Enel Green Power experience in Sub Saharan Africa

July 6th Gaborone

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Head Business Development Southern Africa

Enel Group today[1]

Green Power

~ **40 €bn** Regulated Asset Base
~ **62 mn** distribution end users

#1 in Italy, Spain, Chile, Peru
#2 in Argentina, Colombia

~ **38 GW renewable capacity**[2]

Global leadership in renewables

~ **18.3 mn** free retail customers

#1 in Italy and Spain

~ **47 GW thermal capacity**

Highly flexible and efficient generation fleet

Global and diversified operator

1. *As of 2016*
2. *Consolidated (35.9 GW) and managed (1.9 GW) capacity including 24.9 GW of large hydro.*

Enel Group today

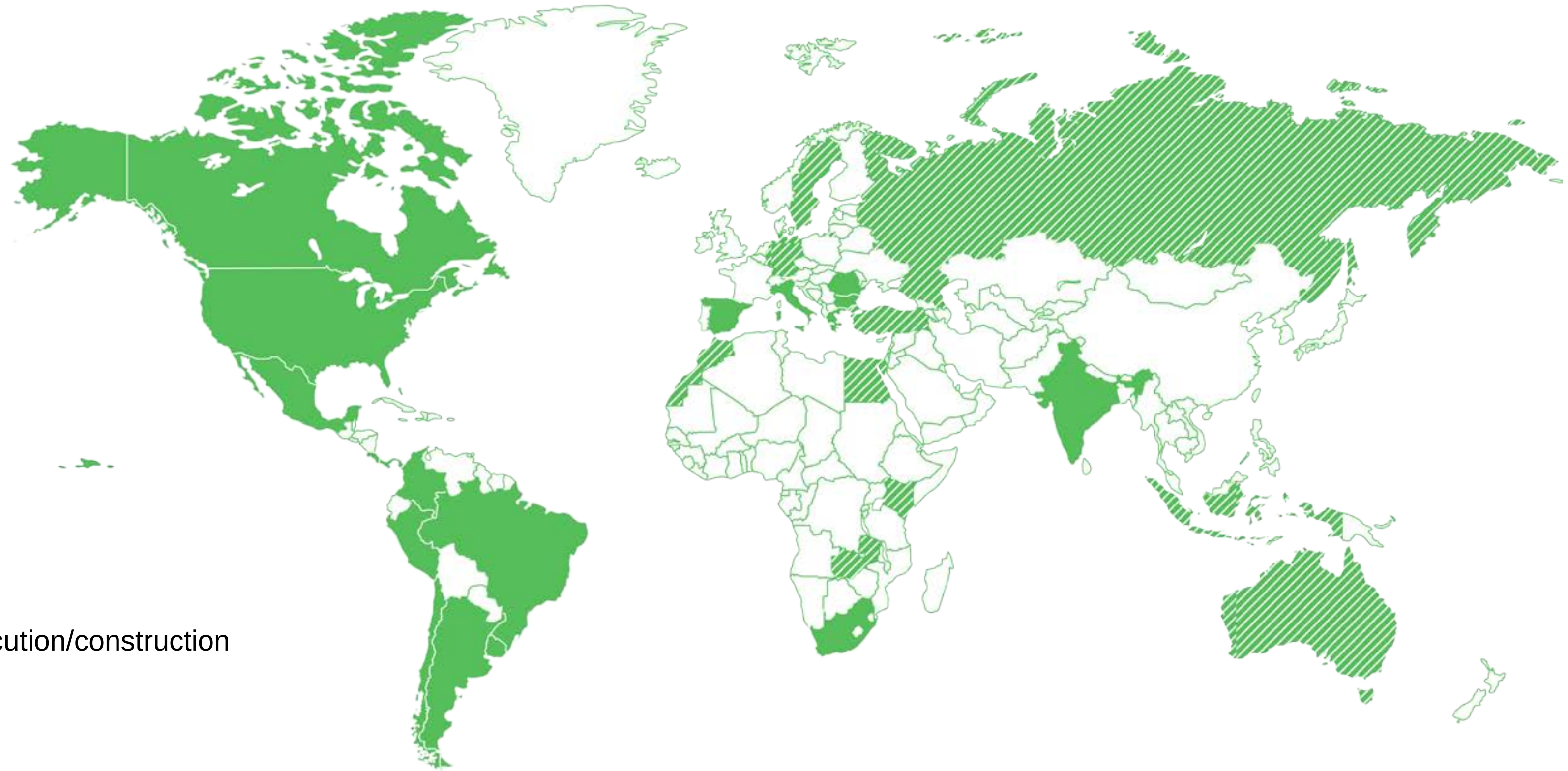
countries of presence

Global and diversified operator

Enel Green Power

Positioning and key figures

enel
Green Power



operating capacity

capacity under execution/construction

Expanding and consolidating our footprint

Enel Green Power

Positioning and key figures

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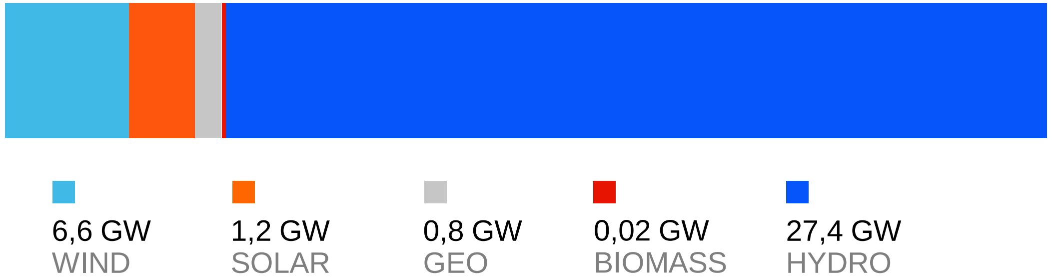
Capacity[1]

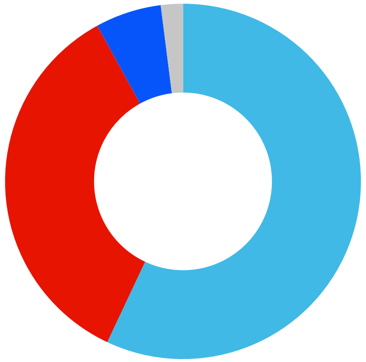
36 GW

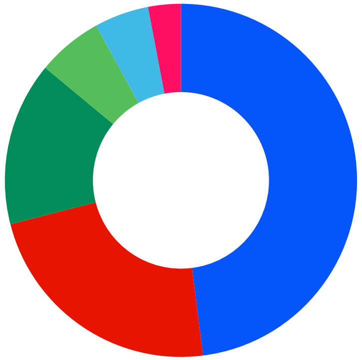
