BRICS YEA

BRICS YOUTH ENERGY 2024 OUTLOOK

BRICS YEA

Introducing

BRICS YOUTH ENERGY 2024 OUTLOOK

The fifth edition of the leading international research on energy development of BRICS countries prepared by young researchers, scientists and professionals

INITIATIVE APPROVED
BY BRICS ENERGY MINISTERS

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Inside the Outlook

Welcome _

Message from the Chairperson

This year's Outlook is special. Along with welcoming the five nations to the BRICS family, we have carefully rethought how we develop our flagship edition. The eight Young Expert Groups created under BRICS Youth Energy Agency will consolidate the vision and perspective of the BRICS younger generation in the energy sector.

This edition highlighted the major topics in our global energy discourse, and young people have become active participants of these high-level discussions. We have observed that today's international organizations and mechanisms, along with BRICS, tend to listen to young people and take their opinion into consideration. This is a massive change. The matters of just energy transition, resource management, climate change, agrifood systems, green skills and jobs, nuclear technologies along with energy partnerships and youth-led businesses are pivotal for us, BRICS Youth, and these areas are most likely for young people to focus their efforts in the near future.

The BRICS Youth Energy Outlook 2024 is a fifth edition which has been rethought for the better and broader engagement of young people in primary and related energy cooperation. We have managed to persuade the leaders that the outlook is a well thought strategic document that must be reviewed and guide our countries in the long-term energy planning.

In the next year, the BRICS Youth Energy Agency celebrates its 10th anniversary, and it is going to be 7 years since the first outlook has been ever published. Our team has grown beyond BRICS to the Global South where it gained a committed community and became known in the Global North where it proved a reputable partner. We see a bright future ahead where our members are not only driving ambition today but also steadily taking their seats at the decision-makers' tables to ensure that the mission is complete.

Alexander Kormishin
Chairperson
BRICS Youth Energy Agency

Preface _

#9

Over almost 10 years, the BRICS Youth Energy Agency has been embarking on a transformative journey to amplify the voices of young professionals across the BRICS countries in shaping the future of energy. What began as a vision to engage youth in addressing key energy trends has now evolved into an influential platform where emerging leaders come together to research, innovate, and collaborate. In 2024, we build upon our past accomplishments, launching the latest edition of the BRICS Youth Energy Outlook with renewed passion and a deeper commitment to fostering meaningful dialogue.

This Outlook is more than just a research document — it's a statement of youth-driven ambition in a world facing complex energy challenges. The ten BRICS nations, each with their own distinct energy landscapes, remain at the forefront of global efforts to innovate, diversify, and transition to more sustainable energy systems. The convergence of their resources, technological advances, and geopolitical roles offers unparalleled opportunities for collaboration. As energy consumers, producers, and innovators, BRICS countries are uniquely positioned to contribute to global energy security and sustainability.

Our shared mission remains clear: to engage youth as active participants in shaping the future of energy within BRICS and beyond. This year's edition of the Outlook reflects a diverse range of perspectives from over 120 young researchers, students, and experts from across the Global South. Together, they have examined some of the most critical energy issues of our time within 8 Young Expert Groups, which are as follows — International Partnerships and Policy Advocacy, Just and Sustainable Energy Transition, Nuclear Energy and Technologies, Resource Management and Critical Minerals for Energy Transition, Sustainable Agrifood Systems, Climate Change, Green Jobs and Skills for Energy Transition, and Business in Energy Sector. By uniting the visions of young researchers and established experts, this document presents bold ideas and thoughtful analysis, fostering greater understanding of the unique challenges and opportunities that BRICS countries face.

As we stand at a pivotal moment in global energy transformation, the collaboration within BRICS takes on an even greater significance. This year's edition of the Outlook not only reflects on the past but also looks ahead, addressing the urgent need for sustainable solutions, energy equity, and technological innovation. The youth's perspective in this dialogue is crucial, as the decisions made today will shape the energy future they will inherit. We are proud to see BRICS Youth stepping up as thought leaders and contributing to these critical discussions.

As the Director for Research Initiatives of BRICS Youth Energy Agency, I would like to express my deepest gratitude to all the contributors, editors, and supporters who made this year's Outlook possible. Your dedication to thorough research, your passion for sustainability, and your unwavering belief in the power of youth are reflected on every page of this report. We hope that this Outlook serves not only as a resource but as a catalyst for continued dialogue, innovation, and cooperation across the BRICS nations and the global energy community.

We invite you to delve into the BRICS Youth Energy Outlook 2024 and explore the ideas, analyses, and visions presented by the young minds shaping the future of energy. Enjoy the journey, and together, let us drive forward towards a more sustainable, resilient, and energy-secure future.

Irina Kulinenko

Director, Research Initiatives —
Head of BRICS Youth Energy Outlook 2024

Acknowlegments _

#11

This year's BRICS Youth Energy Outlook 2024 is a result of ambitious effort delivered for the first time in the updated procedure through Young Expert Groups of BRICS Youth Energy Agency, which unite developers from all over the globe with invaluable support of governments, institutions and organizations. The Outlook 2024 was prepared by a team led by Head of Research Division Ms. Irina Kulinenko (BRICS YEA) who served as task team leader of the project and coordinated activities at different stages of the Outlook's development. The overall guidance was provided by Chairperson Mr. Alexander Kormishin (BRICS YEA). We also acknowledge the contribution of Mr. Ilya Zabrin who has also took over the design and typographic formatting of the present edition with support of the Mission Impact, Rosatom's Human Potential Development Programme. The present Outlook 2024 has been developed pro-bono and the printing expenses have been covered by the Andrey Melnichenko Charity Foundation.

The core team was composed of chief experts Hoor Ahli (UAE), Dr. Abdulrahman Bin Jumah (KSA), Soumojit Mukherjee (India), Janaina Fonseca Nolasco (Brazil), Athira Aji (FAO), Mpendulo Dlamini (South Africa), Olga Kelebogile Mmelesi (South Africa) and Yomna El-Awamri (Egypt), who served as editors of their respective chapters under the Outlook 2024, executed communication, run the meetings and submitted research papers. The chief experts were assisted by secretaries, including Cataleya (Xinyue) Han (China), Anastasia Shirokograd (Russia), Milana Ozerina (IAEA), Anna Loginova (Russia), Regina Chukova (Russia), Milana Gomeniuk (Russia), Ali Alnajim (KSA) and Sonam Maheshwari (India), who ensured that deadlines were met, and members were well informed about the development. The Outlook 2024 enjoyed a media coverage which was delivered by The Geostrata, our strategic partner in media space.

The execution of this project is not possible without associate professors, docents, students and professionals who represent 35 universities and organizations from BRICS countries and beyond making our report a globally focused. This year, we would also like to acknowledge the information and guidance shared by IAEA and FAO for their relative topics. Especially, we would like to acknowledge our traditional partners, including the JIS College of Engineering, Thapar Institute of Engineering and Technology (India), University of Pretoria, Senamile Masango Foundation (RSA), University of São Paulo (Brazil) for their commitment to the project as many-year participants. We also acknowledge the contributions and guidance received from the Russian Energy Agency of the Ministry of Energy of the Russian Federation, and in particular Ms Olga Yudina, for her support commitment to ensuring the role of youth in the BRICS energy cooperation.

Also, the core team is grateful to the research groups who represent the other universities and who completed their studies in accordance with the provided methodology that made possible to provide scenario- and strategy-based recommendations: University of Johannesburg, Oxford Institute for Energy Studies (OIES), Federal Fluminense University, University of Pretoria, Moscow Lomonosov University, University of São Paulo, University of Florence, Tsinghua University, University of South Africa, University of Brasília, University of Witwatersrand, University of Edinburgh, Higher School of Economics, Saint Petersburg National Research University of Information Technologies, Mechanics and Optics (ITMO University), National Autonomous University of Mexico and Indian Institute of Science.

