



**NATIONAL SCIENCE AND TECHNOLOGY FORUM**

# **Sustainable energy for all in South Africa**

**positioning in the country**

**#SEforAll**

*S.E.T. for socio-economic growth*

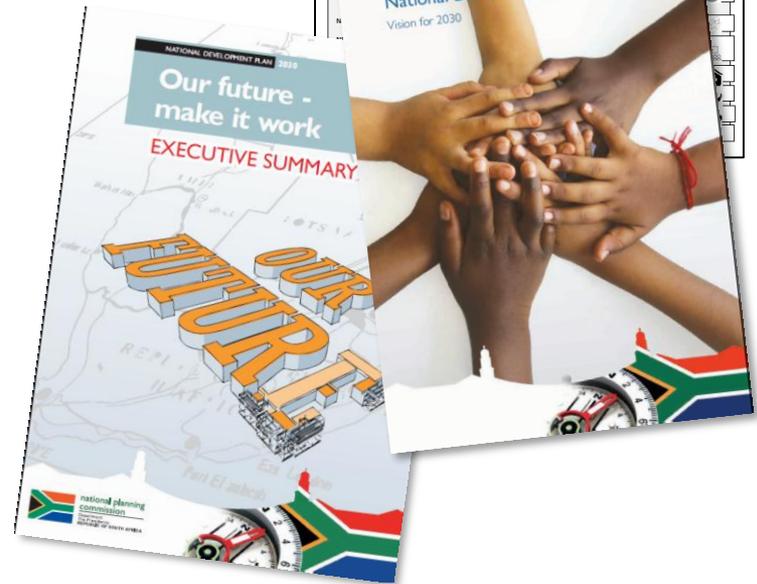
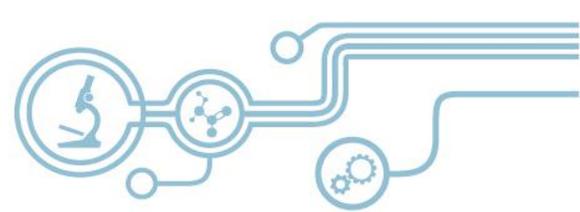
# National Development Plan (NDP)

NSTF series – unpacking the NDP

Focus – understanding it from a science, engineering, technology (SET) perspective.

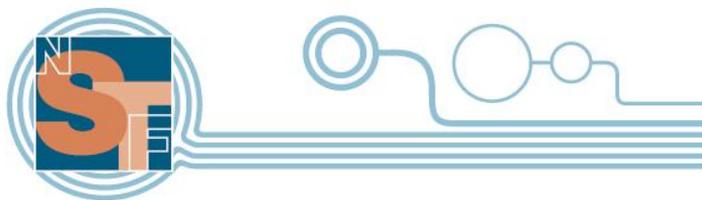
NDP is seen as a **blueprint/guiding document** for South Africa.

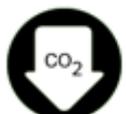
NDP aims to **eliminate poverty and reduce inequality by 2030**.