Production

92,4 TWh



Consolidated Capacity Additions 3,5 GW





Leadership position supported by very strong track record

1. *Consolidated (35.9 GW) capcity including 24.9 GW of large hydro.*

Global transition to renewables

Renewables globally

Global trends and facts

Policy Makers

- **134 countries** in the Paris Agreement in 2016
- **100 countries** planning a carbon price or equivalent
- **Regulatory initiatives** worldwide transition to renewables

Private Sector. End Users

- **33% Fortune 100 and 50% Fortune 500** have renewable commitments
- **88 of the most influential world companies** going “100% renewable”
- **Increasing interest for corporate green PPAs** driven by C&I strategies

Res Manufacturers, IPPs, Developers

- **More renewables** added than all fossil fuels combined
- **Sustained investment** and LCOE reductions for all technologies
- **Record low prices** in last regulated auctions

Investors

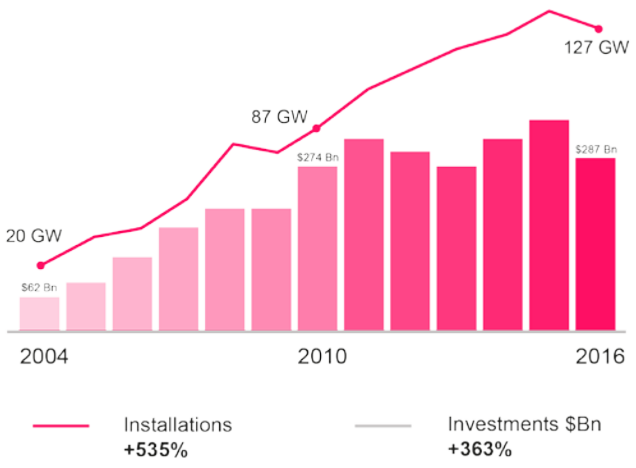
- **Green bonds at record levels** (65 billion ‘16 vs 42 billion ‘15)
- **Sustained > $280 Bn/year investments** since 2010
- **Global oil & gas capital spending at lowest levels** since 2007

Unstoppable virtuous cycle?