The Outlook 2024 as a leading energy study for and in the interests of the BRICS nations has been acknowledged by energy and youth policy state authorities. We acknowledge the endorsement of the initiative by the BRICS Energy Ministers following their annual meetings and the Heads of State following their BRICS Summit in Johannesburg. We are grateful to the Ministry of Energy of the Russian Federation and the Department of Mineral Resources and Energy of the Government of the Republic of South Africa who actively participated in the preparations of the Outlook 2024 at various stages. The team also benefited from endorsement of the Russian BRICS Chairmanship 2024 coordinated by the Ministry of Foreign Affairs of the Russian Federation.

We would like to acknowledge a growing support for the project from various stakeholders representing BRICS companies and public organizations who have pronounced their interest in the project and considered cooperation in the years to come, and we are looking forward to it.

Finally, the team apologizes to any individuals or organizations that contributed to this Report but were inadvertently omitted from these acknowledgments.

#61

04

CLIMATE CHANGE

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Editorial Summary _

CLIMATE CHANGE

EMBRACING ACCOUNTABILITY, COLLABORATION, AND SUSTAINABLE FINANCING OF AN EQUITABLE ENERGY TRANSITION IN BRICS+ NATIONS IN A CHANGING CLIMATE

INTRODUCTION

Climate change is a critical global issue, especially affecting developing countries, including BRICS+ nations. These nations are central to global climate efforts, each facing distinct environmental challenges and contributing differently to greenhouse gas emissions. Therefore, coordinated action by them is essential.

Developing countries, with large youth populations, often struggle with energy access and some are significant emitters due to economic activities. Limited financial resources hinder their transition to low-carbon economies. BRICS+ nations are well-positioned to lead in sustainable energy technologies and decarbonization through collaboration and technology transfer. Adopting sustainable technologies towards low carbon economies also requires transition justices. A just energy transition, which is key to climate justice, seeks to balance energy security, sustainability, and affordability in the Global South. Climate finance is also crucial for enabling sustainable energy and adaptation initiatives in BRICS+ countries.

Lastly, in terms of climate justice, the youth especially in developing countries has played a vital role in climate accountability, driving awareness and innovation in renewable energy through movements, campaigns, and entrepreneurial efforts. Despite challenges, BRICS+ countries have significant potential to lead global sustainability efforts through coordinated action, youth involvement, and innovative solutions, contributing to a sustainable future.

MAJOR TRENDS

SUB-THEME 1: THE PARIS AGREEMENT AND SUSTAINABLE DEVELOPMENT GOALS — RESPONDING TO A CHANGING CLIMATE IN RELATION TO THE ENERGY SECTOR

OVERVIEW

Significant strides have been made globally to combat climate change, driven by the 2015 adoption of the 2030 Agenda, which includes 17 Sustainable Development Goals (SDGs) aimed at promoting a sustainable society. Goal 13 specifically focuses on urgent measures to combat climate change and its adverse effects.

TREND

The 2015 Paris Agreement aims to limit global temperature increases to 1.5°C above pre-industrial levels. The urgency for action is underscored by climate events in 2023, which caused $190 billion in global losses, affecting 42% of the world's population. By November 2023, the average temperature increase was approximately 1.3°C. The UN Climate Change report predicts a 9% increase in carbon emissions by 2030 compared to 2010 levels, potentially causing 2.1°C to 2.8°C warming by century's end. By 2050, climate change may result in 14.5 million deaths, $12.5 trillion in economic losses, and $1 trillion in additional healthcare costs.

Key to addressing these trends is implementing proposed climate actions, which require mobilizing resources. Developed nations committed to mobilizing $100 billion annually from 2020 onwards to support developing countries' mitigation actions and transparency, including operationalizing the Green Climate Fund.

New Saudi Arabia Desalination Plant Powered by Clean Energy by Green Prophet

CONCLUSION

Countries in the Global North, with their historical high emissions, must lead and finance the energy transition. Following the Kyoto Protocol and Paris Agreement principles, they must provide financial resources to support the Global South's decarbonization efforts, balancing adaptation and mitigation measures. Resolving the climate crisis requires solidarity, multilateral cooperation, and consensus.

SUB-THEME 2: CLIMATE CHANGE AND WATER RESOURCES REALITIES IN BRICS+ NATIONS — THE SAUDI ARABIA CONTEXT

OVERVIEW

In recent decades, BRICS+ nations have experienced significant climate changes, presenting challenges to their populations and ecosystems. These emerging economies, spanning

diverse regions and socio-economic landscapes, face various climate impacts, including extreme weather and gradual shifts in temperature and precipitation. Examples include melting permafrost in Russia and increasing water scarcity in South Africa. In response, BRICS+ nations are focusing on climate adaptation efforts, such as investing in resilient infrastructure, promoting sustainable agriculture, and implementing innovative water management strategies.

TREND

Examining Saudi Arabia within the BRICS+ framework highlights unique climate adaptation strategies. Despite its wealth from oil, Saudi Arabia faces severe water scarcity and has become a global leader in desalination technologies, being the largest producer of desalinated water. Approximately half of its domestic oil production is used for desalination. Recently, Saudi Arabia has aimed to reduce diesel dependence, making significant strides in solar energy development, including building its first full-size solar-powered desalination plant.

CONCLUSION

BRICS+ nations and Saudi Arabia face complex climate challenges, underscoring the need for collaboration and innovation. By prioritizing climate adaptation, investing in resilient infrastructure, and adopting sustainable practices, these countries can build a resilient and sustainable future. Collective action and shared knowledge are crucial to protecting populations and ecosystems from the impacts of a rapidly changing climate.

SUB-THEME 3: CLIMATE CHANGE ACCOUNTABILITY — HOLDING BIG EMITTERS AND CORPORATES IN THE ENERGY SECTOR LIABLE FOR THEIR EMISSIONS

OVERVIEW

Climate change, intensified by human activities, particularly corporate actions, is a pressing global issue. Corporations contribute to climate change through greenhouse gas emissions from production, supply chains, mining, agriculture, and manufacturing. To combat these challenges, improved transparency and disclosure of environmental performance have been promoted. Initiatives like the Task Force on Climate-related Financial Disclosures (TCFD) encourage companies to report on climate-related risks and opportunities. Projections suggest global energy-related CO2 emissions could reach 36 GtCO2 by 2030 if current policies are followed, but a 45% reduction by 2030 and net-zero emissions by 2050 are necessary to limit global warming to 1.5°C.

TRENDS

Regulatory Framework Strengthening: There is a trend towards stricter emissions regulations, with governments imposing caps, penalties, carbon pricing mechanisms, emission trading schemes, and tighter standards. The number of countries with carbon pricing mechanisms has doubled over the past decade, reflecting the urgent need to mitigate emissions and transition to a low-carbon economy.

Disclosures and Corporate Emission Reporting: Companies are increasingly disclosing their greenhouse gas emissions and setting reduction targets. Transparency allows stakeholders to hold companies accountable. By 2020, over 9,600 companies reported environmental data to the Carbon Disclosure Project (CDP), driven by corporate social responsibility, investor pressure, and consumer demand for sustainable practices.

Divestment from Fossil Fuels: Institutional investors are divesting from fossil fuel assets, shifting investment strategies towards sustainable alternatives. This trend signals the urgency of transitioning to a low-carbon economy. As of 2020, divestment commitments from fossil fuels reached over $14 trillion globally, with investments in coal, oil, and gas decreasing by 7% annually over five years.