# NDP

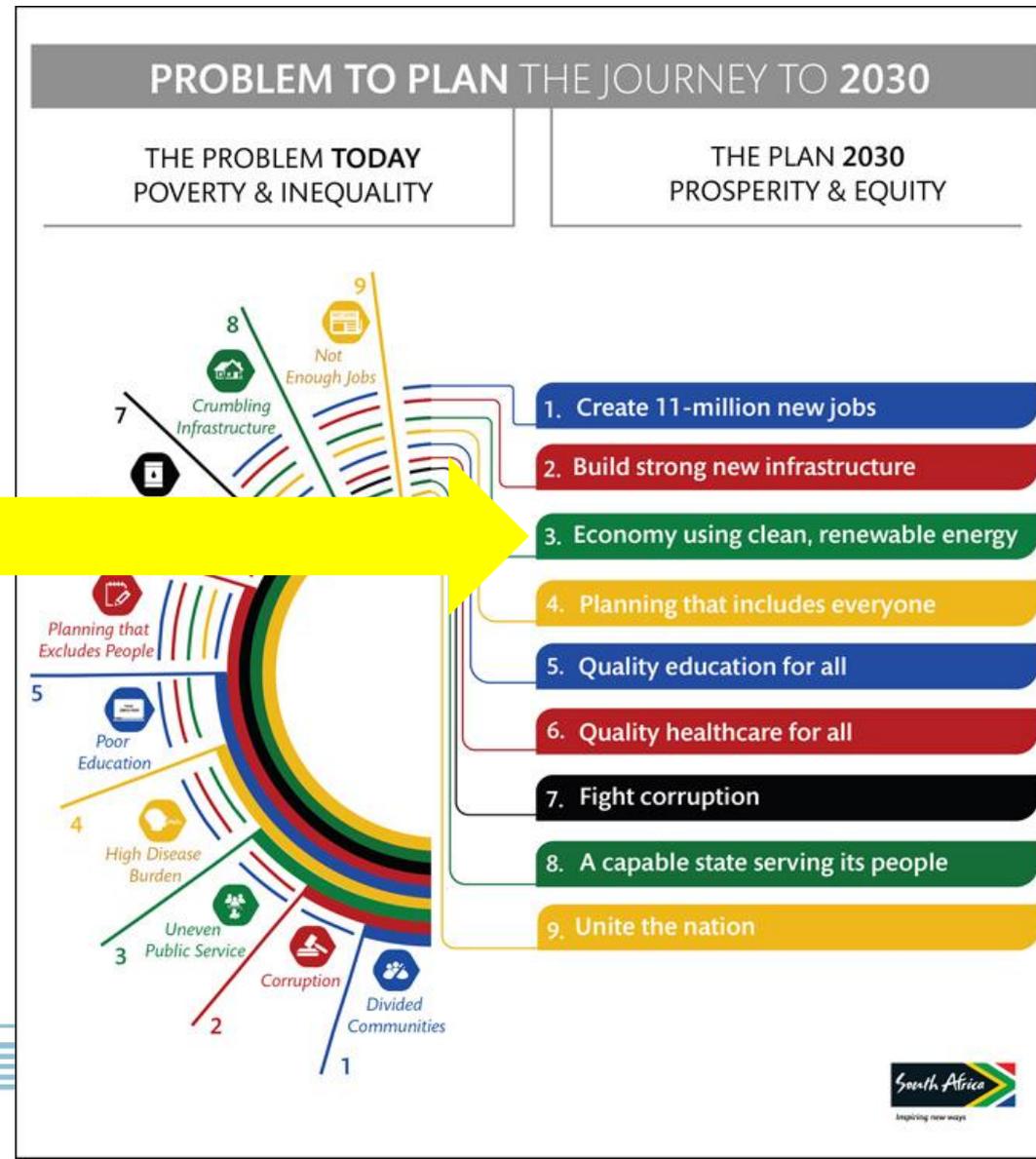
In 2012, Cabinet adopted the NDP as a long-term vision and plan for the country.



Summary of NDP 2011 actions	
	An economy that will create more jobs
	Improving the quality of education, training and innovation
	Reversing the spatial effects of apartheid
	Transition to a low-carbon economy
	Quality healthcare for all
	Reforming the public service
	Fighting corruption
	Transforming society and uniting the country
	An inclusive and integrated rural economy
	Social protection
	Building safer communities

# NDP

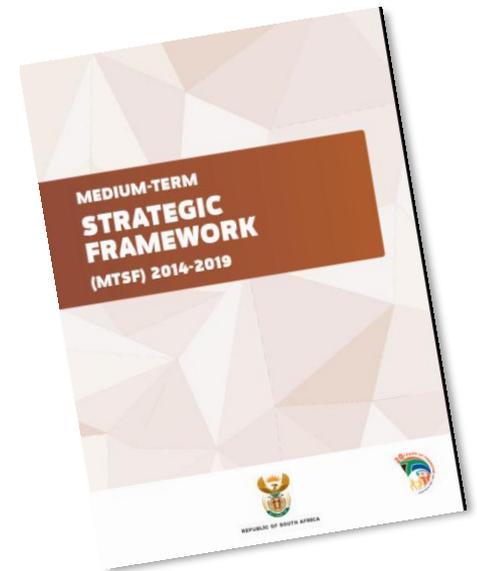
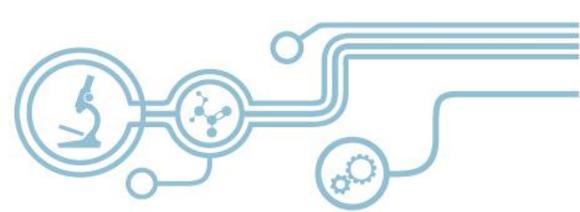
In 2017, there was a need for an update.



