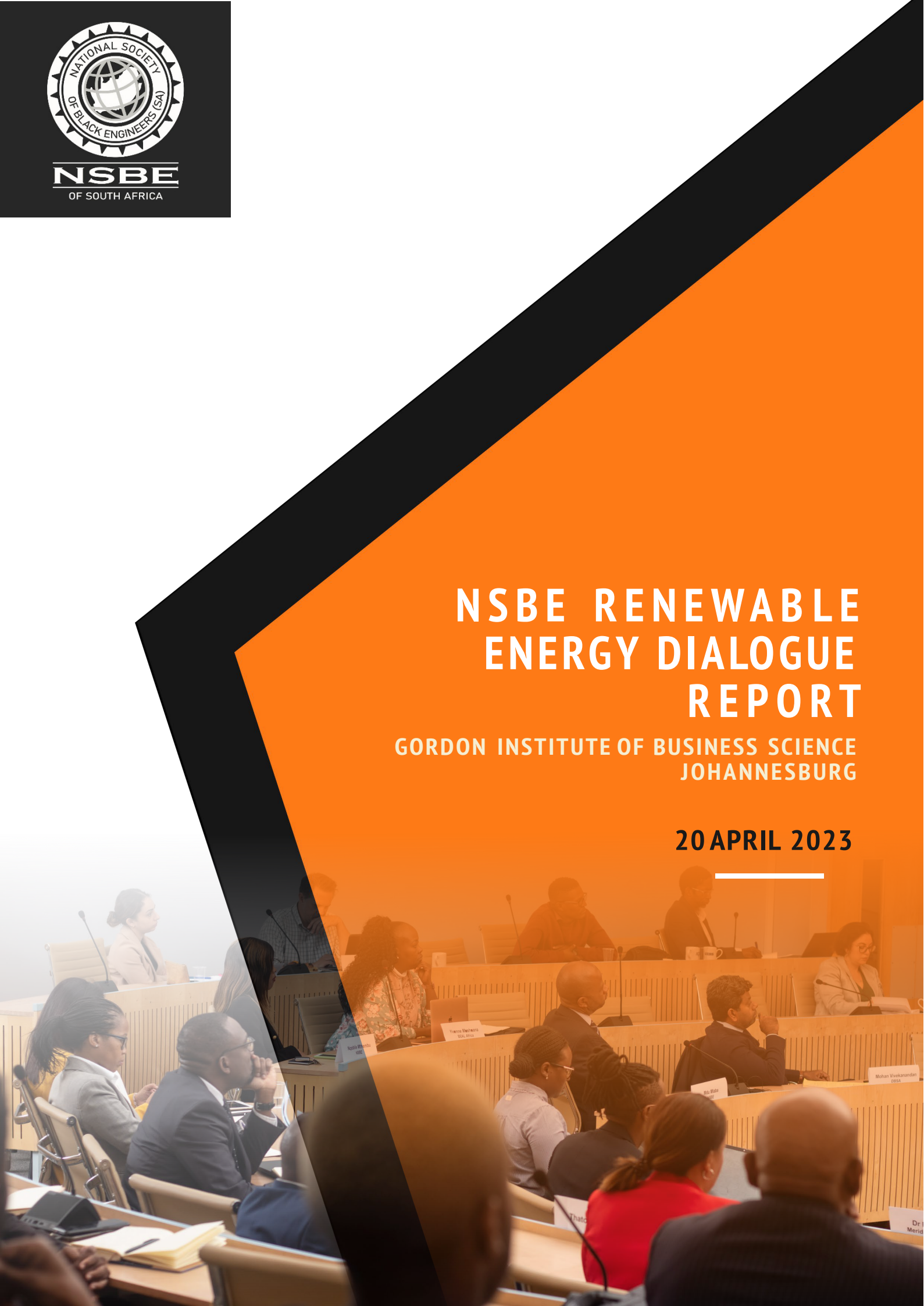
NSBE
OF SOUTH AFRICA

# NSBE RENEWABLE ENERGY DIALOGUE REPORT

## GORDON INSTITUTE OF BUSINESS SCIENCE JOHANNESBURG

**20 APRIL 2023**



# TABLE OF CONTENTS

# ACRONYMS

DBSA: DEVELOPMENT BANK OF SOUTHERN AFRICA

EWSETA: ENERGY & WATER SECTOR EDUCATION TRAINING AUTHORITY

GIBS: GORDON INSTITUTE OF BUSINESS SCIENCE

GW: GIGAWATT

NSBE: NATIONAL SOCIETY OF BLACK ENGINEERS

OCGTs: OPEN CYCLE GAS TURBINES

RE: RENEWABLE ENERGY

SANEA: SOUTH AFRICAN NATIONAL ENERGY ASSOCIATION

TWh: TERAWATT-HOUR

# EXECUTIVE SUMMARY

The National Society of Black Engineers (NSBE) is a non-racial and non-profit organization dedicated to empowering and supporting black engineers in the country. With a focus on advancing diversity, equality, and excellence in engineering, NSBE provides a platform for networking, professional development, community engagement and stimulating debates that contribute towards economic development and nation building.

Through various initiatives, programs, and events, NSBE strives to inspire and uplift black engineers, fostering their growth and contribution to the engineering industry. The organization plays a vital role in promoting inclusivity, addressing challenges faced by black engineers, and creating opportunities for their success in South Africa's engineering landscape. The vision of NSBE is to ensure full participation of black engineers in the mainstream economy, wealth creation and distribution in South Africa.

The NSBE hosted a thought-provoking Renewable Energy Dialogue on April 20th, 2023. The purpose of the dialogue was to encourage open debate on the critical dynamics exacerbating the country's energy crisis and explore the role of renewable energy as one of the possible solutions to end load shedding. The discussion focused on two key aspects: firstly, the Energy Skills Roadmap developed by the South African National Energy Association (SANEA), and secondly, the evaluation of the report by Meridian Economics titled "Resolving the Power Crisis by Adding More Renewable Energy into the Eskom Transmission Grid."

The dialogue emphasized the crucial role played by SANEA's roadmap in addressing the country's energy challenges by identifying the necessary skills to effectively manage renewable energy projects. Additionally, discussions revolved around resolving the power crisis in South Africa by exploring viable options to integrate more renewable energy sources into the Eskom Transmission Grid.