CONCLUSION

Climate accountability is crucial for addressing climate change. Effective measures, including regulatory interventions, technological innovation, and sustainability strategies, are essential for achieving targets and safeguarding the planet. Setting ambitious emissions reduction targets in line with the Paris Agreement and IPCC reports is vital for limiting global temperature rise.

SUB-THEME 4: BRICS+ CLIMATE TECHNOLOGICAL COLLABORATIONS BETWEEN NATIONS IN THE AREAS OF ENERGY TECHNOLOGY DEVELOPMENT

OVERVIEW

The BRICS+ nations are pivotal in the global shift to a low-carbon economy. Recent trends highlight the potential of the youth generation to drive a sustainable energy future.

TRENDS

BRICS+ countries are significantly increasing investments in renewable energy sources like solar, wind, and bioenergy to move away from fossil fuels and lower greenhouse gas emissions. China and India lead in global renewable capacity additions, with other BRICS+ nations also enhancing their renewable energy targets and policies.

The transportation sector, a major greenhouse gas emitter, sees BRICS+ countries promoting electric vehicle (EV) adoption through incentives, infrastructure development, and domestic EV manufacturing. Sustainable mobility solutions, including public transit and non-motorized transport, are gaining popularity, particularly in urban areas, reducing carbon emissions and improving urban connectivity.

In India, companies like Tata Power and Suzlon Energy are leading renewable energy solutions, with the Indian Institute of Technology (IIT) Bombay researching solar radiation management technologies. China, a leader in renewable infrastructure, features companies like BYD and Hanergy in solar power and EVs, supported by Tsinghua University's research. South Africa's renewable sector includes companies like Eskom and Sasol investing in carbon capture and storage (CCS) technologies, aided by the University of Cape Town's research.

CONCLUSION

These trends underscore BRICS+ nations' commitment to sustainable energy and decarbonization through technological collaborations. Sharing knowledge, resources, and best practices can accelerate renewable energy, clean transportation, and resource-efficient solutions, significantly reducing carbon emissions and mitigating climate change impacts for future generations.

SUB-THEME 5: ENERGY SECURITY AND ITS SIGNIFICANCE IN A CHANGING CLIMATE

OVERVIEW

According to Paul D. Williams, a society's complexity and productivity increase its energy needs, making energy supply crucial for maintaining industries, sovereignty, and living conditions. An energy crisis, as cited by Jakstas, involves severe constraints on energy supply due to factors like industrial actions, protests, embargoes, excessive consumption, outdated infrastructure, and disruptions in vital points like oil refineries. Ensuring energy security requires not only natural resource availability but also the necessary infrastructure to meet social and national needs.

TREND

Climate change will impact the generation potential of all primary energy forms, stressing electricity networks and challenging BRICS+ nations to provide stable electricity, essential for youth education and employment. Climate-induced disruptions could destabilize international energy flows and destroy infrastructure, affecting both energy-producing and consuming countries. However, young talents in BRICS+ nations must find novel ways to balance environmental sustainability with economic development, addressing the energy trilemma of their generation.

CONCLUSION

Energy security is essential for a prosperous future amid rising environmental sustainability concerns. The World Energy

Council (WEC) emphasizes involving diverse communities in addressing global energy challenges, aiming for societal transformations beyond decarbonization. This approach is especially relevant for youth in the global south and BRICS+, who need to adopt this mindset to tackle the complexities of energy security and sustainability.

SUB-THEME 6: BRICS INTRA-COUNTRY CLIMATE FINANCE FLOWS IN RELATION TO THE ENERGY SECTOR

OVERVIEW

Climate finance flows aim to enhance resilience and enable better adaptation to climate change impacts. These finance flows include grants and low-interest loans through mechanisms established by the Paris Agreement. Funds are invested in renewable energy infrastructure, energy efficiency initiatives, and sustainable development projects, particularly in developing nations. Climate finance initiatives should also include provisions for capacity building, technology transfer, and knowledge sharing.

TRENDS

Greenhouse gas emissions from the energy sector are significant, making it a central focus for climate finance. BRICS+ nations have invested in renewable energy projects such as hydro, wind, and solar power, as well as initiatives to improve energy efficiency through battery farms, building retrofits, and insulation improvements. Climate finance has also supported the phasing out of fossil fuels and the redirection of subsidies towards low-carbon initiatives.

The BRICS+ nations, with diverse economies and energy profiles, are not on course to meet the 1.5°C target. China and India, with the largest populations, have the highest emissions and fossil fuel subsidies. Reforming these subsidies is crucial for transitioning to sustainability. Public finances in these countries still heavily fund fossil fuels, but there is hope in the commitment to clean energy initiatives.

CONCLUSION

Public finances remain heavily invested in fossil fuels across BRICS countries, limiting the potential for greenhouse gas reductions. However, BRICS nations have begun funding programs to move towards sustainability using climate finance. Collaborative research, technology transfers, and harmonized regulations are facilitating this transition. Countries like Saudi Arabia are implementing innovative solutions, such as "spongy cities," to address water conservation and climate resilience.

SCENARIOS

Negative:

- The energy sector remains a major contributor to climate change, with developed countries responsible for the majority of emissions. Lack of transparency in green loans and political inertia hinder effective action, exacerbating climate impacts and social unrest.
- Developing countries face challenges in transitioning to low-carbon economies due to policy misalignments and economic dependencies on fossil fuels.

Innovative:

- BRICS+ countries collaborate on renewable energy and sustainability projects, facilitating technology transfers and innovation. Policies are being implemented to support the energy transition, with significant investments in resource efficiency and circular economy principles.

Conservative:

- Incremental policy changes and voluntary corporate actions drive modest improvements in emission reductions. Public pressure gradually leads to stronger accountability measures, laying the groundwork for future progress.

RECOMMENDATIONS

- Integrate climate change considerations into development policies, funding green innovations, and supporting climate risk assessments in infrastructure projects.
- Prioritize water conservation and sustainable alternatives in arid regions.
- Enhance public transportation and urban planning to reduce greenhouse gas emissions.
- Invest in renewable energy, decentralize energy generation, and promote energy storage options.
- Implement global energy efficiency standards across buildings, appliances, and vehicles.
- Establish enforceable accountability mechanisms through international agreements and transparent emissions reporting.

By addressing these challenges and leveraging climate finance effectively, BRICS+ nations can accelerate their transition towards a sustainable and resilient future.

EMBRACING ACCOUNTABILITY, COLLABORATION, AND SUSTAINABLE FINANCING OF AN EQUITABLE ENERGY TRANSITION IN BRICS NATIONS IN A CHANGING CLIMATE

1. INTRODUCTION

Climate change is a global concern and challenge that affects nations around the world, and in greater severity those that are still developing, which includes the BRICS countries. As major emerging economies, the BRICS nations play a significant role in the global efforts to address climate change and promote sustainability. Each BRICS country has a unique profile of environmental challenges as well as contributions to greenhouse gas emissions, making cooperation and coordinated action essential for tackling this pressing climate change issue. By understanding the specific challenges and initiatives of each BRICS nations, we can gain insights into the complex dynamics of climate change within this influential group of countries and the opportunities for collaboration on a global scale and importantly within youth initiatives.

A significant portion of the world population, especially the youth, resides in developing countries, with China and India, as BRICS countries, having the highest populations. Many developing countries also suffer from equitable access to energy. Their economic activities in various value chains also contribute to significant global economic outputs, and by extension, greenhouse gases. Limited financial resources hinder the ability of developing countries to mitigate and adapt to climate change impacts and transition towards low carbon economies.

