WHITE PAPER ON TACKLING SKILLS AND TECH SHORTAGES IN BRICS

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BRICS BUSINESS COUNCIL

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WELCOME MESSAGES FROM BRICS BUSINESS COUNCIL CHAIRS

FEDERATIVE REPUBLIC OF BRAZIL

Felipe Morgado

Brazil Section Chair of BRICS Business Council Skills Development, Applied Technology

The accelerated pace of climate change and digital transformation poses significant challenges to global progress in welfare and prosperity. The twin transition — green and digital - brings significant implications for labour markets and economies, revealing skills shortages and reinforcing the urgency to expand reskilling initiatives to support workforce adaptation and to reallocate talents.

There is nothing less sustainable than a society without opportunities for good jobs. Now is the time to coordinate solutions that blend international cooperation with local driven action. Strategic collaboration between businesses and governments in advancing technical and vocational education, higher education, and employability policies is essential to ensure a just, inclusive, and sustainable twin transition.

PEOPLE'S REPUBLIC OF CHINA

Dr. Liu Zhenying

China Section Chair of BRICS Business Council Skills Development, Applied Technology

Amid rapid global transformation, the BRICS nations are pioneering a new era of international collaboration through the BRICS Global Remote Employment Platform. This groundbreaking initiative reflects our shared commitment to removing barriers, unlocking talent, and advancing innovation in the digital age.

At the heart of our vision lies a transformative approach to skills development and employment. The BRICS Skills Passport and BRICS Engineer Passport are revolutionizing workforce mobility by ensuring seamless recognition of qualifications across nations. Through the BRICS Workshop, we're delivering hands-on, future-ready training that equips professionals with cutting-edge skills.

The BRICS+ Auditorium extends this learning ecosystem through hybrid platforms that enable continuous knowledge sharing across continents. Our BRICS Skills & Tech Competition further elevates this ecosystem by identifying and nurturing exceptional talent through dynamic, innovation-driven challenges.

Supported by strategic alliances, including the IASDBR and the BRICS+ STI Alliance, this platform transcends traditional infrastructure—it's a dynamic bridge connecting talent with opportunity on an unprecedented scale. Together, we're creating more than a platform; we're building a borderless workforce ecosystem where talent flourishes, economies expand, and BRICS nations collectively shape the future of work in the digital era.

This is our moment to redefine global employment—where geography no longer limits potential, and where every skilled professional can contribute to our shared prosperity. Welcome to the future of work, powered by BRICS innovation and collaboration.

REPUBLIC OF INDIA

Dr Rajesh Pankaj

Director and Head — Education & Skills, FICCI

As global economies transition rapidly in the face of technological disruption and shifting workforce demands, it becomes imperative for BRICS nations to collaborate and innovate in addressing skill gaps and digital divides. Federation of Indian Chambers of Commerce and Industry (FICCI), India is proud to contribute to this vital discourse, fostering partnerships and policies that empower our people, industries, and institutions. Together, we can unlock the shared potential of our economies and pave the way for inclusive and sustainable growth across the BRICS+ region. This white paper reflects our shared vision of how digital innovation can reshape the skills landscape, creating new avenues for economic growth. The strategies outlined within are designed to strengthen the effective use of technology and resources, enabling our nations to remain agile and competitive in the evolving digital era.

INDONESIA

Tri Mumpuni

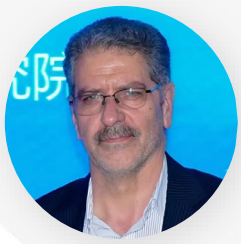
Board of Director People Centered Business and Economic Initiative (IBEKA Indonesia)

Board of Governor National Research and Innovation Agency (BRIN), Indonesia

As a new member of BRICS, Indonesia is expecting a collaboration in pursuing the development technology that will give benefit to the community and industry. The gap between the appropriate technology which give direct benefit for the community with the high technology produced from Institutional Research in Indonesia is still high. BRIN is responsible for the research which government has already planned, and IBEKA as a non-government organization since 1992 has been implemented technology of renewable energy found that the capability of young engineers has to be improved so that the implementation of technology can be sustainable.

The introduction of Techno anthropology plays a very important role to increase the welfare in the community level. The best technology is if it can be brought as close as possible to the community capability to operate and maintain, especially for the remotest community such as in Indonesia and in Brazil. The Village Vocational Studies is needed since the potency of village in natural resources are huge but lack of intellectual capacity to utilize is still high. This makes it difficult to uplift the life of those community. BRICS who its member posses' high gap in technology capability, sharing knowledge amongst the member countries are highly important especially from China and Russia other members.

ISLAMIC REPUBLIC OF IRAN



Professor Gholamreza Zamani

President of Technical and Vocational University

Technical and Vocational University of Iran is dedicated to training technicians and engineers who, by leveraging digital technologies — particularly artificial intelligence — will build the future and bridge the gap between theory and practice. Recently, we have integrated AI courses across all our undergraduate programs to ensure that the skilled workforce of tomorrow is proficient in applying AI within their respective fields. We believe this approach will significantly enhance employability, drive economic growth, and ultimately improve living standards. This white paper represents our next step in advancing this shared vision, enabling us to collaborate with our BRICS partners. Collectively, we have the potential to open new horizons of opportunity for our countries.