The Renewable Energy Dialogue provided a unique opportunity for stakeholders in the energy sector, researchers, and policymakers to analyse the proposed solutions and share their ideas and knowledge on renewable energy. The dialogue dispelled the narrative of renewable energy as the silver bullet to the country's energy woes and underscored the significance of using all available energy sources, including fossil fuels, in tackling the country's energy crisis. The dialogue also stressed the role of synergistic collaborations among various stakeholders in driving much needed positive change in the energy sector.

As a follow-up to the high-level dialogue, the NSBE intends to conduct a deep dive into the Meridian Economics modelling methodology used in their reports for better understanding and to provide an independent peer review.

# WELCOMING OF DELEGATES

## DR MICHELE RUITERS: SENIOR LECTURER, GIBS

The program director, Dr. Michele Ruiters, a senior lecturer at GIBS, extended a warm welcome to the session attendees, including the speakers, panelists, and delegates. She acknowledged the presence of key stakeholders in the dialogue and invited President of the NSBE, Mdu Mlaba, to deliver the opening remarks.

# OPENING STATEMENT

## MDU MLABA: PRESIDENT, NSBE

The NSBE president, Mdu Mlaba, kicked off his remarks by bemoaning the erosion of ethics and integrity in the political landscape of the country. He mentioned that South Africa is characterised by ills such as rampant corruption, crime, joblessness, and relentless interest rate hikes affecting the general populace. Mlaba mentioned that experts in the financial services sector predict jobs bloodbath to deepen if the pervasive level 6 load shedding is not addressed as soon as possible. He said it was worrisome to note that the load shedding data in the first quarter of 2023 showed that this year's conditions will be much worse compared to the previous year.

Hence, the primary objective of the dialogue was to promote open debate regarding the country's energy crisis, which was exacerbated by highly contested vested interests. Considering the polarised landscape of the debate around the energy crisis, Mlaba expressed that NSBE aims to foster a transparent discussion about the challenges and encourage collaborative efforts to overcome them. He expressed hope that in the dialogue, scholars and professionals will be guided by scientific and engineering principles to find sustainable solutions, in the best interest of SA Inc.

