

SAWEA

South African Wind Energy Association

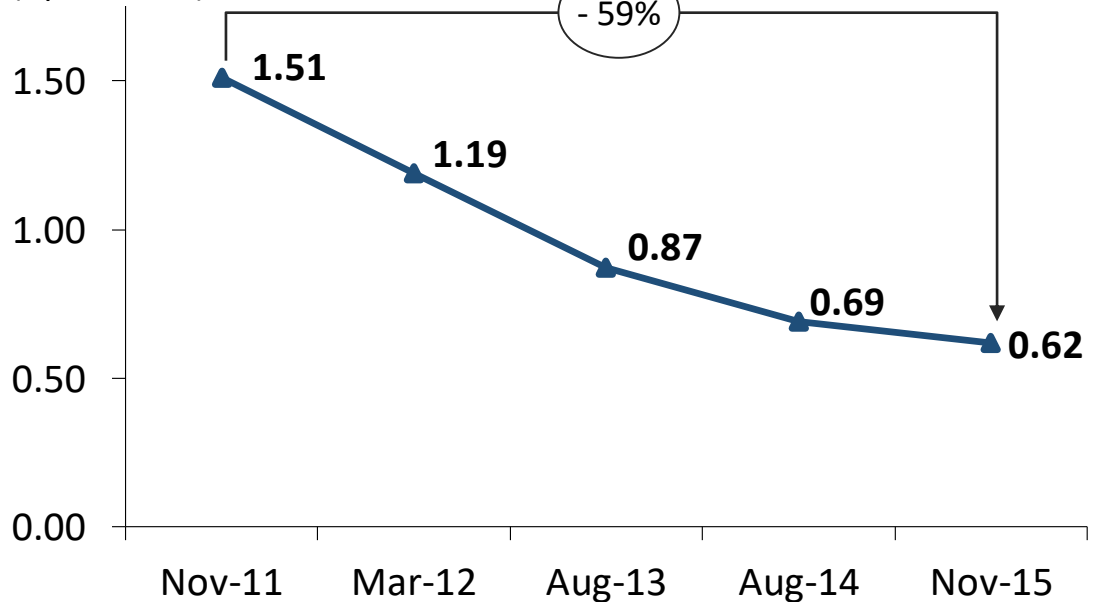
The Cost of Wind Energy

Wind Fact Series 2017

Wind Energy has become very cheap

The actual average tariffs of wind energy have drastically declined since the first bidding window in 2011.

Actual average tariffs in R/kWh (Apr-2016-R)



Source: CSIR Statistics of utility-scale solar PV, wind and CSP in South Africa in 2016. CSIR, April 2017.

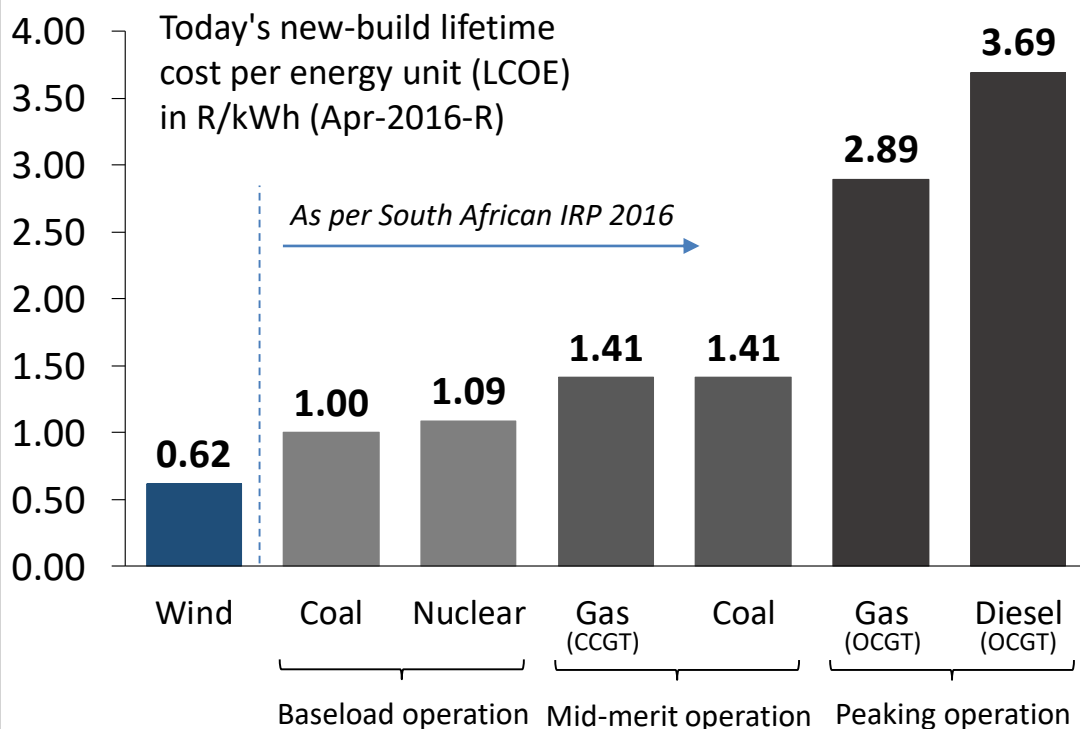


Reasons for price decline:

- drop of technological component prices
- technological advancements in wind harvesting
- strong competition for low wind energy costs by IPPs

Today, wind energy is by far the cheapest new-build energy generating option in South Africa

