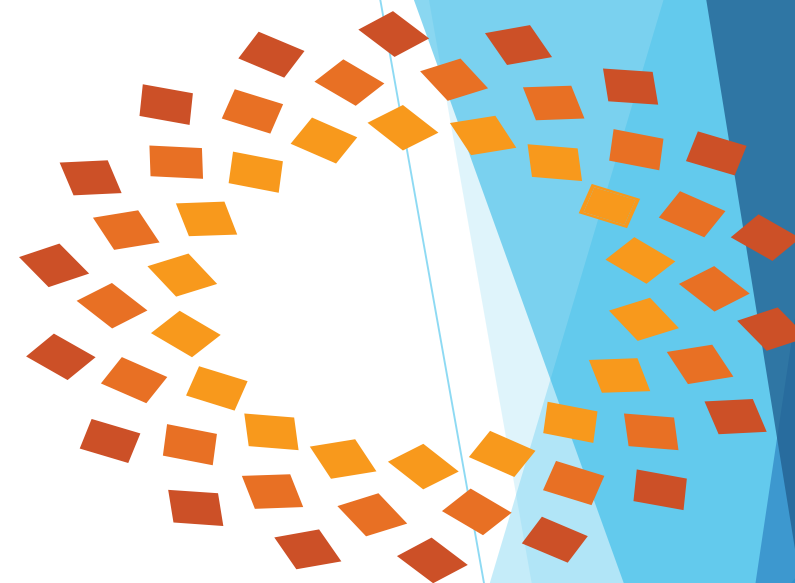


STASA



SOLAR THERMAL ASSOCIATION OF SOUTHERN AFRICA

Terence Govender
STERG 2017

14th July 2017

Agenda

- ▶ STASA - who we are and what we stand for?
- ▶ Who and What we do?
- ▶ CSP Technologies
- ▶ The Market Space - where are we going?
- ▶ CSP - a success story in the South African context
- ▶ CSP - across the globe
- ▶ CSP: The BENEFITS
- ▶ How to contact us.

STASA: Who we are? Members & Affiliates

- ❑ Solar Thermal Association of Southern Africa
- ❑ STASA was established in 2017 to promote CSP Technology in the Southern African Energy Market
- ❑ STASA is representative of ALL CSP technologies across the board
- ❑ STASA aims to provide ONE VOICE to all members and affiliates that are associated with CSP Technology



What we do?

Single point of access to all key players in the market

OUR MANDATE

- ❑ Fair representation of all CSP industry players in Southern Africa;
- ❑ The advancement of CSP technology and its inclusion into the generation mix in Southern Africa ;
- ❑ Lobbying of key shareholders to ensure the benefits of CSP projects are realised in Southern Africa;
- ❑ Engagement with other associations, including SAREC, to build a powerful voice for the industry, and the wider community;
- ❑ To ensure the sustainability of the CSP industry in the RE development landscape;
- ❑ Ensure outstanding PPA's are signed and bid projects announced.

CSP Technologies

- ❑ Molten Salt Power Tower with storage
- ❑ Linear Fresnel
- ❑ Parabolic Troughs
- ❑ Stirling Dish



Current Market Status and IRP & IEP

Market Conditions

- Initial phases of REIPPPP was a success story
- Current delays- Eskom
- Economic crisis shown a massive slow-down in electricity demand
- Demand at levels last seen in 2007
- Surplus generation capacity on the national grid as claimed by Eskom

IEP & IRP 2016 Update

- Out for Public Comment since November 2016

- IRP considers generation mix for the next 30 years
- No CSP Technology allocation provided for in next 30 years in IRP & IEP 2016 Update

IRP Approval to be delayed

Government & Parastatals

- Eskom stance on RE is against Government Policy
- No BQ issued since Round 3 CSP Projects (2015)
- PPA signing
- Delays include 37 projects
- Announcement of PB of Expedited Round, Coal, Gas & Future Rounds

- Parliamentary Cabinet Shuffle – New Minister of Energy
- ANC Election 2017 further delays
- Political instability