Mlaba emphasized the importance of presenting a unified voice, while acknowledging the diversity of the NSBE membership, citing that NSBE does not fall into any lobby group. He mentioned that members and stakeholders of NSBE come from various disciplines and sectors in the wide energy mix spectrum, which includes coal, gas, nuclear, hydro, and renewables. He emphasised that the decision-making process should be based on science and prioritize the country's needs over narrow self-interest. Mlaba stressed that moving away abruptly from coal-powered electricity generation, which makes up 80% of SA's current energy mix, without a reliable baseload alternative, would risk plunging the country into a deeper energy crisis.

Furthermore, Mlaba expressed support for upgrading the Eskom transmission grid to increase wheeling capacity in the Northern, Eastern & Western Cape. This upgrade would enable the integration of more renewable power sources, particularly solar & wind energy, into the grid. The excess gigawatts generated by solar & wind energy can then compensate for the reduction in coal-generated power. Mlaba highlighted the importance of this upgrade in facilitating the transition and creating headspace to conduct proper maintenance of the aging coal fleet.

Mlaba stated that the position of NSBE is that a clever combination of coal, gas, nuclear, hydro, and renewable energy, and not one or the other, will guarantee energy security to end load shedding.

Mlaba expressed appreciation for the enthusiasm and energy shown by the new Minister of Electricity, Dr. Kgosientsho Ramokgopa, in resolving the electricity crisis. Mlaba urged Ramakgopa to stay the course in his noble pursuits and not feel compelled or intimidated to appease everyone.

Lastly, he expressed concern about the lack of patience and tolerance towards stakeholders who hold differing views on the country's future energy mix.

# SANEA INTRODUCTION

## KIREN MAHARAJ: CHAIRPERSON, SANEA

Kiren Maharaj, the Chairperson of the South African National Energy Association (SANEA), highlighted the organization's long-standing presence and its role in thought leadership in the energy sector. Maharaj emphasized the transformative potential of technology, particularly robotics, in shaping the energy landscape. She acknowledged the challenges involved in remaining at the forefront and expressed SANEA's commitment to fostering cutting-edge discussions on competition within the energy sector.

According to Maharaj, one of the key initiatives identified by SANEA is the production of an annual report, which will be made available on their website. Maharaj stressed the importance of addressing energy risks, which have converged to create a complex and challenging environment. These risks have long been a topic of concern and require careful execution to avoid adverse outcomes. Consequently, discussions have focused on the skills and competencies required for successful navigation of the energy landscape in South Africa.

Maharaj viewed this undertaking as a critical starting point in a broader journey of developing the necessary capabilities to facilitate the energy transition. She underscored the positive aspect of Africa's young population and highlighted the need to invest in building skills and competencies on the continent to seize emerging opportunities and mitigate the impact of an aging population. Maharaj indicated that the roadmap presented by SANEA represents the initial phase of a comprehensive and lengthy consultative process. She stated that efforts are currently underway to shape various entities, enhance transparency, and improve access to information. Based on the outcomes of discussions, a list of priorities had been compiled for further exploration.

Maharaj took the opportunity to encourage the audience to visit SANEA's website and explore the report for more in-depth information. Maharaj expressed her gratitude and anticipation for an enlightening exchange of ideas.

# SANEA'S ENERGY SKILLS ROADMAP

## WENDY POULTON: SECRETARY GENERAL, SANEA

In her presentation, Wendy Poulton, Secretary General of the South African National Energy Association (SANEA), emphasized the importance of integrating various skills into the energy sector. Poulton highlighted the need to consider the broader context and not just focus on cost savings. She stressed the significance of the broader socio-economic landscape of South Africa and the need to identify gaps in skills and expertise.

To provide a comprehensive view, Poulton discussed the range of skills required by policymakers, including economic, procurement, financial, design, construction, generation, transmission, distribution, storage, transportation, and customer-oriented skills. Recognizing the importance of understanding future trends, she mentioned the analysis conducted by SANEA, which involved over 200 publications and a future foresight exercise based on the BRICS Business Council's insights.

Poulton referred to assessments and a large database that helped identify necessary skills. She also highlighted the association's efforts in conducting baseline analyses, understanding drivers and technology policies, and assessing the benefits associated with certain skills. She emphasized the importance of considering both technical and social aspects in policymaking, as well as the significance of addressing future social issues. The presentation explored the challenges faced in integrating skills, including the cost of training and portability issues. Poulton acknowledged security concerns and the impact of factors such as animal welfare and climate change on the energy sector. She emphasized the need to adapt to sector coupling and decentralization, which would create new job opportunities.