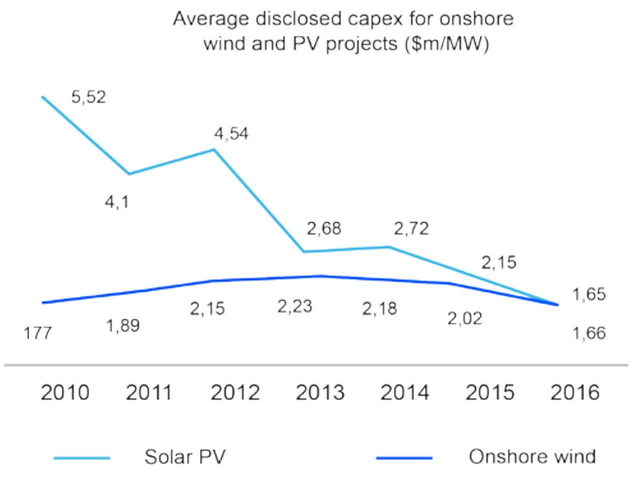
Renewables globally

Some figures

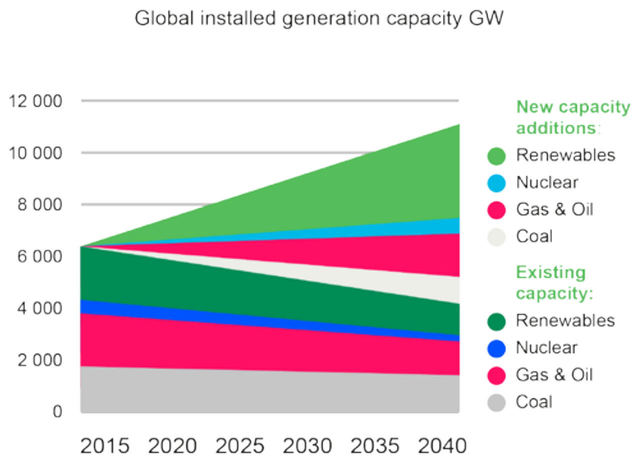
Investments



Technologies



Capacity Forecast

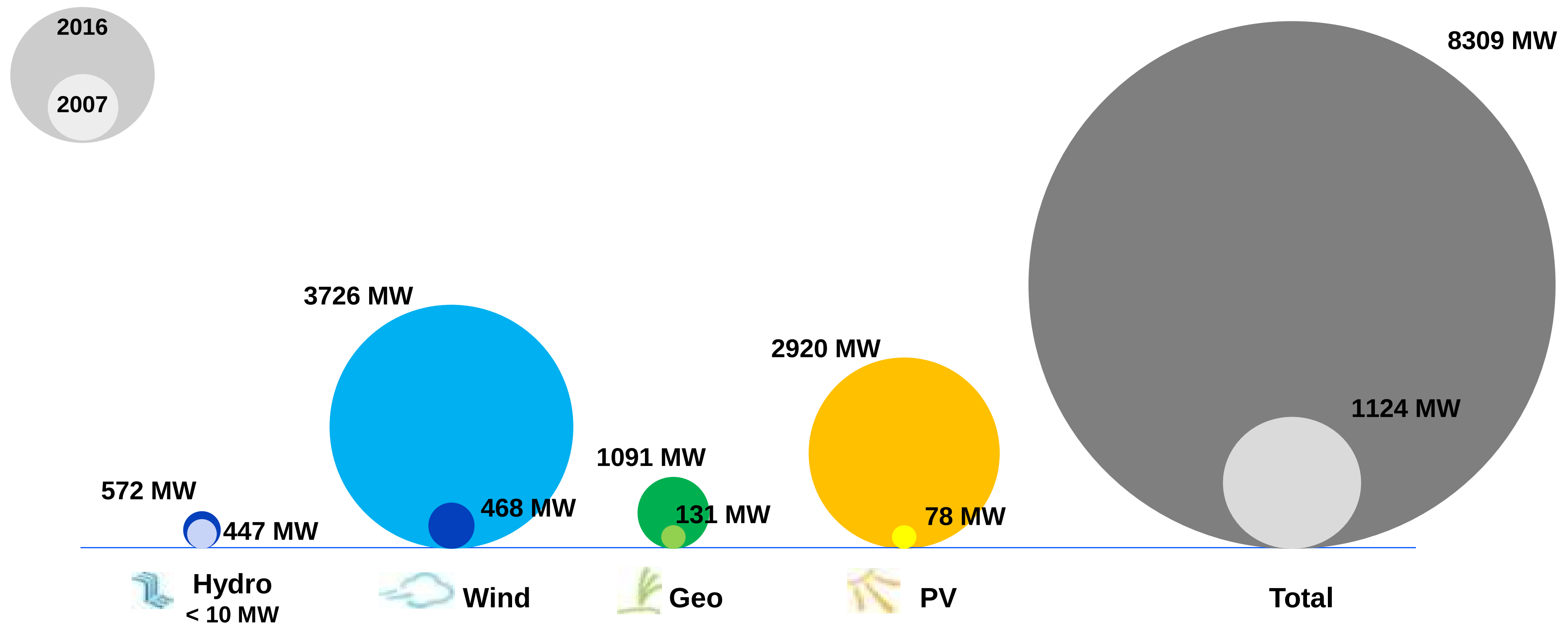


Despite uncertainties, renewables keep growing and getting more competitive

A Decade of Change

The Renewable Energy escalation in Africa

Renewable Installed Capacity by Technology in Africa, 2007 – 2016



Mainly composed by (MW)		
South A.	1744	
South A.	1473	
Kenya	1091	
Morocco	798	
Morocco	205	
Ethiopia	324	
Algeria	250	
Tunisia	245	
Other	2179	