# NDP implementation

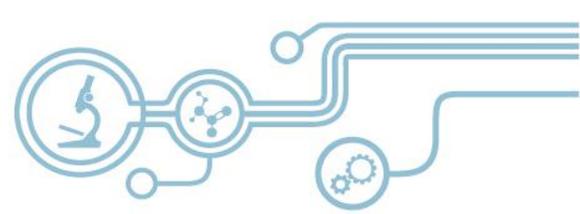
**2013** – it was explained there would be 3 cycles

1. 2014-2019 planning cycle – Medium Term Strategic Framework (MSTF)
2. 2019-2024
3. 2024-2029 planning cycles



**Operation Phakisa – a fast-results delivery programme launched in July 2014.** ('Phakisa' means 'hurry up' in Sesotho.)





# NDP implementation

**Vision 2030 Summit (21 June 2017)** with endorsement of National Planning Commission.

- Government still aligning
- Importance of public-private partnership
- What can fast-track the realisation of goals



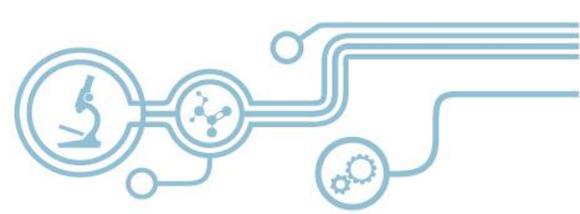
**NATIONAL  
DEVELOPMENT  
PLAN  
2030**

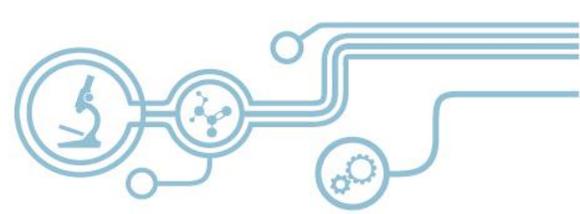


# NDP – progress

NDP aims to **eliminate poverty and reduce inequality by 2030.**

**Are we closer to reaching this?**

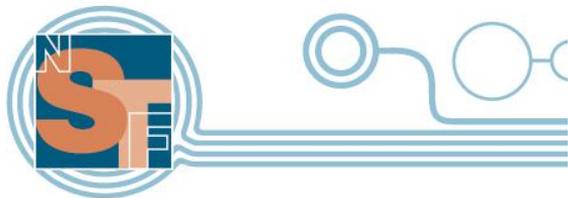
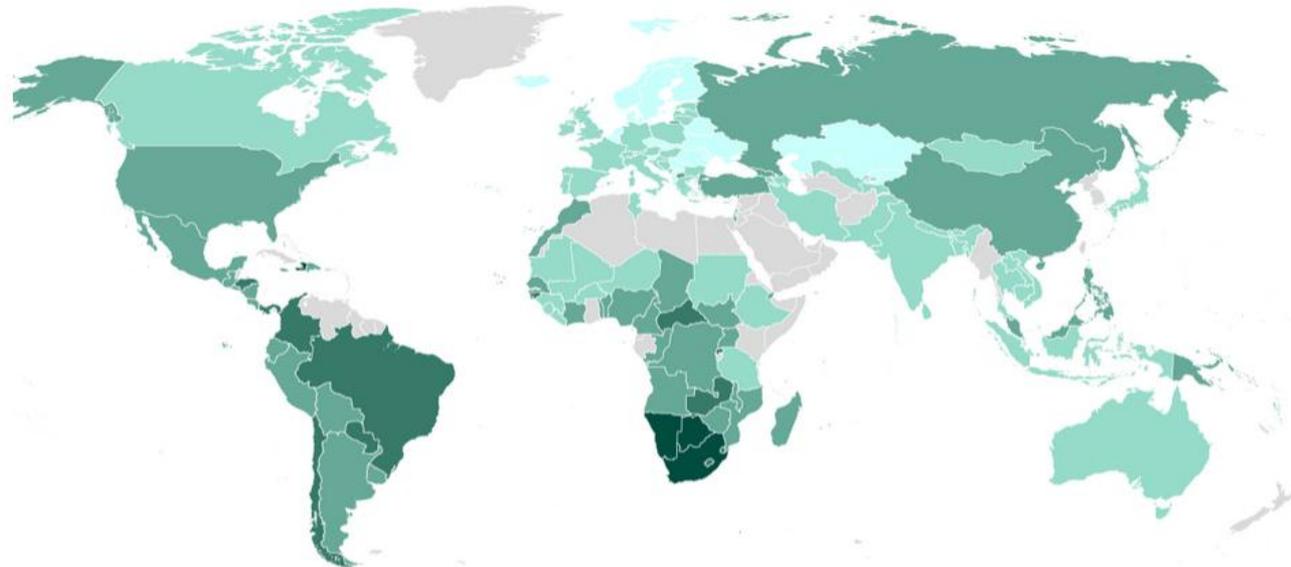