Recognizing the importance of risk management, Poulton discussed the various scenarios developed by SANEA to assess the impact of trends and uncertainties on skills requirements. She mentioned the importance of renewable energy certifications and energy efficiency expertise in meeting the evolving demands of the market. Poulton highlighted the current skills required in South Africa and the challenges in meeting the demand for skilled individuals.

Poulton discussed the critical skills identified in their research. She emphasized that certain skills were considered essential for the future. One interesting observation was the importance of artisan skills, such as air conditioning and refrigeration mechanics. Another critical skill highlighted was project management. According to Poulton, there will be a high demand in the construction and installation disciplines due to the increased use of renewable technologies. Furthermore, she mentioned the significance of addressing less common but crucial topics including soft skills, policy skills, and proficiency in various critical sectors that have a direct or indirect bearing on the energy sector and the entire economy.

Throughout the presentation, Poulton emphasized the impact of energy security and transmission skills on the sector. She referenced the categorization of data and research to gain insights into future skill requirements. Poulton concluded by sharing the most in-demand occupations, including energy system managers, procurement managers, legal advisors, public policy managers, and supply chain practitioners. She highlighted the critical skills identified through research and those emphasized by relevant bodies such as the Energy & Water Sector Education Training Authority. (EWSETA), a skills development authority serving the energy and water sectors.

# RESOLVING THE POWER CRISIS BY ADDING MORE RENEWABLE ENERGY INTO THE ESKOM TRANSMISSION GRID

DR. PETER KLEIN: HEAD: ENERGY SYSTEMS MODELLING, MERIDIAN ECONOMICS

Klein introduced Meridian Economics, a company specializing in economic advisory work and climate finance. Klein presented research outputs published by Meridian Economics in June 2022, in the form of a two- part series of reports called "Resolving the Power Crisis." Part A of the series analyzed Eskom's hourly data and quantified the potential impact of additional Renewable Energy (RE) generation capacity on load shedding in 2021. The study revealed that incorporating 5 GW of wind and solar power, proportionate to the existing capacity, could have eliminated 96.5% of load shedding in that year.

Klein presented data indicating that since the publication of the previous work, load shedding has significantly worsened. In 2022, there was a substantial increase, with 8.1 TWh of energy shed, marking a 355% (4.5-fold) rise compared to 2021. This surpassed the combined load shedding of all previous years. Notably, a significant portion of the energy shed occurred in the last quarter of 2022. The sustained levels of stage 4 to 6 load shedding in 2022 had a severe economic impact, surpassing the consequences of 2021.

Furthermore, the presentation showed that high levels of load shedding have continued into 2023, with Eskom shedding 2.1 TWh in January alone, exceeding the total energy shed in 2021. If this trend persists, South Africa may experience shedding of more than 5% of its annual electricity demand, a scenario that would have seemed unimaginable a few years ago.

Given these unprecedented levels of load shedding, Meridian Economics conducted a repeated analysis of Eskom's published hourly data to assess the potential reduction in load shedding in 2022 through additional RE capacity. The study also examined addressing constraints on diesel supply to Open Cycle Gas Turbines (OCGTs) as short-term measures to alleviate load shedding.

## RESEARCH METHODOLOGY

According to Klein, the methodology used in this analysis is consistent with a previous report from 2021. It relies on Eskom's data on actual load shedding and assumes that if additional energy had been available to exceed the load shed in any given hour, load shedding would have been completely avoided for that hour. If the additional renewable energy in an hour is less than the load shed during that hour, the load shedding total is reduced by the amount of additional energy available.

Klein also indicated that the primary metric used to assess the impact of additional renewables on load shedding is the sum of remaining load shedding over the year, which is the total load shed over all 8,760 hours minus the additional energy that would have been generated by renewables during the load shedding hours. In 2022, the actual load shed was 8.1 TWh, and the percentage load shedding reductions mentioned in this report are compared to this figure.

The analysis was conducted using these modelling methods and tools: a spreadsheet model and a dedicated system modelling software. The results from both platforms were compared to verify the findings and ensure the credibility of the results. The spreadsheet analysis provides a straightforward way to demonstrate the direct impact of additional renewable energy and how it reduces diesel usage and cycling of pumped storage facilities. The system dispatch model is more sophisticated and allows for a realistic assessment of the further knock-on impact on load shedding reduction by considering the use of OCGT and pumped storage assets in conjunction with additional energy on the system.

