

# **Renewable energy in South Africa and the role of rising powers**

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- China has the largest cumulative installed wind power capacity
- Since 2008 China has been the world's largest producer of solar PV (Fu and Zhang 2011). 95% of its solar PV products are exported despite growing domestic demand
- China has almost 1/3 of global installations of solar PV and has dominated module production globally since 2009 (REN 21). 67% by 2013.

- South Africa has become a leading global destination for RE investment in 3 years since launch of RE IPPPP
- From few hundred million dollars in 2011 to \$5.7 billion in 2012 (UNEP/BNEF 2013:27) of which approx \$1.5 billion wind and \$4.2 billion solar
- New Growth Path, Green Economy Accord (300,000 jobs by 2020), Industrial Policy Action Plan, National Development Plan etc
- Integrated Resource Plan for electricity approved 2011: doubling of national capacity from approximately 41,000 MW to 89,532 MW by 2030
- Just over 20% of installed capacity (17.8GW) from renewable energy (RE IPPPP and other). This will produce approx 9% of electricity supply

# Renewable energy independent power producers' programme

- Renewable energy independent power producer's programme (RE IPPPP) approved 2011.
- Competitive bidding process: potential developers bid to construct an RE project below a certain cap.
- Utility-scale renewable energy connecting to centralised grid
- Projects are scored 70% on tariff and 30% on economic development criteria & community ownership

# Renewable energy independent power producers' programme

- 6.5 GW over 3 years under 5 bidding rounds
- 3 bidding rounds complete, 3,901 MW approved...64 projects in various stages of development
- 4<sup>th</sup> bidding round deadline August 2014
- Mostly wind, solar PV and CSP
- Total investment commitments of approx \$14 billion, Rounds 1 to 3 (Eberhard et al 2014)



Droogfontein solar power plant source:  
[www.energyblog.org.za](http://www.energyblog.org.za)

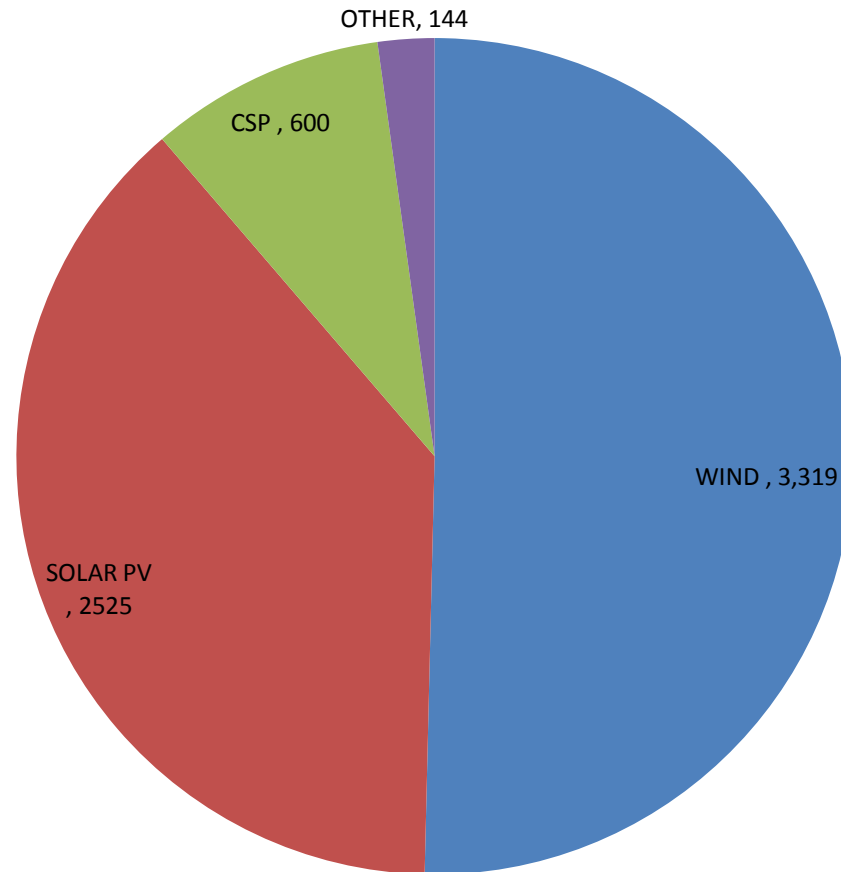
- 62% drop in PV tariff and 42% in wind
  - Grid connectivity issues
- Round 3 & 4

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# RE IPPPP technology allocation by MW

