

Remarks by the Deputy Minister of the Department of Energy, Ms Barbara Thompson at COP17 on 29 November 2011 on: Diversification of Energy Mix towards a low carbon economy

In order to ensure that aspirations of moving toward a low carbon economy are realised, it is important that both sides of the coin be considered. We need to have a clear vision of where we want to be, but at the same time take stock of current realities and where we are.

South Africa, like many countries globally has to respond to climate change and the challenges it presents. However for us as a country, while trying to address this pertinent issue we also need to reach our developmental needs and work towards becoming a more equitable society.

The current reality is that more than **65%** of South Africa's **total** energy needs are met through coal as the primary energy source. This is followed by crude oil at around **22%**, while the remaining **13%** of our energy needs are met by gas, nuclear, hydro and renewable energy sources combined. Coal therefore plays the dominant role in our supply of energy, especially in the electricity sector where approximately **90%** of the country's electricity is produced in coal-fired power stations, the country's biggest source of greenhouse gas emissions, while nuclear, gas, hydro and renewable energy sources make up the remaining **10%**. We cannot, however ignore the fact that we are a coal-rich economy, nor can we ignore the significant contribution of the coal mining industry towards the economy. In **2010** South Africa had an estimated **32 billion tonnes** of coal reserves (which at current local consumptions rates can last us more than 100 years to come) and according to Statistics South Africa, in **20??** the coal mining sector contributed about 1.8% of GDP directly.

However these statistics should not deter us from acknowledging the other reality of the impact that coal-related emissions have on health, the environment and of course climate change. As a country we are committed to playing our part to reducing total emissions and therefore moving towards a low-carbon economy. As we are all aware, this commitment was entrenched when the President pledged for South Africa to reduce greenhouse gas emissions by **34%** below **2009** levels by the year **2020** and further tighten this target by emitting **42%** below **2007** levels by the year **2045**.

The signing of the Green Economy Accord by the government and its social partners **two** weeks ago marks yet another significant milestone in achieving this. Of the 12 commitments made in the accord, some are direct contributions by the energy.

We aim to achieve our target of installing one million solar water heaters in homes by 2014; and securing commitments from the private sector for the supply of **3 725MW** of renewable energy by **2016**. This capacity will primarily be from solar and wind technologies. South Africa has a high abundance of sun and certain parts of the country are very windy, thereby

making addition solar and wind energy to our energy mix a very high possibility which we are currently pursuing aggressively. The Wind Atlas project which is being undertaken by various research institutions including SANERI and the CSIR aims to develop and employ numerical wind atlas methods and develop capacity to enable large scale of exploitation of wind power in South Africa.

Given the fact that we are a coal-rich economy, the accord also commits the government to have an increased focus on the advancement of clean coal technologies through projects such as underground coal gasification, as well as carbon capture and storage (CCS) through our energy research and development institute (SANEDI).

CCS is a key potential greenhouse mitigation option for the country and as the energy sector we are committed to its implementation. We want to invest in CCS technologies, and efforts have been made to scale these technologies up to a commercial scale. In this regard, the South African Centre for Carbon Capture and Storage (SACCS) under SANEDI was established to support development and deployment of geological sequestration in the country. The South African “Carbon-Dioxide Geological Storage Atlas” launched in **2010** identified significant (**150 Gigatons**) potential CO₂ storage capacity in the country. The next milestone for the centre is for development of the technologies which will enable the first test injection to be up and running by **2016**.

If we are serious about diversification towards a low carbon economy, then we cannot ignore the role that natural gas can play as a bridging gap in this transition as natural gas emits significantly lower green house gases than other fossil fuels such as coal and crude oil. Coal Bed Methane (CBM), is no longer regarded as an obstacle in the coal mining sector and is instead fast becoming known as a commercially viable energy source. Over and above conventional sources of natural gas, we also need to keep our minds open to the furtherance in developments for the extraction of unconventional natural gas sources such as shale gas. A study conducted by the EIA estimated that South African has a shale gas potential of **485 trillion cubic feet (tcf)** however this is not yet proven and further exploration will be informed by the outcomes of the study on the process of fracking. Once all the environmental impacts are well-understood, it will be possible to determine to what extent this source of energy can help meet South Africa’s needs. It is also increasingly important that we collaborate with our neighbours such as Mozambique (with whom we already have long term cooperation), Namibia, Angola, Botswana and Zimbabwe. Regional cooperation (similar to that which is well-established in Europe) is essential if we are to tackle this issue successfully while also assisting each other with our developmental needs.