Long-term prevention of climate-related disasters could be reduced through the implementation of climate change mitigation response actions, such as the reduction of countries' carbon emissions, especially from the energy sector, which is the leading sector globally when it comes to greenhouse gas emissions. These mitigation initiatives should be consistent with the Sustainable Development Goals (SDGs), the Paris Agreement and other subsequent international agreements and accords. Enhanced climate change mitigation measures require the intentional aversion from activities that emit greenhouse gas and the adoption of greener alternative fuels as well as energy efficient installations. All these require a mindset change and a gradually introduced technological revolution. This will further stress electric networks, making it harder for countries, especially BRICS nations, to provide a stable electricity supply that can support the socio-economic and education requirements of young people.

The BRICS nations are poised to lead in sustainable energy technology advancements and the decarbonization of the energy sector through collaborative efforts. There are opportunities for technological advancements in the Waste and Industrial Processes and Product Use (IPPU) sectors as they are the two major sectors after the energy and transportation sector, responsible for significant global greenhouse gas emissions. This outlook recognises that technology transfer amongst BRICS countries is imperative because they each have different technological capabilities and regulatory environments.

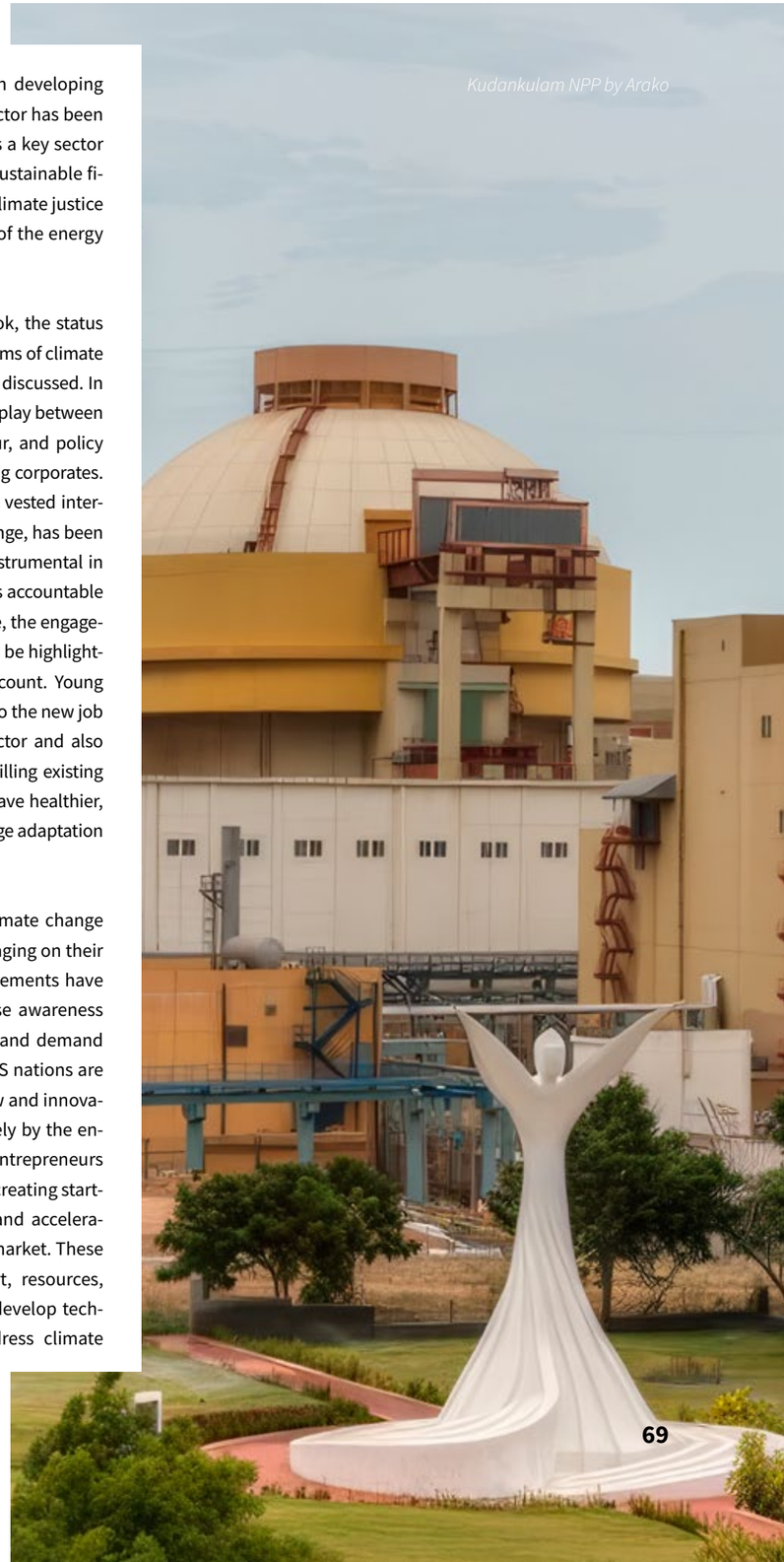
A just energy transition is encompassed by justice. Climate Justice is a concept under construction and in dispute that seeks to approach the climate emergency scenario from a perspective that considers the reality of vulnerable populations and communities as central. In decisions to combat and reduce climate change, it is important to take into account and integrate the concept of climate justice into public policy, with a view to its practical application and materialization in different territories, especially those that are still developing.

Hinged on climate justice and a just energy transition, the criticality of energy security and energy affordability is recognised, in the context of a just transition, as addressing the challenge of balancing the energy trilemma. This trilemma which refers to Energy Security, Energy Sustainability, and Energy Affordability which could lead to environmental sustainability without a compromise on the required economic prosperity in the Global South. The emerging economies and young population of the Global South reflect the necessity of tackling the energy trilemma challenge which this outlook will address.

Interventions to address climate change require dedicated resources in the form of climate finance. Climate finance has the ability to accelerate climate action, in developing countries, especially BRICS. The energy sector has been a major recipient of climate finance as it is a key sector tied to economic growth. Lastly, through sustainable financing of the energy sector, elements of climate justice are also addressed, any negative impacts of the energy trilemma are averted.

In this 2024 climate change-themed outlook, the status quo and progress that has been made in terms of climate change response in BRICS countries will be discussed. In addition, the outlook will examine the interplay between climate accountability, corporate behaviour, and policy formation, with a focus on the actions of big corporates. The role of youth as a demographic with a vested interest in the long-term impacts of climate change, has been amplified. Youth movements have been instrumental in raising awareness and holding corporations accountable for their environmental practices. Therefore, the engagement of youth in climate accountability will be highlighted as a significant aspect to take into account. Young people will benefit greatly by being added to the new job opportunities in the renewable energy sector and also the traditional energy sector through upskilling existing capacities and also in the bigger scheme have healthier, safe and secure futures where climate change adaptation is possible.

The youth has played a pivotal role in climate change accountability through boycotts and leveraging on their influence of buying power. Youth-led movements have organized campaigns and protests to raise awareness about companies' environmental impact and demand accountability for their emissions. As BRICS nations are also fostering a fertile environment for new and innovative ideas to combat climate change, largely by the entrepreneurial spirit of their youth. Young entrepreneurs are at the forefront of climate adaptation, creating startups and leveraging business incubators and accelerators to bring their innovative solutions to market. These platforms provide the necessary support, resources, and mentorship for young innovators to develop technologies and business models that address climate challenges.