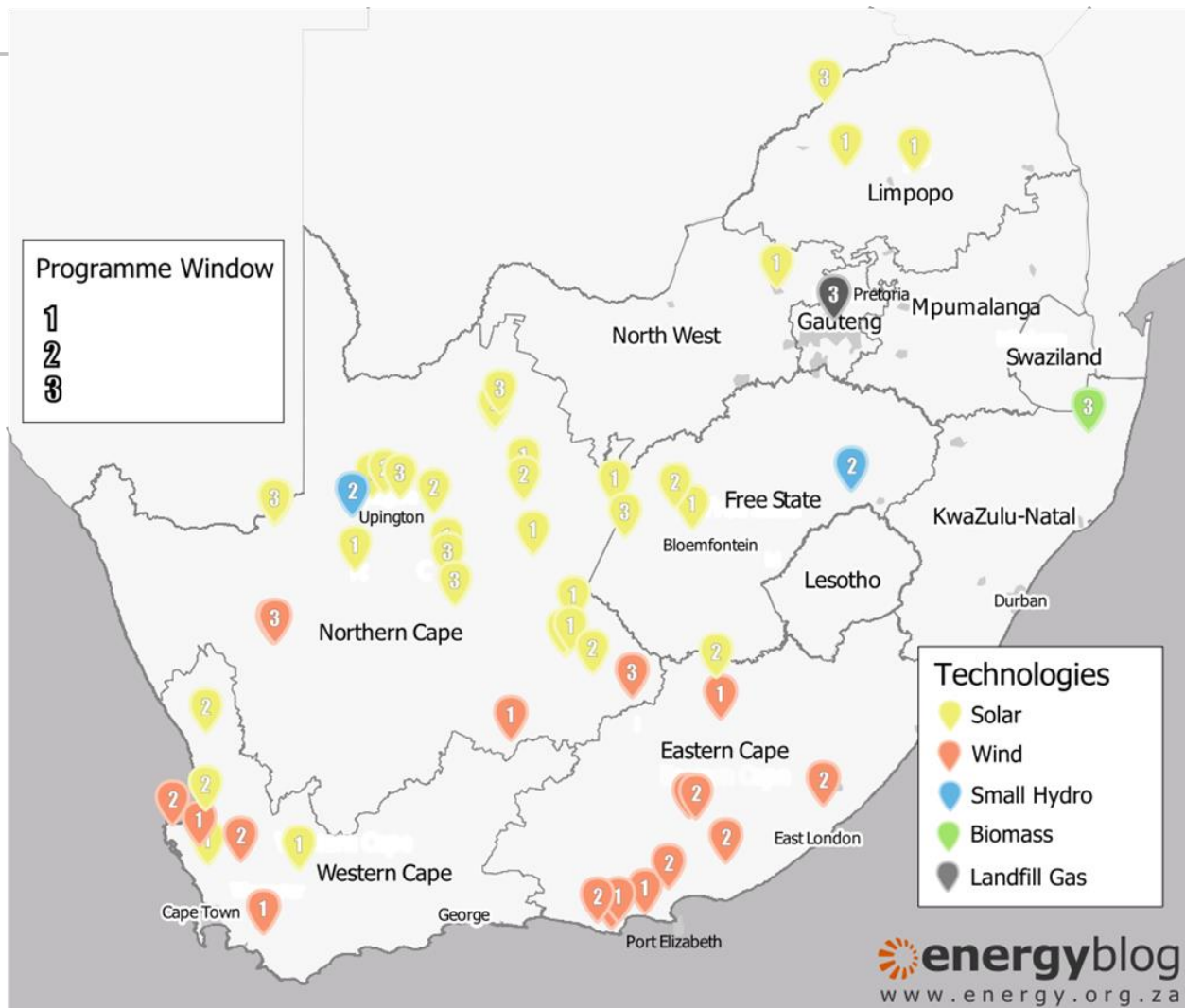


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# RE IPPPP project map



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Source: Forder (2013) [www.energy.org.za](http://www.energy.org.za)

- *Project development*
- *Finance and investment*
- *Engineering, procurement and construction (EPC)*
- *Technology supply*
- *Economic development and community ownership requirements*



- An unprecedented success: strong regulatory criteria, impressive economic development (EY 2014, Dodd 2014)  
BUT....
- Concerns over extent to which the financial returns will benefit or leave the country
- Ownership of industry becoming domain of large international utilities
- Tensions between ‘bankability’ and economic development/ community ownership criteria
- Delays due to connectivity issues (and other)

# The project companies

- Project companies: special purpose vehicles (SPVs). Exclusive purpose of developing, operating and owning the project.
- Minimum 40% SA entity participation; minimum black ownership of 12 per cent (target 20 per cent); minimum 2.5 per cent community ownership (50km radius).
- Complexity of ownership structures involving the developer & other international, national, private and public players & financial, BEE and local community shareholders.
- Some developers involve a South African company in joint venture (JV) with a foreign company e.g Cennergi.
- Others are an international company that has set up a South African subsidiary e.g Norway's Scatec Solar.