›Increasing number of installed capacity in Africa, particularly Wind and PV

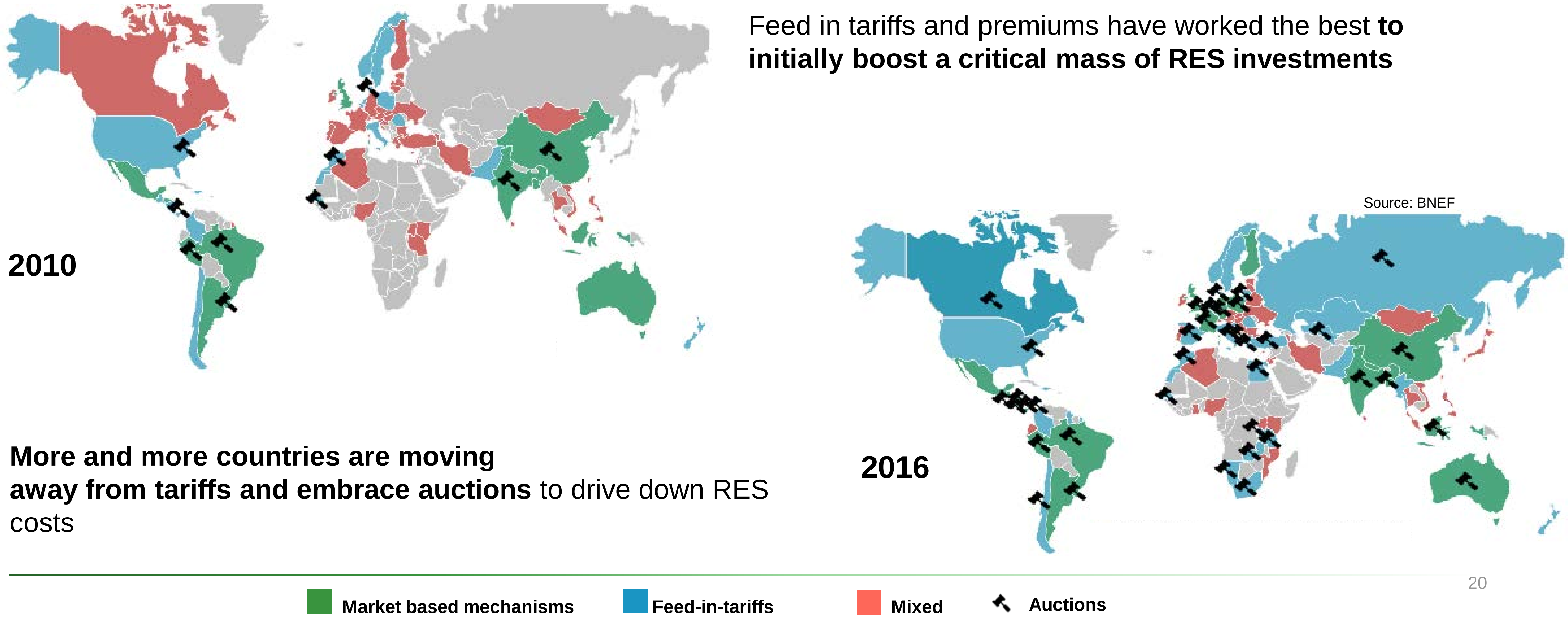
Source: IRENA – RE Capacity Statistics Mar 2017

Enel Green Power Achievements in Africa

The role of policy and regulation

The switch from tariffs to competitive mechanisms is taking place

Feed in tariffs and premiums have worked the best **to initially boost a critical mass of RES investments**



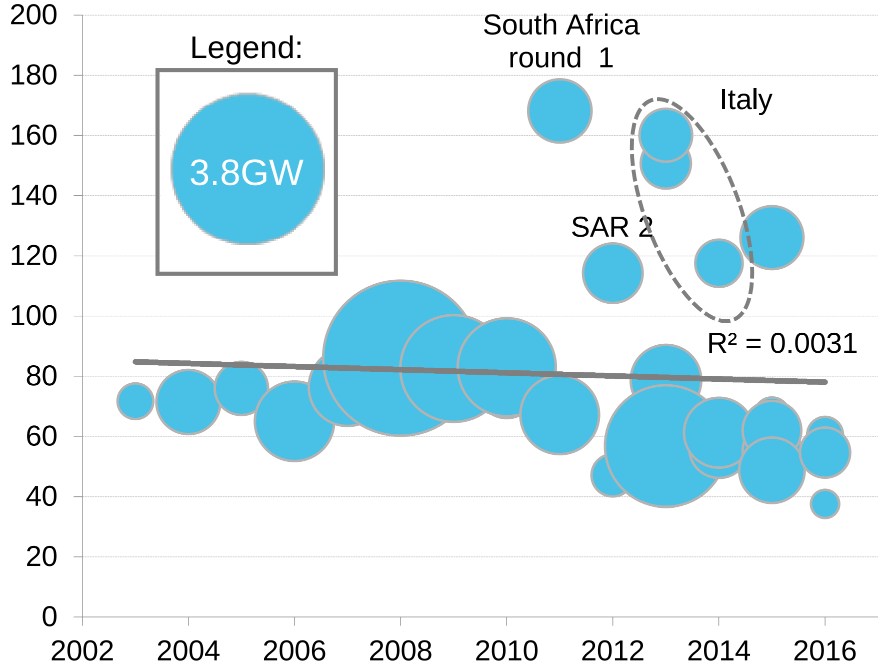
More and more countries are moving away from tariffs and embrace auctions to drive down RES costs