RUSSIAN FEDERATION

Alina Singh (Doskanova)

Russia Section Chair of BRICS Business Council Skills Development, Applied Technology

Through years of collaboration in research, skills and technology development, we have laid a strong foundation for collective advancement. This white paper represents the next step - transforming our shared vision into actionable strategies that will equip our people with future-ready skills and technologies. Together, we can unlock unprecedented opportunities for our nations. This white paper helps us take the next steps to prepare our workforce for future challenges and opportunities. Together, we can find solutions that benefit all BRICS people.

Envision a future where BRICS transcends partnership to become a global catalyst for innovation — where aligned technological frameworks and co-created skills ecosystems dissolve barriers between talent and opportunity. By uniting our strengths, we will transform today's skills gaps into tomorrow's strategic advantage, forging not just jobs, but entirely new economic frontiers. This is how we'll redefine progress: by empowering millions with future-proof capabilities, ensuring no nation merely adapts to change, but instead co-authors it. Together, we won't just bridge divides — we'll build a new paradigm where shared advancement unlocks limitless potential.

REPUBLIC OF SOUTH AFRICA

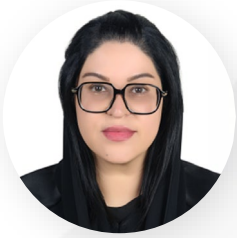
Mapule Ncanywa

South Africa Section Chair of BRICS Business Council Skills Development, Applied Technology

Our collective efforts as captured in this white paper represents how we envision digital innovation transforming the skills landscape providing pathways for economic activity. The robust strategies proposed aim to enhance the use of technologies and resources for the benefit of our nations to remain competitive in this digital age.

Our collective efforts as captured in this white paper represents how we envision digital innovation transforming the skills landscape providing pathways for economic activity. The robust strategies proposed aim to enhance the use of technologies and resources for the benefit of our nations to remain competitive in this digital age. As leaders, we should be intentional about developing and leveraging these collaborative solutions to create a better and sustainable world for the future.

UNITED ARAB EMIRATES



Latifa Mohammad

Group EVP — Head Office
Group People
DP World

Our global commitment is to contribute in shaping a future-oriented agenda that prioritizes global talent expertise, cross-sector talent mobility frameworks and sustainable innovation initiatives. This white paper reflects our shared determination to support, equip future leaders with the skills needed to navigate a fast-changing global landscape — one defined by technological advancement, digital transformation, and sustainability.We believe that investing in skills development is not only a pathway to economic resilience but also a catalyst for global cooperation. Through collaboration across BRICS nations, we can unlock new opportunities, bridge talent gaps, and empower our people to thrive in the economies of tomorrow.

Let this be a stepping stone toward greater unity, stronger partnerships, and a future where every individual has the tools to succeed.

WELCOME MESSAGES FROM BRICS NETWORK

ARAB REPUBLIC OF EGYPT

Dr Ahmed Moustafa

Director & Owner
of Asia Center for Studies
& Translation Egypt

The technological advancement, skill development, and employability connection is essential for economic growth in BRICS Plus countries like Brazil, Russia, India, China, and South Africa, and Egypt. Nations are using technology and skills training to improve job opportunities, especially in sectors such as AI, data science, and renewable energy. For example, China's AI investments increased job postings by 34%, while Brazil's digital literacy programs reduced tech sector unemployment by 12%.

Egypt can follow these models by promoting lifelong learning and upskilling. By investing in vocational training and fostering partnerships, Egypt could tackle its 27% youth unemployment. Additionally, collaborative innovation, like China's Belt and Road Initiative providing jobs, shows the importance of aligning technology with national goals. Egypt's strategic location and resources can position it as an innovation hub while benefiting from BRICS' economic exchange, enhancing its global influence.

RUSSIAN FEDERATION

Nikolay Dolgov

Director of "Professionals 4.0" platform, Gazprom neft

Today, work is changing very fast. New technologies demonstrate us that people can work from anywhere, not only in the office.

More and more companies use remote work, gig jobs, and digital tools to find the right people.

At the same time, many countries in BRICS+ have the same problem — not enough skilled workers and a big gap between what companies need and what workers can do.

BRICS countries face similar challenges associated with talent shortages.

To address them, we must move not backward to traditional migration — but forward to digital integration.

With the right frameworks, digital employment can be a shared solution to a shared challenge.

These statements underscore our shared commitment. As this white paper will demonstrate, translating this unity into actionable strategies requires a clear understanding of current challenges and opportunities.

INTRODUCTION

The BRICS nations—Brazil, Russia, India, China, South Africa, and newly expanded members such as Egypt, Ethiopia, Iran, and the UAE—represent a collective powerhouse of economic potential, technological innovation, and demographic diversity. However, these countries face shared challenges in addressing critical skills and technology shortages that threaten to hinder their growth and global competitiveness. Rapid digital transformation, evolving industrial demands, and demographic disparities have created gaps in workforce readiness and access to cutting-edge technologies, underscoring the need for coordinated solutions.

This white paper examines the current landscape of skills and technology shortages across BRICS countries, highlighting sector-specific demands, national strategies, and systemic barriers. It explores the unique challenges each nation faces, from outdated education systems and rural-urban divides to geopolitical constraints and limited R&D investment. Crucially, the document proposes collaborative frameworks to leverage the bloc's complementary strengths, including shared staffing initiatives, unified credential recognition, and cross-border remote employment platforms.

By fostering south-south cooperation, harmonizing standards, pooling resources and Joint Efforts to Overcome Shared Labor Market Challenges BRICS can build a resilient, innovation-driven future. The policy recommendations and working group proposals outlined here aim to transform these challenges into opportunities, ensuring that BRICS nations not only meet their domestic needs but also emerge as leaders in the global economy.

