

PROJECT FINANCE FOR CONCENTRATING SOLAR POWER IN AFRICA

STERG Symposium 2017



- Introduction – about our team
- Project finance and concentrating solar power
- Doing business in Africa
- Conclusion

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The Energy Team at Nedbank

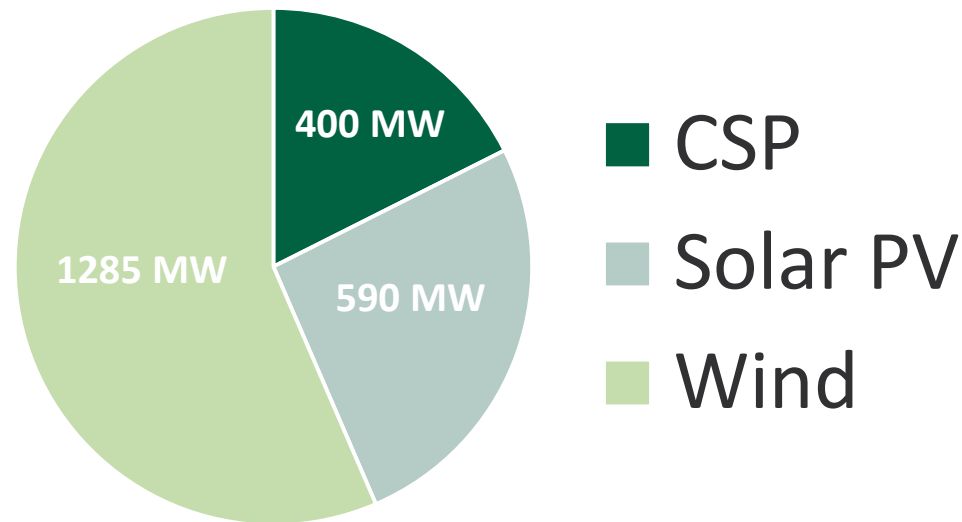
- Specialised finance
- Our team works to finance energy projects in Sub-Saharan Africa

My background

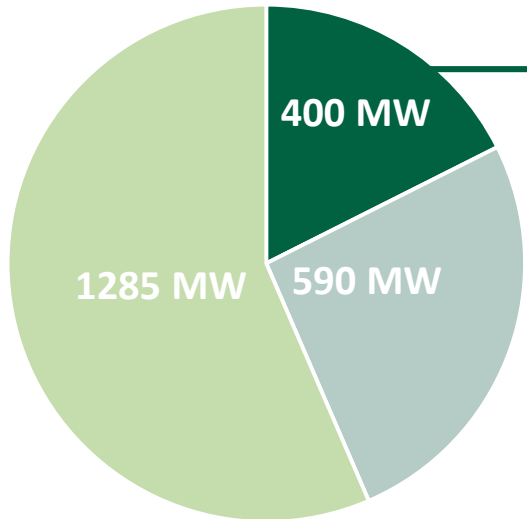
- M.Eng (Mechanical) at STERG
- Passionate about renewable energy and especially CSP



- Nedbank's participation in REIPPPP Rounds 1 through 3, a total of 2.275 GW



- Currently managing a portfolio of 28 REIPPPP projects in construction or operation



CSP projects

- Kaxu Solar One
- Karoshhoek Solar One
- XiNa Solar One
- Kathu Solar Park
- Redstone

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What is project finance?

- Project finance is the financing of long-term projects
- Non-recourse or limited recourse financial structure
- Debt and equity used to finance the project are paid back from the cash flow generated by the project



Why use project finance?

