South African National Energy Development Institute Energy Breakfast at Cape Town International Convention Centre 05 February 2019

The Interim Chairperson of the South African National Energy Development Institute (SANEDI); Mr Nkululeko Buthelezi

Members of the Board of Directors present;

The Interim Chief Executive Officer, Dr Thembakazi Mali;

Executives in both the Energy and Mining sector;

Members of the Media;

Senior Government Officials;

Captains of Industry,

Good Morning

It is a great pleasure to address you at this auspicious occasion on the side-lines of the Mining Indaba held here in Cape Town. I am standing in for the Principals who could not be here due to other pressing work commitments, the Minister has wished us good deliberations and is looking forward to receiving the outcome of this event

with proposals. It is necessary that we often have these kind of discussions especially in light of the energy needs that affects us in one way or the other, be it in our homes, work environment, industrial operations, and public spaces.

South Africa's economy is energy intensive and with the mining sector being among the Energy Intensive User Group (EIUG), it has even become more necessary that we do not wait for platforms of this nature, only to talk about pressing issues that affect our operations. We should be continuing to have robust debates that are followed by action and or implementation as part of creating certainty for investments in the country. With the $100 billon target that His Excellency, President of the Republic of South Africa, Mr Cyril Ramaphosa has set, we have to do more as energy cuts across any type of investment we may think of at this present moment. It is in this context that we are approaching all stakeholders across the energy sector value chain who should play a role - and the mining sector is among those in the main.

Distinguished Guests

Technology Development and Advancement

The South African National Energy Development Institute (SANEDI) deemed it fit that together with the Department of Energy, they should present possible collaborative partnerships in the energy efficiency and renewable energy space, that can establish win-win cleaner technology solutions into mining value chain after thorough consideration of the mining production processes; operations and maintenance; research and development; technology growth, development and advancement in contributing towards low a carbon economy in the short, medium and long term.

It is important to ensure that collectively we allow production to happen in a greener, cleaner and sustainable environmentally friendly manner. Industry, transport and the building sectors all cut across the mining sector and will need to use more of renewable energy coupled with energy efficiency. For instance, among others some areas of the mining operations have infrastructure such as buildings, street lighting twenty four

hours, seven days (24/7); operate waste water treatments plants; use a lot of fuel in the fleets. For such a high energy demand industry to reduce consumption and produce more with less, and reduce high carbon content of certain products and high emission processes, will certainly require innovative and novel solutions and lifecycle thinking in an integrated approach. SANEDI is presenting itself into this equation of the mining sector to also ensure that the benefits of integrating some of these initiatives are realised through the Energy Efficiency Incentive Scheme. It is critical that we connect the dots and optimise on the synergies presented when working together with local government especially municipalities.

Ladies and Gentlemen,

With the Fourth Industrial Revolution advancing faster, we too need to move with speed to intensify the deployment of smart grids. The Smart Grid represents an unprecedented opportunity to move the energy industry into a new era of reliability, availability, and efficiency that will contribute to our economic and environmental health. During the transition period, it will be critical to carry out testing, technology improvements, consumer education, development of standards and regulations, and information sharing between projects to ensure that the benefits we envision from the Smart Grid become a reality. The benefits associated with the Smart Grid include:

- More efficient transmission of electricity;
- Quicker restoration of electricity after power disturbances;
- Reduced operations and management costs for utilities, and ultimately lower power costs for consumers;
- Reduced peak demand, which will also help lower electricity rates;
- Increased integration of large-scale renewable energy systems;
- Better integration of customer-owner power generation systems, including renewable energy systems; and
- Improved security.

In the past 4 years SANEDI has implemented Smart Grids in ten municipalities and in the main, this project confirmed that smart grid enhances revenue collection and improved cash flow and immediately detects theft.

The latest International Partnership on Climate Change (IPCC) report states that the Sustainable Development Goal 7 on energy is not on track whilst also acknowledging progress. IRENA's Global Energy Transformation roadmap, 2050 states that while different paths can mitigate climate change, renewable energy and energy efficiency provide the optimal pathway to deliver the majority of the emission cuts needed at the necessary speed. A decarbonised power sector with a significant quantum of renewable sources is at the core of the transition to a sustainable energy future. Renewable energy and energy efficiency are the main pillars of the energy transition. Together they can provide over 90% of the energy related CO2 emission reductions that are required, using technologies that are safe, reliable, affordable and widely available.