To fully harness the potential of BRICS nations, it is imperative to adopt a collaborative approach in addressing labor market challenges. By combining resources, expertise, and policy frameworks, member states can create a more dynamic and inclusive employment ecosystem. BRICS nations must unite to tackle shared labor market challenges through coordinated solutions. This collaborative approach will balance workforce needs across BRICS economies, turn demographic potential into sustainable competitive advantages and help to build more resilient and inclusive employment systems for the future.

This white paper systematically examines these issues through three lenses:

the current state of skills and technology gaps	sector-specific workforce demands	actionable policy solutions

By aligning our approaches, BRICS nations can turn demographic challenges into competitive advantages while building more resilient employment ecosystems.

TECH LANDSCAPE AND SKILLS SHORTAGES IN BRICS COUNTRIES

The following country analyses reveal both the diversity of our challenges and the common threads connecting BRICS economies in the digital age.

BRAZIL

Brazil is experiencing significant shifts in its digital economy, marked by the rapid integration of new technologies across various economic sectors. This scenario is further shaped by the pressing challenge of climate change and the urge to embrace more sustainable production processes. As a result, there is a growing demand for professionals in high technology fields, such as AI, cybersecurity and data science. Concurrently, there is an increased focus on fostering environmental awareness and supporting the workforce's adaptation to future skills. The complexity of Brazil's educational landscape and skills shortage lies not only in the speed of technological change, but also in structural constraints that affect its workforce preparedness, particularly in STEM-related careers.

According to the Brazilian National Industry Observatory, Brazil will need to upskill and reskill over 14 million workers between 2025 and 2027 to meet industrial demand[1]. Moreover, digital gaps are not exclusive to individuals, as many business sectors still struggle to attract and retain qualified talent. This challenge reflects a global trend influenced by demographic shifts, urban concentration, and the rapid pace of technological transformation in green and high-tech areas. Despite the growth of technical and vocational training offerings, there is still room to expand offers and develop financing mechanisms for large-scale roll-out of workers' reskilling and upskilling programs. Besides, there remains a mismatch between some graduate programs and the competencies required by the labour market, underscoring the opportunity for a closer collaboration between higher education institutions and businesses to adequately prepare future workforce.

To face this scenario, collaborations between technical and vocational education and training institutions, higher education systems, governments, and the productive sector are crucial to inform the formulation of labour policies oriented towards employability, bridging the skills gaps. Led by the government, the Brazilian Digital Transformation Strategy (E-digital)[2] and the Plan of Action to develop IoT[3] in Brazil set the direction of development with focus on Industry 4.0, smart cities and public digital services. Contributing to it, the Plan Digital Brasil 2030+[4] was designed by private sector stakeholders to position Brazil as a global leader in the digital economy and support digitalization processes across sectors.

Adding to these efforts, SENAI's programs contribute to modernize technical and vocational education and training, and more recently higher education, by providing cutting-edge courses and labs in high technologies and green transformation areas. With operations in more than 5,300 cities, with training programs in 23 technological areas and +92 million of workers trained over 80 years of existence[5], SENAI boosts collaborative networks with industries to ensure training aligns with market demands, fostering an adaptive, skilled labor pool ready to tackle the challenges of the future. Around 86% of students are hired upon completion of the courses, and 91% of businesses prefer to contract professionals with prior training from SENAI.

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[1] https://noticias.portaldaindustria.com.br/noticias/trabalho/mapa-do-trabalho-2025-2027-confira-a-demanda-de-profissionais-por-estado/

[2] https://www.gov.br/mcti/pt-br/centrais-de-conteudo/comunicados-mcti/estrategia-digital-brasileira/digitalstrategy.pdf

[3] https://www.bndes.gov.br/wps/portal/site/home/conhecimento/pesquisaedados/estudos/estudo-internet-das-coisas-iot/estudo-internet-das-coisas-um-plano-de-acao-para-o-brasil

[4] https://brasscom.org.br/plano-brasil-digital-2030/

[5] https://www.senai.portaldaindustria.com.br/

CHINA

China has positioned itself as a leader in AI, intelligent manufacturing, and big data. It has issued national-level strategies, such as "Made in China 2025," to enhance its technological sovereignty. However, it faces talent shortages in chip design, AI ethics, and data governance.

There's a gap between world-class urban universities and under-resourced rural areas. China is also racing against demographic pressures that may shrink its skilled workforce in the coming decades.

EGYPT

Government promotes Digital Egypt Strategy and ICT 2030 Vision with focus on ICT infrastructure, youth digital literacy.

Egypt's fast-growing youth population makes it a vital case study. While the government promotes the ICT sector and digital entrepreneurship, skill shortages remain in cybersecurity, mobile app development, and data science. Programs like Digital Egypt Builders Initiative (DEBI) focus on technical degrees in AI, but rural-urban divides and underfunded technical colleges limit national impact.

INDIA

The World Economic Forum's Future of Jobs Report 2025 stresses that ~63% of Indian workers will have to upskill by 2030.Indian employers lead globally in adopting AI: 35% expect semiconductors/computing and 21% quantum technologies to significantly transform work—well above global norms. India has the second-highest employer demand for AI and big data talent globally. 69% of Indian companies plan to adopt AI by 2027 — compared to 42% globally.