- REIPPPP Programme at risk based on Eskom actions

Renewable Energy IPPP Programme

PROCURED 6 376 MW to date through the rolling bid-window programme

- 6 Bid rounds completed Large REIPPP Bid Windows 1, 2, 3, 3.5, 4 Smalls BW1
- 102 Preferred bidders announced Large REIPPP Bid Windows 1, 2, 3 and 3.5 (1 project)
- 51 Operational IPPs - 2 738 MW reached Commercial Operation by 30 Aug 2016

SIGNED 4 006 MW to date

- 64 Projects signed from Large REIPPP Bid Windows 1, 2, 3 and 3.5 (1 project)

PROCURED, ANNOUNCED BUT NOT YET SIGNED 2 370 MW

- 38 Projects contracted from Large REIPPP Bid Windows 3 (1 project) and 3.5 (1 project) 4 (26 projects) and Smalls (10 projects)

PROCURED, NOT YET ANNOUNCED 1 850 MW

- 29 Projects (19 Expedited Bid Window projects, with option to double-up to 38 projects totalling 3,500 MW and 10 Smalls projects totalling 50 MW)

PLANNED

- Release Requests for Proposals for Large REIPPP Bid Window 5, Smalls Bid Window 3, and Solar Parks Programme

BW1
150MW CSP
allocation

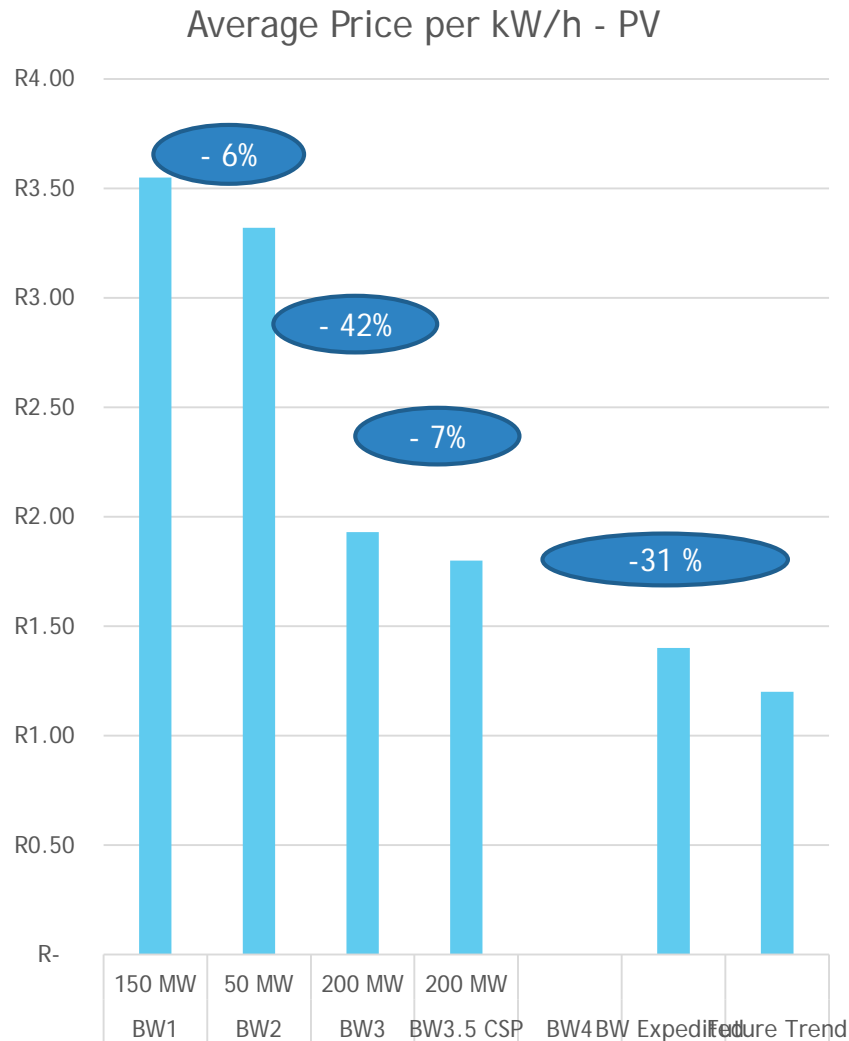
BW2
50MW CSP
allocation

BW3
200MW CSP
allocation

BW 3 (CSP)
200MW CSP
allocation

Less than 10% allocation in the programme

The Cost of CSP



LCOE reduction is due to -

- ❑ Economies of scale
- ❑ Increased technology awareness and operational experience
- ❑ CAPEX Cost reductions
- ❑ Reduction of soft costs through de-risking
- ❑ Increased plant and technology performance
- ❑ Lower cost and alternative Financing Structures
- ❑ O&M Costs through familiarization, economies of scale & more efficient contracting
- ❑ Advancement in technology
- ❑ Optimum configuration of plant (baseload, mid-merit & peaker) in order to displace less cost effective technologies

CSP, a success story in the South African Context

CSP projects in the late stages of development, under construction and/or operational in South Africa are listed below.

- ❑ [Bokpoort](#) (50 MW)
- ❑ [Ilanga I](#) (100 MW)
- ❑ [Kathu Solar Park](#) (100 MW)
- ❑ [KaXu Solar One](#) (100 MW)
- ❑ [Khi Solar One](#) (50 MW)
- ❑ [Xina Solar One](#) (100 MW)
- ❑ [Redstone Solar Thermal Power Plant](#) (100 MW)



