministers' Meeting in Cape Town, it was noted that Brazilian and Russian travelers enjoy a 90-day visa waiver when visiting South Africa. In addition, China and India are among the first 34 countries to implement South Africa's e-visa system. In general, the BRICS countries are taking actions to organize visa-free travel, mainly in a bilateral format. A proposal to expand academic mobility through visa-free travel within the framework of the BRICS Travel Card initiative remains on the agenda. Overall, in recent years, the sole commitment in the field of tourism was the decision to establish a relevant Tourism Working Group in 2018, although the first Working Group meeting was held only in June 2024. In 2024, the BRICS Tourism Ministers' Meeting took place within the framework of the first BRICS Tourism Forum. The ministers adopted the Roadmap for BRICS Tourism Cooperation aimed at facilitating tourist exchanges, developing skills, promoting sustainable tourism, and digitalizing tourist services. This decision, followed by plans to develop a platform for digital tourism solutions, represents a critical milestone for further expansion of intra-BRICS cooperation.

Since 2014, BRICS has emphasized the need to develop mechanisms for enhancing intra-BRICS cooperation in the field of sports. As a follow-up to this initiative, at the 2015 Ufa Summit under Russia's Chairship, India announced plans to host the first sporting event in 2016 under India's Chairship. The BRICS Under-17 Football Tournament was held in 2016 and 2018. The BRICS Exercise and Sports Science Council (BRICSCESS) was established in 2017 as an international professional organization. Since 2017, the BRICS Games have been held on an annual basis (except during 2019-2021). The first BRICS Games were held in Guangzhou, China, and included three sports with more than 300 participants from the BRICS 5. In 2018, the BRICS Games took place in Johannesburg, South Africa. Following the success of the BRICS Games in 2017 and 2018, it was decided to expand the traditional program of sports games to include the national sports of the participating countries. In 2020, the key document for multilateral cooperation in the field of sports was adopted: the Memorandum on Cooperation Between the BRICS Countries in the Field of Physical Culture and Sports, which, among other things, provided for holding the annual BRICS Sports Games under the respective country's chairship for the given year. The BRICS Games resumed in 2022 with the program augmented by several new sports, increasing from three sports in 2022 to five in 2023. The 2022 BRICS Games attracted spectators from more than 50 countries and regions, with the Games' official website recording over 500,000 views. The 2023 BRICS Games were held in Durban, South Africa, with more than 450 athletes participating. In 2024, the Games were held in Kazan, Russia, with competitions covering more than 27 different sports and bringing in more than 2,800 participants from 82 countries. Also in 2024, Russia hosted the first international Games of the Future, a "phygital" multi-sports tournament that combined classical physical sports with digital disciplines. More than 2,000 athletes from 107 countries took part in the tournament, competing in 21 phygital disciplines. The number of participating countries and athletes grows every year. Given the significant potential for BRICS sports initiatives to expand each year, sports diplomacy can become the basis for further expansion of cooperation in this area within the BRICS countries and beyond. The 2024 BRICS Sports Ministers' Meeting resolved to establish a framework program for developing sports cooperation between BRICS countries to formulate the rules for holding the BRICS Games in the chair country, and to create the basis for enshrining key values of the sports movement. Today, at the global level, only BRICS has the capacity to transparently discuss and implement a fair, equal, and non-politicized approach to international sports. In this regard, further development of cooperation in this field is required, in terms of launching, among other initiatives, the BRICS Paralympic Movement.

6. HEALTHCARE

BRICS devotes particular attention to the healthcare sector. BRICS Health Ministers' Meetings have been held on an annual basis since 2011. As of 2024, 14 such meetings have been convened. In 2013, the BRICS 5 reaffirmed their commitment to cooperate in five thematic areas and adopted the BRICS Framework for Collaboration on Strategic Projects in Health.

This key framework document focuses on strengthening health surveillance systems; reducing risk factors for non-communicable diseases (NCD) through prevention and health promotion; ensuring access to universal health coverage (UHC); promoting strategic health technologies, with a focus on communicable and non-communicable diseases; developing medical technologies; and promoting drug discovery and development. Three work tracks were identified for cooperation: public health, health systems, and biomedical sciences. The BRICS countries have enjoyed long-standing, successful cooperation in the fight against tuberculosis. In 2017, the BRICS TB Research Network was established in line with the BRICS TB Cooperation Plan, which was discussed in 2016 at the VI BRICS Health Ministers' Meeting in New Delhi, India, and subsequently endorsed by the BRICS leaders in the BRICS Leaders Xiamen Declaration issued at the conclusion of the IX BRICS Summit in Xiamen, China, in September 2017. The BRICS TB Research Network promotes and conducts collaborative research across the spectrum, from basic to operational, to develop innovative solutions in TB diagnostics, vaccines, drugs, and treatment regimens. The BRICS TB Research Network also meets annually; the 15th meeting was held in May 2024 in Russia.

The COVID-19 pandemic, which rapidly spread across borders, compelled countries to respond to this serious biogenic challenge and served as a catalyst for health diplomacy. China, Russia, and India were pioneers in the development of COVID-19 vaccines and in supplying aid to other countries. In 2020, China sent more than 179 billion face masks and 1.73 billion protective suits to 150 countries. After Italy experienced a spike in COVID cases, China dispatched 31 tonnes of essential supplies and equipment to Italy, including respirators, protective suits, masks, and medicines, after which another Chinese team flew directly to Milan to provide assistance. China soon launched a medical air bridge to Europe. In 2021, China also committed 1.6 billion doses of COVID-19 vaccines to more than 100 countries. Roughly 40% of Chinese vaccines were delivered to countries in Southeast Asia (Huang, 2022). Moreover, China built vaccine filling and finishing plants in Africa, Europe, Latin America, the Middle East, and South Asia. Recipient countries included BRICS members Brazil and the UAE. Russia also provided expertise and humanitarian aid, sending doctors and virologists abroad. This effort included the widely publicized "From Russia with Love" air mission to Italy, opening up a Moscow-Rome air bridge of 15 IL-76 transport aircraft, which brought 122 medical specialists to Italy and up to 60 tonnes of aid with each flight.

In terms of the share of vaccine exports, BRICS countries accounted for 38% of global exports, according to the WTO-IMF COVID-19 Vaccine Trade Tracker (WTO-IMF Vaccine Trade Tracker, 2022). By the end of 2022, China (1.9 billion doses exported), India (140.2 million), South Africa (110.4 million) and Russia (102.4 million) were among the top 10 countries in the world in terms of the total number of doses exported by the producer country. In terms of the total supply of vaccines, containing both exported and domestically delivered doses, the BRICS countries accounted for 60% (9.1 billion doses) of the total world supply, with China alone accounting for 40% and India with a share of 16.3%.