FICCI's latest report Future of Jobs -3.0 highlights that India's demographic advantage — over 65% of the population is under 35 — is a powerful asset, conditional on timely and relevant skill development. India's government and industry are collaboratively building a tech-ready workforce — not just for national transformation, but to meet the world's growing demand for digital skills. With visionary policy frameworks, robust training ecosystems, and industry-led skilling models, India is positioning itself as a global skills powerhouse, capable of exporting talent and leading the future of work.

The Policy and Institutional Framework includes National Education Policy (NEP) 2020, Skill India Mission, Prime Minister's Skilling Scheme, more than 15,000 Industrial Training Institutes (ITIs) are being upgraded with new-age courses in AI, robotics, IoT, cybersecurity, etc. Many other initiatives such as Microsoft–MSDE Collaboration: AI and cloud skilling in ITIs and NSTIs with a special focus on women (CyberShikshaa initiative). Tata STRIVE, Infosys Springboard, and Google's Skill India tie-up offers millions of learners training in AI, cloud, digital marketing, and data analytics.

The Indian Government has signed MoUs with countries like Germany, Japan, and UAE for cross-border skill recognition. India is already a global exporter of IT talent, but now the government aims to position the country as a global hub for skilled digital workers, especially for markets like Europe which is facing aging workforce issue, the Gulf countries for tech infrastructure roles and to Africa and Southeast Asia for digital transformation support. Through the G20 & BRICS Platforms, India is shaping global skilling dialogues to synchronize with global standards.

The Indian Government and industry are strategically collaborating to harness India's demographic dividend—its large, youthful population—to meet both domestic and global demand for tech and digital skills. This synergy is reflected through key policies, public–private partnerships, and capacity-building initiatives aimed at transforming India into a global talent hub.

INDONESIA

Indonesia's government has set a target to achieve 8% GDP growth by 2029. This goal is driven by the belief that industrial growth, particularly in the manufacturing sector, is key to achieving this level of economic expansion. The Indonesian government has highlighted the critical role of investment in achieving this target, aiming for a significant increase in investment to boost GDP growth.

Moreover, Indonesia is driven by Making Indonesia 4.0 Initiative with focus on key sectors: food, automotive, electronics, chemicals, and textiles. Key goal is to prepare industry and workforce for digital transformation, Smart manufacturing and innovation ecosystems. This effort is still low in the result.

While initiative is ongoing there is Urban–rural disparity in education and tech access and Limited R&D investment (less than 1% of GDP) and Informal sector dominance (over 55% of employment).

Fulfilling the basic needs such as electricity which can drive the economic development and technology implementation in rural area still become a major effort that government still work on it.

The role of technology plays an important role in achieving the economic growth target, Furthermore BRIN and The Ministry of Higher Education Science and Technology has its own program. BRIN through the Research Organization works on energy and manufacture, nano technology and material, nuclear technology, electronic, Aeronautics and space, Health, Agriculture and food, Earth sciences and maritime, and Governance &Economy and Community welfare.

Technological cooperation in renewable energy, artificial intelligence, and digitalization could help modernize Indonesia’s industries, enhancing productivity and competitiveness. Leading commodities such as agricultural products, mining, and down streaming of natural resources can be optimized to increase added value and export competitiveness.

IRAN

Iran’s technology landscape is characterized by remarkable resilience and innovation, shaped largely by the country’s geopolitical challenges and sanctions. Despite being cut off from major global platforms, Iranian entrepreneurs have developed a thriving digital ecosystem, creating a $32 billion e-commerce market and successful homegrown unicorns. This environment has fostered a culture of self-reliance where local IT solutions have flourished, driven by necessity and a proactive approach to overcoming restrictions. The digital economy in Iran has been growing at an impressive rate of 25% annually since 2020, highlighting the dynamic nature of its tech sector even under pressure.

The sanctions have limited access to international services but incentivized domestic innovation, leading to the development of scalable and localized internet-based platforms that cater specifically to Iranian users. These entrepreneurs have turned infrastructural and regulatory challenges into opportunities, building models that offer valuable lessons for other regions facing similar obstacles. Iran’s digital economy is a testament to how constraints can fuel creativity and growth, enabling the country to rewrite the rules of technology adoption and digital entrepreneurship in a complex geopolitical context.

Despite the rapid growth and innovation within Iran’s digital economy, the country faces significant challenges in skill development and talent management. A persistent gap exists between academic education and the practical, entrepreneurial skills demanded by the labor market, resulting in a shortage of qualified professionals and rising unemployment among graduates. Factors such as outdated curricula, weak links between universities and industry, limited resources, and insufficient national talent management programs exacerbate this issue. Iran’s Technical and Vocational University, representing the country in BRICS, recognizes that addressing these skill shortages is critical to sustaining economic growth and technological advancement. Through enhanced collaboration with BRICS partners, Iran aims to leverage shared expertise, exchange best practices, and develop comprehensive training programs that will better prepare its workforce for future challenges, ultimately fostering regional integration and mutual digital prosperity.

RUSSIA

Russia's new national technological leadership projects launching from 2025 focus on achieving technological sovereignty and global competitiveness across key sectors: "Advanced Materials and Chemistry" aims to develop domestic production of innovative materials like composites and rare-earth metals; "Production Means and Automation" targets top-25 global ranking in industrial robot density; "New Energy and Nuclear Technologies" expands Russia's global nuclear tech presence while ensuring 90% domestic equipment in energy sectors; "Unmanned Aerial Systems" seeks to dominate 70% of the domestic drone market with R&D hubs; "Multisatellite Orbital Group" plans to deploy satellites for digital sovereignty; and "Bioeconomy" will advance biotech for waste recycling, agriculture, and pharmaceuticals.

