



**Keynote Address by Elizabeth Marabwa
on Transforming the Future of Energy Systems to Ensure
Sustainability and Climate Protection: Are We Missing Something?
First Energy Economics Conference held at
Future Africa Campus, University of Pretoria,
South Africa on 18 November, 2019**

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Distinguished guests,

Speakers,

Delegates, Ladies and Gentlemen

Good morning.

It is my pleasure and honour to be with you at this first South African
Conference of Energy Economics. I thank Professor Roula Inglesi-Lotz for
inviting me and for the University of Pretoria for making it possible.

Energy is the engine for economic growth and development especially in our country South Africa, the developing economies and all the modern economies in general. Secure and reliable energy supply is essential for the provision of essential services, water, health, education including such as lighting, heating, cooking, information and communication technologies, as well as transport or mobility. Without access to affordable and secure energy, development remains a remote dream.

Energy is also central to climate change and environmental sustainability. The energy sector is responsible for approximately two thirds of the anthropogenic greenhouse gas emissions globally. Even those who do not believe that greenhouse gas emissions harm the environment at least accept that the plastics derived from fossil fuels are now choking our oceans.

The conference theme is aptly positioned especially in the South African Energy discourse and the African continent. The energy system is currently going through an unprecedented change with environmental concerns shaking the foundations of the system and at the same time, the economics of competing energy sources have also changed coupled with the advent of the fourth industrial revolution which enables new business models and renders others obsolete.

For economies to navigate the energy transition, it is critical that conferences such as this provides a platform to share facts, scientific research and enable stakeholders to deliberate on the diverse challenges facing the energy system today. Globally, energy systems are experiencing fast changes in consumption patterns, supply dynamics, technological innovations and policy changes.

The United Nations states that “a well-established energy system supports all sectors of the economy from business, medicine, education, agriculture, infrastructure and communications and high technology. Conversely, lack of energy supplies and transformation systems, is a constraint to human and economic development.”

Giving context to the energy sector, it is important to have a perspective on the energy challenges. The International Energy Agency publication on the World Energy Outlook 2018 show that progress on energy access has been made worldwide. *In 2017, the number* of people without access to electricity fell from 1.7 billion in 2000 to 1.1 billion in 2016. It is on track to decline to 674 million by 2030. The IEA further notes that approximately 600 million of the 674 million people without access to electricity will be from sub-Saharan Africa, mostly in rural areas. Here is a major challenge for the continent.

In the African context, electrification efforts in sub-Saharan Africa outpaced population growth for the first time in 2014, leading to a decrease in the number of people without access in the region. Nonetheless, despite progress in the last few years the electrification rate in sub-Saharan Africa is currently just 43%. Several countries in sub-Saharan Africa, including Ethiopia, Gabon, Ghana, and Kenya, South Africa are on track to reach universal electricity access by 2030, progress across the region as a whole is uneven, and the number gaining access fails to keep pace with population growth. As economists, it is important that you provide research based solutions to enable the continent to achieve universal access to clean, safe, sustainable and affordable energy, otherwise this lack of electricity in rural areas will exacerbate urbanisation.

The conference comes at an important time in South Africa when the Minister of Mineral Resources and Energy has just promulgated the Integrated Resources Plan 2019 which outlines the electricity plan for the country up to 2030. South Africa acceded to the United Nations Framework Convention on Climate Change from which the Paris Agreement outlined various options of addressing climate change impacts. The energy sector in the country contributes close to 80 percent of the country's greenhouse gas emissions of which 50 percent is from electricity generation and liquid fuels production. The country's national climate change response white paper policy outlines the near, medium and long term mitigation measures from which renewables, EE, green transport, CCS among other clean energy technologies to be deployed to reduce the country's carbon foot print.

The IRP 2019 has been informed and is aligned to the conference theme which seeks to deliberate on **Transforming the Future of Energy Systems to Ensure Sustainability and Climate Protection**. These energy technologies include renewables, energy storage and hydro. By 2030, renewables alone are expected to contribute 32.8% of electricity in South Africa comprising 26.6 percent from (solar, wind, and CSP) alone and 6.2 percent from hydro.

The IRP 2019 has been informed by the government policy to diversify the energy mix and reduce dependency on a few energy sources and the decommissioning of coal based generators has enabled entry of other sources of energy such as natural gas, renewables (Solar photo voltaic, and wind). Natural gas although it is a fossil fuel it supports greater deployment of renewable energies.