Kudankulam NPP by Arako

2. MAJOR TRENDS

SUB-THEME 1: THE PARIS AGREEMENT AND SUSTAINABLE DEVELOPMENT GOALS — RESPONDING TO A CHANGING CLIMATE IN RELATION TO THE ENERGY SECTOR

OVERVIEW

Significant global administrative strides have been made towards the combating of climate change impacts. Ongoing efforts to mitigate climate change is a result of key decisions made by the global community in 2015 with regards to the 2030 Agenda. This agenda was inclusive of the adoption of 17 Sustainable Development Goals (SDGs) whose targets were to be achieved by 2030. The overall aim of these goals was to promote a more sustainable society, where eradicating poverty, protecting the environment, and mitigating climate change are priorities. Goal 13 is the specific goal that focuses on taking urgent measures to combat climate change and its adverse effect.

TREND

In 2015 the remarkable Paris Agreement was introduced for ratification. This objective of this agreement was to collectively agree to limit the global temperature increase to 1.5°C above pre-industrial levels. The need for immediate action is evident, especially in light of the damages caused by climate events in 2023, which totalled approximately $190 billion in global losses, significantly affecting 42% of the world's population, considered highly vulnerable to climate change (Munich Re, 2024).

The average temperature increase, until November 2023, was approximately 1.3°C compared to pre-industrial levels (1850-1900). The UN Climate Change report, released in November 2023, predicts a 9% increase in carbon emissions by 2030 compared to 2010 levels, which could result in an additional warming of 2.1°C to 2.8°C by the end of the century. Future projections are even more alarming, with studies indicating that by 2050, approximately 14.5 million deaths may be attributed to Climate Change, resulting in economic losses estimated at $12.5 trillion and additional costs of $1 trillion for healthcare systems (World Economic Forum, 2022).

Key to these observed and forecasted trends is the implementation of proposed climate actions. However, implementation action requires the mobilisation of resources. Developed and Developing nations differ in abilities as well as capabilities. In order to satisfy Goal 13 of the SDGs, the signatories of the United Nations Framework Convention on Climate Change (UNFCCC) discussed efforts of joint mobilization of $100 billion per year from 2020 onwards by the developed countries to assist in meeting the needs of developing countries and facilitating the implementation of mitigation actions and promoting transparency in the execution of these measures, including the full operationalization of the Green Climate Fund.

BRICS Climate Agenda Forum. Climate Change: Youth and Global Challenges by BRICS Russia 2024

CONCLUSION

Countries in the Global North, due to their historical industrial development and high emission levels, have an undeniable responsibility in leading and financing the energy transition. In accordance with the principles established by the Kyoto Protocol and the Paris Agreement, it is essential that these countries provide significant financial resources to support developing nations in the Global South in implementing decarbonization strategies, considering their specific needs and seeking a balance between adaptation and mitigation measures. The climate crisis can be resolved through solidarity and multilateral cooperation in an increasingly fragmented world. The pursuit of agreements and consensus is essential to effectively address this global challenge.

SUB-THEME 2: CLIMATE CHANGE AND WATER RESOURCES REALITIES IN BRICS NATIONS — THE SAUDI ARABIA CONTEXT

OVERVIEW

In recent decades, BRICS nations have witnessed profound shifts in their climate patterns presenting significant challenges to their populations and ecosystems. These emerging economies, encompassing diverse geographical regions and socio-economic landscapes, are experiencing a range of climate change impacts, from extreme weather events to gradual shifts in temperature and precipitation patterns. From melting permafrost in Russia to the escalating water scarcity in South Africa, each BRICS nation faces its unique set of vulnerabilities. In response to these challenges, BRICS nations are increasingly prioritising climate adaptation efforts. This includes investments in resilient infrastructure, the promotion of sustainable agriculture practices and the implementation of innovative water management strategies.

TREND

To further explore climate adaptation strategies within the BRICS framework, it is valuable to examine the unique context of Saudi Arabia, a pivotal nation in the middle east region facing its own distinct climate challenges and opportunities. Despite being one of the wealthiest nations globally due to swift economic growth and prosperity from oil, Saudi Arabia is one of the poorest nations in terms of natural renewable water resources, Saudi Arabia has become a global leader in both the development and use of desalination technologies, making them the largest producer of desalinated water globally. Fuelled by oil, it has been estimated that about half of domestic oil production in the Kingdom is now used for desalination. Saudi Arabia recently announced intentions of weaning the Kingdom off diesel energy and has been making great strides in solar development and built its first full-size solar-powered desalination plant.

CONCLUSION

As BRICS grapples with the multifaceted challenges of climate change, it becomes increasingly clear that collaboration and innovation are essential. By prioritising climate adaptation strategies, investing in resilient infrastructure, and embracing sustainable practices, these nations can pave the way for a more resilient and sustainable future. Through collective action and shared knowledge, they can address the urgent imperative of safeguarding both their populations and ecosystems from the impacts of a rapidly changing climate.

SUB-THEME 3: CLIMATE CHANGE ACCOUNTABILITY — HOLDING BIG EMITTERS AND CORPORATES IN THE ENERGY SECTOR LIABLE FOR THEIR EMISSIONS

OVERVIEW

Climate change has become a pressing global issue, exacerbated by human activities, particularly those of corporations. Corporations contribute to climate change through the emission of greenhouse gases through their production processes, supply chains where business is done with organisations that do not subscribe to sustainable practices, mining, agriculture and manufacturing. To address these challenges

various strategies and initiatives have been proposed or implemented. Improved transparency and disclosure of corporations' environmental performance enable stakeholders to hold them accountable, with initiatives like the Task Force on Climate-related Financial Disclosures (TCFD) encouraging companies to report on climate-related risks and opportunities in their financial disclosures. The trends analysis of this work reveals significant insights across various domains. Projections to 2030 suggest that global energy-related CO2 emissions could reach around 36 GtCO2, assuming current policies and pledges are implemented. However, long-term projections indicate the necessity for a 45% reduction in CO2 emissions by 2030 and achieving net-zero emissions by 2050 to limit global warming to 1.5°C.

TRENDS

Regulatory Framework Strengthening:

In recent years, there has been a discernible trend towards the intensification of regulations on emissions, with governments worldwide imposing stricter caps and penalties on large emitters. This trend encompasses a range of measures, including the implementation of carbon pricing mechanisms, the establishment of emission trading schemes, and the tightening of emission standards across various industries.

The tightening of regulatory frameworks reflects a growing recognition of the profound risks posed by climate change and the imperative for decisive action. The devastating impacts of extreme weather events, sea-level rise, and ecosystem degradation have underscored the need for robust accountability measures to mitigate emissions and transition towards a low-carbon economy.

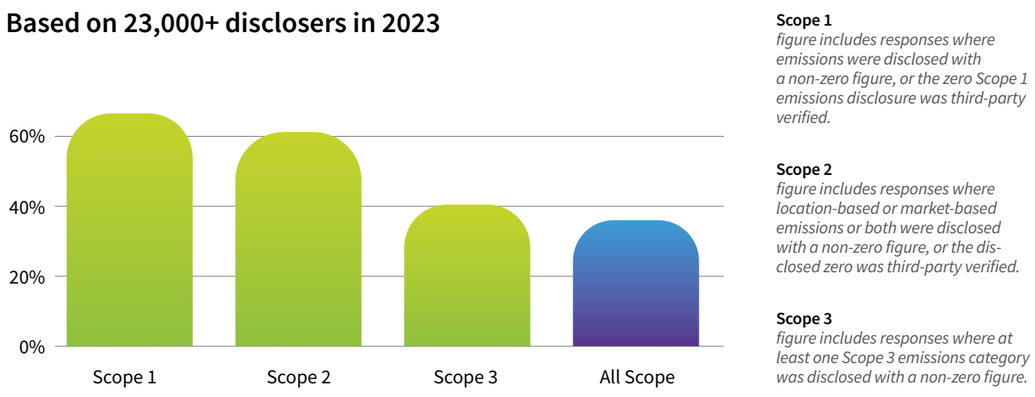
According to data compiled by the World Bank, the number of countries implementing carbon pricing mechanisms has more than doubled over the past decade, from 20 countries in 2010 to over 50 countries in 2020. Moreover, analysis of emission standards across key sectors, such as energy production and transportation, indicates a trend towards more stringent regulations aimed at curbing CO2 emissions.

