

Eskom's view on renewables

Presentation at the Renewable Energy Africa Conference

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- With its focus on coal fired power generation South Africa ranges among the top 15 countries with the highest total CO₂ emissions with Eskom being the 2nd largest single emitter of CO₂ in the world
- In this context Eskom has design its climate change strategy that consists of the three elements "Reduce carbon footprint", "Adapt to climate change" and "Actively participate in national and international initiatives"
- Part of this initiative is the foundation of a renewables unit that focuses on large, currently approved renewable power generation capacity, namely Wind, Solar PV and Solar CSP
- This builds seamlessly on Eskom's long history of renewable power generation that up until now focussed mainly on hydro power
- The intensified focus on renewables is complemented by an additional push to reduce demand through more efficient energy use
- By implementing these measures Eskom aims on reducing its specific carbon footprint by approx. 34 % from current emissions rate of 0.96. tons /MWh

Eskom being a top CO₂ emitting power company in the world has an obligation to curb emissions



Comparison of annual CO₂ emissions by country in 2009

Rank	Country	Annual CO ₂ emissions (Mt)
Total	World	30,398
1	China	7,711
2	United States	5,425
-	EU	4,310
3	India	1,602
4	Russia	1,572
5	Japan	1,097
6	Germany	766
7	Canada	541
8	South Korea	528
12	South Africa	450
27	Egypt	192
36	Algeria	114

Highest CO₂ emitting power companies in the world

Rank	Company	Annual CO ₂ emissions (in Mt)	MWh Energy (in M)
1	Huaneng Power International	285	260
2	Eskom	210	208
3	China Huadian Group	207	195
4	Southern Co	206	279
5	NTPC Ltd	186	182

If Eskom was a country, it would rank 26th globally with its emission, higher than any other African country

Eskom is fully supportive of renewable energy generation in South Africa



Developing renewable energy in South Africa is important

- Reduce CO₂-emissions
- Mitigate climate change
- Diversify energy sources

Government has taken several important steps to drive renewables deployment

- Large portion of IRP allocated to renewables
- Renewable Energy Purchase programme introduced

South Africa has excessive resources (especially for solar)

- Average solar radiation of about 2,300 kWh/m²/year
- Large areas in the cape with average wind speeds of more than 6 m/s

Eskom facilitates the deployment of renewable energy and the ramp up of a renewable energy industry in South Africa

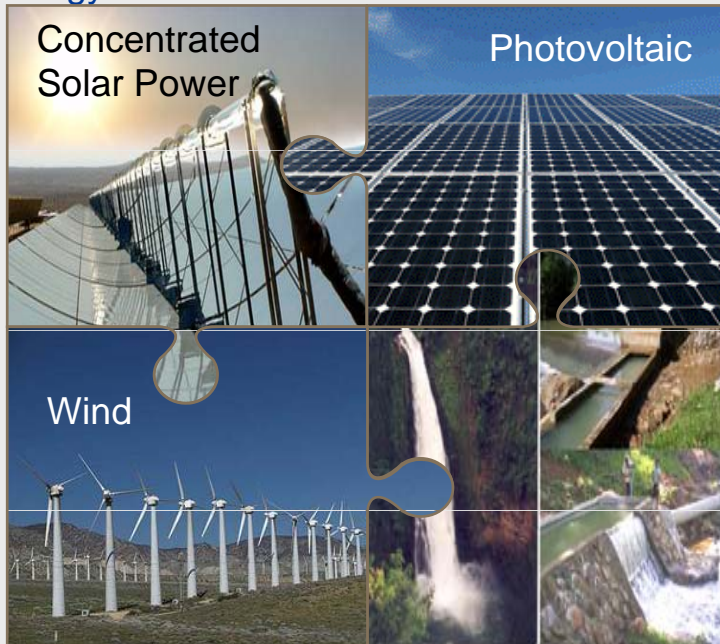
We aim to contribute to a cleaner, more sustainable energy future for South Africa



Addressing climate change requires addressing both supply and demand factors in the energy sector

Reduce carbon intensity of energy supply

One key lever is to increase the share of renewable energy and nuclear in the overall energy mix



Reduce demand through more efficient energy use

Eskom is also driving a number of demand side management initiatives

Solar water heaters

Often 30-40% of electricity is used for water heating, which can be saved with solar water heaters

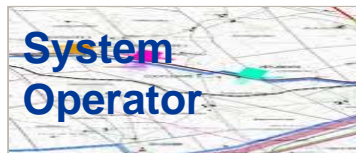
Energy efficiency program

Installation of energy efficient equipment e.g. compact fluorescent lights bulbs.