During the pandemic, intra-BRICS cooperation greatly expanded in this area. Immediately after the pandemic started, the BRICS countries began providing each other with expert, humanitarian, and economic assistance. A striking example of such cooperation is the decision of the New Development Bank (NDB) to extend a 5-billion-yuan loan to China earmarked toward combatting COVID-19. This loan is one of the largest issued in the history of the NDB. During the outbreak of the epidemic in China, Russia sent more than 23 tonnes of personal protective equipment (PPE) to China, and when the epidemiological situation in Russia deteriorated, China in turn dispatched a group of medical specialists to Russia, together with 26 tonnes of humanitarian aid. Overall, during the pandemic, Russia delivered 65 tonnes of PPE, medicines and medical equipment, as well as a mobile diagnostic laboratory and a batch of test systems for diagnosing the coronavirus infection, to the BRICS countries as part of its humanitarian aid efforts. India-based institutes played a key role in the global rollout of the COVID-19 vaccine. China, India, and Russia have invested heavily in vaccine research and development, both for COVID-19 and other communicable diseases, underscoring the BRICS' commitment to healthcare innovation.

In 2020, the BRICS countries established the BRICS Committee for International Cooperation in Health (BCICH) (BCICH, n.d.) as an advisory and coordinating body on health issues to support the BRICS countries in improving health services and promoting the health and well-being of their citizens. The BCICH aims to promote academic exchanges in the field of traditional medicine among health professionals across the BRICS countries.

In 2021, according to the Joint Statement of the BRICS Ministers of Foreign Affairs, BRICS set the goal of producing vaccines locally to reduce dependence on external suppliers and enable member states to respond quickly to health crises. Subsequently, the BRICS countries established the Centre for Vaccine Research and committed to providing vaccines as a global public good and improving equity in access to them. In 2022, under China's Chairship, BRICS launched the Vaccine Research and Development Centre to bolster vaccine production capabilities and foster collaboration among BRICS nations to tackle public health challenges. Despite the significant transportation restrictions imposed by the pandemic, BRICS members joined forces to effectively address the challenges of rapidly restoring air and rail services.

In 2023, the Working Group on Nuclear Medicine was established by decision of the XV BRICS Summit in Johannesburg. The Working Group includes leading experts in the field of nuclear medicine and radiopharmaceuticals, representing major research and specialized medical centers, as well as manufacturers of medical radioisotopes and radiopharmaceuticals. The BRICS Working Group on Nuclear Medicine held its first meeting in 2024 at the Future Technologies Forum in Russia. Moreover, the BRICS Expert Forum on Nuclear Medicine has been held on an annual basis, bringing together more than 200 specialists from the BRICS 5. The Forum serves as a platform for making proposals and recommendations in developing effective cooperation and interaction within BRICS.

Since 2024, BRICS has been developing an Integrated Early Warning System for Preventing the Risk of Mass Infectious Diseases. The system will focus on three areas: prevention, early detection of infectious threats, and the response to an emerging threat, in order to better prevent pandemics and control outbreaks of disease.

An analysis of the ministerial declarations issued after BRICS Health Ministers' Meetings shows that the BRICS countries' current priorities and key areas for cooperation in the field of healthcare are: communicable diseases (HIV/AIDS, tuberculosis [TB], malaria, and emerging infectious diseases [EIDs], such as Ebola and COVID-19) and access to medicine (ensuring the affordability of medicines by promoting technology transfer, increasing supplies of medicines, and reducing prices). Other key topics include universal health coverage (UHC), traditional medicine, non-communicable diseases (NCD), digital medicine, maternal and child health, and reforming the World Health Organization (WHO).

As a group, BRICS has the potential to increase engagement in the process of developing the global health architecture, improving the efficiency of healthcare governance, and providing a platform for cooperation that directly benefits the peoples of the BRICS countries, among other methods, through the promotion and development of health diplomacy.

7. CONCLUSIONS AND RECOMMENDATIONS

Every year, the BRICS countries record rapid growth in the number of patents issued and scientific publications released. Since 2009, the BRICS 5 countries have accounted for more than 40% of all patents worldwide and about 16% of global scientific publications. The number of co-authored publications within BRICS has also shown a significant increase, growing by more than tenfold over the past 15 years. Further monitoring will require an analysis of publications and patents, including the percentage of patents and publications issued under the BRICS STI Framework Program and in the relevant priority areas. Recent years have shown that special attention is being paid to cooperation in the field of intellectual property and IP management. Given that a significant number of patent applications are registered by universities, which account for more than 50% of total patent applications, further monitoring will require an analysis of the industrial application of patents and other

IP, particularly those created by universities with industrial partners, although access to the relevant data may present a challenge. It is recommended that a systematic approach be taken to ensuring the coherence and consistency of the further development of BRICS STI cooperation mechanisms, in addition to the BRICS STI Architecture. In particular, this entails synchronizing the implementation of relevant initiatives and digital platforms in the field of intellectual property management, innovation, and technology transfer (including IP BRICS, iBRICS, BRICS TechTransfer, BRICS GRAIN, etc.). Another promising area of STI cooperation is the development of joint databases and digital platforms that provide data on co-authored scientific publications, citations, and current and potential collaboration among organizations in the BRICS countries.

The number of projects within the BRICS STI Framework Program is increasing. It is imperative to ensure not only the monitoring of the number of implemented projects but also their further development after the completion of the BRICS STI FP Calls or other competitions. It is also important to monitor the current status of collaboration of the project teams with partners from the BRICS countries that applied for international calls or competitions but did not receive financial support, as well as provide a mechanism for encouraging such project teams to continue expanding their collaboration with partners from the BRICS countries. To support cooperation and the development of technological entrepreneurship, it is important to involve such project teams in the international accelerators of STI projects, in particular in the BRICS Accelerator.

In the context of the International Decade of Sciences for Sustainable Development 2024–2033, as declared by the United Nations, the format of annual BRICS studies and reports could potentially be amended to include a classification of unilateral, bilateral, and multilateral STI projects that have been launched in the BRICS countries and which may have a specific impact on the achievement of Sustainable Development Goals (SDGs).