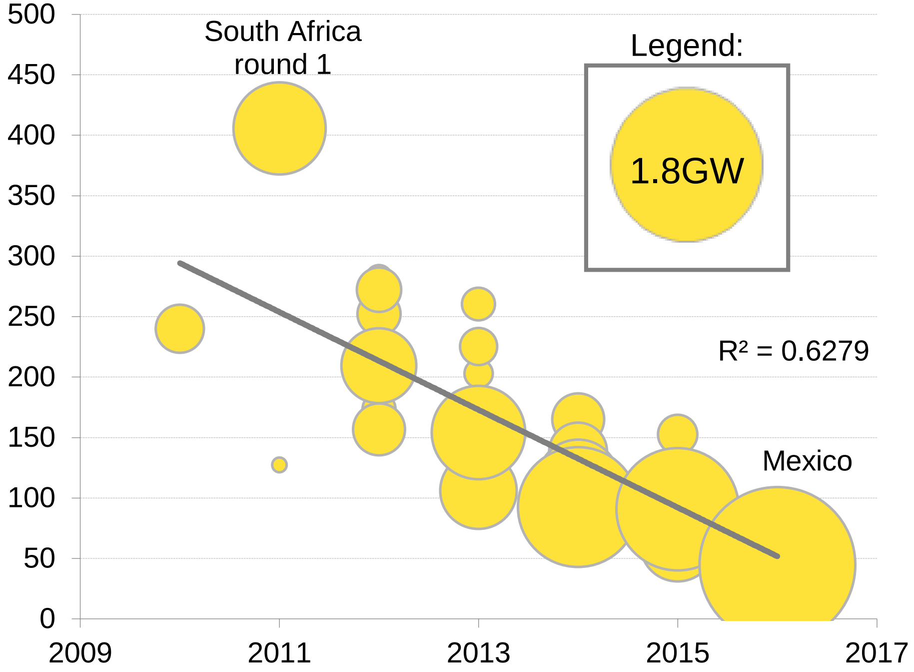
Towards a global RES market

Is the move to auctions creating a global market where low bids can be replicated?

Onshore wind | **Solar PV**

Global auction prices (constant 2015 $/MWh) and allocated capacity (bubbles, GW), 2002-16