Russia's technology ecosystem is undergoing a strategic transformation, driven by the National The National Technological Initiative (NTI) is a non-commercial entity conceived by the President of the Russian Federation in 2014 and instituted by an Executive order of the Government of Russia in 2018. It acts as a platform to combine efforts of business and expert communities for the development of future markets and industries that will be the cornerstone of the global economy in the near future and to enable global technical leadership in Russia.

The NTI conceives new policies for fostering future markets and supports a wide range of activities aimed at achieving integrity and sustainability of essential technological domains, as well as aids the development of new end-to-end and disruptive solutions, nurtures small-scale research teams, accelerates startups growth and training appropriately qualified staff for future markets. An important function of the NTI is furthering technological sovereignty, including self-sufficiency and authority, on the national scale.

As of end 2023, the NTI had nearly 4,000 tech companies in its orbit focused on the selected fifteen future markets and 25 centers of competence. The Initiative also manages University 2035, a specialized education and training operator that has more than 250,000 graduates in future professions despite only being launched in 2020.

The NTI operates a series of dedicated platforms that drive the establishment of future markets, as well as the network of affiliated structures ranging from university laboratories and shared research spaces to a venture fund that targets strategic growth companies, under the umbrella of the non-commercial entity called “Platform for the NTI”.

Despite these hurdles, the NTI reflects Russia’s ambition to build a self-reliant tech ecosystem. By 2035, it aims to cultivate a new generation of innovators through programs like the Kruzhok movement, which trains youth in cutting-edge technologies.

University 2035 addresses Russia's skills shortage by serving as a national digital education platform that accelerates workforce upskilling through industry-aligned programs. It leverages online courses, AI-driven personalized learning, and partnerships with employers to rapidly train professionals in high-demand fields like IT, engineering, and digital technologies. The initiative focuses on closing competency gaps by offering micro-credentials, reskilling pathways, and real-time labor market analytics to align training with economic priorities, while fostering continuous learning ecosystems across universities and corporations.

National «Professionalitet» programme is transforming vocational education by deeply integrating industries into the training process. This employer-driven model creates tailored programs that equip students with job-ready skills in critical sectors. Supported by modernized infrastructure and cross-sector partnerships, «Professionalitet» aims to strengthen Russia’s talent pipeline while offering a replicable framework for addressing global workforce challenges.

The International High Tech Future Skills Competition drives technological advancement and addresses skills shortages by serving as a competitive platform where engineers and workers from leading industrial enterprises demonstrate and refine cutting-edge skills in fields like AI, drone systems, and digital manufacturing. Through hands-on challenges aligned with real industry needs, it identifies skill gaps, fosters cross-border knowledge exchange, and accelerates the adoption of innovative solutions.

SOUTH AFRICA

South Africa is driven by 4IR Strategy and Digital Economy Masterplan. The vision of the strategy to have a globally competitive, inclusive and shared economy with the technological capability and production capacity that is driven by people. The country has implemented a National Digital Skills and Future Skills Strategy which identifies priority digital skills in line with global trends and national development objectives.

Sectoral skills initiatives are driven by the Sector Education and Training Authorities (SETA's), for in-demand skills required by industries whilst the Labour Activation programmes are championed by private sector partnerships to increase the supply of industrious and technology skills. However, South Africa experiences a dichotomy of a skilled labour force with high unemployment amongst its youth but with a growing demand in fintech, telecommunications, and digital education, strategic and meaningful partnerships amongst private sector and government can see the lever of employability changing this narrative.

Skills shortages are acute in network engineering, cybersecurity and app development. Initiatives like the Youth Employment Service (YES) offer private sector internships to bridge this gap. However, network infrastructure, access to broadband, educational inequality, and a slow policy rollout remain challenges.

UNITED ARAB EMIRATES (UAE)

The UAE has led the Gulf in adopting smart technologies and digital finance. Initiatives like the Artificial Intelligence Strategy 2031 have created demand for AI scientists, cloud engineers, and cybersecurity experts. While infrastructure and investment are robust, the local education system is still catching up. A heavy reliance on expat talent is being addressed through university-industry collaboration and government scholarships for Emiratis in tech.

To complement the UAE's ambitious talent strategies, the government's Talent 2033 initiative aims to enhance global talent expertise by introducing flexible visa solutions, enabling cross-sector talent mobility frameworks, and investing in agile work models that reflect the evolving demands of a dynamic, innovation-driven economy.

In parallel, UAE have also established structured agreements with educational institutions to convert work experience into academic credit for students, turning real-world projects into educational qualifications.

HUMAN RESOURCE NEEDS IN KEY SECTORS. HIGH DEMAND

These national landscapes translate into concrete sectoral demands. The table below identifies priority areas where collaborative action could yield the highest returns.