The positive trends reflected in the E-Government Development Index (EGDI) demonstrate that the BRICS countries are devoting significant attention to developing the ICT infrastructure and digital services, as well as implementing measures aimed at expanding direct public participation in political and economic decision-making. While both the Global Innovation Index (GII) and the Frontier Technology Readiness Index (FTRI) point to positive trends in the development of STI cooperation, further collaboration is required to advance research and development and foster innovation in the process of aligning human capital and talent management within BRICS. This includes cooperation in education and building stronger connections between businesses, industries, and universities in the BRICS nations. At the same time, further analysis of the development of cooperation between universities, business, industry, government, and society in the BRICS countries points to promising results. Monitoring the cooperation between the BRICS universities (covering current status, barriers, and opportunities) may yield new paths for developing the BRICS Network University. The key priorities for cooperation in the field of education continue to be the quality of education, professional development trajectories, qualification frameworks, mutual recognition of qualifications, joint academic partnership and internship programs, educational programs in BRICS-related studies, and the assessment of universities, as well as the development of joint ranking systems and methodologies focused on specific characteristics of educational institutions in the BRICS countries, in particular, the Pilot Ranking for BRICS Universities.

By collaborating on AI policies and regulations, the BRICS countries can build a stronger foundation for developing the global regulatory landscape and adopting AI technologies to harness the transformative potential of AI in order to address social, ecological, and economic challenges. The annual bilateral trade flows by ICT goods categories within the BRICS could be further increased by, among other means, boosting the share of ICT goods as a percentage of total trade in the BRICS countries.

Cooperation in tourism requires new tools and solutions geared toward promoting all forms of tourism (science, sustainable, medical, etc.) by, among other means, introducing the BRICS

Travel Card for visa-free travel. Adoption of the Roadmap for BRICS Tourism Cooperation and the decision to develop a platform for digital solutions in the field of tourism are crucial elements for further cooperation within the group. In the field of sports, BRICS sporting events, such as the BRICS Games, have the potential to reach a wider global audience, making sports diplomacy a key tool for fostering cooperation both within the BRICS countries and beyond. The BRICS grouping stands out as a unique platform for transparent and fair discussions on international sports, which are free from any form of politicization. The group should further consider the establishment of the BRICS Paralympic Movement.

BRICS has the potential to enhance involvement in global healthcare governance, serving as a collaborative platform for cooperation to advance positive public health outcomes. The collaboration within BRICS in the field of healthcare can lead to more efficient and impactful healthcare governance on a global scale.

CONCLUSION

The indicators analyzed in this report show that BRICS has significantly strengthened its role in world affairs, particularly in world economy. Over the past 30 years, the average economic growth rates of the BRICS 5 nations have consistently surpassed the global average. According to UNCTAD and the World Bank, the BRICS countries' share of global GDP increased from 18% in 2010 to 26% in 2022, while growth remained stable each year. Annual FDI inflows into BRICS countries have surged more than fourfold, from USD 84 billion in 2001 to USD 357 billion in 2021, while the group's share of global FDI inflows doubled, rising from 11% in 2001 to 22% in 2021. Though the situation varies among countries, BRICS nations have become significant recipients of FDI, accounting for 24% of global FDI inflows as of 2022, and they also play an important role as investors themselves. All this makes BRICS countries a major player in the international investment landscape. Additionally, all BRICS nations have made steady progress towards achieving the Sustainable Development Goals over the past 15 years, with India and Ethiopia showing the most remarkable improvements. However, as of 2022, Russia leads the group in SDG achievement, followed closely by Brazil.

The group has also made substantial progress in multiple areas of cooperation, including economic, political, and humanitarian efforts. This progress strengthens BRICS' role in global decision-making and governance, also making the group more attractive to the Global Majority.

For instance, the New Development Bank demonstrates a commitment to fostering cooperation and mutual support among its member countries by providing financial assistance for infrastructure and sustainable development projects. The harmonization of regulations among BRICS countries and improved mechanisms for cooperation in finance and investments have contributed to this success. Furthermore, BRICS intergovernmental initiatives play a significant role in protecting the economic interests of member countries amid the high volatility of the global economy and financial markets. These initiatives help both individual members and the group as a whole to support BRICS business entities and facilitate investment activities. Research also shows that while BRICS business entities may utilize various financial instruments to navigate inflationary challenges, this diverse approach to financial tools has not substantially hindered the execution of strategic development programs, thanks to intergovernmental support within BRICS. It is also important to note the positive role of BRICS in ensuring the economic interests of the member countries amid high levels of global economic and financial volatility.

Analysis has revealed that mutual imports within BRICS exceed exports, driven by high demand for energy and commodities from Russia and new member states on the one hand and manufactured goods, primarily from China, on the other hand. This trade pattern underscores BRICS' growing economic interdependence. An additional factor boosting intra-BRICS trade is Western geopolitical pressure on Russia and China, which is a part of its geopolitical containment strategy. Anti-Russian sanctions and anti-Chinese restrictions resulted into substantial reorientation of Russian trade towards the other BRICS states, primarily China and India, but also the UAE and Iran. From 2009 to 2023, export volumes within BRICS grew on average by fivefold, while imports rose by three times. The primary drivers of this mutual trade expansion were Russia and China.

Simultaneously, the shift away from the US dollar has accelerated as BRICS members increasingly adopt national currencies for international trade. According to the Bank of Russia, the share of national currencies in exports among "friendly" countries, primarily the BRICS members, has grown from 16% in 2019 to 68% in 2023 and to 76% at the beginning of 2024, with Russian ruble and Chinese yuan being the top currencies in Russia's trade with the other BRICS nations. The use of a single digital unit in serving the economic interests of the member countries, currently discussed by BRICS, will further contribute to the development of a flexible mechanism for currency interaction between economic entities and strengthen the group's role in global finance.

BRICS has also made significant strides in sustainable development, focusing on areas such as food security, environmental protection, and climate change management. The growing number of initiatives in these fields and related indicators reflect a shift from general agreements to practical cooperation mechanisms, joint program implementation, and the creation of shared information and technology platforms.

For instance, the BRICS Environmentally Sound Technology (BEST) Cooperation Platform was established back in 2018 to facilitate the exchange of experiences in sustainable development. One of the programs initiated on the platform is BRICS Clean Rivers, designed to identify and implement best practices for river management. In 2024, the group held its first discussions on global forest issues. BRICS includes both countries that boast the largest volumes of renewable water resources globally and nations experiencing water scarcity, which creates a strong foundation for enhanced collaboration in water security. Rational use of water resources is one of the priorities highlighted in the Strategy for the BRICS Economic Partnership 2025. The BRICS Strategy also emphasizes the importance of enhancing cooperation to address climate change, a priority underscored by the fact that BRICS countries have significantly influenced global emissions trends over the last three decades. BRICS countries have made significant strides in integrating clean energy into their energy mix. China has demonstrated the most consistent long-term progress in this area, while the UAE has achieved the fastest increase in clean energy adoption among the member states. The XVI BRICS Summit in Kazan reinforced cooperation on these goals by supporting decision by the relevant ministers, taken during the Russian Chairship (June 2024 in Nizhny Novgorod), to establish the Contact Group on Climate and Sustainable Development.

