



Proposed Speech
Mr Thava Govender, Group Executive: Transmission and Acting Group
Executive: Risk and Sustainability
Africa Energy Indaba 2018
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“The evolution of the electricity sector and the role of innovation”

Programme Director

Executives from business

Industry associates, experts and leaders

International associates

Members from academic institutions

Researchers

Members of the media

Distinguished guests

Ladies and gentlemen

Good afternoon

The energy industry, particularly the electricity sector, has undergone exciting developments over the past two centuries. From fulfilling the basic functions of lighting and cooking at the turn of the 19th century, electricity is now the backbone of the world’s economy and a basic societal need.

Innovation and technological advancements were and continue to be the catalysts of this evolution. It is in this spirit that I, on behalf of Eskom and as President of GO15 – an organisation comprising the top 19 very large grid operators in the world, who



deliver electricity to over half the world's population and accounts for more than two-thirds of global electricity consumption – take this opportunity to address this auspicious gathering in the presence of industry experts, leaders and partners from across the African continent.

Ladies and gentlemen, we are in an exciting era where technological advancements are rapidly changing how we generate, deliver and use energy. We are touching people's lives in a significant way. Traditional business models are undergoing transformational change and utilities and energy consumers have to adapt and embrace this new energy world. As energy experts and leaders in our industry, we can agree that climate change has a direct impact on our industry and how we do business.

Ladies and gentlemen, the effects of climate change are currently being felt in South Africa. South Africa, like many countries in Africa, is experiencing water scarcity in the Western Cape, Northern Cape and Eastern Cape provinces. These locations have been declared national disaster areas. The dire need for the City of Cape Town and the severe impact of the looming "Day Zero" is evidence of the effects of climate change.

Water availability, which the energy industry is heavily reliant upon, poses a serious challenge to energy security given that energy generation and water make inseparable bedfellows. While water scarcity is a cause for concern, South Africa is still facing a mammoth task and a global social responsibility to comply with the United Nations COP21 Paris Agreement, which South Africa signed on 1 November 2016. The Agreement is based on three main objectives which are defined within the broader context of sustainable development and poverty eradication. These objectives are to limit the increase in global average temperature to below two degrees Celsius from now until the beginning of the 21st century (2100), to increase the ability to adapt to the adverse impacts of climate change and to make finance



flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

Honouring the Paris Agreement is essential for the achievement of the Sustainable Development Goals, which are in-turn aligned to South Africa's National Development Goals (NDP). The NDP goals seek to, among other things, unite all South Africans around a common programme to achieve prosperity and equity, promote active citizenry to strengthen development, democracy and accountability, bring about faster economic growth, higher investment and greater labour absorption. It is for this reason that South Africa's roadmap for climate actions must not only drive the reduction of CO₂ emissions and build climate resilience, but also drive sustainable development and poverty eradication.

Sustainable development is a very localised matter defined by a country's unique circumstances. South Africa drove its economic growth and development on the back of abundant coal resources. While global energy trends envision limiting reliance on coal, South Africa has diverging needs and obligations that need effective management. The absence of a clear energy policy makes it even more difficult to support what is sometimes conflicting objectives. The opportunity to harness South Africa's national resources for broader societal goals is lost in the current policy vacuum. Electricity generation can be leveraged to achieve localisations of industry, skills development, economic growth and technology development.

Eskom recognises that there is no one-technology option that is the answer to meeting sustainable development goals. We need to strike the right balance in our pursuit of a lower-carbon future, providing universal access to electricity and leveraging electricity supply to achieve the broader Sustainable Development Goals. We are therefore committed to the principle of no upfront technology exclusion and



assessment of all options for meeting the imperatives we have for the sustainable development of our country.

