

“Energy Expert” Blom's Crusade against 27 Renewable Energy Contracts

Costs of Renewables *versus* Coal

I refer to the article <https://www.esi-africa.com/more-nuanced-approach-needed-in-pursuing-renewables-say-experts/#comment-147310>

“Energy Expert” Ted Blom is quoted in this article as saying “[In South Africa] coal power from the old fleet costs less than 40c/kWh, while the average cost of the renewable bid windows, already approved as at 1 January 2018, is more than R1.88/kWh”.

Blom “is highly critical of the South African government’s recent signing of 27 renewable energy independent power producer projects”.

The real cost¹ of coal-fired power in South Africa is at least TWICE as much as Blom claims. And according to a study by the CSIR Energy division, the real cost of solar PV and wind power from the latest expedited round of these same 27 renewable energy independent power producer projects (REIPPPs) in April 2016 rands² is 62c/kWh – a mere THIRD of what Blom claims.

A far more relevant comparison is between these NEW wind power and NEW solar photovoltaic (PV) costs and the cost of power from Eskom’s NEWEST coal-fired power station – Kusile. Again according to the 2016 CSIR study, Kusile power cost is estimated at R1.16/kWh – nearly twice as much as the wind and solar PV projects which Blom “is highly critical of . . .” See <https://www.dailymaverick.co.za/article/2016-10-18-comparative-analysis-the-cost-of-new-power-generation-in-south-africa/#.WtZsnNRubIU>.

The recently signed 27 REIPPP contracts also include delayed wind and solar projects from older rounds, which cost more – but still less than coal power.

They also include the 100 MW Redstone CSP solar project with 12 hours’ energy storage, which like the already operational 50 MW Bokpoort CSP (with 9 hours’ storage) can deliver flexible on demand dispatchable power day and night. Indeed Bokpoort has run at varying output levels according to demand for 24 hours per day for several weeks of commercial operation. These pioneering new solar CSP projects with storage at present cost more than coal power, but like wind and solar PV power, they have a downward cost trajectory.

According to another CSIR study³, the benefit of the very substantial cost from bid windows 1 to 3 (BW 1-3) of the REIPPPs “lies in the fact that without them the country would not have been able to bring the cost for new solar PV and wind down to the latest achieved R0.62/kWh – which is 40% cheaper than new coal” (Thabametsi). Having contractually committed to these already operational REIPPPs, it makes little sense to complain about their higher average tariff.

It makes even less sense to use this cost as an argument against the new REIPPPs whose cost – according to the CSIR³ merely equals the fuel cost of the coal plants. They will³ “trigger tariff payments of merely R6.6bn per year while they will produce more than 9 TWh/yr”. An average cost below $R6.6/9 = R0.73/kWh$.

Why is Blom silent in this article about the exorbitant cost of coal-fired power, which moreover⁴ uses a lot of water for cooling, is highly automated⁵ and creates fewer jobs per TWh/a of electricity delivered than solar or wind? This while so strongly (on the radio, television and on so many platforms) and repeatedly protesting the government’s signing the far more cost-effective new REIPPPs – which also create more jobs and whose wind and solar PV power projects need no water? In doing so, he is NOT doing South Africa a favour. And NOT acting in the public interest.

This is not even yet counting the very real cost of air and water pollution caused by coal power stations. Eskom has been acting outside of the law on this matter for more than two decades. Nor does this include the cost associated with climate change, which amongst other effects, currently deprives thousands of farm workers in the Western and Eastern Cape of their jobs!

If Blom is truly an independent “energy expert”, as is implicit in the title of the article linked above (and in the title of one of the articles linked therein), why does he make such crassly misleading misrepresentations? This Emperor’s crusade against those 27 renewable contracts has no clothes!

¹ As indicated from actual contracts. See the example (Thabametsi) from the link below (in the next paragraph of the main text). To claim that the old Eskom power stations deliver power at lower cost conveniently excludes their very substantial maintenance cost. It is no accident that many of the older Eskom plants had already been mothballed, and were brought back into service only to attempt to avoid the exorbitant fuel cost of diesel-fuelled open cycle gas turbines.

Currently, due apparently to severe problems with (mis)managing coal contracts and lumping coal of different grades together in a single pile at some of its Giga power stations, Eskom is again burning massive amounts¹⁰ of diesel at a cost it will likely also want to recover from consumers in a future RCA clawback round.

² REIPPP tariffs are adjusted annually for general inflation (which runs far below Eskom tariff inflation), so to be specific, one should state the year.

³ <https://www.fin24.com/Economy/Eskom/5-reasons-why-eskom-is-wrong-about-renewables-costs-csir-20170112>

⁴ In most cases. Even “dry” cooling, in which the late Prof Dieter Kröger of Stellenbosch University was a recognised world leader, uses some (but much less) water for cooling. Of course solar PV as well as CSP solar also use water – for cleaning the PV panels or the mirrors. Newer solar CSP plants use dry cooling, older ones use wet cooling.