In 2021, the group adopted the second BRICS Agricultural Cooperation Action Plan 2021–2024, which aims to accelerate agricultural development, strengthen food supply capacity within BRICS, and promote the exchange of information and best practices through the BRICS Agricultural Research Platform. The BRICS Grain Exchange initiated during the XVI BRICS Summit aims to address global food security challenges by creating a platform for transparent trading of grains and other essential agricultural commodities. By focusing on localized trading within the BRICS framework, the exchange could reduce dependency on Western-dominated markets and mitigate the impact of price volatility on food-importing nations. Given the dependence on imports for certain BRICS countries, intensifying agricultural trade is a key priority for developing sustainable agriculture markets and ensuring food security.

Lastly, analysis revealed substantial progress in BRICS cooperation across humanitarian sectors, including science, education, innovation, tourism, sports, and healthcare. Notably, the number of patents and scientific publications from BRICS countries is rapidly growing every year. Since 2009, BRICS nations have accounted for over half of all global patents (52%) and approximately 20% of global scientific publications. Additionally, co-authored publications within BRICS have grown more than tenfold in 15 years.

The Science, Technology, and Innovation (STI) collaboration among BRICS nations occurs annually, encompassing Meetings of the Ministers in the field of STI of the BRICS countries, Meetings of BRICS STI Senior Officials, and Working Group Meetings across 13 priority areas. Since the establishment of the BRICS STI Framework Program (FP), over 1,600 applications from 5,000 research teams have been received, resulting in 157 supported projects from 2016 to 2023.

Digital development stands out as one of the most promising areas of BRICS cooperation. The BRICS Communications Ministers' Meetings are held every year to facilitate sectoral cooperation across the BRICS countries in digital economy and ICT. In 2018, the CyberBRICS project was launched to analyze digital policies across BRICS nations, map the existing regulations, identify best practices, and offer policy recommendations. Furthering these efforts, the BRICS Digital Economy Partnership Framework (FINAL) was adopted in 2022, aimed at enhancing both bilateral and multilateral digital governance cooperation and fostering an open and fair environment for cooperation in digital economy within BRICS. Between 2010 and 2024, BRICS

countries collectively advanced 28 positions on average in the E-Government Development Index (EGDI). Notably, Brazil moved from 61st to 50th place, Russia from 59th to 43rd, India from 119th to 105th, China from 72nd to 35th, and South Africa from 97th to 40th. Across the BRICS 5, the EGDI score increased by 80% during the same period.

The positive dynamics of the E-Government Development Index reflect a strong commitment to expanding ICT infrastructure, enhancing digital services, and encouraging direct public participation in political and economic decision-making. The Global Innovation Index and Frontier technology readiness index demonstrate positive trends in the development of STI cooperation.

Since 2010, annual bilateral trade flows of ICT goods from Brazil, Russia, India, China, and South Africa to the BRICS countries have surged, driven primarily by China, which constitutes over 97% of intra-BRICS trade. China, India, and Russia maintain the highest volumes of ICT goods trade with other BRICS nations.

Educational cooperation within BRICS has also progressed significantly in recent years, notably with the establishment of the BRICS Network University. In 2024, Egypt, Iran, and the UAE joined this initiative by signing the Protocol of Accession to the Memorandum of Understanding on the Establishment of the BRICS Network University. To date, eleven BRICS Education Ministers' Meetings have been held, emphasizing a strong focus on academic collaboration.

In tourism, cooperation has mostly evolved in a bilateral format since 2015, with several agreements signed to promote travel and hospitality exchanges among BRICS nations. However, the analysis showed that multilateral collaboration in tourism has been limited. Overall, in recent years, the only commitment in the field of tourism was the decision to establish a relevant Tourism Working Group in 2018, with no meetings of the Working Group held till 2024.

In contrast, BRICS cooperation in sports has been notably active. Since 2017, the BRICS Games have taken place every year (except for 2019–2021), with the 2024 games hosted in Kazan, Russia, featuring over 27 sports and attracting more than 2,800 participants from 82 countries. Additionally, Russia launched the first international Games of the Future in 2024, integrating classical and digital sports disciplines.

BRICS has achieved remarkable progress in cooperation on healthcare. BRICS Health Ministers' Meetings have occurred annually since 2011, with 14 meetings completed by 2024. The BRICS countries have a long-standing successful cooperation in combating tuberculosis. In 2017, the BRICS TB Research Network was established in line with the BRICS TB Cooperation Plan and holds annual meetings (the 15th meeting took place in May 2024 in Russia). The COVID-19 pandemic further accelerated BRICS healthcare collaboration, with BRICS countries collectively supplying 60% of global vaccines (9.1 billion doses) for both exported and domestically delivered doses, primarily from China (40%) and India (16.3%). Early in the pandemic, BRICS nations started providing mutual expert, humanitarian, and economic assistance. In 2023, the Working Group on Nuclear Medicine was established and held its first meeting in 2024 at the Future Technologies Forum in Russia. Since 2024, BRICS has been working on an Integrated Early Warning System for Preventing the Risk of Mass Infectious Diseases.

Russia's Chairship in 2024 and the decisions made during the Kazan Summit provided a significant impetus to BRICS cooperation across various sectors. Key outcomes from the Summit include the establishment of the Grain Exchange, the creation of the Contact Group on Climate and Sustainable Development, and the launch of the Investment Platform, designed to enhance the NDB infrastructure and increase investments in BRICS and Global South countries. Additionally, discussions were initiated on transport cooperation, and new working groups were launched, including the Nuclear Medicine Working Group and the Geological Platform. The Summit also introduced a new format for BRICS cooperation with third countries – the BRICS Partners – to accommodate the growing interest from other

nations wishing to join BRICS while preserving the group's cohesion and effectiveness. The Kazan Declaration also reaffirmed BRICS' commitment to enhancing cooperation among banks, increasing trade in national currencies, and developing new payment and insurance platforms that are independent of the Western-dominated infrastructure. Furthermore, the Summit underscored the group's dedication to promoting a more equitable, balanced, and multipolar world order and reforming global governance institutions to strengthen the role of developing countries in global governance and address global challenges more effectively.

While these trends are promising, the analysis also highlights areas requiring further collaboration and joint effort within BRICS.