# The project companies

- Others a more intricate consortium of players e.g Ireland's Mainstream acting with UK's Globeleq & South Africa's Thebe Investment Corporation, the Rebuna Litsatsi Trust, Enzani Technologies and Usizo Engineering.

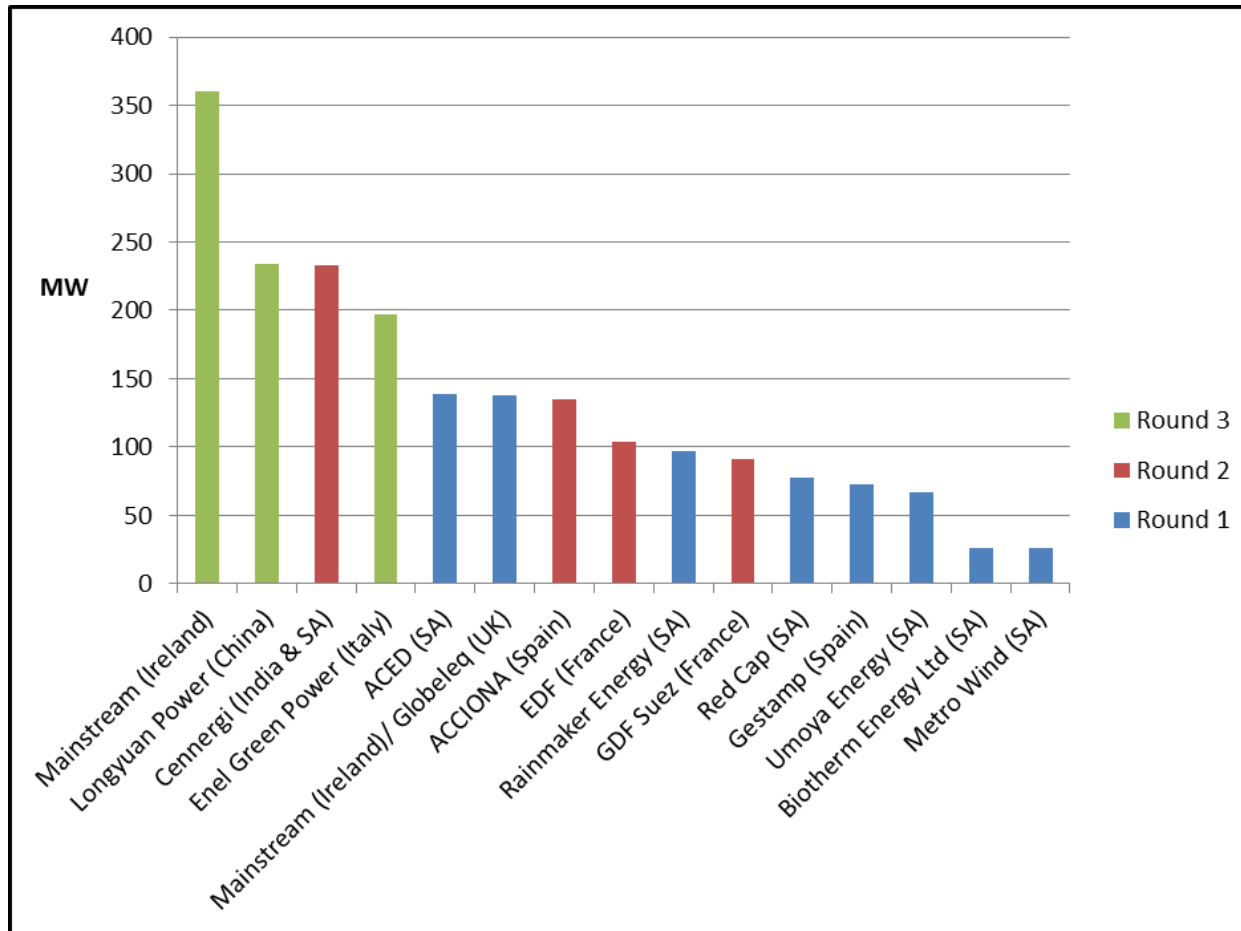
# Rising powers & renewable energy in South Africa



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- China Longyuan power involved as lead project developer & equity investor (60%) in two wind energy projects in Round 3 with black-owned company Mulilo Energy (138 & 96 MW).
- Guodian is supplying technology to these projects
- China's Sinovel involved as technology supplier in two wind projects
- China, as world's leading manufacturer of solar PV (Schmitz and Lema 2013), plays a leading role in the supply of solar PV components e.g Jinko, Trina, BYD, Powerway, Suntech
- Solar PV assembly plants using Chinese technology
- Greater ownership of RPs (Chinese and Indian companies) in wind