According to Klein, the analysis considers a range of additional renewable energy capacities from 0 GW to 10 GW. The focus is on 5 GW, which had previously shown a 96.5% reduction in load shedding in 2021.

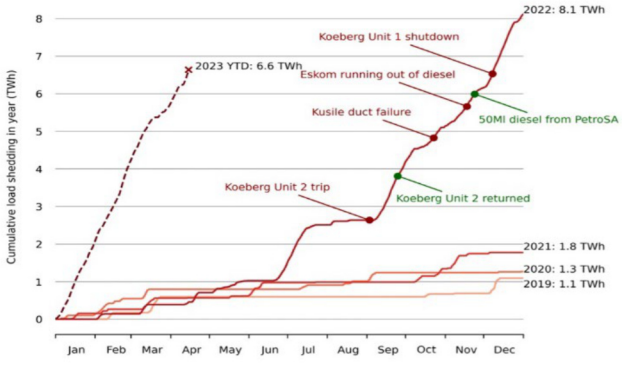
The assumed additional RE capacity comprises a mix of 60% wind and 40% solar PV, although scenarios with a predominantly solar mix are also explored. The report also examines other measures to address load shedding, with a particular emphasis on the OCGTs. Under the existing constraints on diesel supply, more than 10 GW of additional RE capacity would have been needed to achieve a 95% reduction in load shedding in 2022. However, if the constraints on diesel supply were lifted, more than 90% of the load shedding in 2022 could have been eliminated with just 5 GW of additional RE capacity. Importantly, this reduction in load shedding would have only required a modest increase in the amount of diesel burned, approximately 12% more than the actual usage in 2022.

## RESULTS

### Additional Renewables Would Have Made A Real Difference In 2022

Figure 1. below shows the overview of cumulative load shedding data from 2019 to April 2023. Unserved energy in 2022 exceeded the sum of all previous years, while the first 4 months of 2023 almost match the full year of 2022, making it the worst year in the history of lead shedding. According to Figure 2, adding 5 GW of renewable energy (RE) capacity, considering current diesel supply constraints, would have reduced load shedding in 2022 by 71% (eliminating 5.8 TWh out of the total 8.1 TWh). The direct impact of RE generation offset load shedding during available hours, resulting in a 61.7% reduction. Optimizing the dispatch of pumped storage and peaking plants in conjunction with additional renewable energy would have further reduced load shedding by 9.3%. However, under the existing diesel supply constraints, more than 10 GW of additional RE capacity would be needed to achieve a 95% reduction in load shedding in 2022. If diesel supply constraints were removed, just 5 GW of additional RE capacity could eliminate over 90% of load shedding in 2022, with a modest increase of approximately 12% in diesel consumption.

**Figure 1: Cumulative load shedding since 2019**

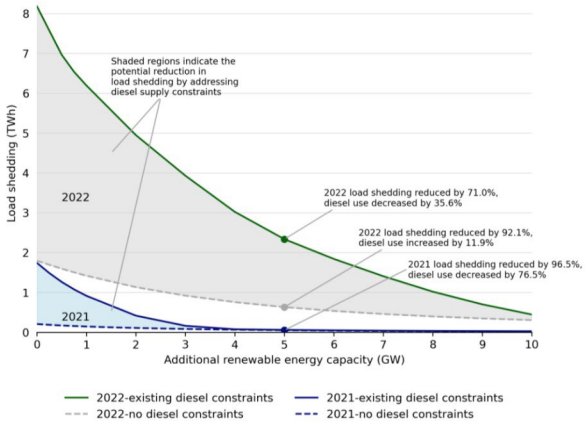



SOURCE: MERIDIAN ECONOMICS

### Cumulative Load Shedding Trends and Economic Consequences

The speaker discussed cumulative load shedding trends and exponential increases in energy demand, which have had severe economic consequences. They referred to the costs incurred due to load shedding, estimated to range from 200 billion to 6 billion rands. Efforts to recover coal fields, enhance plant maintenance, and improve the performance of the coal fleet have not effectively addressed the issue. Klein presented data on declining availability in the coal fleet and emphasized the need for urgent action as the continent falls behind in renewable energy targets.