For instance, the analysis of BRICS trade relations reveals that while the group's presence in global trade is growing, trade volumes with non-BRICS countries still significantly exceed intra-BRICS trade. This highlights the importance of prioritizing intra-BRICS trade development, with an emphasis on increased use of national currencies to accelerate this process.

BRICS countries should also intensify efforts toward achieving Sustainable Development Goals. The analysis suggests working out a joint BRICS Sustainable Development Roadmap, which will comprise the vision of all BRICS countries on the steps required on national and international levels to achieve the SDGs. Enhanced collaboration in urban development is also essential for BRICS, with a focus on creating a knowledge-sharing platform to facilitate cooperation between regional authorities on building sustainable cities. Additionally, BRICS countries should establish shared targets for reducing city air pollution.

Developing a more equitable climate change agenda that prioritizes the interests of developing countries and rejects the inconsistencies in Western-led climate policies would be highly beneficial for BRICS. Although many developed nations emphasize the importance of emissions cuts, they continue to import substantial quantities of carbon-intensive goods, which does not contribute to emissions reductions globally. In contrast, BRICS countries display slower growth in per capita emissions, which often remain below OECD averages despite rising absolute emissions. To address these disparities, BRICS could draft a joint document, which would solidify the group's international stance in international climate negotiations. Additionally, BRICS nations should begin comprehensive and consistent tracking of consumption-based emissions, alongside production-based figures, which will support their position against trade barriers and other forms of trade protectionism emerging from the West under the banner of combating climate change. The accounting, as well as the independent collection and analysis of data on challenges, risks, policies, and other areas related to climate change and energy transition can be conducted by the newly created BRICS Climate Research Platform. It may gradually evolve into the BRICS Climate Research Center that could pose as an alternative to North-centric institutions, such as the IEA or OECD, which currently provide the majority of policy-relevant information in these areas. It is also advisable for BRICS nations to negotiate the convergence of their voluntary carbon market and green finance infrastructures in order to remove barriers to attracting finance into the green transition throughout the format. It may be done within the BRICS Carbon Markets Partnership, a platform created in 2024.

Additionally, BRICS members have the potential to play a significant and meaningful role in helping ensure global food security. The creation of the BRICS Grain Exchange proposed in the Kazan Declaration may become a key step in ensuring BRICS food security through building new and independent infrastructure for international trade in cereals. In addition to the grain exchange, BRICS could consider establishing a joint Food Security Fund aimed at accumulating financial and food resources to support nations facing food shortages. This initiative would significantly strengthen BRICS' role as a leading voice for the challenges and needs of developing countries.

In the humanitarian field, further collaboration is needed to advance research and development and foster innovation, particularly in alignment with human capital and talent management within BRICS. This includes deepening cooperation in education and

strengthening connections between businesses, industries, and universities across BRICS countries. Monitoring and assessing the state of cooperation between BRICS universities – identifying current state, key barriers, and opportunities – could open new pathways for the growth of the BRICS Network University. As the number of projects within the BRICS STI Framework Program continues to grow, it is essential to ensure robust monitoring not only of the number of projects being implemented but also their further development following the completion of BRICS STI FP Calls or other initiatives.

Another promising area for strengthening cooperation within BRICS is Artificial Intelligence (AI). By fostering collaboration on AI policies and regulations, BRICS countries can establish a stronger foundation for the development of a cohesive regulatory framework and the adoption of AI technologies. This collaboration would enable the group to harness AI’s transformative potential to address social, ecological, and economic challenges. Additionally, annual bilateral trade flows of ICT goods within BRICS could be further expanded, particularly by increasing the share of ICT goods in total trade mix among the BRICS countries.

To enhance cooperation in tourism, new tools and solutions are required to address all forms of tourism – including science, sustainable, medical tourism, and others. One such initiative could be the introduction of the BRICS Travel Card for visa-free travel. This would help make BRICS sports events, such as the BRICS Games, more accessible for tourists and participants and expand their global reach.

The importance of and the potential for cooperation between the BRICS countries in the fields of STI and education have been highlighted in the XVI BRICS Summit Kazan Declaration (2024). The BRICS countries have seen rapid growth in patents and scientific publications since 2009, accounting in 15 years for over 43% of global patents and 18% of publications in 15 years. Co-authorship within BRICS has increased significantly over the past 15 years. Future monitoring should focus on analyzing publications and patents, as well as their industrial applications, especially those involving university-industry partnerships. A systematic approach is required to synchronize intellectual property management, innovation, and technology transfer initiatives within BRICS. Development of new joint databases and digital platforms for collaboration is a promising area for STI cooperation. The number of projects within the BRICS STI Framework Program is growing, requiring close monitoring of both completed and ongoing projects. Supporting continued collaboration among project teams, even without financial backing, is crucial. Engaging such teams in international STI project accelerators, the BRICS Accelerator in particular, may do much to help foster technological entrepreneurship and cooperation in this field. The BRICS countries are actively developing ICT infrastructure and digital services, promoting public engagement in decision-making. Positive trends in STI cooperation call for enhanced R&D, innovation, and human capital management, alongside strengthened ties between businesses, industries, and universities. Collaboration on AI policies and regulations within BRICS can strengthen the global regulatory framework and facilitate AI adoption to address societal, environmental, and economic challenges. Additionally, increasing bilateral trade flows of ICT goods within BRICS would boost their share in overall trade. The development of ranking systems focused on specific characteristics of the BRICS countries, and monitoring of universities and their cooperation (among other means, through the BRICS Network University) remain some of the key priorities, together with advancing educational quality and joint academic partnership and internship programs. Enhancing tourism cooperation across BRICS will require implementing new tools and approaches, such as the BRICS Travel Card, along with digital solutions and the Roadmap for BRICS Tourism Cooperation, which has been adopted in 2024. BRICS sporting events, such as the BRICS Games, help to promote broader cooperation and sports diplomacy. In addition, efforts should be considered toward establishing the BRICS Paralympic Movement. Finally, the BRICS can significantly contribute to global health governance by providing a collaborative platform for advancing positive public health outcomes and improving the efficiency of healthcare governance worldwide.