Industrial demand side management

Energy auditing & optimizations for industrial clients

Eskom is involved in the deployment of renewable energy in various ways



- Designing **grid enhancement** to allow for renewables
- Ensuring equitable and fair **connection to grid**



- Enter into **power purchasing agreements**



- **Connecting to the grid**



- **Deploying pilots** to understand renewables technologies
- In potential playing a role in **developing, operating and maintaining** renewable energy assets

Eskom plays a significant role for renewable energy IPPs in South Africa



Process undergone by all IPPs



Who leads

- DoE

- DoE

- Eskom – Single buyers office

- Eskom – Transmission/ Distribution (excludes municipal connections)

Eskom's role

- No role played – no influence

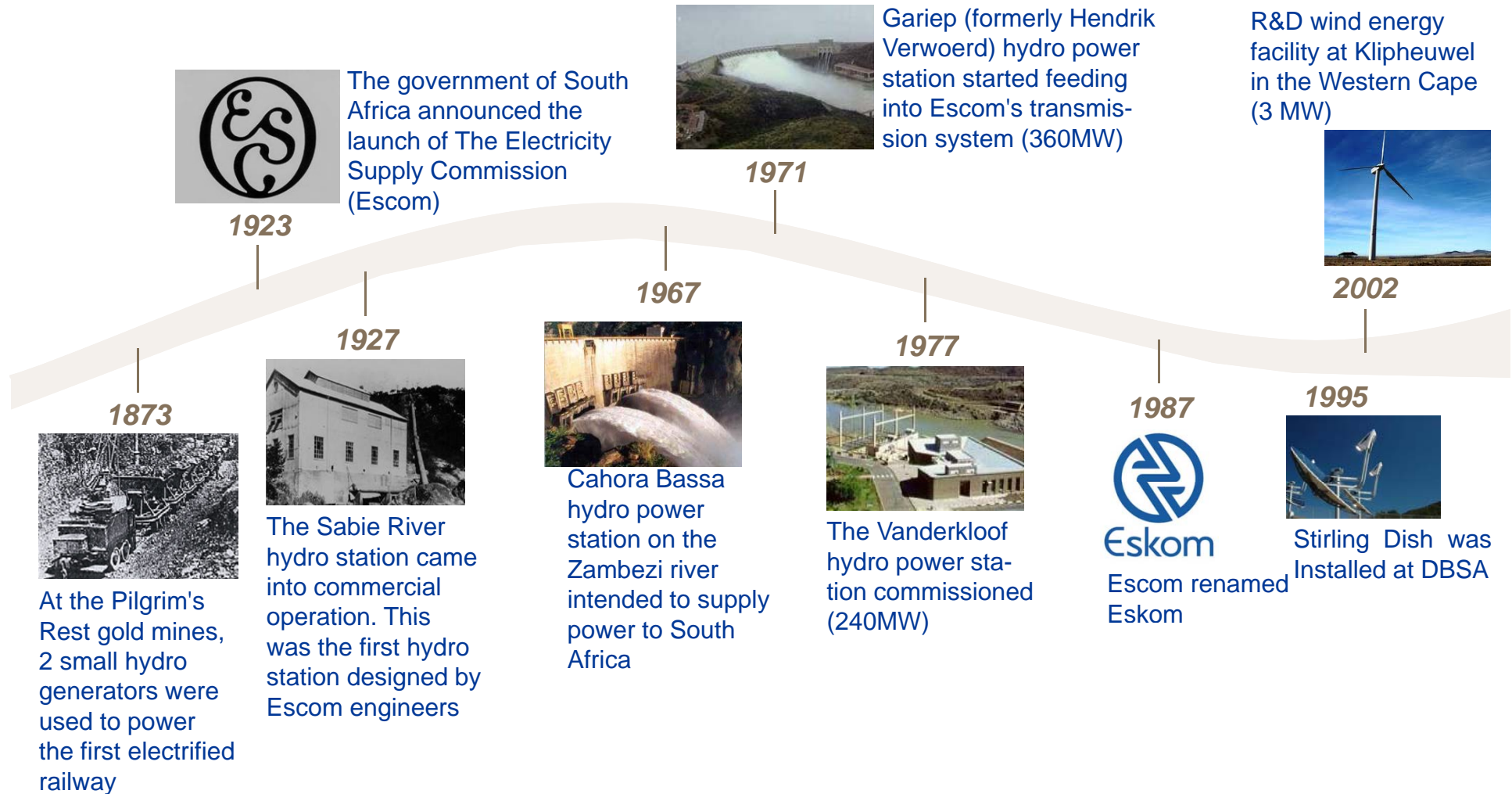
- Make information concerning current and future grid capacity publicly available
- System operator provides information of grid capacity and stability to DoE to assess the impact of renewable energy on grid stability

- Eskom signs PPAs for all capacity allocated and make payment to IPPs, recovering costs through tariffs

- Eskom Transmission and Distribution ensure equitable and fair access to the grid