- Typically large-scale infrastructure, mining and energy projects, which are very capital intensive
- Project finance allows for the creation of a special purpose vehicle (SPV), which removes the project from balance sheet of the owners



CSP and Project Finance

- Concentrating solar power is very well suited to the typical project finance model
- South African environment provides high solar resource, government guarantees, government support program



Shareholders



SPV

Kathu Solar Park (Pty) Ltd

Contractors



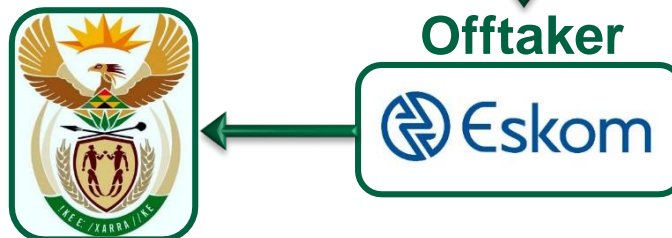
Asset

100 MW Concentrated
Solar Power Plant

Lenders



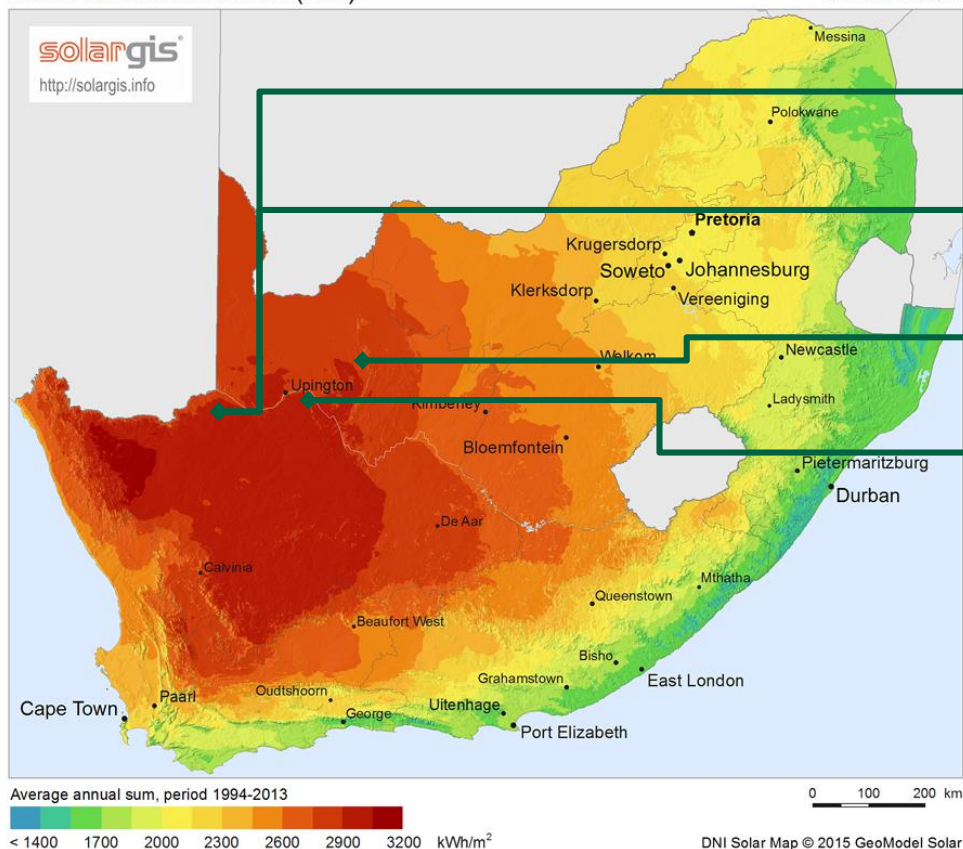
Offtaker



Key component: Financial Model

- The interface between the engineering, legal and financial components:
 - Revenue from operations
 - CAPEX
 - OPEX
 - Capital structure
- The model is also used to structure the deal, and monitor the plants performance

Direct Normal Irradiation (DNI)