LIST OF ACRONYMS

BCICH	BRICS Committee for International Cooperation in Health and Healthcare
BRICS 5	Brazil, Russia, India, China, South Africa
BRICS 10	Brazil, Russia, India, China, South Africa, Egypt, Ethiopia, Iran, Saudi Arabia, UAE
BRICS GRAIN	BRICS Advanced Network of Global Research Infrastructures
BRICS ICT HPC	BRICS Integrated Centre for Innovative Cooperation in Information and Communication Technologies (ICT) and High-Performance Computing Systems
BRICS TB RN	BRICS Tuberculosis Research Network
BRICS NCMSN	BRICS Network Centre for Materials Science and Nanotechnology
BRICS NU	BRICS Network University
BRICS STI FP	BRICS Science, Technology and Innovation (STI) Framework Program
BRICS TechTransfer	BRICS Technology Transfer Network
BRICS VIP	BRICS Virtual Institute of Photonics
EGDI	E-Government Development Index
EPO	European Patent Office
GII	Global Innovation Index
iBRICS	BRICS Network of Science Parks, Technological Business Incubators, and Small and Medium Enterprises
IP BRICS	BRICS Cooperation Mechanism in the Field of Intellectual Property
NEPAD	New Partnership for Africa
Rospatent	Federal Service for Intellectual Property of the Russian Federation
OAPI	African Intellectual Property Organization
STI	Science, Technology, and Innovation
WIPO	World Intellectual Property Organization
IP	Intellectual property
AI	Artificial intelligence
ICT	Information and Communication Technologies
AEO	Authorized Economic Operator
BPIC	BRICS PartNIR Innovation Centre
BEST	BRICS Environmentally Sound Technology
CDIS	Coordinated Direct Investment Survey
CIPS	Cross-Border Interbank Payment System
CRA	Contingent Reserve Arranegment
EPSI	Exporting Partner Significance
FTA	Free Trade Agreement

IFS	International Financial Statistics
MSMEs	Micro, Small, and Medium-sized Enterprises
MDBs	Multilateral Development Banks
OPEC+	Organization of the Petroleum Exporting Countries
PartNIR	Partnership on the New Industrial Revolution
PBoC	People's Bank of China
R&D	Research and Development
SPFS	Financial Message Transmission System
FY	Fiscal year
UNCTAD	UN Conference on Trade and Development
UNIDO	United Nations Industrial Development Organization
WTO	World Trade Organization
ANS	Adjusted Net Savings
BTTC	BRICS Think Tanks Council
CBE	Consumption-based emissions
CPI	Consumer Price Index
FAO	Food and Agriculture Organisation
FDI	Foreign Domestic Investment
GHG	Greenhouse gas
IEA	International Energy Agency
IMF	International Monetary Fund
ULUCF	Land use, land-use change, and forestry
NEET	Net Emissions Embodied in Trade
NDB	New Development Bank
OECD	Organisation for Economic Co-operation and Development
PBE	Production-based emissions
PM2.5	Particulate matter with a diameter of 2.5 micrometers or smaller
PPP	Public-Private Partnership
RBI	Reserve Bank of India
SDG	Sustainable Development Goal
CNPq	National Council for Scientific and Technological Development
Finep	Brazilian Innovation Agency
MCTI	Brazilian Ministry of Science, Technology and Innovation
FASIE	Foundation for Assistance to Small Innovative Enterprises
MSHE	Ministry of Science and Higher Education of the Russian Federation
RCSI	Russian Centre for Science Information
DBT	Department of Biotechnology

DST	Department of Science and Technology
MOST	Ministry of Science and Technology
NSFC	National Natural Science Foundation of China
DSTI	Department of Science, Technology and Innovation
NQF	National Qualifications Frameworks
NRF	National Research Foundation
SAMRC	South African Medical Research Council
BIFN	BRICS Institute of Future Networks
DBTF	Digital BRICS Task Force
FTRI	Frontier Technology Readiness Index
BRICSCESS	BRICS Exercise and Sports Science Council
NCD	Non-Communicable Diseases
UHC	Universal Health Coverage
PPE	Personal Protective Equipment
WHO	World Health Organization

LIST OF REFERENCES

Adjusted Net Savings | DataBank. (n.d.). Databank.worldbank.org
<https://databank.worldbank.org/source/adjusted-net-savings/preview/on>

Anna Kondrich. (2024). The Future of BRICS National Currencies. (Non)de-dollarization opportunities. RussianCouncil.ru.
<https://russiancouncil.ru/analytics-and-comments/columns/sandbox/budushchee-natsionalnykh-valyut-briks-ne-vozmozhnosti-dedollarizatsii/>

Bank of Japan. (2024). Home : 日本銀行 Bank of Japan. Bank of Japan.
<https://www.boj.or.jp/en/>

Bank of Russia (2024). www.cbr.ru
https://cbr.ru/Content/Document/File/160781/forecast_240426.pdf

Bank of Russia (2024). www.cbr.ru
https://cbr.ru/statistics/bank_sector/mortgage/Indicator_mortgage/0224/

Bank of Russia (n.d.). www.cbr.ru
https://cbr.ru/eng/statistics/macro_itm/

2019 Brasilia Declaration. (n.d.). www.brics.utoronto.ca.
<http://www.brics.utoronto.ca/docs/191114-brasilia.html>

BRICS. (2024). Ipbrics.net. <http://www.ipbrics.net/index.html>

BRICS Committee for International Cooperation in Health and Healthcare (BCICH). BRICS Healthcare.com. <https://bricshealthcare.com/>

BRICS Finance Ministers and Central Bank Governors' Joint Statement. (2022). Mfa.gov.cn.
http://brics2022.mfa.gov.cn/eng/hywj/ODMM/202206/t20220607_10699541.html

BRICS Finance Ministers and Central Bank Governors' Joint Statement/
<http://www.brics.utoronto.ca/docs/2022/2022-finance-P020220607348199719292.pdf>

BRICS-Finance-Ministers-and-Central-Bank-Governors-review-the-outcomes-of-the-Russian-BRICS.
<https://eng.brics-russia2020.ru/news/20201109/1121994/BRICS-Finance-Ministers-and-Central-Bank-Governors-review-the-outcomes-of-the-Russian-BRICS.html>

15th BRICS Johannesburg-II-Declaration (2023) - BRICS Think Tanks Council. (2023, August 23). BRICS Think Tanks Council.
<https://bricsthinktankscouncil.org/knowledge-base/15th-brics-jhb-ii-declaration-24-august-2023-1-2023/>

BRICS Joint Ministers of Finance and Central Bank Governors Statement under the South African Presidency.
<https://www.resbank.co.za/content/dam/sarb/publications/media-releases/2023/brics-2023/BRICS%20Joint%20Ministers%20of%20Finance%20and%20Central%20Bank%20Governors%20Statement%20under%20the%20South%20African%20Presidency.pdf>

BRICS STI FP Call Secretariat: <http://brics-sti.org/?p=new/36>

XV BRICS Summit Johannesburg II Declaration. (n.d.). www.brics.utoronto.ca.
<http://www.brics.utoronto.ca/docs/230823-declaration.html>

XIII BRICS Summit - New Delhi Declaration.
<https://brics2021.gov.in/brics/public/uploads/docpdf/getdocu-51.pdf>