South Africa is a highly-fuel dependant country, with **34%** of overall energy consumption being that of liquid fuels. Approximately **70%** of this is from crude oil as a primary energy source while the remaining **30%** is from coal. The green economy accord also commits government to facilitate the development of a local biofuels industry and setting targets for the mandatory blending of bio-ethanol and bio-diesel into petrol and diesel. However,

blending of biofuels alone is not sufficient in addressing the carbon footprint of the sector, and there is a need to move to cleaner fuels standards such as those already adopted in most parts of Europe. This will require substantial investments as current refining technologies will have to be overhauled to adapt to new specifications.

We are a water-constrained country, however not all of Africa is. The Congo River and Inga Dam in the DRC provide a significant potential for energy. Our own state President recently signed a Memorandum of Understanding on the Grand Inga Hydroelectric Project with the state president of the DRC. This project has an estimated capacity of **40 000MW** which has the potential to change the African energy sector and it would significantly increase Africa generation capacity. This will enhance energy access to clean and efficient energy across the continent and contribute significantly towards a low carbon economy and economic development.

In order to keep a balance between energy security and sustainable development, we realise that moving towards a low carbon economy is not going to be an overnight event. It will be a difficult but deliberate process where we will draw on our own previous experience as well as the experiences of other countries. We believe that the targets which we have set ourselves, and therefore this transition, are achievable. However it cannot be accomplished without the introduction of new technologies and the investments associated with such technologies. A wide range of technologies will be essential to achieve stable economic growth, energy security and environmental sustainability. To address these challenges, collaboration between different nations, globally and regionally, is essential as this will ensure rapid and large-scale development of low-carbon technologies.

Electricity Planning for a Diversified Power Production. (IRP2010-2030)

In May 2011, we promulgated South Africa's first 20 year electricity Integrated Resource Plan (IRP2010-2030). This plan is a policy document detailing what South Africa's 20 year electricity generation expansion aspirations are. It aims to provide an indication of the country's electricity demand, how this demand will be supplied, and also provides an estimate of how much capital will be required to build the supply capacity. IRP caters for a flexible cone of demand within reason to changes in assumptions on demand and supply.

It is not a plan that deals with the overall energy needs for the country nor does it deal with the wider energy infrastructure plan for the country as it merely focuses on electricity supply and demand situation. IRP2010-2030 is a key policy input into the electricity

Transmission Development Plan plans and other associated plans. It is envisaged that IRP development process will be an iterative and repeated every two years, thus in year 2012 the current version of IRP will be revised.

The objective of the IRP2010-2030 can be summarized as seeking a balance between the following key parameters in South African context:

1. Carbon Emissions
2. Cost of Electricity Production
3. Security of Electricity Supply for a sustainable economic growth and
4. Creation of sustainable jobs

Central to the development of IRP2010-2030 is question of “cost of electricity production” versus the countries’ objective to limiting the carbon emission. To this extend, it should be noted that finding a balance between these two parameters is not an easy task considering that there are unknown as far as the financial incentives relating to a low carbon economy is concerned. It is our intention to clarify these uncertainties around financial parameters at the 17th Conference of the Parties is order for South Africa.

The draft IRP2010 is alive to this financial uncertainty challenge and hence a balance between minimal financial “cost of electricity production” and low carbon emission is being proposed as a country plan until the uncertainty is removed. This scenario is referred to as the “Revised Balanced Scenario”

This balanced scenario includes the committed projects under the IRP1 and more renewable energy projects beyond South African’s own target set in 2003 of 10 000 GWh renewable by 2013.

Our current policy on new power generation mix can be summarized as follows;

- **42 % Renewable Energy**
 - Wind
 - Solar
 - Biomass
 - Biogas
 - Landfil gas and
 - Hydro
- **23 % Baseload Nuclear**
- **15 % Baseload Coal**
 - Incorporating Carbon Capture and Storage (CCS)
- **9 % Peaking Open Cycle Gas Turbine**
- **6 % Gas-fired Closed Cycle Turbine** and
- **6% Imported Hydro Power** from within SADC region.

The above percentages are South Africa’s 20 year electricity generation plan.