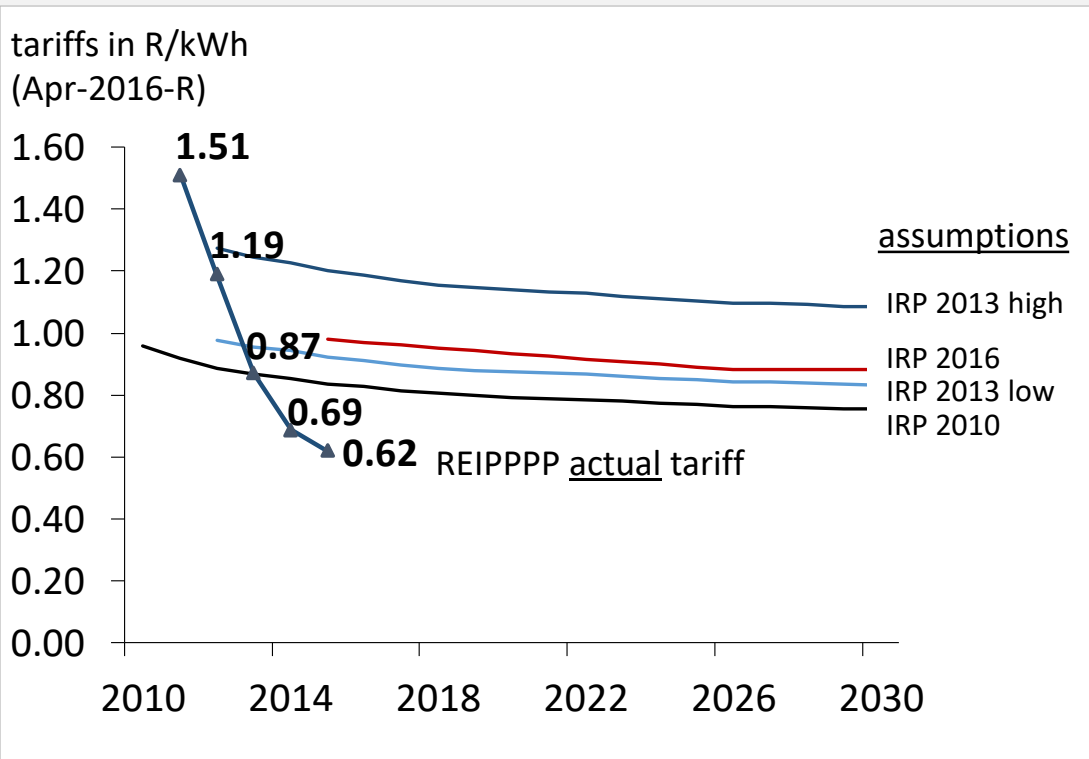
The 2016 tariff for wind energy was almost 40% cheaper than the one for baseload coal.



Source: The case for Renewable Energy to provide base load energy in South Africa. CSIR, June 2017.

The IRP 2016 uses wind tariffs that are too high for the calculation of the future energy mix

The price assumptions applied in the IRP 2016 are higher than actual REIPPPP tariffs.



Source: Comparison of IRP assumptions with actual IPP tariffs: A feed-back loop between planning assumptions & actuals. CSIR, 2016.



Using wind tariffs that are too high leads to the **underrepresentation of wind technology** in the future energy mix

Wind is good value for money

For the phases up to and including bidding window 4

Significant investments have been made into wind development

74.7 billion
Rand

Source: IPPPP Overview, December 2016. Department of Energy SA, Development Bank SA, National Treasury SA.

The investment costs in wind are very low

22 million
Rand/MW

Source: IPPPP Overview, December 2016. Department of Energy SA, Development Bank SA, National Treasury SA.

3.3 GW
of wind power have been procured. Wind supplies 50% of SA RE power

Source: <http://www.energy.org.za/> accessed July 2017.



Wind helps to save fuel costs when the energy system is under strain

2014

Total fuel savings
because of wind
R2.5 billion

direct fuel saving: R1.7 bn

avoiding unserved
energy: R0.8 bn

Source: Financial benefits of renewables
in South Africa in 2014. CSIR, Feb 2015.

2015¹

Total fuel savings
because of wind
R3 billion

direct fuel saving: R1.5 bn

avoiding unserved
energy: R1.5 bn

Source: Financial benefits of renewables
in South Africa in 2015. CSIR, Aug 2015.

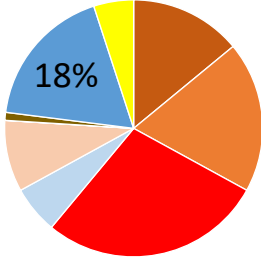
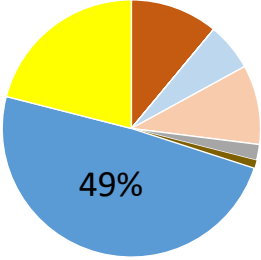
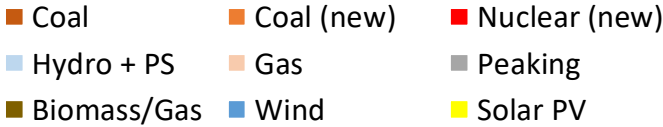


¹ in the first 6 months of 2015 only

It is important to highlight, that the CSIR study assumptions are very conservative and that the real total fuel savings are considerably higher than the numbers presented.

Opting for an RE based energy mix is the cheapest solution for SA

The total system cost of power generation is **R73 billion/yr cheaper** by 2050 than Draft IRP 2016 Base Case

Energy mix in 2050 Demand 522 TWh	IRP 2016 base case 	Least cost 
Total system cost (R-billion/yr)	700	627
Average tariff (R/kWh)	1.34	1.2
		

Source: CSIR Comments on Draft IRP2016. CSIR, March 2017.



Also, by 2050, Least Cost

- emits 55% less CO₂ & consumes 65% less fresh water
- creates 10-20% more jobs in the electricity sector than Draft IRP 2016 Base Case