Country	Sectors
 **Brazil**	• Agribusiness Tech, AI and Cybersecurity, Civil Construction, Fintech, Healthcare, ICT, Logistics and Supply Chains, Mining, Oil and Gas, Renewable Energy, Tourism.
 **China**	• AI & Semiconductors, Biotech, Clean Energy, Aerospace, Digital Manufacturing.
 **Egypt**	• Digital Infrastructure, Tourism, AgriTech, Health, Fintech.
 **India**	• Artificial Intelligence, Big Data, 3D Printing, IT & Data Science, Healthcare, EV & Green Tech, Manufacturing, Infrastructure.
 **Indonesia**	• Digital economy: e-commerce, fintech, AI. • Green tech: renewable energy, biofuel, waste management. • Agritech and agro processing. • Infrastructure tech: smart cities, transport digitization. • Cybersecurity and Data.
 **Iran**	• Software Engineering and AI Specialists. • Health-Tech Professionals. • Cybersecurity Experts. • Network and Telecommunications Technicians. • Industrial and Mechanical Technicians (Including HVAC and Automation).
 **Russia**	• Information Technology (IT) and Cybersecurity, Construction and Industrial Production, Healthcare and Pharmaceuticals, Transport and Logistics, Microelectronics and Advanced Manufacturing.
 **South Africa**	• Mining, Renewable Energy, ICT, Finance, Construction, Public Health and Cybersecurity.
 **UAE**	• Fintech, Cybersecurity, Smart Cities, Tourism, Clean Tech.

TALENT DEMAND FRAMEWORKS IN BRICS COUNTRIES

Talent demand frameworks in BRICS countries vary based on economic priorities, demographic trends, industrial capacity, and tech maturity.

BRICS Governments have following models and tools.

BRAZIL

model Industry Collaboration + Technical Education

key tools

- S System: Comprised of 9 national skills agencies (like SENAI, SEBRAE, SENAR and SENAC), S System provides a platform to coordinate business and educational effort for skills development according to industry sectors demands and future trends.
- Plano Nacional de Educação (PNE): Aligns education with labor market needs.
- National Industrial Observatory predicts sectoral demands with employers.
- National Forums like the Business Mobilization for Innovation (MEI), Business Mobilization for Health (MES) and Business Mobilization for Education, organized by the Brazilian National Industry Confederation bring businesses, governments and the educational systems together to discuss future trends and action plans.

CHINA

model Centralized Workforce Planning + Regional Innovation Zones

key tools

- Five-Year Plans: Set HR priorities for tech, education, and defense.
- Ministry of Human Resources and Social Security (MOHRSS): Tracks sectoral skill shortages.
- Talent Migration Zones: Incentivize skilled workers to move to lower-tier cities.

EGYPT

model Dual Approach – Technical Training + Digital Upskilling

key tools

- Egypt Vision 2030: Outlines HR demand in digital economy, healthcare, and infrastructure.
- Information Technology Institute (ITI): Trains youth in AI, IoT, cybersecurity.

INDIA

model Sector-Specific Demand Mapping & National Skill Missions

The Ministry of Skill Development & Entrepreneurship (MSDE) is the nodal government agency that leads this through

- NSDC (National Skill Development Corporation):
  Forecasts manpower needs and designs skill programs.
- Sector Skill Councils (SSCs) – 37 industry-specific bodies that define Occupational Standards (QPs/NOS) for job roles. The National Skills Qualification Framework (NSQF) which is a competency-based framework that maps skills to education levels.
- Industry Associations like FICCI, NASSCOM etc.
- Skill India Mission: National framework for industry-driven skill training.
- NITI Aayog: Projects future demand in AI, EVs, healthcare, etc.

Key Models for Demand forecasting & industry alignment

- Skill Gap Studies by FICCI, NSDC, Other Industry Cham and state Governments.
- Industry Academia engagement through National Apprenticeship Promotion Scheme, Prime Minister's Internship Scheme, National Apprenticeship Training Scheme, National Career Service, Prime Minister's Education to Employment Centers.

INDONESIA

Indonesia's requirement model focuses on massive reskilling, digital adoption, and industry alignment to meet evolving global and local demands. It shares similarities with BRICS+ countries but also tailors its approach to its demographic profile and economic structure.

Indonesia has National Strategy for human capital and digital transformation.

key tools

- Indonesia's National Medium-Term Development Plan. Goal: Strengthen human resource capacity and reduce the skills mismatch.
- Pre-Employment Card Program (Kartu Prakerja). Goal: Provide reskilling and upskilling for unemployed and informal workers.

IRAN

model Integrated Digital Talent Forecasting + Industry-Academia Collaboration

key tools

- IranTalent Platform: A leading national job portal connecting talent with industry needs in real-time.
- AI-Powered Workforce Demand Forecasting Tools: Advanced analytics to predict skill gaps and optimize recruitment strategies.
- Technical and Vocational University (TVU) Industry Collaboration: Aligning education with market demands to bridge theory and practice.
- Government Labor Market Research and Trend Analysis: Data-driven insights to inform policy and workforce planning.
- WorldSkills Iran Vocational Upskilling Initiatives: National programs enhancing practical skills in emerging trades and technologies.

RUSSIA

model Industry-Driven Skills Development & Strategic Workforce Planning

The Russian government coordinates human capital development through a state-corporate partnership model, focusing on technological sovereignty and addressing critical labor shortages.

National Programs, Strategic Frameworks and Labor Market Tools:

- "Professionalitet" Program: Accelerates vocational training (2–3 years) with 70% employer-led practical training, targeting 1 million skilled workers by 2028 in IT, manufacturing, and energy sectors. Guarantees employment for graduates with industrial partners.
- National Technology Initiative (NTI): Develops future tech talent in AI, robotics, and quantum computing through hubs like Skolkovo Innovation Center and youth STEM programs (e.g., Kruzhok Movement).
- "Priority 2030" Program: Aims to create 100+ advanced universities as centers of scientific and socioeconomic development by 2030. Supports research in critical fields like microelectronics, biotech, and AI through grants and industry partnerships.
- "Work in Russia" Portal: AI-powered job matching platform with real-time labor market analytics, linking job seekers to high-demand sectors (IT, healthcare, logistics).