Central Bank of the Russian Federation | Bank of Russia. (n.d.). cbr.ru. <https://cbr.ru/>

DataBank | The World Bank. (n.d.). Databank.worldbank.org.
<https://databank.worldbank.org/source/world->

European Central Bank. (2023). European Central Bank. European Central Bank.
<https://www.ecb.europa.eu/home/html/index.en.html>

Earth System Science Data (2023). Global Carbon Budget 2023.
<https://essd.copernicus.org/articles/15/5301/2023/>

FAO. (2020). Global Forest Resource Assessment 2020.
www.fao.org. <https://www.fao.org/interactive/forest-resources-assessment/2020/en/>

Federal State Statistics Service. National Accounts of Russia [Federal'naya sluzhba gosudarstvennoj statistiki. Nacional'nye scheta Rossii]. Rosstat.ru.
<https://rosstat.gov.ru/folder/210/document/13221>

Finance And Central Bank Governors. Available at:
<https://brics2021.gov.in/finance-and-central-bank>

Friedlingstein, P. (2023). Global Carbon Budget 2023. Earth System Science Data, 15(12), 5301–5369. <https://doi.org/10.5194/essd-15-5301-2023>

Global-rates.com (n.d.). www.global-rates.com
<https://www.global-rates.com/en/interest-rates/central-banks/12/chinese-pbc-loan-prime-rate/>

Greenhouse Gas (GHG) Emissions | Climate Watch. (n.d.). www.climatewatchdata.org.
https://www.climatewatchdata.org/ghg-emissions?end_year=2021&start_year=1990

Greenhouse Gas Inventory Data. (2021). Unfccc.int. https://di.unfccc.int/time_series

Home-Public Private Partnerships in India. (n.d.). www.pppinindia.gov.in.
https://www.pppinindia.gov.in/list_of_all_ppp_projects

Huang, Y. (2022). The Health Silk Road: How China Adapts the Belt and Road Initiative to the COVID-19 Pandemic. American Journal of Public Health, 112(4), 567–569.
<https://doi.org/10.2105/ajph.2021.306647>

IEA. (2023). Renewables - Energy System. IEA.
<https://www.iea.org/energy-system/renewables>

IMF Publications: Currency Usage for Cross Border Payments, WP/23/72, March 2023

International Trade Centre (ITC). (2023). Trade Map - Trade Statistics for International Business Development. Trademap.org. <https://www.trademap.org/Index.aspx>

Investor Presentation. (2024).
https://www.ndb.int/wp-content/uploads/2023/10/Investor-Presentation-Q1_2024-NDB.pdf

IP BRICS: <http://www.ipbrics.net/index.html>

Issues Brief - Reform of IMF Quotas and Voice: Responding to Changes in the Global Economy. (n.d.). www.imf.org. <https://www.imf.org/external/np/exr/ib/2008/040108.htm>

Johannesburg Declaration-II 2023.
<https://d-russia.ru/wp-content/uploads/2023/08/brics-declaration-2023.pdf?ysclid=lv9cralm9k381184464>

Johannesburg II Declaration. BRICS and Africa: Partnership for Mutually Accelerated Growth, Sustainable Development and Inclusive Multilateralism, Sandton, Gauteng, South Africa, 23 August 2023 - The Ministry of Foreign Affairs of the Russian Federation. (2023). Mid.ru. https://mid.ru/en/foreign_policy/news/1901504/

John P.A. Ioannidis. (2024). August 2024 data-update for “Updated science-wide author databases of standardized citation indicators.” Mendeley Data, 7. <https://doi.org/10.17632/btchxktzyw.7>

(2024). mid.ru. https://mid.ru/en/foreign_policy/news/1901504// National PPP Center (2023). <https://pppcenter.ru/analitika/>

National Treasury. (n.d.). www.treasury.gov.za. <https://www.treasury.gov.za/documents/national%20budget/2022/review/Annexure%20E.pdf>

News. (2024). Brics-Russia2024.Ru. <https://brics-russia2024.ru/news/v-moskve-proshla-strategicheskaya-sessiya-mekhanizma-mezhbankovskogo-sotrudnichestva/>

New Development Bank (n.d.). www.ndb.int <https://www.ndb.int/about-ndb/general-strategy/>

NDB. (n.d.). New Development Bank. <https://www.ndb.int>

Objectives, goals and significance of the BRICS New Development Bank / NRC BRICS (2022). Nkibrics.ru. <https://nkibrics.ru/posts/show/639dfe3162726945fab0000>

Oxford insights. (2023). Gov AI Readiness Index. Oxford Insights. <https://oxfordinsights.com/ai-readiness/ai-readiness-index/>

Publication: Trade Statistics in Policymaking – A Handbook of Commonly Used Trade Indices and Indicators (Revised Edition) | ARTNeT. (2019). Unescap.org. <https://artnet.unescap.org/publications/books-reports/trade-statistics-policymaking-handbook>

Pilot Ranking for BRICS Universities. (2024). Mosiur.org. https://mosiur.org/ranking_brics_2024/

RBC. (2023, July 26). BRICS Bank refuses new investments in Russia due to sanctions. RBC. <https://www.rbc.ru/finances/27/07/2023/64c181429a79470005ae94e4>

Research at the IMF. (2019). IMF. <https://www.imf.org/en/Research> (n.d.). Data.imf.org. <https://data.imf.org/?sk=9D6028D4-F14A-464C-A2F2-59B2CD424B85&slid=1514498277103>

Reserve Bank of India (RBI) Contact No. | India Customer Care. (2023). Indiacustomer care.com. <https://www.indiacustomer care.com/reserve-bank-india-customer-care-numbers>

Resumo de Contratos de PPPs Archives – Radar PPP. (2024). Radar PPP. <https://radarppp.com/resumo-de-contratos-de-ppps>

Reuters Staff. (2023, November 14). Exclusive: China orders local governments to cut exposure to public-private projects as debt risks rise. Reuters. <https://www.reuters.com/markets/asia/china-orders-local-governments-cut-exposure-public-private-projects-debt-risks-2023-11-14/>

Schmidt-Traub, G., Kroll, C., Teksoz, K., Durand-Delacre, D., & Sachs, J. D. (2017). National baselines for the Sustainable Development Goals assessed in the SDG Index and Dashboards. Nature Geoscience, 10(8), 547–555. <https://doi.org/10.1038/ngeo2985>

Search results | Bank of Russia. (2024). www.cbr.ru. <https://www.cbr.ru/search>

South African Reserve Bank (SARB) | South African Government. (2024). www.gov.za. <https://www.gov.za/about-government/contact-directory/soe/south-african-reserve-bank-sarb>