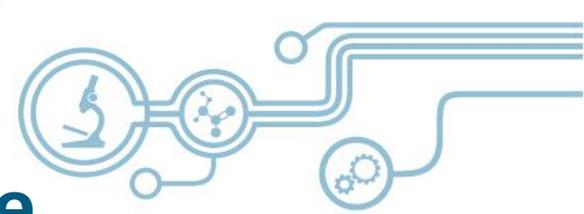
# NDP – progress

**2017 - South Africa is the most unequal country according to the World Banks GINI Index.** The GINI coefficient is a measure of inequality of distribution.

Gini index for income inequality ranges from zero (absolute equality) to 100



# NDP (Ch 1) – Key drivers of change



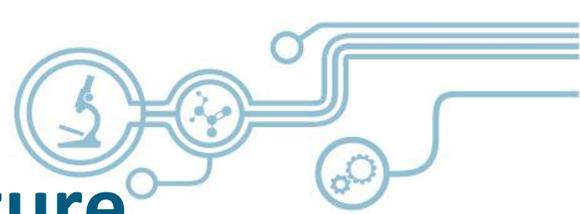
## Environmental challenges and drivers

**The NDP is clear on the effect of climate change and the link between environmental threats and poverty.**

**A low carbon future is positioned as the only realistic option.** This presents potential for innovation around energy systems. The political challenge is to develop policies and regulatory initiatives for improved resource management, for substantial clean technology industries, and to assist with the transition.



# NDP (Ch 4) – Economic infrastructure



## Energy sector

**NDP sees, by 2030, an integrated energy sector with adequate investment in infrastructure.**

Needs to provide expanded, quality energy services at competitive rates or with subsidies for needy households.

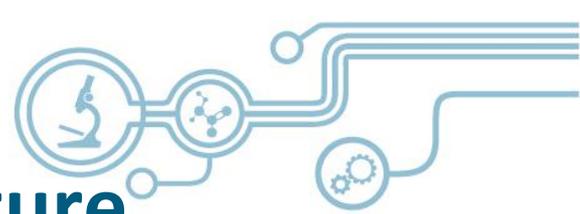
Having the security that economic activity, transport, and welfare are not disrupted.

That more than 90% of population has access to electricity.

Integrated energy sector should support economic growth through job creation and export.



# NDP (Ch 4) – Economic infrastructure



## Energy sector

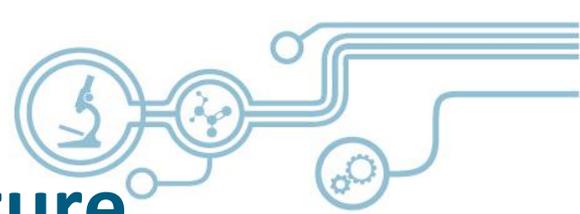
**NDP sees, by 2030, an integrated energy sector with adequate investment in infrastructure.**

“[C]oal will contribute proportionately less to primary-energy needs, while gas and renewable energy resources – especially wind, solar and imported hydroelectricity – will play a much larger role”.

The NDP describes a more diverse energy market that holds investor opportunities for providing innovative and sustainable energy solutions within credible regulatory frameworks.



# NDP (Ch 4) – Economic infrastructure



## Energy sector

**There is a continuous focus on environmental sustainability “through efforts to reduce pollution and mitigate the effects of climate change”.** This means balancing supply security, affordability, economic growth, and climate change mitigation.