# Approved capacity for wind by lead developer: rounds 1 to 3

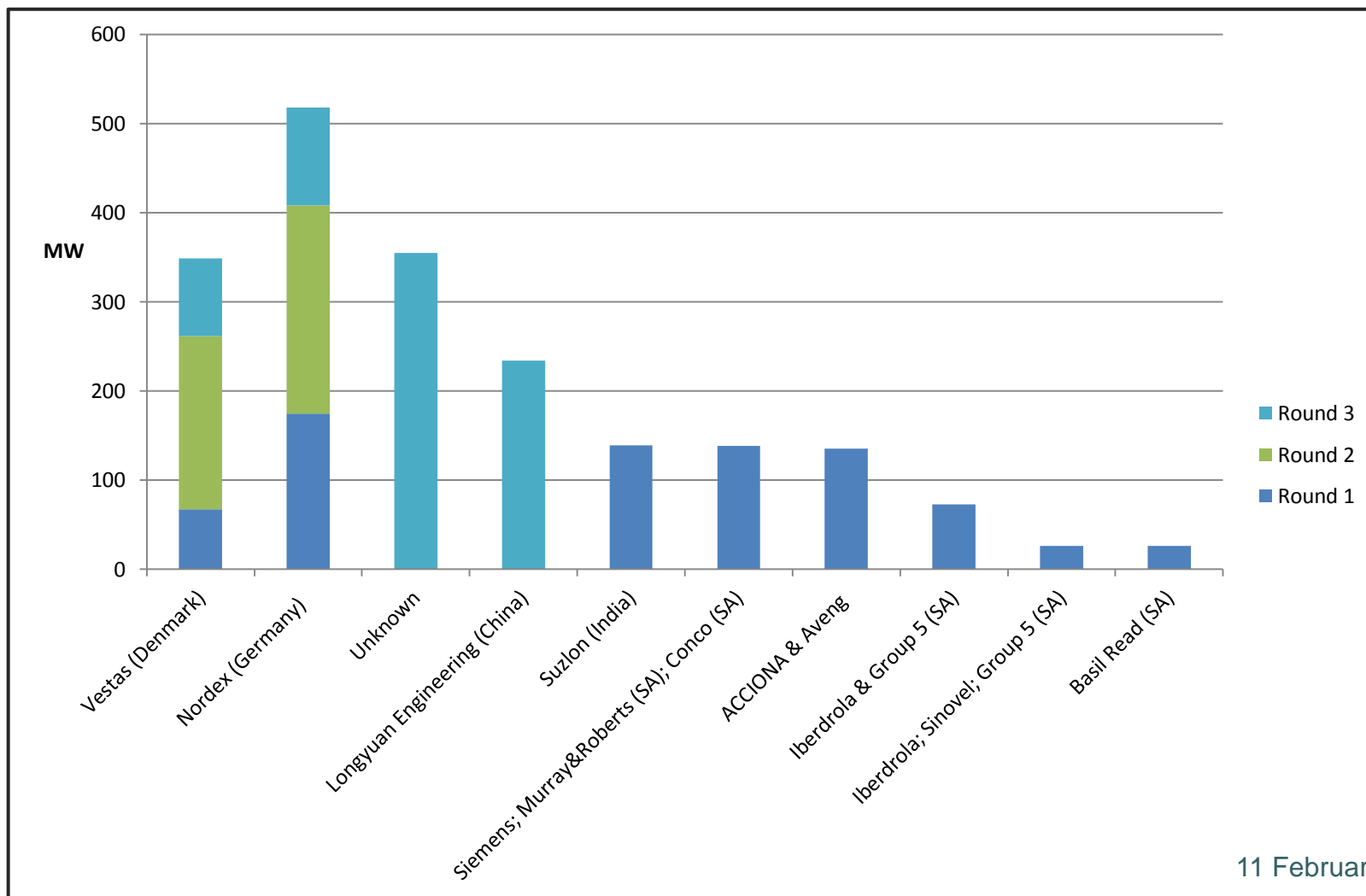


Source: Baker and Wlokas 2014

Authors' own compilation from publicly available sources at the time of writing. Figures do not reflect the other shareholders involved in the JVs or consortiums that make up the project companies.

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# EPC (lead company) by MW allocation for wind: Rounds 1 to 3



Source: Baker and Wlokas 2014

- ‘Rising powers’ in this case Chinese and Indian companies, are embedded within more complex configurations of national and international players South Africa
- Competition between Rising Powers and EU/US companies in SA’s renewable energy development
- Chinese companies more tolerant of risk than EU/US companies: either state-owned or state backed. In a better position to meet high upfront capital costs of an RE project than EU/US developers
- Difficulty of attributing project ownership reflects the complex, transient and opaque nature of global trade and production networks, and transnational and multi-national flows of investment and finance (Grimes and Sun 2014).