⁵ With about 30 colleagues I visited Eskom’s Duvha in 1975 – then one of the five largest thermal power plants worldwide. The visit included the huge opencast mine, where we were permitted inside the control cabin of a dragline – a huge crane with boom rivalling Africa’s tallest building. We also saw the kilometers-long conveyor belt taking coal from the mine to the crushing plant at the power station, and the boilers – each taller than Africa’s tallest building – and several stories above ground level were shown one of six three-stage turbines on a single shaft driving a generator on yet the same shaft. Also the control room, a spectrograph determining the percentage of hydrogen gas in the steam (an indicator of corrosion in the boiler via reactions like $H_2O + Fe \rightarrow H_2 + FeO$ which occur at high temperatures and are promoted by impurities in the water), the ultra-pure make-up water purification plant and the cooling tower innards.

The entire mining plus power station operation is highly automated, and employs only a tiny highly trained staff complement.

Worldwide New Renewable Energy, Coal, Gas and Nuclear Power Installations in 2016

In 2016 growth in solar power capacity overtook new coal-fired generation for the first time⁶, showing how the falling cost of green technology is reshaping the global energy system.

Solar capacity grew faster⁶ than any other source of electricity in 2016, during which almost two-thirds of net power capacity added around the world was renewable, with 126 GW of solar and wind power against 86 GW from coal and gas.

2016 saw a record amount of new nuclear power – 10 GW – the most in 25 years⁷. But newly started nuclear power construction was only 3.2 GW, and the only plant commissioned in the West⁸ had started its construction no less than four decades earlier! Compared to new renewable, coal and gas power, new nuclear is tiny!

Ted Blom's Important Role at Outa and Nersa

At the Organisation Undoing Tax Abuse (Outa), Blom has provided a huge service to our country. At a National Energy Regulator (Nersa) hearing⁹ in Cape Town on 16 April 2018 Outa head of energy Ronald Chauke verily said that Eskom leadership must institute stringent measures to recoup the billions of rands siphoned out of the utility through corruption and maladministration to get immediate reprieve on its cash flow/liquidity challenges before Nersa considers granting it a tariff hike. And that as Outa was still concerned about the 'rampant corruption' that had plagued Eskom, as well as its weak adherence to corporate governance, Eskom should show clean and independent reporting, an enhanced regulatory framework and a primary energy procurement strategy.

Outa remained concerned about a lack of transparency on coal contracts¹⁰, the inefficient procurement of coal and poor plant performance, especially due to systemic and chronic breakdowns, and is concerned about Eskom's personnel productivity, which has declined by 35%, from 7.1 GWh/y per person in 2007 to 4.6 GWh/y per person in 2017, as a result of an increase in (staff) from 32 674 to 47 658 over the same period, during which output has remained relatively flat.

On the same occasion⁹ Ted Blom of Mining and Energy Advisors called for a cessation of regulatory clearance account (RCA) applications until a full independent forensic report on Eskom has been presented. In view of the distrust engendered by Eskom's recent actions, Blom also called on Nersa to implement a (software) model or dashboard to cross-check information provided by Eskom.

Eskom's Current Fuel Problems

These severe problems¹⁰ – which stem largely from Eskom's previous as well as current abysmal management of a highly complex matter, and from its support for Zupta-linked Tegeta – may cost South Africa hundreds of billions of rands. Eskom's response to serious enquiries by a top energy journalist indicates that a culture of nontransparency reportedly initiated during the time of former CEOs Molefe and Koko still persists.

With transparency, the massive looting by Tegeta and others would of course not have been nearly as easy to conceal, and might have been prevented. The linked article¹⁰ and the CSIR Energy Division in my opinion deserve top awards!

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Initiator & Presenter of the Renewable Energy course in the Physics Dept of the University of Pretoria

⁶ <https://www.iea.org/publications/renewables2017/> Indeed, in 2016 164 GW of new renewable power capacity was installed worldwide. Of this, 74 GW was solar photovoltaic (PV) power, and 52 GW wind power – together 126 GW. Net new coal power was 57 GW (26 GW of plant retired), and net new gas power 29 GW (12 GW retired) – together 86 GW.

⁷ <https://www.iea.org/etp/tracking2017/nuclearpower/>

⁸ https://en.wikipedia.org/wiki/Watts_Bar_Nuclear_Generating_Station#Unit_2

⁹ <http://www.engineeringnews.co.za/article/outa-calls-for-eskom-turnaround-before-tariff-hikes-are-granted-2018-04-17>

¹⁰ <http://www.ee.co.za/article/the-transition-to-a-low-carbon-future-must-be-rapid-and-must-be-for-everyone.html>