Solutions may exist in nuclear power but the NDP says this “needs a thorough investigation on the implications of nuclear energy, including its costs, financing options, institutional arrangements, safety, environmental costs and benefits, localisation and employment opportunities, and uranium enrichment and fuel fabrication possibilities”.



# NDP (Ch 5) – Transitioning SA to a low carbon economy that responds to climate change

**Commitment to “reduce its emissions below a baseline of 34 percent by 2020 and 42 percent by 2025”.**

The NDP sees 2030 as a time when “South Africa has reduced its dependency on carbon, natural resources and energy”.

Need to recognise that humans’ wellbeing relies on the wellbeing of the planet. However, this must be balanced with increasing employment and reducing inequality.





# NDP (Ch 5) – Transitioning SA to a low carbon economy that responds to climate change

Need for consensus on challenges and trade-offs. **Only some consensus was reached.**

**Government approach and policies: The “primary approach to adapting to climate change is to strengthen the nation’s resilience”.**

Resilience includes socioeconomic objectives such as decreasing poverty and inequality, increasing education levels, improving health care, creating employment, promoting skills development, and having a strong economy with high energy, water, food and natural resource security and strong innovation.



# NDP (Ch 5) – Transitioning SA to a low carbon economy that responds to climate change

**The NDP sees South Africa’s carbon emissions as peaking around 2025 and then stabilising. This must be done without hindering the socioeconomic objectives.**

The regulatory environment will support stabilisation through, for example:

- Expanded renewable energy programme
- Advanced liquid and bio-fuels sector
- Promotion of green building and construction practices
- R&D resources being allocated to low-carbon technologies (not only for mitigation but for global opportunities)



# NDP (Ch 5) – Transitioning SA to a low carbon economy that responds to climate change

## **Moving from the historical focus on minerals and energy.**

Transition is challenging because historically policies have focused on minerals and energy. Beyond this, there is also a shortage of skills and capacity.

“[F]undamental structural challenge in moving towards a lower carbon economy”.

The main “challenge is de-linking economic activity from environmental degradation and carbon-intensive energy, while remaining competitive” and keeping to the socioeconomic objectives.





# NDP (Ch 5) – Transitioning SA to a low carbon economy that responds to climate change

**The NDP notes that “more detailed analysis is needed to determine the optimal mix of mitigation actions”.**

The poor and vulnerable must be protected from transitional costs, while considering the economic implications overall.



# NDP (Ch 5) – Transitioning SA to a low carbon economy that responds to climate change

## Proposing a carbon tax

A carbon budget approach is proposed. “A carbon budget sets the amount of carbon that can be emitted in a given amount of time.”

The NDP supports a carbon tax approach. However, specific planning needs to be addressed around the uncompetitive and monopolistic electricity generation sector to see real effects. Further focus should be on sectors where the price may be insufficient to change behaviour.

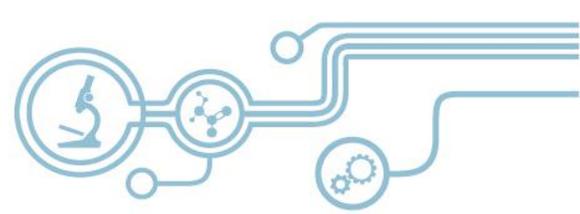




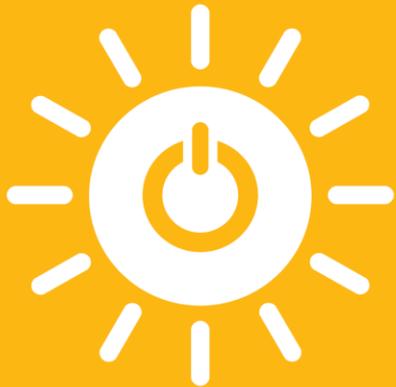
# SUSTAINABLE DEVELOPMENT GOALS



# SDGs – number 7



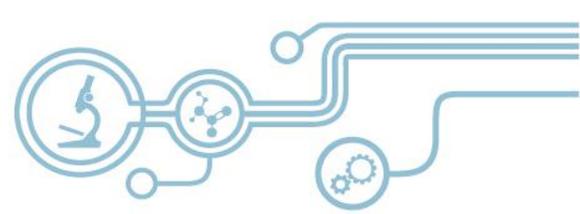
## 7 AFFORDABLE AND CLEAN ENERGY



Energy is central to nearly every major challenge and opportunity the world faces today. Be it for jobs, security, climate change, food production or increasing incomes, access to energy for all is essential.