SOUTH AFRICA

model Scarce Skills Lists + Youth Employability Initiatives

key tools

- National Skills Authority: Guides the Sector Education and Training Authorities (SETAs).
- NSDP 2030: Sets long-term targets for skills demand in growth sectors.
- Critical Skills Visa List: Targets immigration for specific shortages.
- National Development Plan: Artisan development targets 30,000 artisans by 2030

UAE

model Talent-Based Immigration + Future Skills Mapping

key tools

- UAE Future Skills Framework: Focuses on AI, blockchain, green economy.
- Golden Visa Program: Attracts global experts and entrepreneurs.

The UAE aims to reposition beyond its tourism appeal by launching global campaigns that showcase the quality of life and career opportunities available to professionals relocating to the country.

JOINT BRICS CHALLENGES IN SKILLS SHORTAGES

STEM FIELDS

BRICS countries face a shortfall of skilled professionals in science, technology, engineering, and mathematics

DIGITAL SKILLS GAP

Rapid digitization has outpaced the development of a workforce skilled in AI, cybersecurity, data analytics, and software development

VOCATIONAL & TECHNICAL SKILLS

There is an ongoing need for qualified technicians, machine operators, and skilled tradespeople

JOINT BRICS CHALLENGES IN TECHNOLOGY SHORTAGES

INNOVATION CAPACITY

Limited R&D investments in some member countries hinder innovation and technology development

ADVANCED MANUFACTURING

Lack of access to and capability in cutting-edge manufacturing technologies like robotics and 3D printing

GREEN TECHNOLOGIES

Shortfalls in the development and deployment of renewable energy technologies, smart grids, and sustainable practices

THE COMMON BRICS CHALLENGE

A tremendous imbalance of human resources and technologies — a lack of manpower and tech solutions in one area and excess in another

SOLUTIONS

Shared Staff Makes Sense for BRICS

COMPLEMENTARY DEMOGRAPHICS

- India, Egypt, and Ethiopia have fast-growing youth population.
- Russia and China face aging workforces and tech talent gaps.
- South Africa and Brazil have skilled individuals but limited domestic demand.

MUTUAL SKILL GAPS IN TECH

- AI, cloud computing, chip design, and data science are shared pain points across all BRICS nations.
- Shared staffing can pool experts and specialists across borders.

ECONOMIC SYNERGY

By leveraging each other's strengths, BRICS can reduce dependence on Western talent and platforms.

GEOPOLITICAL ALIGNMENT

BRICS+ expansion already signals a push toward south-south cooperation—shared staffing is a natural extension.

- **National Models for Talent Localization and Incentivization:**
  The UAE presents a hybrid model balancing international talent attraction with local capacity-building. Programs like the **Golden Visa** and **National Program for Coders** show how nations can simultaneously incentivize global experts while building domestic tech competencies. This model could serve as a replicable approach for BRICS countries with similar demographic or education constraints.
- UAE is working on providing unparalleled access to exclusive resources with cross zone mobility frameworks, removing all barriers to free zone-based opportunities which includes on the spot **AI-powered recruitment process** that enables efficient hiring decisions and optimal matching of talent to opportunities with guaranteed internships for identified top talent. UAE also introduced the GCC's first skills-based, income-flexible visa system, unlocking instant access to top-tier global talent.
- Discussions about partnership with several educational institutions to convert work experience into academic credit, enabling students to transform real-world projects into recognized qualifications is also in progress in the UAE.

UNIFIED STANDARDS

Since 2022, the BRICS Skills and Technology Standardization Working Committee has been established, aiming to bring together experts from BRICS countries to jointly develop new technology and skills standards. It aims to promote mutual recognition and harmonization of standards among BRICS countries.

BRICS BUSINESS COUNCIL WORKING GROUPS PROPOSALS:

Roadmap from Education to Employment

The BRICS nations hold immense potential for technological advancement and workforce competency development. Given the rapid digitalization of global labor markets, it has become imperative to establish collaborative frameworks that bridge skills gaps and facilitate cross-border employment. To harness this collective potential, we propose an integrated, full-cycle ecosystem that combines the BRICS Global Remote Employment Platform, a Credential Recognition Framework, and Targeted Training Programs—all supported by strategic alliances and innovation networks. This comprehensive approach ensures seamless integration of talent cultivation, validation, and deployment across member states.

As the cornerstone of this initiative, the BRICS Global Remote Employment Platform could serve as a unified digital ecosystem enabling seamless cross-border employment while fostering skills development and innovation. Its core functions include:

- Cross-Border Employment Facilitation
- Standardizing cross-border contracts and payments in local currencies via integrated national freelance platforms to overcome financial and contractual barriers.
- Ensuring compliance with labor, data protection, and IP laws across BRICS nations, respecting diverse legal landscapes.
- Enhancing collaboration through AI-driven cultural adaptation tools and real-time translation for documents, messaging, and calls.
- Guaranteeing security via encrypted data exchange protocols to ensure safe remote service delivery.

Amid the accelerating wave of global digital transformation and the increasing mobility of cross-border talent, the development of the BRICS Global Remote Employment Platform is not only a necessary response to the evolving demands of the era, but also a key strategic initiative to enhance the digital competitiveness of BRICS countries and promote coordinated regional development. By removing geographical and national boundaries and optimizing the international allocation of human resources, the platform serves as a vital support mechanism for BRICS nations to navigate shifts in the global economic landscape and to advance high-quality growth in the digital economy. It carries far-reaching significance in strengthening the overall influence and cohesion of BRICS cooperation.

