



## **Using technology and innovation to reduce GHG emissions – wind in SA**

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**SAWEA**

South African Wind Energy Association

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# Summary

- Wind is far cheaper than fossil fuel derived electricity
- Wind power is fast and incremental
- Technology has improved dramatically
- Wind as procured in SA avoids many risks and problems for government
- Huge potential
- Leads to social investment and sustainable development

# Wind power is so cheap

- Wind power was bid in Round 4 of REIPPPP at 56c/kWh and the average winning price will be 65c/kWh or less
- Latest estimates for Medupi are ZAR 1.05/kWh
- Even without counting externalities, wind is the clear winner

Table 1: Estimated annual externality cost of Kusile (BE at UP: p. 18)

	Net output GWh	Externality cost			
		Low (R million)	R/kWh (Low)	High (R million)	R/kWh (High)
Health	32 301	182.8	0.006	213.3	0.007
Climate change	32 301	3 148	0.097	5 334	0.165
Water	32 301	21 305	0.660	42 357	1.311
Mining	32 301	6 538	0.202	12 690	0.393
<b>Total</b>		<b>31 174</b>	<b>0.97</b>	<b>60 594</b>	<b>1.88</b>
<b>Total excluding water for generation purposes*</b>		<b>9 869</b>	<b>0.31</b>	<b>18 237</b>	<b>0.56</b>

\* For illustrative purposes only

# Fast and incremental - avoids stranded, dinosaur technology

	Year	Capacity factor/availability of plant (Medupi)	Capacity factor/availability of plant (80MW Wind Farm) assuming construction commenced with Medupi in May 2007
Construction starts	0		
	1	0%	0%
Wind farm commissioned after about 18-24 months	2	0%	0%
	3	0%	25%
	4	0%	35%
	5	0%	40%
	6	0%	40%
	7	0%	40%
	8	0%	40%
Medupi unit 1 synchronised	9	14%	40%
	10	14%	40%
	11	14%	40%
Medupi unit 2 synchronised	12	28%	40%
Medupi unit 3 synchronised	13	42%	40%
Medupi units 4 & 5 synchronised	14	70%	40%
Medupi unit 6 synchronised	15	84%	40%



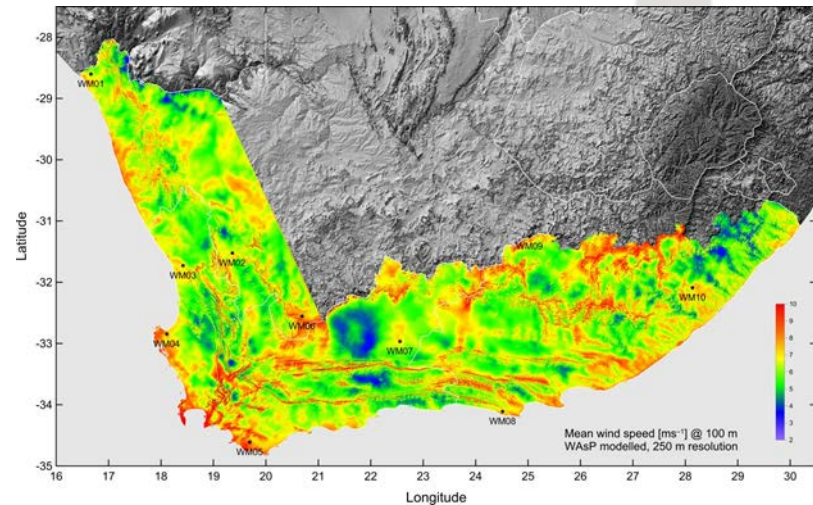
## New Mobiles 2014



<http://mobiles2014.blogspot.com>

# TECHNOLOGY HAS IMPROVED DRAMATICALLY – RESOURCE EXCELLENT

- Darling National Demonstration Wind Farm (2008) has 1.3 MW turbines, 40 meter blade lengths and capacity factors of well below 30%.
- Recent REIPPPP projects have 3 MW turbines with blades in excess of 50 meters and capacity factors around 40%
- These impressive figures are far exceeded by developments in the international off-shore market
- As availability goes up, costs come down and wind power becomes ever more dependable.



# THE WAY WIND POWER IS PROCURED IS GOOD FOR “SA INC”

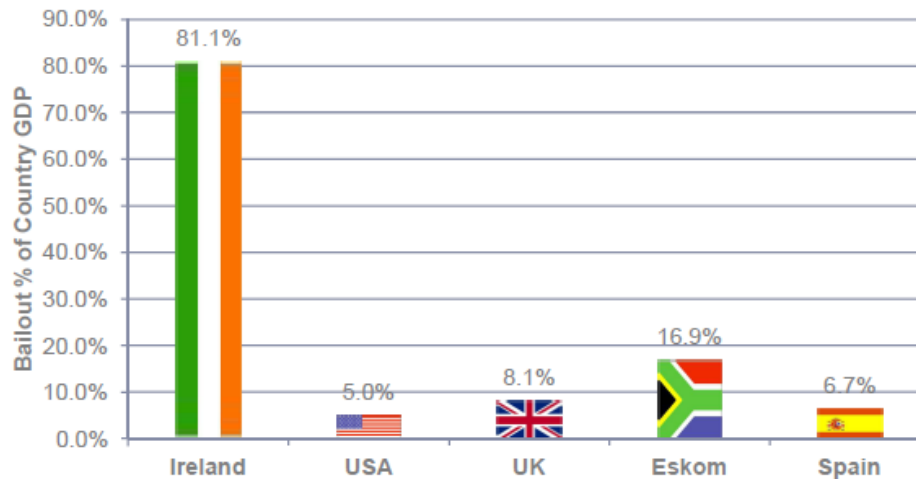
- Approx ZAR 45 billion invested by private sector in less than 4 years
- Close to 2,000 MW procured
- Early projects being commissioned on time and on budget without construction risk to SA
- Commitments to community development of ZAR 7 billion over next 20 years

## Key points

*The magnitude of the bailout of Eskom - 16.9% of 2010 GDP shows the importance of the SA power sector...*

*...Eskom's loans are intended to be serviced from increased tariffs*

## Bank/Utility Credit Support as a Percentage of Country GDP



UK , USA, Ireland, Spain and Eskom Bailouts

- Note: The bailouts of financial institutions in the UK, USA and Ireland are reflected from 2008 – 2010 and Spain for 2012 i.e. When made, while the other statistic represents the funding/credit support by SA Govt of Eskom.
- The bailouts represent 81.1%, 5%, 8.1% and 16.9% of the 2010 GDP's of Ireland, the USA, the UK and South Africa respectively
- The most recent June 2012 Spanish bailout represents 6.7% of their 2011 GDP

# SOCIAL INVESTMENT AND SUSTAINABLE DEVELOPMENT

- Wind in REIPPPP rounds 1 – 4 has committed ZAR 7 billion into socio-economic development and enterprise development over the next 20 years
- Education, skills development, health care, enterprise development within 50 kms of the projects site
- “People-planet-prosperity“ finally being seen
- Can fundamentally transform deep rural communities
- One of the best climate success stories anywhere

# THANK YOU



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