**Figure 2: Impact of added renewables would have had on load shedding in 2021 and 2022**




SOURCE: MERIDIAN ECONOMICS

Overall, the presentation focused on retrospective analysis, the need for transparency and open-mindedness, the economic impact of load shedding, declining availability in the coal fleet, and the importance of addressing energy shortages and renewable energy targets.

### Diesel Supply Constraints Are A Critical Limiting Factor In Addressing Load Shedding

Addressing diesel supply constraints is crucial in tackling load shedding. Eskom faces financial and logistical limitations in operating Open Cycle Gas Turbines (OCGTs) at higher capacity. Resolving these constraints can significantly reduce load shedding, particularly when there is limited additional RE capacity available in the short term. Removing diesel supply constraints would enable OCGTs to operate at full power when needed, leading to a direct reduction in load shedding and allowing for increased energy storage using pumped storage during non-load shedding periods, thereby enhancing peaking power capabilities.

## Impact Of Load Shedding On The Energy System

The presentation highlighted the impact of load shedding on the energy system and the associated costs. He explained that load shedding was necessary to maintain emergency reserves but posed challenges in terms of efficiency, resulting in a 25% energy loss per cycle. The role of renewables in alleviating peak assets was emphasized, with Klein demonstrating how adding renewable energy to the system could reduce the need to dispatch limited resources. He discussed the exponential rise in renewable energy registrations, indicating the potential for thousands of actors across the economy to contribute to capacity expansion.

## Measures To Address Frequency Fluctuations

The presentation delved into technical aspects related to frequency balancing in the electric supply system. Klein explained the available measures to address frequency fluctuations and maintain balance, including operational coal fleet adjustments, emergency reserves, pump hydro assets, and cycle gas turbines. He also highlighted the innovative demand response programs in South Africa, particularly with large industrial customers.

Klein discussed the importance of distinguishing between two types of overload: capacity shortage and extended energy shortages. He explained how the former occurs when there is a temporary lack of installed capacity during an evening peak, while the latter refers to prolonged shortages throughout the day. He emphasized the significance of addressing extended energy shortages, as they posed a greater challenge to the energy system.

Klein emphasized the significant difference that adding storage capacity and renewables made in the system. He highlighted the importance of balancing the system and avoiding the need to burn more diesel. He recommended increasing storage capacity at peaking plants as a powerful strategy to support additional renewables.

Klein concluded by expressing gratitude for the opportunity to present their findings and insights. He highlighted the importance of continuous analysis and planning to navigate the challenges of energy predictions and system optimization.

## Conclusions of the Report

- Analysis of hourly Eskom data from 2022 shows that 5GW of additional renewable energy capacity could have eliminated between 71% to 92% of load shedding, depending on measures to relieve diesel supply constraints.

- Rooftop PV deployment, achievable quickly and at scale with proper financial incentives, can have a significant impact on load shedding, almost comparable to a more optimal mix including wind. Rooftop and distributed PV have short lead times and are not constrained by the transmission grid.

- Logistical supply constraints hinder the ability of OCGTs to burn diesel when needed, which remains a critical cause of load shedding. Mitigating load shedding can be achieved by improving diesel burning capabilities, such as doubling the available diesel storage at OCGT plants.

- In the short term (next 6 months), burning significant volumes of diesel when necessary is the only solution to address the current crisis. The economic, social, and political consequences of load shedding outweigh the cost of diesel.

- In the long term, as South Africa adds more renewable capacity to the power system, improved diesel logistics should not aim to increase overall diesel consumption. Instead, they should ensure continuous supply to OCGTs during shorter intense usage periods, without increasing overall diesel usage.

# PANEL DISCUSSION AND QUESTIONS & ANSWERS

## THE PANEL COMPRISED THE FOLLOWING EXPERTS:

MR JACOB MAROGA: EXECUTIVE DIRECTOR, ERINITE ENERGY
DR GROVE STEYN: MANAGING DIRECTOR, MERIDIAN ECONOMICS
MS KIREN MAHARAJ: CHAIRPERSON, SANEA
MR LUNGI MAMINZA: CHAIRPERSON, NSBE GAUTENG

### Summary

The panel discussion focused on the report by Meridian Economics and its implications. Grove Steyn summarized the key conclusions and recommendations drawn from the report. Kiren Maharaj emphasized the importance of considering every aspect of the energy transition and highlighted the need to build clean infrastructure capable of accommodating diverse sources of electricity. Lungi Maminza expressed concerns about the report, stating that it oversimplified the energy crisis by presenting renewables as the sole solution to the country's energy challenges. He emphasized that the report deliberately directed the readers' attention towards a specific viewpoint chosen by the authors.
In the end, all panelists agreed that the energy mix is critical moving forward, and solutions for the energy crisis should not be framed as coal fleet versus renewable energy.