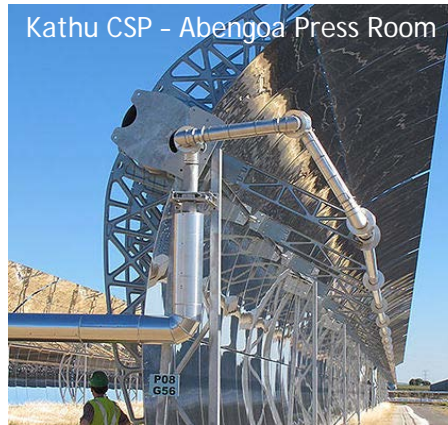
Operational & Proposed Projects



Bokpoort CSP Project - Energy



Khi Solar 1
Project -
Abengoa
Press Room

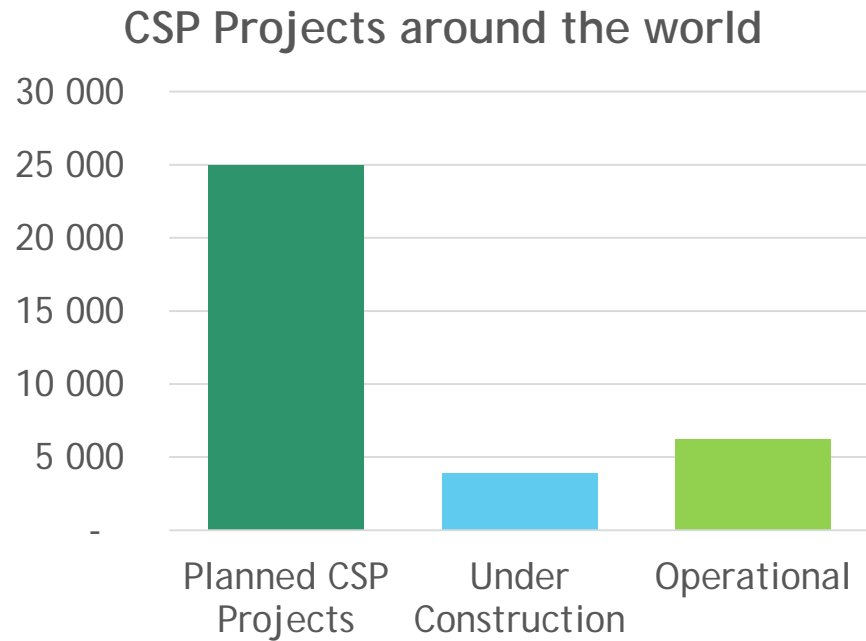


Kathu CSP - Abengoa Press Room



Redstone CSP - SolarReserve

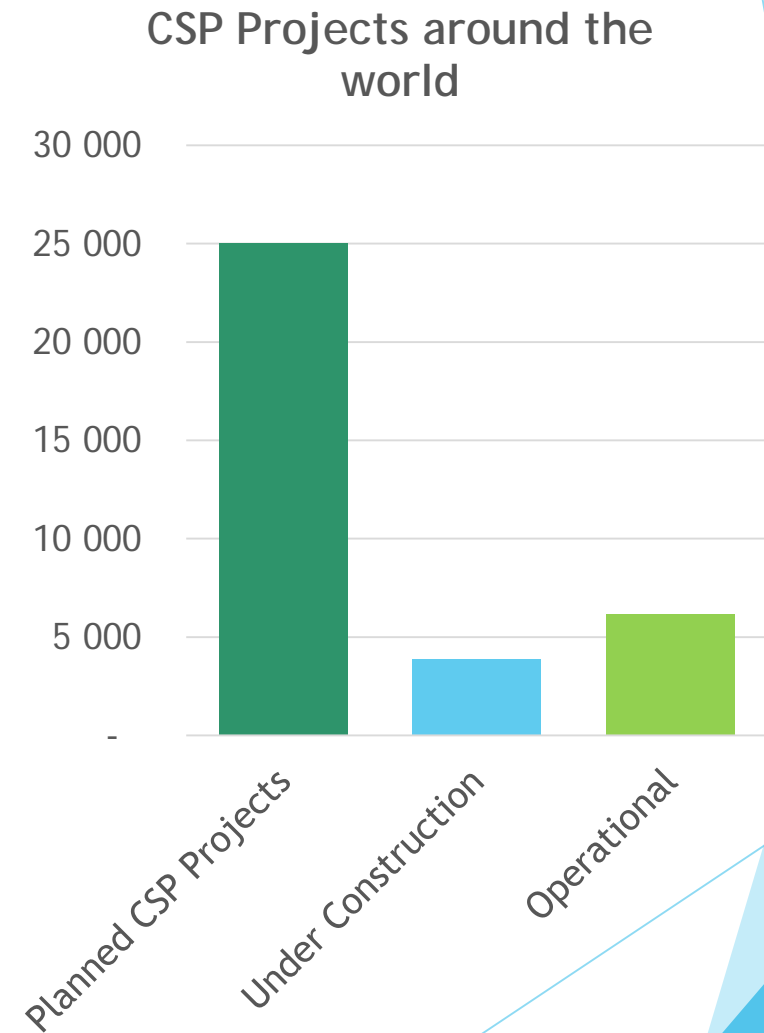
CSP across the globe



- ❑ CSP technology implemented in 23 countries across the globe
- ❑ Over 6,000MW in operation
- ❑ Over 3,500MW in construction
- ❑ Almost 25,000MW planned or in development stages



Commercialisation of CSP around the world



The Benefit of CSP

- ▶ Job creation
- ▶ Local content
- ▶ Local investment
- ▶ Inward investment
- ▶ Local Spend: Economic Development
- ▶ Black Empowerment Equity
- ▶ Fuel - no FX risk - no commodity risk