Gas producers, policy makers and other industry stakeholders are focusing on developing technologies and innovations needed to capitalise on the environmental benefits. The significant gas finds in Mozambique and our own shale gas potential will make gas a significant energy contributor to the country's energy mix. In line with the need to develop a gas market, South Africa as a member of SADC Energy Ministerial Committee, has agreed to participate in the development of the SADC Gas Infrastructure Master Plan which would guide the development of gas in the region taking advantage of gas discoveries in the SADC region. This provides a very good opportunity for the region to strengthen regional interconnectivity and to transition towards lower emission energy system.

South Africa has abundant coal and it is the mainstay of primary energy for electricity generation accounting for about 82% of electricity used in the country. The advantage of using coal for energy generation is underpinned by availability, accessibility, reliability and affordability to South Africans. South Africa's knowledge and expertise in generating energy from coal supersedes other technologies and includes among others coal to liquid technology and reduction in metallurgical processes.

As part of the just transition, South Africa will continue to deploy coal in the energy mix using clean coal technologies such as coal fluidized bed circulation combustion, integrated gasification combined-cycle plant, underground coal gasification and ultra-super critical technologies that can be deployed but with significantly less emissions from coal power stations in addition to carbon capture utilization and storage.

As economists you need to provide research that balance the competition needs to generate cheap sustainable energy and economic competitiveness of developing country.

We need researchers like yourselves to inform the country's industrialization plans for these new technologies. For example, South Africa still has no energy storage manufacturing facilities in spite of the fact that we are well endowed with lithium, vanadium – the metals used in these new energy technologies. Instead we are growing our exports of these metals. How can we achieve domiciliation of these new technologies? It is sad that we are failing to develop industries on the new technologies that the energy transition is bringing.

The transport sector is also an important area to focus on especially for developing countries. Africa will have the fastest growing population with a young growing middle class. Demand for vehicles will have a bearing on the growth and development of the liquid fuels industry and the electric vehicles market. Bloomberg state that one in every 250 vehicles sold today is EV. It is estimated that EV will hit 2.9 million in 2019 and increase to 50 Million by 2038.

What does this mean for Africa and South Africa in particular? What will be a fair transition in the mobility sector for our economy? This is where you as economists need to provide guidance and research on various scenarios and opportunities for industrialization trajectory the country should take and how to best position South Africa to participate in this emerging industry and ensure that as a country we create a niche in this market.

It will be remiss to conclude without talking to the role of women in this energy transformation. Changes in the energy systems comes with new industries. The number of jobs in the RE sector were approximately 10.3 million in 2017. The RE jobs are expected to increase to 29 million by 2050. The International Renewable Energy Agency (IRENA) research indicates that of the total 10.3 million people employed in the RE sector, only 32 percent were women. However women in positions related to science, technology, engineering and mathematics profession within the RE are very low. Of the women employed in the different categories 28 percent are in the STEM fields, 35 percent are in the non-stem technical jobs and 45 percent in the administrative jobs.

Empirical evidence clearly demonstrates that gender diversity and inclusion of women in leadership teams leads to better innovation and improved financial performance and business profitability as business make maximum use of all available talents in the economy.

Mark Misercola of Credit Suisse Research Institute¹ reaffirms the leadership link between gender diversity and better results and establishes that companies with more female executives in decision-making positions generate stronger market returns and superior profits. Companies where women accounted for 25% of senior leadership grew at a rate of 2.8 percent and companies with more than 50 percent women had growth rates of 10.3 %. The report also de-bunks the myth that women in senior positions actively exclude

¹ Mark Misercola, Credit Suisse Research Institute, 2016, Higher Returns with Women in Decision-Making Positions.

other women from promotions into top management. The report's findings shows that female CEOs are much more likely to surround themselves with other women in senior roles.

Transforming the future of energy systems to ensure sustainability and climate protection should not miss women and gender diversity in particular. Women should be included in every part of the energy value chain as researchers, policy makers, entrepreneurs, investors, leaders and technical experts. This inclusion will ensure that the sector benefits from the talent we have as a human race.

In conclusion, I take this opportunity to wish you fruitful deliberations. I invite you to join the South African National Energy Association so that as researchers and economists you contribute to the energy discourse in the country.

I thank you.