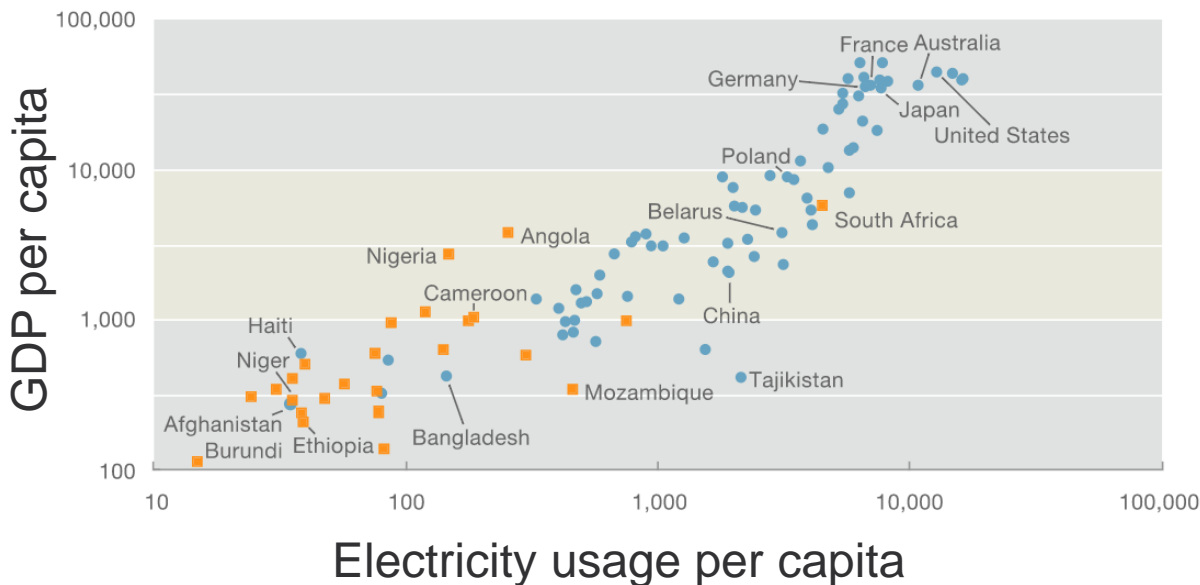


- Kaxu – 860 mil. USD
- XiNa – 880 mil. USD
- Kathu – 900 mil. USD
- Karoshhoek – 880 mil. USD

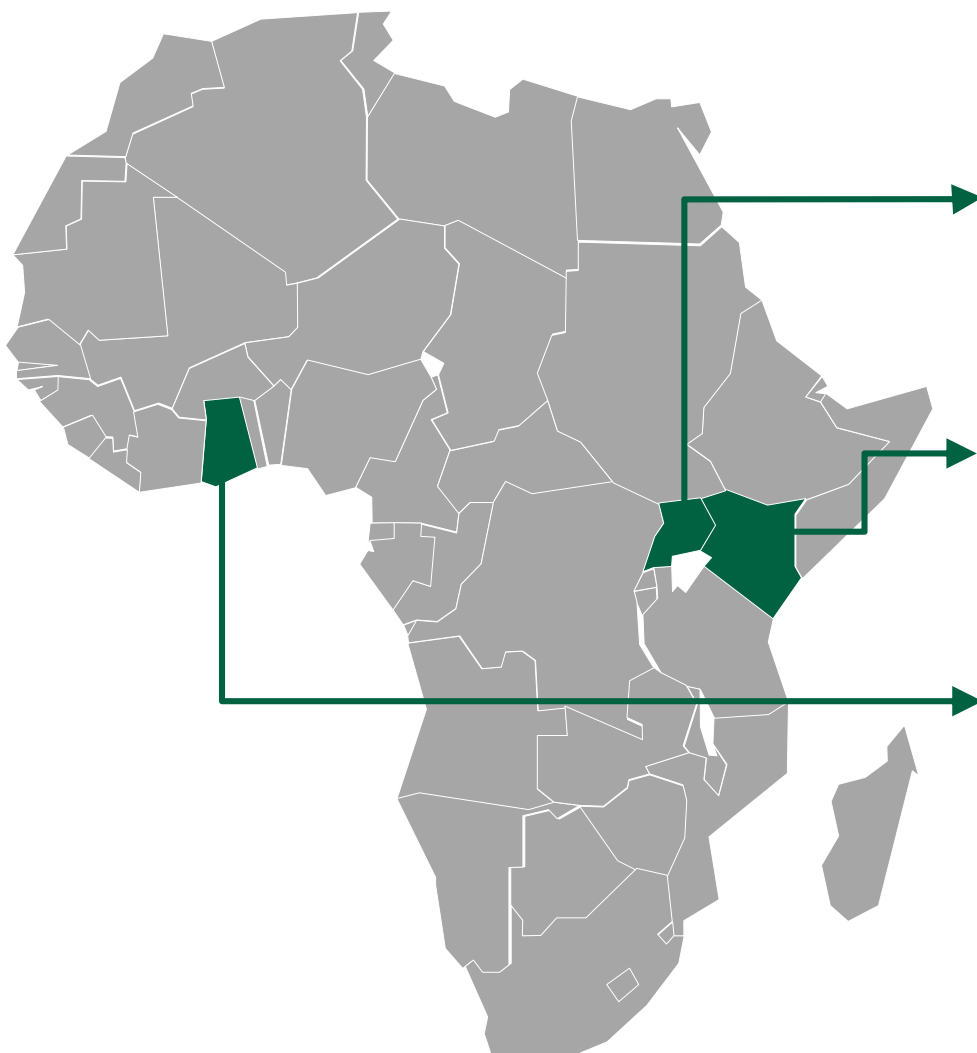
All financed using similar project finance structures