Meanwhile, our continent has more than 40% of all the people in the world who are still without access to electricity, as noted by the International Energy Agency (IEA). The IEA states that in more than ten countries in Africa, 75% of their population lives without electricity, followed by an additional ten countries where half of their population lives without electricity. According to the IEA's Special Report – Energy Access Outlook (2017) 2.8 billion people in the world (during 2015) had no access to clean cooking. Of these people, 846 million are in Sub-Saharan Africa. The report states that women endure the most in this situation having to spend many hours gathering wood and cooking on polluting stoves which in-turn results in a high number of premature deaths.

The fourth industrial revolution presents a window of opportunity to embrace technology and innovation in the energy sector as technological advancements in renewable energy, distribution, generation, smart grids and other advances are rapidly unfolding.

Advancements such as energy storage, off-grid technologies and control systems, smart grid technologies, renewable, clean coal and nuclear energy all offer potential opportunities for investment and achieving the Sustainable Development Goals.

The fourth industrial revolution may bring us closer to realising an interconnected super smart African grid, which would be huge, due to the potential of the abundant energy resources on the continent.



Ladies and gentlemen, opportunities often go hand-in-hand with challenges. One overarching challenge is that while the fourth industrial revolution presents us with opportunities, utilities across the globe face the realities of the death spiral as an immediate threat. This calls for utilities and energy leaders to rethink the approach and double our efforts in overcoming and adapting to these macro changes.

This requires an energy sector to engage in honest and unclouded conversations; to strengthen mutual partnerships, mergers and acquisitions to accelerate market penetration and increase agility. International partnerships with entities such as GO15, EPRI, Cigre and the World Energy Council, among others, enable us to engage with leading energy players to advance our individual utility goals. Forums such as the Africa Energy Indaba, in its 10th year of existence, remain a key platform – to dialogue and to realise the dream of an African Energy Grid.

As Africa, we have spoken about the dream of an interconnected smart Africa grid for more than a decade now. Regional power planning and an interconnector has the potential for instantaneous intervention by a regional backbone system operator affording reliable and secure power exchange with significant economic potential. Despite this dream, the sad reality remains that very little progress has been achieved.

Utility reform and refined business models could unleash our full potential and yield extraordinary results for the continent. As a collective, we can further unlock opportunities for volunteer partnerships with sister African pools, namely the Southern Africa Power Pool, West Africa Power Pool, East Africa Power Pool and Central Africa Power Pool, as we drive electricity power flows between neighbouring countries.



Being mindful of the significant changes in the industry, Eskom has invested in its own infrastructure development, while understanding the potential of the electricity market in South Africa, particularly in terms of renewables, distributed energy resources and e-mobility. Our Research and Development department has identified these as having potential to reshape the energy sector of today and such are developing solutions that will resonate with a developing African energy market.

It remains critical that amidst a shifting energy industry, reliability of electricity remains key. During the past financial year, Eskom constructed about 580 km of transmission lines and commissioned 2 300 MVA transmission transformer capacity. We also completed a 765-kV network to the Western Cape, achieving a significant milestone towards improving grid stability. Eskom continues with its plans to upgrade its electricity infrastructure and deliver on our electrification programme. Eskom, as part of the Transmission Development Plan (TDP), plans to increase the transmission infrastructure by approximately 6 700 km of high-voltage lines and 41 000 MVA of transformation capacity in the next 10 years.

South Africa is making notable progress in diversifying the country's energy mix. In this regard, Eskom welcomed the connection of independent power producers and in so doing we are shaping a new electricity market for the country.

Large-scale renewable generation projects in areas such as wind and solar energy are being connected to the grid. To this end, close to R2.4bn has been invested in the integration of IPPs to the grid, in support of the Renewable Energy Independent Power Producer Procurement (REIPPP) Programme Bid Windows 1 to 3, resulting in a total of 61 projects out of 70 being successfully commissioned and contributing some 3 520 MW to the system. In addition, further renewable and conventional energy sources from IPPs, as determined by the Department of Energy through the Integrated Resource Plan (IRP) will outline further energy diversification.