Sustainable energy is opportunity – it transforms lives, economies and the planet.





# Sustainable Energy for All

Empowers leaders to broker partnerships and unlock finance to achieve universal access to sustainable energy.

Marshal evidence, benchmark progress and connect stakeholders.

Amplify partners' voices and tell stories of success.

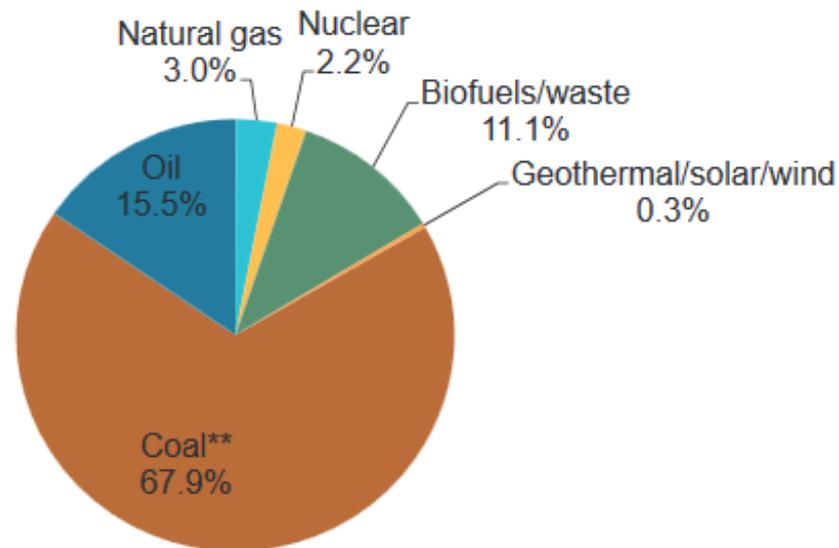
Know what actions are needed.

Regularly taking stock of where we are – in 2018, in 2020, in 2024 – we can help government leaders and other decision-makers stay on track.



## Share of total primary energy supply\* in 2015

### South Africa



**142 Mtoe**

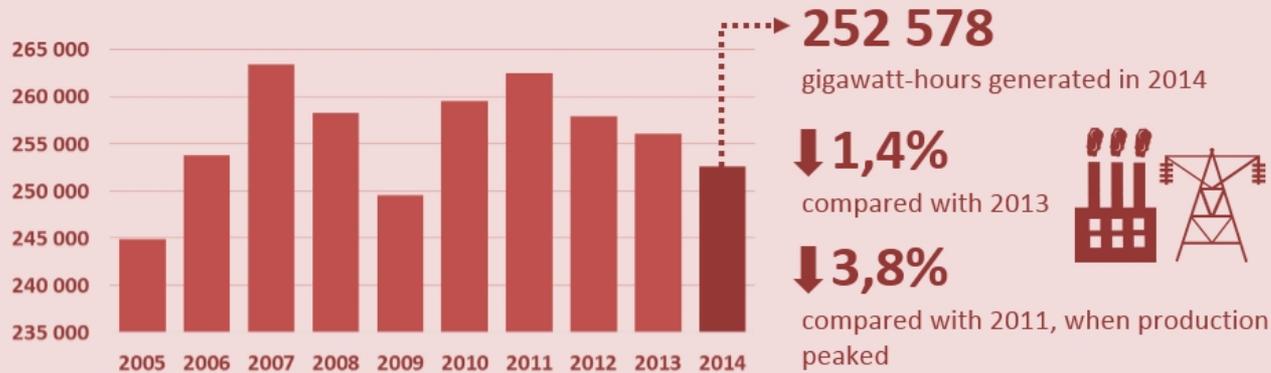
\* Share of TPES excludes electricity trade.

\*\* In this graph, peat and oil shale are aggregated with coal, when relevant.

Note: For presentational purposes, shares of under 0.1% are not included and consequently the total may not add up to 100%.