- ▶ NO carbon emissions
- ▶ Distributed Generation
- ▶ Energy Security
- ▶ CSP Storage provides a dispatchable plant capable of dispatching power in baseload, mid-merit and peaking modes

CONSERVATION OF WATER

MINIMISE COST OF ENERGY

ENERGY EFFICIENCIES

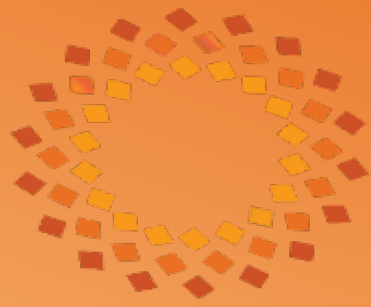
DIVERSIFY SUPPLY AND PRIMARY SOURCES OF ENERGY

SECURITY OF SUPPLY

INCREASE ACCESS TO MODERN ENERGY

CREATE JOBS
LOCALLY

STASA



SOLAR THERMAL ASSOCIATION OF SOUTHERN AFRICA

www.stasa.energy

Terence Govender

STASA Chairman

+27 11 582 6880

+27 83 449 0433

Terence.Govender@SolarReserve.com

For membership enquiries please contact:

Alicia Govender

OR

Leanna Janse van Rensburg

Alicia.Govender@SolarReserve.com

Leanna.jansevanrensburg@solarreserve.com