Ladies and Gentlemen

Energy Supply, Optimisation and Utilisation

I hope you will agree with me that in early 2011 when South Africa started intensifying the diversification of its energy mix by rolling out renewables, most people were concerned about the high generation costs which to a larger extent made it look like it is impossible. Over time, global energy transformation, economies of scale, technology improvements, greater competition in supply chain and the right policy conditions gradually pushed down the cost to where we are now. With continuous improvement being in the mix of any growing organisation in light of unavoidable dynamics of globalisation, the mining sector has to take advantage of proven reliable and affordable initiatives that would enhance efficiency into its operations such as introducing renewable technologies and industrial energy efficiency initiatives to produce more with less.

Phase 1 of the Industrial Energy Efficiency (IEE) project that was piloted through a partnership between the Departments of Energy and Trade and Industry, National Cleaner Production Centre (NCPC) and the National Business Initiative (NBI) focused

its objectives on some of the big industries including the mining sector and the positive outcomes were largely well received. SANEDI is ready to take the baton and forge partnerships and go bigger. The Department of Energy and SANEDI encourages the other role players to tap into strong synergies between energy efficiency and renewable energy among the top priorities of energy policy design because, their combined effect can deliver the bulk of energy related decarbonisation needs in a cost effective manner over time.

Energy Research and Development

In areas where research and development is required in the energy sector, SANEDI's mandate is also to promote relevant energy research through cooperation with any entity, institution or person equipped with the relevant skills and expertise within and outside the Republic. This platform is to also look at the Research and &Development (R&D) needs of the mining sector. SANEDI is ready to explore best possible approaches and practices to relieve and assist the mining sector in introducing reliable and affordable sustainable energy while moving away from some of the traditional and conventional practices.

SANEDI was appointed by the Department of Science and Technology (DST) to implement the R&D initiatives identified in the component of the Draft Solar Technology Roadmap undertaken in the past four years as part of its mandate to promote energy research and technology innovation and also advise the Minister of Science and Technology on research in the field of energy technology.

In addition to its mandate, the areas of possible collaboration with any entity, are in line with providing for training and development in the field of energy research and technology development; establishment and expansion of industries in the field of energy; and commercialisation of energy technologies resulting from energy research and development programmes undertake any other energy technology development related activity as directed by the Minister, with the concurrence of the Minister of Science and Technology.

Distinguished Guests

Socio-economic footprint and Energy Transition

The role of electricity storage, and in particular battery systems has occupied the centre stage – from battery storage in solar home systems to those in electric vehicles. Notwithstanding its core operations which have been supported by the introduction of solar PV rooftop technology, in past few years, the mining sector has invested considerably in the housing development for its work force.

Understanding the socioeconomic footprint of the energy transition is essential to optimise the outcome. It is indisputable that the energy transition cannot be considered in isolation, separate from the socio-economic system in which it is deployed. With holistic policies, the transition can greatly boost overall employment in the energy sector. Partnerships will certainly spread into uplifting communities where these projects are implemented.

The Cool Surfaces Project is an initiative that SANEDI is looking forward to roll out in partnership with various stakeholders in the housing development market. This initiative is in response to South Africa's need for an energy passive, low cost, low maintenance cooling technology for buildings looking at all materials and technologies used in the construction of the building envelope that improve thermal comfort; surfaces that reflect lots of solar energy and release lots of stored heat energy.

Storage Battery Technology

With the increase in the deployment of storage batteries observed, this has started driving the costs down and improving efficiency. As a matter of fact, the deployment of these technologies has provided and continue to provide some of the flexibility that future electricity systems need to accommodate the variability that come with some of the RE technologies such as solar and wind fluctuating availability.

The International Renewable Energy Agency, 2017 released an extensive study on electricity storage from which most of the battery storage technologies were explored in terms of cost and performance. From the study, it is clear that battery storage is multifaceted. While lithium-ion batteries have received much attention thus far, other types are becoming more and more cost effective and further confirming that battery

storage in stationary applications is poised to grow at least 17-fold by 2030 and I would like to urge the mining sector to take advantage of these opportunities.

In conclusion, it is true that while energy transition is technically feasible and economically beneficial, it will not happen by itself hence SANEDI is positioning itself as part of the equation, together with all the relevant Departments, to provide inputs towards policy development and action needed to steer the energy system towards a sustainable path.

I thank you