Disclosures and Corporate Emission Reporting:

Companies should transparently disclose their greenhouse gas emissions and outline strategies for emissions reduction. Transparency allows stakeholders, including investors, consumers, and regulatory bodies, to assess a company's environmental performance and hold them accountable for their contributions to climate change. According to Carbon Disclosures Project (CDP), only 37% of companies on the S&P 500 disclosed complete emissions data in 2023 (Figure 1).

Figure 1: Disclosures for the year 2023

Reference: www.sciencebasedtargets.org/reports/sbti-monitoring-report-2022



Over the past decade, there has been a notable increase in the number of companies voluntarily disclosing their carbon footprint and setting emission reduction targets. The rise in corporate emission reporting is propelled by various factors. Firstly, corporate social responsibility has emerged as a key driver, with an increasing number of companies acknowledging the importance of environmental sustainability in their operations. Secondly, investor pressure for greater disclosure on climate-related risks and opportunities has intensified. Thirdly, consumer preferences for eco-friendly products and services have incentivized companies to adopt more sustainable practices and disclose their environmental impact. According to research by the Carbon Disclosure Project (CDP), in 2010, only a fraction of the world's largest companies were disclosing their carbon emissions and climate-related data. However, by 2020, over 9,600 companies from around the world were reporting their environmental data to the CDP.

Divestment from Fossil Fuels:

Institutional investors, including pension funds, sovereign wealth funds, and universities, are increasingly divesting from fossil fuel assets, citing climate risks and ethical concerns. This trend marks a significant shift in investment strategies away from industries associated with high carbon emissions and towards sustainable alternatives. Divestment not only reduces exposure to carbon-intensive assets but also sends a powerful signal to companies and policymakers about the urgency of transitioning to a low-carbon economy.

According to data compiled by the Global Divestment Movement, the total value of divestment commitments from fossil fuels has surged in recent years, reaching over $14 trillion globally as of 2020. Moreover, analysis of investment flows shows a corresponding decline in fossil fuel investments, with investments in coal, oil, and gas companies decreasing by approximately 7% annually over the past five years.

CONCLUSION

Climate accountability is paramount in addressing the existential threat of climate change. Effective accountability measures, including regulatory interventions, technological innovation, and proactive sustainability strategies, are essential for achieving sustainability targets and safeguarding our planet's future. Also, setting ambitious emissions reduction targets is essential for companies to align with the goals of the Paris Agreement and limit global temperature rise. Science-based targets and the latest IPCC reports, provide a framework for companies to set meaningful goals for emissions reduction.

SUB-THEME 4: BRICS CLIMATE TECHNOLOGICAL COLLABORATIONS BETWEEN NATIONS IN THE AREAS OF ENERGY TECHNOLOGY DEVELOPMENT

OVERVIEW

In the quest for a sustainable future, the BRICS nations have emerged as key players in the global transition to a low-carbon economy. In recent years, there have been major trends that have shaped this thematic area, among which the youth generation could make a difference and contribute to a sustainable energy future.

A photovoltaic (PV) power station on a barren mountain in Xianju county, East China's Zhejiang Province, delivers green energy by IC

TRENDS

The BRICS nations are rapidly scaling up investments in renewable energy sources like solar, wind, and bioenergy to transition away from fossil fuels and reduce greenhouse gas emissions. China and India are leading in renewable capacity additions globally, while other BRICS+ countries are also ramping up their renewable energy targets and policies.

The transportation sector is one of the major sources of greenhouse gas emissions globally, therefore, some BRICS nations have been promoting electric vehicle (EV) adoption through incentives, charging infrastructure development, and domestic EV manufacturing. Sustainable mobility solutions like public transit and non-motorized transport are also gaining traction, especially in urban areas. This solves urban node connectivity as well as reduces carbon emissions.

In India, Tata Power and Suzlon Energy are among the companies pioneering renewable energy solutions, while the Indian Institute of Technology (IIT) Bombay collaborates with governmental bodies to research solar radiation management technologies. China, a leader in renewable energy infrastructure, boasts companies like BYD and Hanergy actively engaged in solar power and electric vehicles, complemented by research efforts at Tsinghua University. South Africa, with its burgeoning renewable energy sector, sees companies like Eskom and Sasol investing in carbon capture and storage (CCS) technologies, supported by academic research at the University of Cape Town.

CONCLUSION

These trends demonstrate the BRICS nations' commitment to sustainable energy development and decarbonization through technological collaborations. By sharing knowledge, resources, and best practices, these countries can accelerate the deployment of renewable energy, clean transportation, and resource-efficient solutions, thereby significantly reducing carbon emissions and mitigating climate change impacts for the current and future generations.

SUB-THEME 5: ENERGY SECURITY AND ITS SIGNIFICANCE IN A CHANGING CLIMATE

OVERVIEW

According to Paul D. Williams (2008, p. 484), a professor of international security studies at George Washington University, "the more complex and productive the society, the greater the need for energy", so without supplying basic energy needs, a country cannot maintain and/or develop its industries, protect its sovereignty, and provide adequate living conditions for its citizens. As cited by Jakstas (2020), an energy crisis is characterized by severe constraints on the supply of energy resources to an economy. These crises are driven by multifaceted influences, ranging from industrial actions, protests, and embargoes to excessive consumption patterns, outdated infrastructure, disruptions at vital points or bottlenecks in oil refineries where such influences are potentially restricting fuel supplies, especially to those in need in the global south. To ensure energy security, a sovereign state needs to take into account not only the availability of natural resources but also the necessary infrastructure in order to meet its social and national needs.

TREND

Climate change will impact the generation potential of all forms of primary energy. This will further stress electricity networks, making it harder for BRICS nations to provide a stable electricity supply that can support the education of young people and their eventual introduction to the job market. Climatic changes could affect millions of lives by destabilizing the international flow of energy as well as destroying infrastructure, posing challenges on both energy producing and consuming countries' citizens. However, young talents in BRICS nations will have to find novel ways of balancing the trilemma of their generation by adapting to these climatic impacts, focusing on environmental sustainability, and achieving prosperous economic developments.

CONCLUSION

Energy security is recognized as a necessity for a prosperous future along with rising concerns for environmental sustainability. The World Energy Council (WEC) has shaped the global outlook of the energy industry with the remarkable surveying and reporting of the energy trilemma index and framework. Humanising energy comes at the core of WEC objectives in involving more people and diverse communities to ensure societal transformations beyond decarbonization and towards addressing the complexities of global energy challenges, which is especially the required mindset and framework for youth in the global south and BRICS.

SUB-THEME 6: BRICS INTRA-COUNTRY CLIMATE FINANCE FLOWS IN RELATION TO THE ENERGY SECTOR

OVERVIEW

Climate finance flows aim to enhance resilience and also enable better adaptation to climate change borne impacts. These finance flows include the provision of grants and other low interest-bearing loans through established mechanisms as per the Paris Agreement. These funds are invested to renewable energy generation infrastructure, energy efficiency initiatives, and sustainable development projects various sectors, while also addressing developmental issues. The desirable implementation of climate finance mechanisms includes the prioritization of providing financial support to projects in developing nations, especially those that may not attract as many private investors. Lastly, climate finance initiatives should also include provisions for capacity building, technology and knowledge transfer.