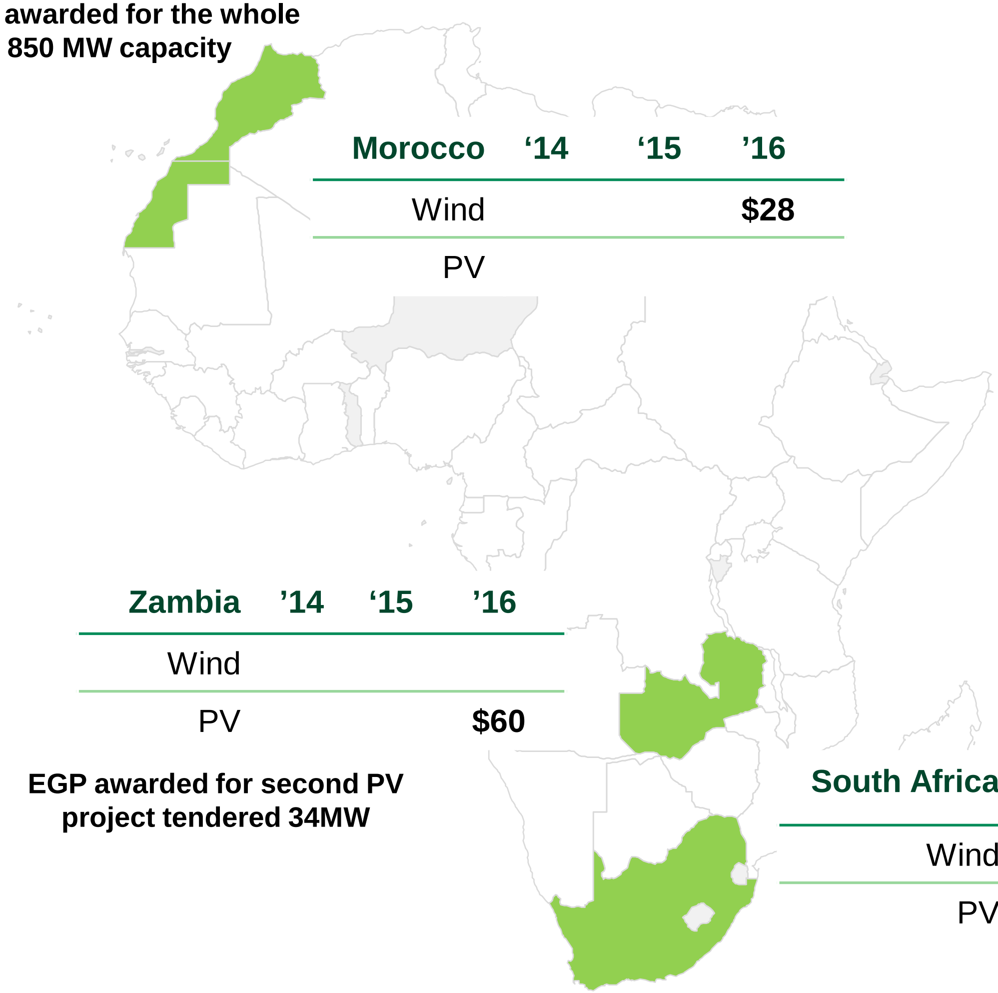


Source: BNEF

The answer is YES but just for solar PV

Bid prices

Record prices for awarded offers



EGP awarded for the whole 850 MW capacity

Morocco	'14	'15	'16
Wind			$28
PV			

Zambia	'14	'15	'16
Wind			
PV			$60

EGP awarded for second PV project tendered 34MW

South Africa	'14	'15	'16
Wind	$41		
PV	$57		

EGP awarded fro 5 wind projects for 705MW

- **South Africa**: Round 4 REIPPPP, August 2014, Wind lower bid by Biotherm, PV lower bid by Scatec Solar ASA
- **Morocco:** BOOT ONEE 850 MW Wind tender in October 2015, lowest bid for Wind by Enel Green Power;
- **Zambia**: World Bank Scaling Solar in June 2016, lowest bid for 50 MW PV by Neoen-First Solar Inc.

Sub-Saharan Africa

Where we are

COUNTRY OF PRESENCE

South Africa

Enel Green Power RSA (Pty) Ltd
Office in Johannesburg
~120 locals + 16 expats

17 subsidiaries

Enel Energy South Africa (Pty) Ltd
Office in Cape Town

8 locals + 2 expat

Namibia

Enel Green Power Namibia (Pty) Ltd

Kenya

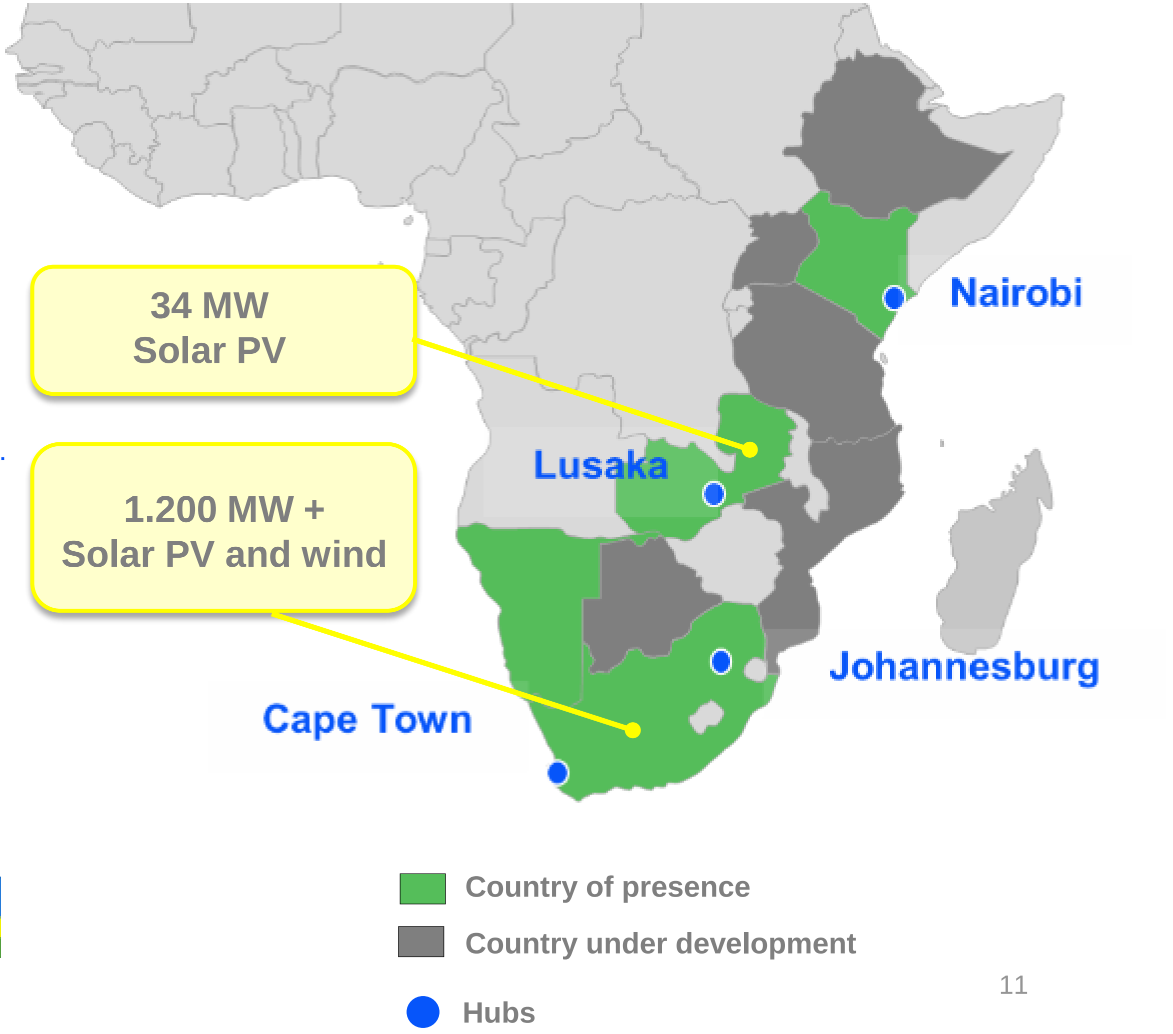
Enel Green Power Kenya Ltd
Office in Nairobi
2 local + 1 expat

Zambia

Coming soon...