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Electricity usage vs. gross domestic product



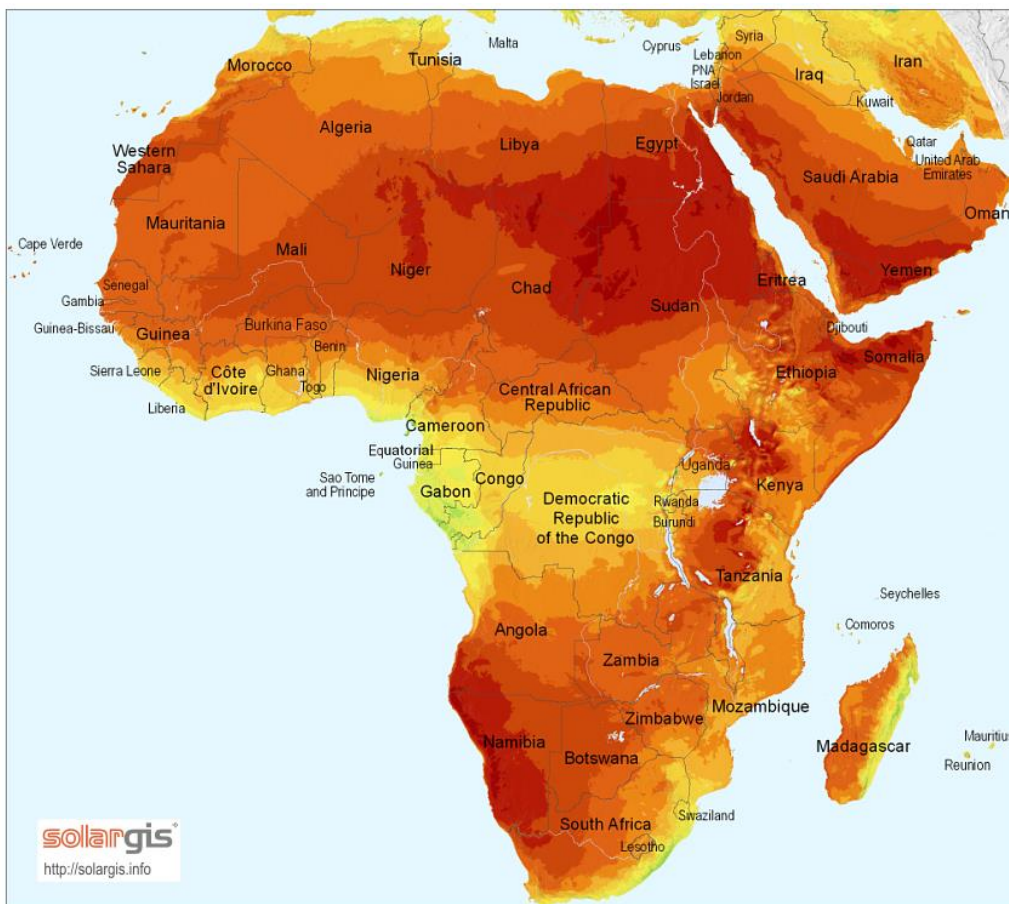
- ~ 600 million people in sub-Saharan Africa lack access to electricity
- Increasing GDP requires increasing electrification