Ladies and gentlemen, it is imperative that the energy industry in Africa explores how new ideas can be borne through collaborative networks of research institutions that bring business, utilities and countries together. In this way, we can define a research agenda to address our specific industry needs, to build infrastructure, local skills and capability, and to develop appropriate intellectual property.

We are making notable strides in embracing technology and innovation at organisational level, despite operating in a financially constrained environment. To this end, we are leveraging resources through strategic collaborations with sister SOEs as well as reputable local and international energy organisations and entities. This approach not only ensures that we remain at the forefront of technology development but that Africa cements itself as a global pioneer within this space. Part of Eskom's 2030 vision is to implement smart grid technology – ensuring safe, reliable and energy-efficient operations to enhance our customers' experience while enabling new energy services. Eskom will soon demonstrate how drones can be used in the process of high-voltage line inspections, which is done in different parts of the world. The next phase of this project will see the deployment of innovative real-time diagnostic capabilities augmenting the drone-enabled line inspections and that, ladies and gentlemen, will be at the forefront of applied technology.

In addition to keeping abreast of new technological developments as the country's key energy player, Eskom has intensified its efforts in the Large-Scale Energy Storage technologies space, thereby augmenting its existing programme to include utility scale as well as beyond the meter storage solutions development. Energy storage can unlock significant opportunities, particularly for Africa. Eskom's research unit has recognised that the future grid will need to incorporate energy storage in significant quantities. As a result, we have established a world-class and first-of-its-kind in Africa Large-Scale Battery Testing Facility at Rosherville, with the objective of measuring the real-time performance of different battery types prior to widespread installation.



This is critical, particularly in Africa, where there is a need to balance affordability with reliability and the pursuit of a lower-carbon future. Energy storage could be the panacea for Africa – transforming the energy sector even further.

Furthermore, Eskom's Research and Development unit is developing market entry strategies within the rapidly evolving Distributed Energy Resource and eMobility spaces. These strategies are not only focused on diversifying our revenue streams but accentuates Eskom's commitment to the National Development Plan objectives of skills and economic development, with the key gatekeeper being a net positive economic impact.

In a few more days, Eskom will celebrate its 95th anniversary on 1 March. Despite the significant challenges facing our utility we remain proud to have made an everlasting contribution to the lives of South Africans and other African partners.

Our electricity provision journey has come a long way from its humble beginnings when the organisation was established in 1923, to the global electricity utility it is today. The organisation is now more than just power stations and power lines. Its performance is also measured by the overall value added to the lives of South Africans. Our developmental responsibilities range from building and maintaining power plants and networks, to electrification and supplying households, schools, and factories with electricity, to supporting local industries and stimulating skills development and job creation. Eskom is also about creating a base on which South Africa can grow, helping to transform the lives of a large percentage of the population who live in poverty. The success of Eskom is the success of the country; the success of the country is the success of the SADC region; the success of the region is the success of Africa.



In conclusion, the real innovation in the energy industry is in our knowledge, collaborations and unrelenting drive to improve people's lives. It is not technology that will make the big difference, but the way people apply technology on the back of abundant energy, which is critical. In this regard, Eskom actively pursues innovation not just as one of its values, but in programmes like the Eskom Expo for Young Scientists – a programme we have been involved in for many years because of our unwavering belief that technological breakthroughs and innovations come from people. The Eskom Expo for Young Scientists engages young people in project work in Science, Technology, Engineering, Mathematics and Innovation.

On that note, I would like to wish you well with the conference as we continue to strengthen our relations and learn how to adopt and take full advantage of the latest technologies and innovations to reap maximum benefits.

Ladies and gentlemen, there is no single answer to the challenges and opportunities that face the energy industry today. Energy security will increasingly involve a diverse energy mix, energy storage, on-and-off-grid solutions, interconnections, information technology, human-driven innovation and the integration of all these elements into an intelligent and adaptive system.

I thank you.