COUNTRY UNDER DEVELOPMENT

Ethiopia *Tanzania* *Botswana* *Mozambique* *Uganda* *Rwanda*



Business Development Strategy - Our Business Model

Entry Strategy, the South Africa Case

Strategic Assessment
- Market Analysis and Strategic assessment

Market entry
- First Round Bid submission
- Awarded one PV Project

Consolidation
- Investment in development: i) technological diversification ii) project portfolio creation
- economies of scale in construction and O&M

2011 - Round 1

2012 - Round 2
10 MW PV awarded

2013 - Round 3
314 MW PV – 199 MW Wind awarded

July 2014
1° COD 10 MW
- Upington -

2014 - Round 4
705 MW Wind awarded

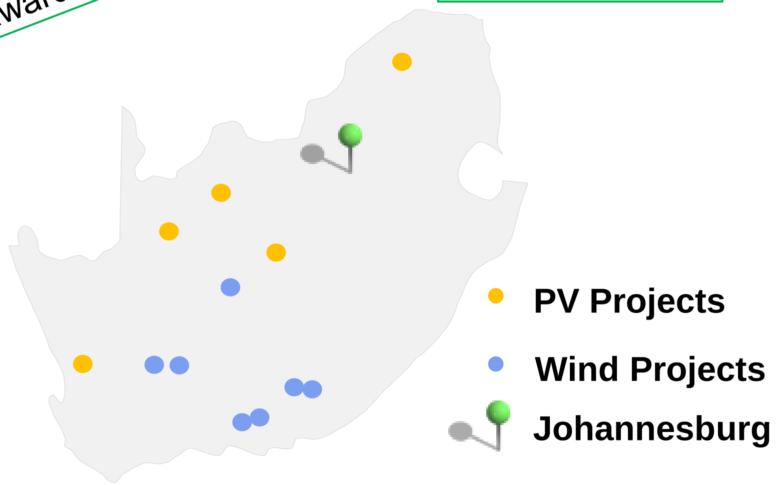
2015 - Round 4.5

Q3/16 – Q2/17
COD Round 3

Gradual but timely entry into the country

Group wide expansion & vertical integration

Vision to become the top IPP in the continent



Enel Green power in South Africa

Where we are

South Africa

522 MW in commercial operation

705 MW awarded

1.5 Bn €
investment

Adams Solar PV 2 R 3
Northern Cape
Technology: Photovoltaic
Capacity: 75MW$_{AC}$ / 82.5MW$_{DC}$

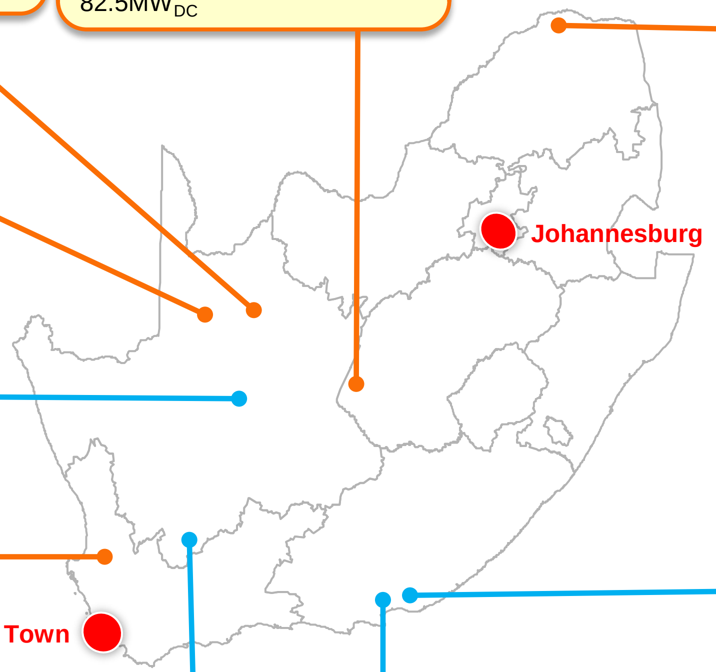
Pulida Solar Park R 3
Free State
Technology: Photovoltaic
Capacity: 75MW$_{AC}$ / 82.5MW$_{DC}$

Tom Burke Solar Park R 3
Limpopo
Technology: Photovoltaic
Capacity: 60MW$_{AC}$ / 66 MW$_{DC}$