South African Reserve Bank (SARB) | South African Government. (2024). www.gov.za. <https://www.resbank.co.za/content/dam/sarb/publications/media-releases/2023/brics-int-relations/BRICS%20bulletin.pdf>

Statistical tables. (n.d.). <https://www.resbank.co.za/content/dam/sarb/publications/quarterly-bulletins/quarterly-bulletin-publications/2022/june/11Statistical%20tables%20National%20accounts.pdf>

Summits and documents / NRC BRICS, Russia. (2022). Nkibrics.ru. <https://nkibrics.ru/pages/summit-docs>

Sustainable Development Report (2024). [https://dashboards.sdgindex.org/System_of_National_Accounts:_Brazil_|IBGE._\(2022\).lbge.gov.br](https://dashboards.sdgindex.org/System_of_National_Accounts:_Brazil_|IBGE._(2022).lbge.gov.br)

<https://www.ibge.gov.br/en/statistics/economic/national-accounts/17173-system-of-national-accounts-brazil.html?=&t=downloads>

In the country (2024). TASS. <https://tass.ru/ekonomika/19876555>

The World Bank. (2017). PM2.5 air pollution, mean annual exposure (micrograms per cubic meter) | Data. worldbank.org. <https://data.worldbank.org/indicator/EN.ATM.PM25.MC.M3>

Treaty for the Establishment of a BRICS Contingent Reserve Arrangement. (n.d.). www.brics.utoronto.ca. <http://www.brics.utoronto.ca/docs/140715-treaty.html>

UNCTADstat (n.d.). unctadstat.unctad.org. <https://unctadstat.unctad.org/datacentre/>

UNCTADstat (n.d.). Unctadstat.unctad.org. <https://unctadstat.unctad.org/datacentre/dataviewer/US.FTRI>

UNCTADstat (2024). Unctadstat.unctad.org. <https://unctadstat.unctad.org/datacentre/dataviewer/US.GDPTotal>

UNCTADstat (2024). Unctadstat.unctad.org <https://unctadstat.unctad.org/datacentre/dataviewer/US.GoodsAndServicesBpm6>

UNCTADstat (2024). Unctadstat.unctad.org <https://unctadstat.unctad.org/datacentre/dataviewer/US.GoodsAndServicesBpm6>

UNCTADstat (2024). Unctadstat.unctad.org <https://unctadstat.unctad.org/datacentre/dataviewer/US.FdiFlowsStock>

UNCTAD (2023). Unctad.org https://unctad.org/system/files/official-document/diae2023d1_en.pdf

UNCTAD (2022). Unctad.org https://unctad.org/system/files/official-document/wir2022_en.pdf

UNCTAD (2020). Unctad.org https://unctad.org/system/files/official-document/wir2020_en.pdf

UNCTADstat. (n.d.). Unctadstat.unctad.org. <https://unctadstat.unctad.org/datacentre/dataviewer/US.FTRI>

UNCTADstat. (n.d.). Unctadstat.unctad.org. <https://unctadstat.unctad.org/datacentre/dataviewer/US.IctGoodsValue>

United Nations. (2020). EGOVKB | United Nations > About > Overview > E-Government Development Index. Un.org. <https://publicadministration.un.org/egovkb/en-us/About/Overview/-E-Government-Development-Index>

University of Notre Dame. (2019). Country Index / Notre Dame Global Adaptation Initiative

/ University of Notre Dame. Notre Dame Global Adaptation Initiative; Notre Dame Global Adaptation Initiative. <https://gain.nd.edu/our-work/country-index/>

Wayback Machine. (n.d.). Web.archive.org. <https://web.archive.org/web/20160926230441/http://ndb.int/download/Agreement%20on%20the%20New%20Development%20Bank.pdf>

WIPO. (2023). Global Innovation Index (E). www.wipo.int. https://www.wipo.int/global_innovation_index/en/

WIPO. (2023). World Intellectual Property Indicators 2023. <https://www.wipo.int/edocs/pubdocs/en/wipo-pub-941-2023-en-world-intellectual-property-indicators-2023.pdf>

World Bank Open Data. (2024). World Bank Open Data. <https://data.worldbank.org/indicator/ER.H2O.INTR.PC?locations=XD>

World Bank. (2024). World Bank Open Data. World Bank. <https://data.worldbank.org/>

WTO-IMF Vaccine Trade Tracker. (2022). www.wto.org. https://www.wto.org/english/tratop_e/covid19_e/vaccine_trade_tracker_e.htm

Yuan Tops Yen in Share of Global Currency Payments, Swift Says. Available at: Johnson, C. (2023, December 21). CNY/JPY: Yuan Tops Yen in Share of Global Currency Payments, Swift Says. Bloomberg.com; Bloomberg. <https://www.bloomberg.com/news/articles/2023-12-21/yuan-tops-yen-in-share-of-global-currency-payments-swift-says>

Zuev, V., Ostrovskaya, E., & Skryabina, V. (2021). The EAEU free trade agreements as a new viable format for the Russian trade policy. *Outlines of Global Transformations: Politics, Economics*, 14(3), 63–83. doi:10.23932/25



Report “BRICS Cooperation Progress According to BTTC Indicator System”

Prepared by the BRICS Expert Council – Russia with the Support of BRICS Think Tanks Council (BTTC)

Edited by: Victoria Panova

Project coordinators: Ksenia Shevtsova, Valeriia Gorbacheva

Authors: Marina Borovskaya, Timofei Bordachev, Igor Makarov, Irina Yarygina, Vladimir Zuev, Feodor Alexeev, Anton Afanasyev, Anna Chistikova, Matvey Chistikov, Alexander Daniltsev, Victor Dostov, Polina Kanevskaya, Mikhail Khubulava, Elena Melnikova, Alexandra Morozkina, Elena Ostrovskaya, Igor Pilipenko, Valentina Skryabina, Elizaveta Smolovik, Marina Starodubtseva, Dmitry Suslov

Contributors: Vsevolod Cheresov, Romain Dradin, Kirill Gorshkolepov, Irina Kostetskaya, Vadim Kuznetsov, Artem Semenov, Lorenzo Trufalo

BRICS Expert Council – Russia
11 Pokrovsky Boulevard, Moscow
info@bricscouncil.ru
www.bricscouncil.ru

© BRICS Expert Council – Russia

Published in November 2024 by the BRICS Expert Council – Russia

All rights reserved. Reproduction, storage, or transmission of material from this publication is prohibited without prior permission from the publisher. Short extracts may be quoted, provided the source is fully acknowledged.