- Bujagali, 250 MW
Hydropower, Uganda
- Lake Turkana, 310 MW
Wind Project, Kenya
- Cenpower, 340 MW
CCGT, Ghana

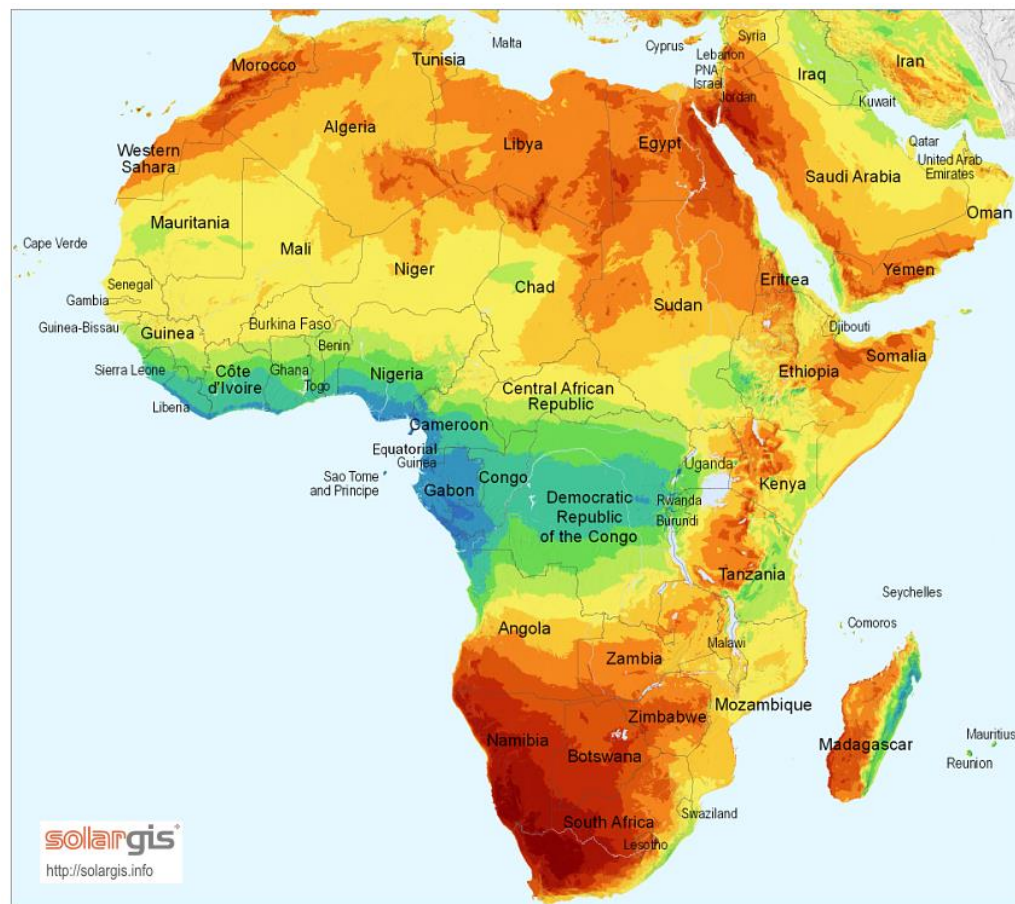
GHI – Solar PV

DNI – CSP



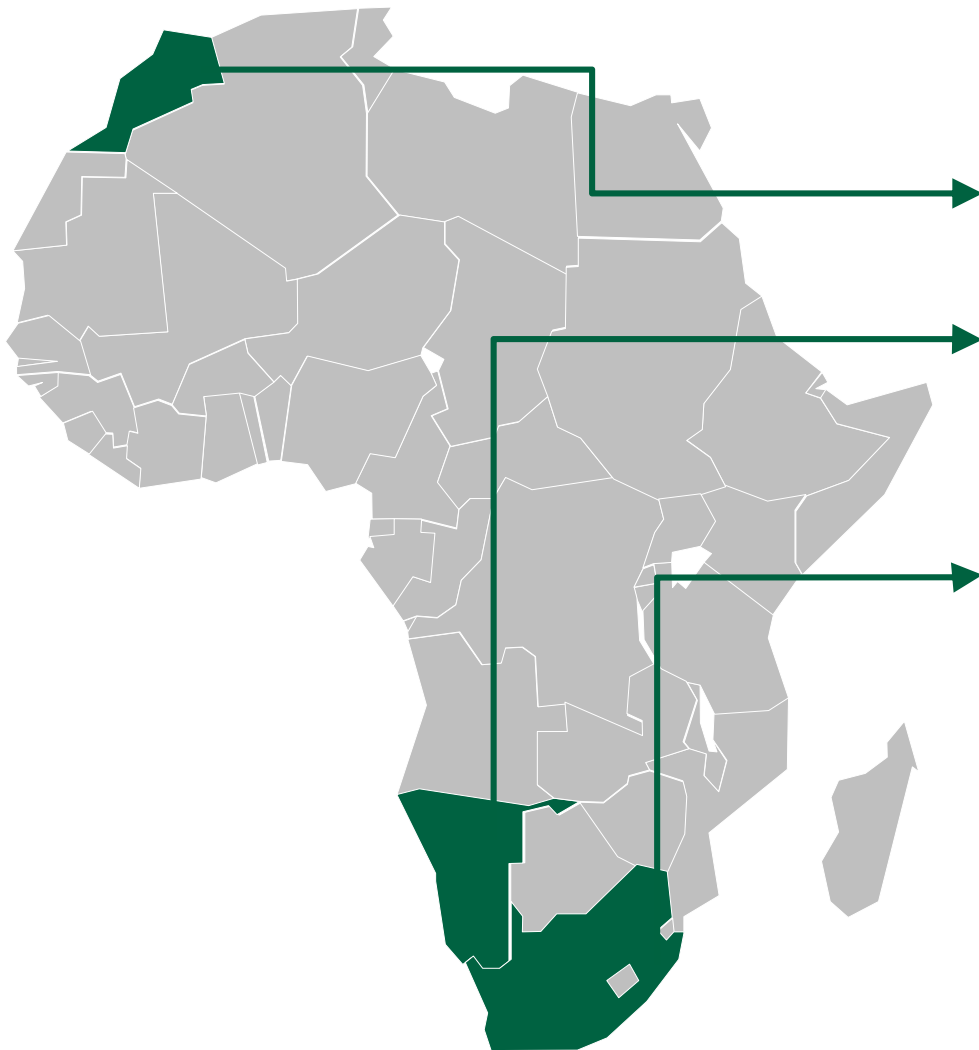
Average annual sum (4/2004 - 3/2010)
 < 1600 1800 2000 2200 2400 > kWh/m²

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Average annual sum (4/2004 - 3/2010)
 < 800 1200 1600 2000 2400 2800 > kWh/m²

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- Morocco
- Namibia, huge potential for CSP, low demand
- South Africa, high potential, currently REIPPPP dependent

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- Nedbank CIB has a large market share in renewable energy projects in South Africa
- We have a large interest in the CSP projects currently in construction and in operation
- Our team is actively looking for potential deals in Sub-Saharan Africa



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