# Electricity produced and consumed in South Africa: 2014

## ELECTRICITY PRODUCED IN 2014

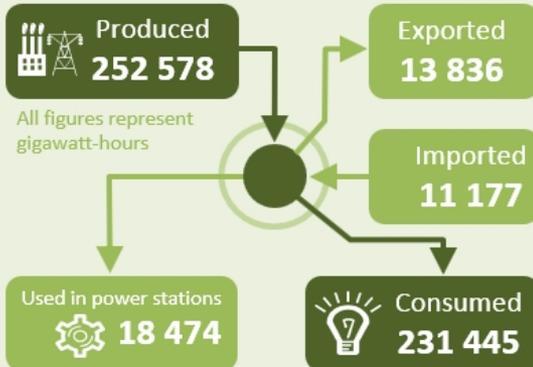


## WHO PRODUCED ELECTRICITY?



Eskom produced 95% of all electricity in 2014

## ELECTRICITY CONSUMED IN 2014



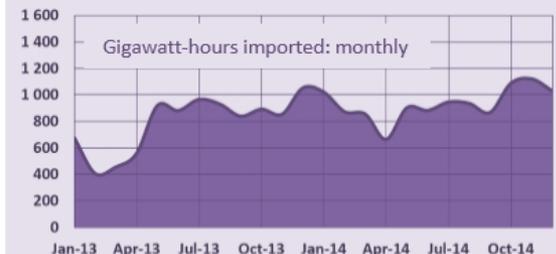
## ELECTRICITY EXPORTED

↓ 0,7% in the amount of electricity exported in 2014, compared with 2013



## ELECTRICITY IMPORTED

↑ 18,6% in the amount of electricity imported in 2014, compared with 2013





# In the news

ITWeb

## Renewables industry rubbishes Numsa's claims



By **ADMIRE MOYO**

Johannesburg, 19 Mar 2018

Engineering News

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## Africa struggles to meet energy demand and reduce carbon emissions

28TH MARCH 2018

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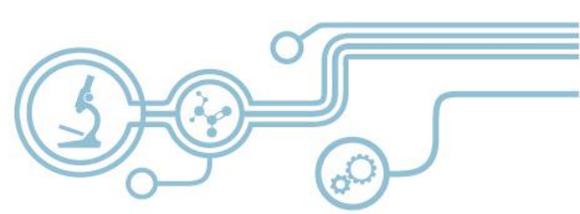
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## South African court dismisses bid to block \$4.7bn renewable deals

Engineering News





## In the news

SAnews.gov.za

**Energy mix key to combat municipal energy challenge**

Wednesday, March 7, 2018

SAnews.gov.za

**SALGA calls for financially viable energy solutions**

Wednesday, March 7, 2018

Infrastructurene.ws

**Civil society takes on new coal plants**

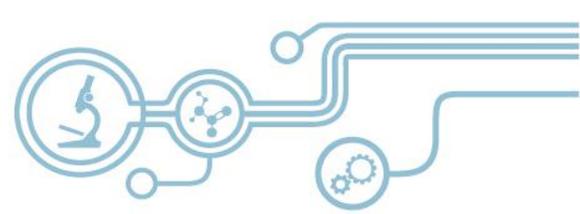
Mar 22, 2018 | News | ★★★★★

**Nuclear build's contribution to South Africa's GDP will be "staggering" – Expert**

Mar 8, 2018 | Energy, Events, News | ★★★★★



Infrastructurene.ws



## In the news

The Conversation

**Why South Africa's power utility should boost its output of in-house renewables**

April 2, 2018 12:52pm SAST

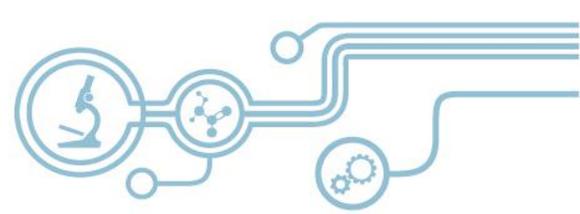
Polity

**Energy-intensive firms say carbon tax wrong tool for reducing power emissions** 14TH MARCH 2018

Polity

**Energy researchers applaud carbon tax, but call for simplified design** 15TH MARCH 2018





# In the news

Engineering News

## EIB pumps \$25m into off-grid solar project

28TH MARCH 2018

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BY: [MARLENY ARNOLDI](#)  
CREAMER MEDIA ONLINE WRITER

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**T**he European Investment Bank (EIB) has provided \$25-million in financing for off-grid solar lighting company d.light to strengthen access to energy in Africa.

## Challenges and opportunities abound in Africa's energy sector

March 5, 2018 · 0

Mining review Africa