New Development Bank Headquarters

TRENDS

Significant greenhouse gas emissions that exacerbate climate change emanate from the energy sector globally, hence focusing on the centrality of this sector remains vital. Understanding climate finance flows in this sector is crucial because it can allow the mitigation of greenhouse gas emissions through the implementation of adequate initiatives, especially in developing countries. BRICS nations have invested significantly in renewable energy projects such as hydrogeneration facilities, wind and solar farms as well as widescale industrial and domestic rooftop solar panel installations. Other initiatives such as battery farms, retrofitting and improving building insulation have also been included as part of improvement of energy efficiency in the sector. Climate finance has also aided in supporting the phasing out of fossil fuels as well as their subsidies and redirecting those funds towards low carbon initiatives.

The BRICS nations are characterized by diverse economies, energy profiles, and climate challenges. All of them have been indicated to not be on course for the 1.5 degrees target. Understanding the climate finance landscape in these countries requires a nuanced approach that considers their unique circumstances and priorities. Most of the initial BRICS countries have had access to some sort of climate finance, and it has been used to assist the dominant economic sectors who also contribute a lot to greenhouse gas emissions. Countries with the largest populations are those shown to have higher emissions, such as China and India. These countries also represent those that have the highest allocations of fossil fuel subsidies. It is these subsidies that should be reformed in such a way that they fund a transition away from fossil fuels and towards sustainability. In terms of the fossil fuel subsidies, petroleum seems to be the dominant energy type in all of the BRICS countries, followed by fossil gas then coal.

CONCLUSION

Public finances are also used for the energy sector. However, it can be seen that across the BRICS countries, fossil fuels remain the most funded energy type, with very little funding towards clean energy. This has a bearing on climate change because supporting clean energy initiatives has the potential to reduce greenhouse gas emissions and consequently future impacts of climate change. Hope still exists that BRICS countries have committed to initiatives that have the potential to upscale the adoption and utilization of clean energy sources through the use of climate finance. In terms of climate finance use, BRICS nations have started to fund programs that move away from carbon intensive operations and towards sustainability.

MAJOR SCENARIOS

Negative

- the energy sector emerges as one of the main contributors to the climate crisis, being responsible for 85% of global energy consumption, of which 75% comes from fossil fuels (Inesc, 2022). It is alarming to note that, while the most developed countries, representing half of the world's population, are responsible for 86% of global emissions, the poorest nations contribute only 14% of polluting gases. This disparity is evidenced by the fact that 2.6 billion people still do not have access to clean energy for cooking, contributing to premature deaths due to exposure to these pollutants (WEF, 2021). Climate activism organizations criticize the lack of transparency in so-called "green loans" granted by financial institutions, highlighting that only 0.07% of the $4.4 billion allocated to improving cooking methods, until 2021, were effectively used for this purpose (UN, 2021).
- Regulatory efforts stalling due to political inertia and resistance from vested interests. Despite mounting evidence of the urgent need for action, some governments have failed to implement meaningful accountability measures. In a negative scenario, emission levels continue to rise unchecked, exacerbating climate impacts such as extreme weather events, sea-level rise, and biodiversity loss, unless if accountability measures are implemented. The lack of decisive action fuels public frustration and social unrest, as communities bear the brunt of climate-related disasters and inequities deepen.
- Most developing countries, as well as the BRICS nations have made commitments to initiatives towards moving to low carbon economies. However there remains several challenges in terms of the climate finance landscape in developing countries. Policy and the regulatory environment and the lack thereof also poses a challenge to developing countries. This can be a misalignment between the political executives and electorates priorities. For example, countries relying heavily on the fossil fuels might face resistance to transition especially if a transition may lead to existing job losses. South Africa is facing a similar type of challenge. Despite its ambitious carbon curtailing commitments, its economy is heavily reliant on coal base load electricity. Closure of more than 18 coal power stations may cause a ripple effect in terms of income loss in various tiers of the economy, both formal and informal, rendering some towns, whose livelihood depended on power stations, as ghost towns.

Innovative

- The BRICS countries are increasingly collaborating on joint research and development projects, technology transfers, and knowledge sharing in areas like renewable energy, energy storage, smart grids, and clean transportation. This facilitates access to cutting-edge technologies and accelerates innovation. Investments in resource efficiency and implementation of circular economy principles in reducing emissions from industrial processes and waste management have been greatly encouraged for exploration, including initiatives that focus on recycling, waste-to-energy, and eco-industrial parks to minimize resource consumption and associated emissions. To support the energy transition, the BRICS nations are also implementing favourable policies to facilitate and fast-track sustainable solutions like setting renewable energy targets, introducing carbon pricing mechanisms, and phasing out fossil fuel subsidies. Efforts are also underway to harmonize regulations and standards across countries to facilitate technological collaborations. Technology transfers oftentimes require resources such as climate finance to be mobilised from both the public and private sector’s. These mobilised can com through the of green bonds, carbon markets, as well as international climate funds as all form part of the emerging and important financing mechanisms for the energy transition.

- As an intervention driven nation, the Kingdom of Saudi has introduced the concept of “spongy cities” as an appropriate means of water conservation into the future. A “Sponge city" refers to the mixture of solutions derived from nature and infrastructure, to retain runoff water in urban areas for later reuse, and this effectively contributes to reducing a flooding risk as well as water scarcity due high temperatures in Saudi cities. The vision of the Kingdom of Saudi Arabia 2030 and its current national initiatives include the implementation of projects and plans to develop natural parks, rehabilitation of water valleys, reforestation and rehabilitate vegetation cover.

Conservative

- if corporations prioritize profit over environmental concerns, leading to a continued rise in greenhouse gas emissions. Analysing historical emission data in the public domain, it can be concluded that future trajectories toward 2030 and 2050 have a concerning trend of increasing emissions, putting sustainability targets at risk. This scenario then needs regulatory intervention. Regulatory frameworks modestly improve, they are normally driven by incremental policy changes and voluntary corporate actions. While governments acknowledge the need for accountability measures, progress remains slow due to political compromises and industry lobbying. Emission reductions are limited, with regulatory initiatives focused on incremental improvements rather than transformative change. However, public awareness and pressure gradually push for stronger accountability measures, as communities increasingly demand action on climate change. Despite challenges, the conservative scenario lays the groundwork for future progress, as incremental changes pave the way for more ambitious climate policies and investments in sustainable infrastructure.
- Middle Eastern nations, few of whom have already joined BRICS, have a large cooling demand in the residential sector, which accounts for most of their electricity consumption as water cooling may not viable option due to water scarcity along with competing interests for water use such as agriculture, human consumption, and power plant cooling. Thermal power plants will be significantly stressed due to climate change, and there is a high risk of energy shortages unless higher water extraction prices are enacted, along with a change from wet to dry cooling and a spatial planning that considers water availability as an important factor. In terms of India, the country has a vast coastline also installed with energy infrastructure assets. These assets are highly exposed and vulnerable to meteorological extremes exacerbated by climate change as oil-importing ports and coal-transporting railways can be particularly affected. Analyses show that it will be more expensive to invest in adaptation to protect these assets under high warming scenarios than to invest in India’s share of mitigation to achieve a lower temperature increase.
- New entrants to BRICS, countries like Saudi Arabia, Iran, Ethiopia, Egypt, Argentina, and the United Arab Emirates (UAE) all have their own and unique challenges, policies and climate change commitments towards addressing climate change. The UAE, Iran and Saudi Arabia all have a heavy reliance on the oil and gas sector, and a shift towards low carbon economies may face resistance and prove to be difficult. However, these nations have committed to purposeful investments in renewable energy from their oil-based finances. UAE has been ambitious in its approach, investing heavily in solar energy initiatives. It has not only financed its own initiatives but has also supported those in other countries too. Geopolitical challenges also affect countries’ abilities to access and utilise climate finance. For example, Iran faces sanctions, subjecting it to economic decline. However, the country has shown interest in solar and wind power projects. From time to time, Egypt also faces political instability which affects climate finance initiatives such as the renewable energy projects that the country has shown interest in. African BRICS+ nations, due to under development, also face excessive climate change adaptation challenges. Similarly to South Africa, the new BRICS entrants, Egypt and Ethiopia face adaptation to flooding and sea-level rise. Water security which threatens agriculture as well as food security is also a significant challenge which inflows of climate finance are geared toward solving.