Sublunary - Upington R 2
Northern Cape
Technology: Photovoltaic
Capacity: 8.9 MW$_{AC}$ / 9.9 MW$_{DC}$
Commercial Oper Date: **Jul' 14**

Garob Wind Farm R 4
Northern Cape
Technology: Wind
Capacity: 138MW$_{AC}$

Paleisheuwel Solar Park R 3
Western Cape
Technology: Photovoltaic
Capacity: 75MW$_{AC}$ / 82.5MW$_{DC}$



Nojoli Wind Farm R 3
Eastern Cape
Technology: Wind
Capacity: 88 MW$_{AC}$

Nxuba Wind Farm R 4
Eastern Cape
Technology: Wind
Capacity: 141 MW$_{AC}$

Karusa Wind Farm R 4
Northern Cape
Technology: Wind
Capacity: 142 MW$_{AC}$

Soetwater Wind Farm R 4
Northern Cape
Technology: Wind
Capacity: 142 MW$_{AC}$

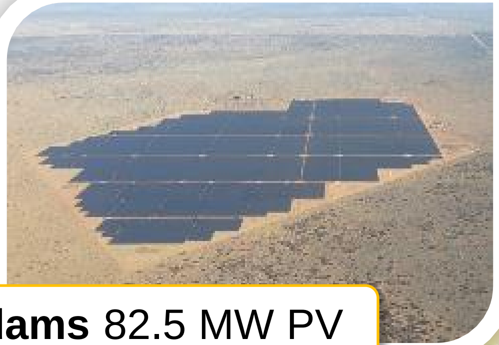
Oyster Bay Wind Farm R 4
Eastern Cape
Technology: Wind
Capacity: 142 MW$_{AC}$

Gibson Bay Wind Farm R 3
Eastern Cape
Technology: Wind
Capacity: 111 MW$_{AC}$

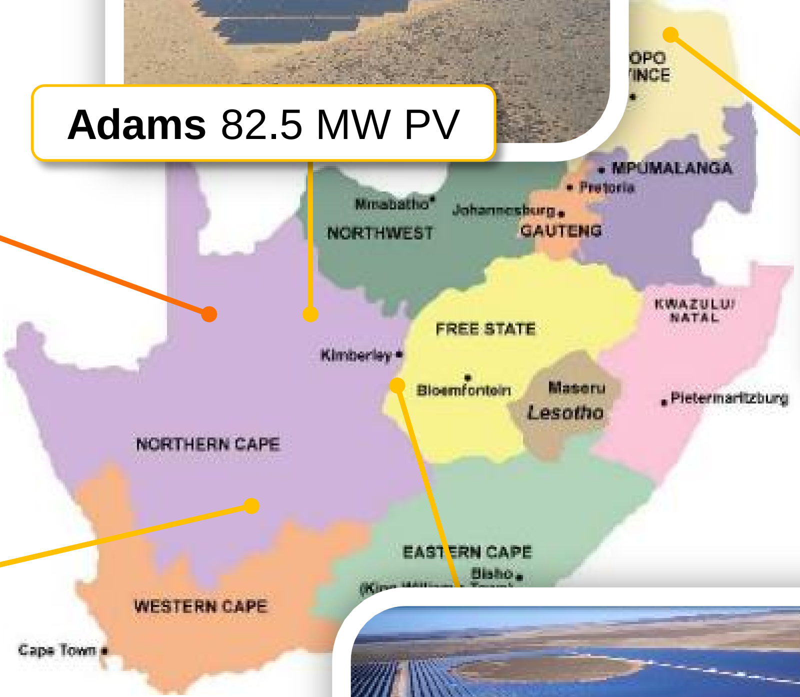
South Africa – PV Plants

323.5 MW PV constructed

Upington 10 MW



Adams 82.5 MW PV



Tom Burke 66 MW PV

Paleisheuwel 82.5 MW PV

Pulida 82.5 MW PV

323.5 MW PV constructed and put in operation within end 2016

South Africa – Wind Plants

199 MW Wind constructed

Nojoli 88 MW Wind

Projects completed ahead of schedule

Gibson Bay 111 MW Wind

Conclusions

The recipe for a successful RES implementation

- Develop a Long Term **Integrated Resource Plan** that considers all Renewable Energy Sources
- Adopt a strategy to set **Renewable Energy Targets**
- Introduce **clear and transparent mechanisms,** as tenders**,** to foster renewable development attracting reputable and capable IPPs; (pre-qualifcation, bankable PPA)
- Assess the **Grid status** and define improvement/reinforcing plan to sustain capacity growth and renewable additional capacity
- Define rules to allow **Third Party Access** in order to promote “wheeling of energy” and allow the possibility for IPPs to set up **bilateral PPAs** with large consumers (such as mine)
- Develop the policies and regulatory framework to facilitate private sector involvement in **decentralized renewable energy technologies** (ie mini –grid projects, net-metering rules etc);
- Define clear rules and procedure to **foster the development of direct and indirect jobs,** along the whole value chain, and to promote local investments.

Thank you

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