### Key Emerging Issues

Grove Steyn concluded by outlining the following conclusions and recommendations coming out of the report.

Analysis of hourly Eskom data from 2022 shows that 5GW of additional renewable energy (RE) capacity could have eliminated between 71% to 92% of load shedding, depending on measures to relieve diesel supply constraints.

Rooftop PV deployment, achievable quickly and at scale with proper incentives, can have a significant impact on load shedding, almost comparable to a more optimal mix including wind. Rooftop and distributed PV have short lead times and are not constrained by the transmission network.

# PANEL DISCUSSION

Logistical supply constraints hinder the ability of Open Cycle Gas Turbines (OCGTs) to burn diesel when needed, which remains a critical cause of load shedding. Mitigating load shedding can be achieved by improving diesel burning capabilities, such as doubling the available diesel storage at OCGT plants.

In the short term (next 6 months), burning significant volumes of diesel when necessary is the only solution to address the current crisis. The economic, social, and political consequences of load shedding outweigh the cost of diesel.

In the long term, as South Africa adds more renewable capacity to the power system, improved diesel logistics should not aim to increase overall diesel consumption. Instead, they should ensure continuous supply to OCGTs during shorter intense usage periods, without increasing overall diesel usage.

**Kiren Maharaj shared the following insights:**

Maharaj emphasized the importance of considering each component of the energy transition and building clean infrastructure for diverse sources of electricity.

She stressed the reliance on energy mobility, and raised the need to revisit discussions on energy and finance. Maharaj highlighted the importance of empirical evidence, cost- efficiency, and support for renewables in addressing the energy crisis.

Maharaj acknowledged challenges around resolving the energy crisis and emphasized the need for informed decisions within the broader ecosystem.

**Lungi Maminza shared the following insights:**

Maminza raised concerns about the report by Meridian Economic, stating that it oversimplified the energy crisis by presenting renewables as the sole solution to the country's energy challenges. He highlighted that the report deliberately directed the readers' attention towards a specific viewpoint chosen by the authors.

He cautioned against oversimplifying the problem at hand and urged others to recognize the interconnectedness of issues, policies, and dynamics of a governance culture riddled with corruption. He emphasized the complexity of the issue and advised against seeking simplistic one-line answers.

**Jacob Maroga shared the following Insights:**

The Meridian Economics report correctly identifies the root cause of the load shedding crisis as a shortage of both 'capacity in MW' and 'energy in MWh'.

The report only presented the analysis of how 5000MW of renewable energy could have avoided 96% of load shedding by providing the energy needed to (1) provide the required energy in the hour of load shedding and (2) to provide additional energy to replenish emergency reserves (OCGTs and pumped storage).

He pointed out to Meridian Economics that their report has been paraded as 'Empirical Evidence' that renewable energy is the only silver bullet to solve load shedding, whilst it is only an option which they chose to model.

The Meridian Economics presenters admitted that additional renewable energy was not the only viable option to provide the energy shortage to reduce load shedding, but the improvement of the Energy Availability Factor (EAF) of the Eskom coal plants was definitely the most effective tool if it could be achieved.

The Meridian Economics were asked to explain how they modelled the hourly shedding to determine how much renewable energy can supply the shortfall to prevent load shedding. Meridian Economics committed to providing this data in future on an open-source platform to allow anyone to have access to the raw data.

# QUESTIONS AND ANSWERS

**Question: Was there data available on jobs in the renewables sector?**

**Answer:** Maharaj indicated that it was really difficult to find data on jobs in the renewables sector. She mentioned that most of the jobs projected for renewables are quite siloed, focusing on specific areas such as wind, hydrogen, and solar. While there are projections for future jobs, there isn't much information available about the current job landscape in renewables.