3. RECOMMENDATIONS

Policy and governance take on the role of the steering mechanisms that lead countries through difficult times in the face of growing climatic concerns. The BRICS nations, which are at the intersection of bold development goals and a changing climate, are urgently needed to revitalise their governance structures and policy frameworks in order to make them resilient and adaptable. The first thing to do is incorporate climate change into policy related to development. This includes funding for green innovations, integrating climate risk assessments into infrastructure projects, and supporting an ecosystem of research devoted to comprehending and mitigating the effects of climate change.

Additionally, considering the arid climates of some BRICS countries, prioritising water conservation, encouraging effective irrigation techniques, and investigating sustainable substitutes like cloud seeding and treated wastewater reuse should be all part of policy.

Public transportation plays a crucial role in climate adaptation strategies by reducing greenhouse gases emissions, decreasing traffic congestion, and promoting sustainable urban development. A sustainable, networked and dynamic urban environment is produced by this integrated strategy. A more inclusive and effective cityscape is fostered by green areas and technology that improve livability and connectedness, as well as legislative changes, community input, and “Transit-Oriented Development” that support accessible and sustainable modes of transportation.

Climate finance is indispensable for supporting the transition towards renewable energies in BRICS nations and addressing the urgent challenges posed by climate change. It plays a vital role in supporting renewable energy development and deployment, improving energy efficiency, and enhancing resilience to climate change impacts. By investing in sustainable solutions and promoting clean energy adoption across sectors, these countries can mitigate emissions, enhance resilience, and foster inclusive development. Also, by addressing challenges such as policy barriers, lack of access to finance, and capacity constraints, BRICS nations can unlock the full potential of climate finance to accelerate their transition towards a sustainable and resilient future.

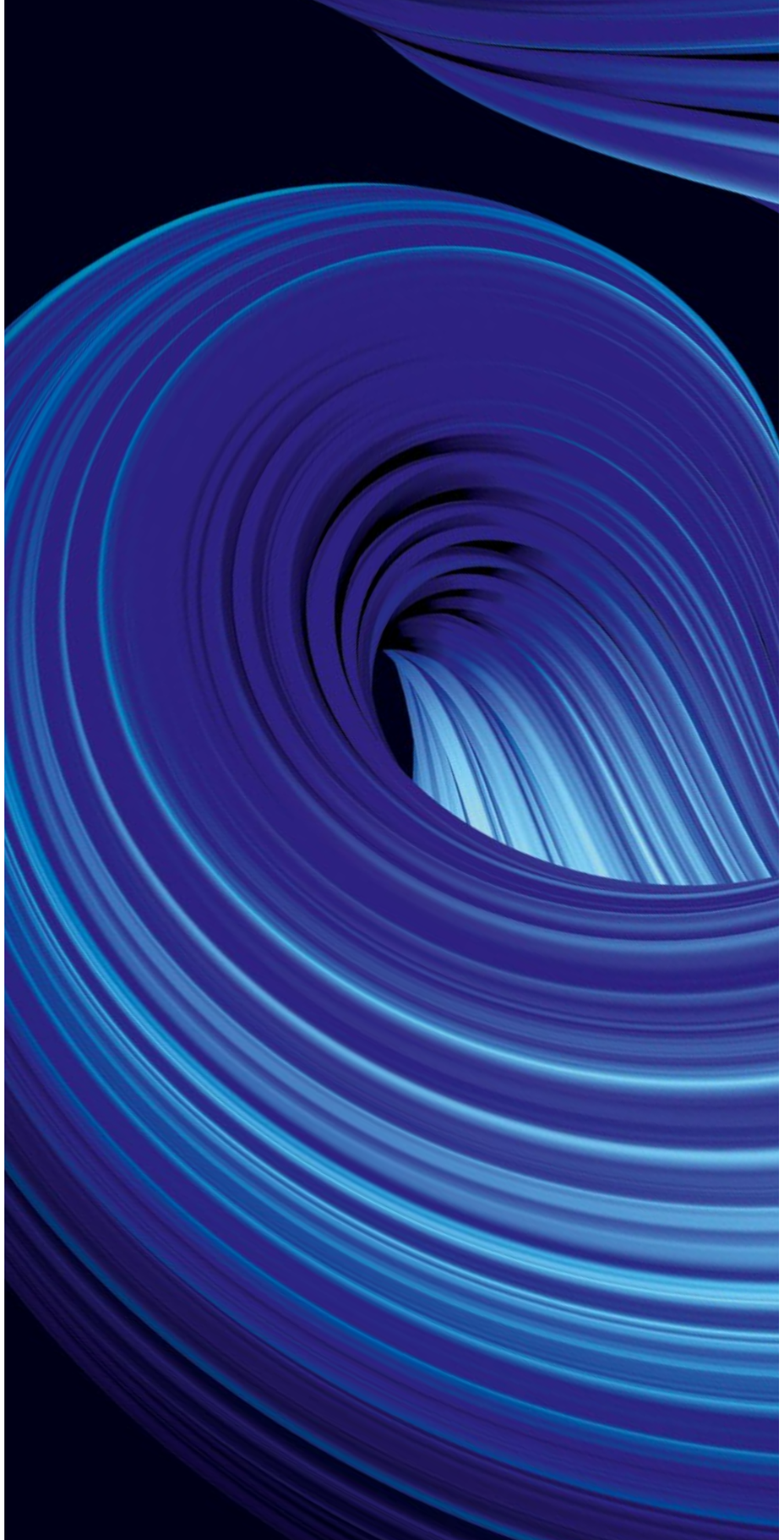
Over and above accessing finance, tangible investments should be made, such as the increasing the uptake of renewable energy sources as well as their diversification. Each BRICS should look into its geophysical attributes that would aid in the uptake of renewable energy. To ensure equitable access, decentralise energy generation and also encourage smart microgrids that will be less dependent on long distance of energy travel which sometimes puts off investments as transmission may balloon energy supply costs. Lastly, energy storage options should also be encouraged to ensure that energy availability is maximised. In terms of technology transfer, energy efficiency standards should be global, and also become a norm across the BRICS nations, and should be applicable for buildings, appliances, and vehicles.

In conclusion, enforceable accountability mechanisms through international agreements and cooperation between BRICS countries should be formulated and also implemented without fear or favour. Once global accountability action with repercussions is ensued, nations will be cognizant of their emissions. Emissions reporting by nations should be transparent and use standard methodology.

Links & resources _

The BRICS Youth Energy Agency is committed to reducing its environmental foot-print. In support of this commitment, we leverage electronic publishing options and print-on-demand technology. Together, these initiatives enable print runs to be lowered and shipping distances decreased, resulting in reduced paper consumption, chemical use, greenhouse gas emissions, and waste.

As long as we cannot refuse to print this annual edition of the BRICS Youth Energy Outlook 2024, we decided to allocate all the sources of informations, i.e. lists of references, figures and tables, which follow the main content at our web server. You can access the data by scanning the QR code below.



BRICS YOUTH ENERGY 2024 OUTLOOK

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