The platform should be developed through a systematic and integrated pathway, aiming to establish a comprehensive development system that covers the full cycle of international talent cultivation and employment.

Building on BRICS technical standards, the platform will integrate the BRICS Skills Passport and Engineer Passport to validate qualifications and reduce employment barriers.

For continuous upskilling, it will link directly to BRICS Future Skills Training Bases (Workshops) for hands-on learning in high-demand sectors. To institutionalize lifelong learning, professionals can access the BRICS+ Auditorium of Skills Development for hybrid training programs.

Competitions could complement training, with the BRICS Competition of Skills Development and Technology Innovation adopting a "train-through-competition" model to identify top talent.

To maximize synergies, the platform could collaborate with the International Alliance of Skills Development for Belt & Road and BRICS (IASDBR) and be align with the BRICS+ Alliance of Science and Technology Innovation to strengthen IP protection and R&D coordination.

By combining these elements, the platform creates a self-reinforcing ecosystem where employment, training, and innovation mutually reinforce growth.

To ensure localized implementation, each BRICS nation can establish national hubs to operationalize the platform and provide tailored support. Acting as the operational backbone, these offices will serve as Project Offices for the BRICS Remote Employment Platform. Recognizing linguistic and regulatory diversity, they will offer country-specific assistance in legal, linguistic, and administrative matters. To optimize talent matching, sectoral desks will facilitate cross-BRICS recruitment in key industries.

This decentralized yet coordinated structure ensures the platform remains responsive to local needs while maintaining BRICS-wide interoperability.

The platform could serve as a Credential Recognition Framework A critical enabler for labor mobility, this framework will harmonize skills validation across BRICS economies.

This multilayered approach removes friction in cross-border employment while maintaining high professional standards.

Complementing the employment platform, this ecosystem ensures continuous workforce development through practical, competition-driven learning.

Together, these programs create a virtuous cycle where training feeds employment, and employment needs inform training.

TO ENHANCE PROJECT THROUGH INTEGRATION WITH THE BRICS GLOBAL EMPLOYMENT PLATFORM

For Hire-me (Contrate-me) Brazil:

1. SENAI's AI matching system could be expanded to include verified candidates from across BRICS countries through platform integration
2. Brazilian employers could access a talent pool with pre-verified BRICS Skills Passport credentials
3. The platform could provide standardized cross-border contract templates for Brazilian companies hiring BRICS remote workers

For Digital Future Brazil:

1. Top-performing platform courses could receive BRICS-wide accreditation through the platform's qualification framework
2. The platform could enable Brazilian vocational students to participate in BRICS virtual internships and apprenticeships
3. SENAI's corporate training solutions could be offered to companies across BRICS through the platform's marketplace

Synergistic benefits:

- All projects would gain access to the platform's unified payment and contract systems for cross-border engagements
- Each initiative would become part of a larger BRICS talent development pipeline rather than operating in isolation

CONCLUSION

By implementing this interconnected system, BRICS nations can achieve three transformative outcomes:

- Labor market fluidity through reduced barriers to cross-border employment. Future-ready workforces via competency-based training aligned with industry needs.
- Sustainable innovation through institutionalized collaboration between education, industry and government.

Most importantly, this initiative positions BRICS as architects of a new global paradigm—one where shared standards and digital infrastructure create equitable opportunities across emerging economies. The time for coordinated action is now, as technological change accelerates and the global talent competition intensifies. Through this comprehensive framework, BRICS can lead the transition to inclusive, skills-driven economic growth in the 21st century.

BRICS EMPLOYMENT PLATFORM:

Partnership Commitments & Case Studies

From Technical and Vocational University (TVU) viewpoint based on the BBC Working Groups proposals:

BRICS Global Remote Employment Platform: TVU welcomes this initiative as it opens new opportunities for Iranian technicians and engineers to access a broader BRICS job market remotely. The platform's features like secure cross-border contracts, local currency payments, and AI-assisted cultural adaptation are particularly valuable for overcoming current barriers faced by Iranian professionals.

BRICS Employment Service Office: Establishing national service offices with dedicated country desks would provide essential support for Iranian remote workers, helping navigate legal, linguistic, and administrative challenges. TVU views this as a critical step to facilitate smoother collaboration and employment processes within the BRICS framework.

Credential Recognition Framework: TVU strongly supports the harmonization and mutual recognition of qualifications across BRICS countries. Incorporating tools like the BRICS Skills Passport would enhance the mobility and employability of Iranian graduates, ensuring their skills are recognized and valued internationally.

Training Programs for Skilled and Technical Talent: The proposed BRICS Future Skills Training Bases and competitions align closely with TVU's efforts to integrate AI and digital skills into vocational education. Participation in these programs would enrich the practical training of Iranian students and foster innovation through international collaboration.

OPEN FOR JOINING

This White Paper marks just the beginning of our journey. We invite BRICS+ companies to join as pilot partners and co-create the future of cross-border talent mobility.

Together, we can bridge skills gaps, test innovative solutions, and establish new global standards for workforce development. Your practical experience will shape the platform's next evolution.

Let's Expand Our Network

BRICS Business Council members:

JOIN NOW

Companies needing skilled workers:

SIGN UP

SOURCES

https://www.dpme.gov.za
https://mcit.gov.eg/en/Strategy
https://mcit.gov.eg/en/ICT_Strategy
https://debi.gov.eg/
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