**Question: What technical skills are required for the entire value chain of solar, including design, building, and operating?**

**Answer:** Maharaj mentioned that most investors already possess the necessary technical skills for the entire solar value chain. She also stated that South Africa has a good foundation of key skills in the renewables sector. She highlighted the difference between coal and renewables, explaining that renewables have more jobs in construction and fewer jobs in operations and maintenance. However, she noted that without specific numbers indicating the demand for these skills, a study is needed to provide accurate information.

**Question: Where can we obtain job numbers and data related to the renewable energy sector?**

**Answer:** A renewable energy sector consultant mentioned that job numbers should be available from the Department of Energy and Mineral Resources, particularly in the renewables program where construction jobs are reported quarterly. However, data for the burgeoning private sector may be limited. Import data could be one area to explore for additional insights.

**Question: Given the limited levels of industrialization and localization in these programs, how much skill development can be unlocked?**

**Answer:** The question raised from the floor focused on the potential for skill development given the current lack of industrialization and localization in renewable energy programs. The suggestion was to engage the government regarding the need to industrialize and localize the renewable sector, enabling more local players to participate in the industry. This would counter the current situation where international players dominate the sector.

**Answer:** In response, Maharaj emphasized that the essence of the report by SANEA is to address missed opportunities for skill development, job creation, and the establishment of a robust and sustainable energy sector.

## RECOMMENDATIONS FROM THE PANEL

- Maharaj emphasized the role of renewables in meeting economic goals and urged exploration of various options and energy efficiency.

She challenged conventional thinking, advocated for new approaches, and stressed the consequences of inaction.

- Maharaj stressed the need to find common ground in mapping out viable solutions in addressing the crisis highlighting the potential impact of the report on individuals less familiar with the intricacies of the energy crisis.

- Maminza emphasized that renewables should be seen as just one component of a comprehensive and sustainable energy mix, rather than a silver bullet. He problematized the titling of the report, suggesting that it misrepresents the complexity of the energy crisis and the need for a multifaceted approach.

- Maminza stressed the importance of crafting and conveying the right messages to policymakers, ensuring that they understand the intricate nature of the energy crisis. He emphasized the importance of nuanced discussions and avoiding oversimplification in order to develop effective and sustainable solutions.

# CLOSING REMARKS

## MOHAN VIVEKANANDAN: GROUP EXECUTIVE, DBSA

Vivekanandan expressed that DBSA is proud to sponsor and participate in such initiatives and engagements stating that the DBSA has been supporting NSBE in many of its activities. He mentioned that it is encouraging to see people coming together for such discussions because often these conversations generate more heat than light. However, dialogues like these provide us with a platform to gain meaningful insights from different minds and stakeholders.

Vivekanandan echoed that South Africans share the same goals for South Africa: a functional economy and the alleviation of poverty. The real question is: how can we achieve these? He reiterated DBSA's commitment to supporting initiatives that contribute to the solutions, regardless of the specific mechanisms involved. He expressed gratitude to NSBE for providing the opportunity for DBSA and other stakeholders to participate. He also thanked delegates for attending and sharing their views. "It is through collaborative efforts like these that we can make progress towards a brighter future for South Africa", Vivekanandan said.

# VOTE OF THANKS

## CHRIZELLE ISAACS: SECRETARY GENERAL, NSBE

In her vote of thanks, Isaacs expressed gratitude to the delegates, speakers, and panelists for their valuable contributions to the dialogue. She also extended special thanks to DBSA for their sponsorship, which made the event possible.

Isaacs acknowledged the efforts of NSBE in organizing the dialogue, emphasizing the importance of such platforms for engaging in meaningful discussions on critical issues, like the country's energy crisis. Furthermore, she urged everyone present to go beyond the scope of the dialogue and actively contribute in their unique ways to addressing the country's energy crisis. Isaacs emphasized the significance of individual actions and collective efforts in finding sustainable solutions and making a positive impact.

In conclusion, she expressed appreciation for the participation and collaboration of all attendees and encouraged continued engagement and commitment to finding innovative ways to address the energy challenges facing the country.

NSBE SA, TWICKENHAM BUILDING, THE CAMPUS,
CORNER MAIN ROAD & SLOANE STREET,

BRYANSTON, 2191

0696833318 | TEL (011) 575 1838

ADMIN@NSBE.ORG.ZA

WWW.NSBE.ORG.ZA

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