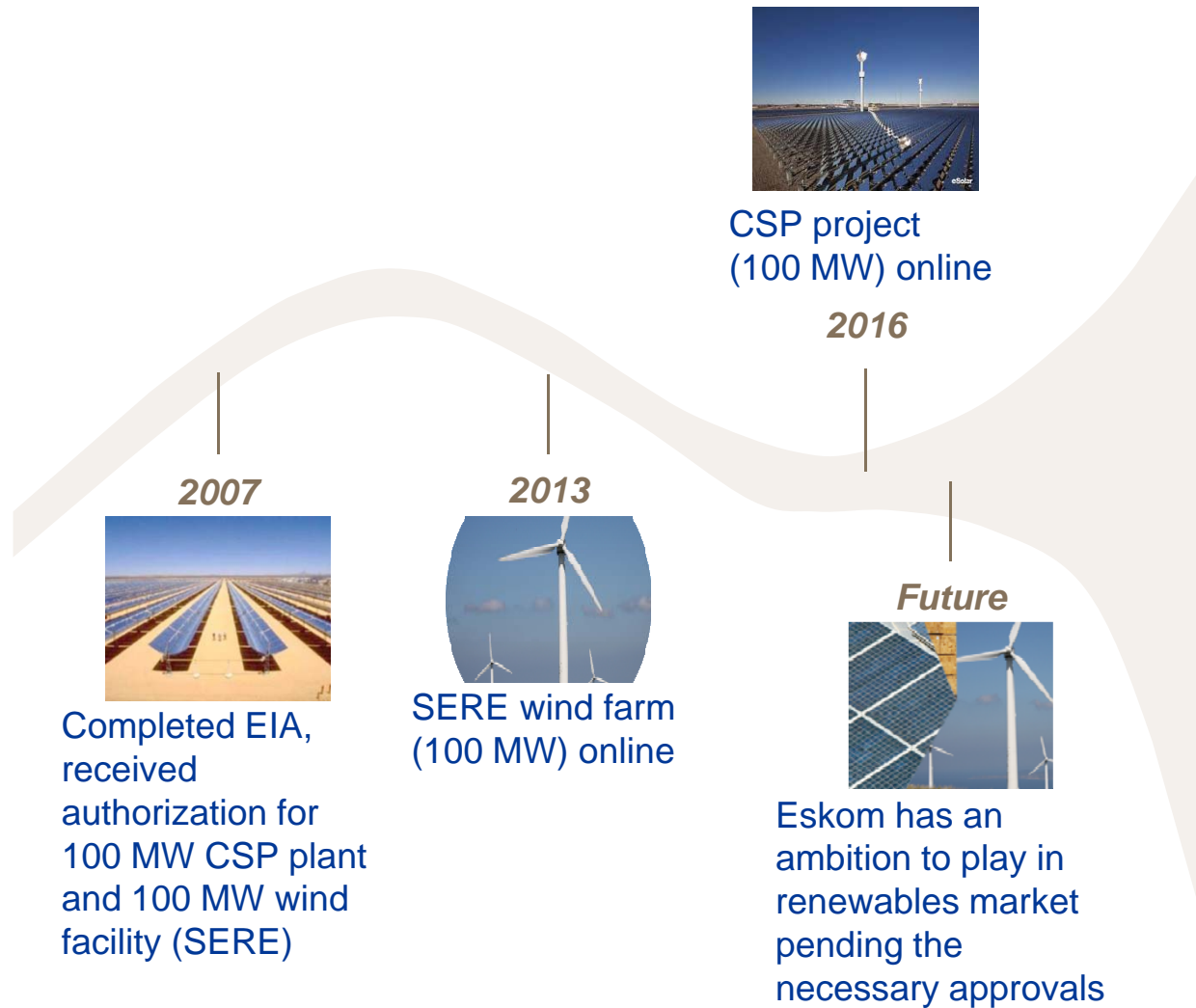
Eskom does not influence or have access to the process of PPA allocation within the country. The role-playing entities are ring-fenced from each other

Eskom has a long history with renewable energy...



SOURCE: Eskom history; company information

...and is committed to support its further deployment in South Africa



Eskom's ambition is to be a renewables enabler in South Africa, pending clarification from shareholder

1 Based on South Africa Renewables initiative escalations
SOURCE: Eskom

Eskom is already delivering first projects for the country



Sere Wind Farm



Description

- 100 MW Wind farm being constructed in Western Cape region
- 50 turbines of 2 MW each
- Commissioning in 2013



Summary

- Wind is recognised as the most proven renewables technology worldwide
- ~220,000t CO₂ saved per year based on 0.9t CO₂ /MWh

PV at Eskom sites



Description

- Installation of photovoltaic systems at Eskom sites
- Initial installation of one hectare per site at two sites adding 2 MWp of capacity



Summary

- PV is zero emissions technology
- PV does not require water during the power production cycle
- PV is a well-established, safe technology
- PV can be installed quickly at plant site

CSP demo plant



Description

- Studies under way of a 4km² 100 MWp concentrating solar thermal power station with molten salt energy storage near Upington



Summary

- Plant required to investigate CSP technology in South Africa
- Vital to Eskom's carbon footprint reduction/ low carbon growth strategy

Eskom is currently discussing its role regarding developing, operating and maintaining renewables assets, driving local industry development and developing local skills with the key relevant players.



THANK YOU

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