



Geothermal Exploration and development in Olkaria

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Olkaria Geothermal Power Project, Naivasha, Kenya

Disclaimer:

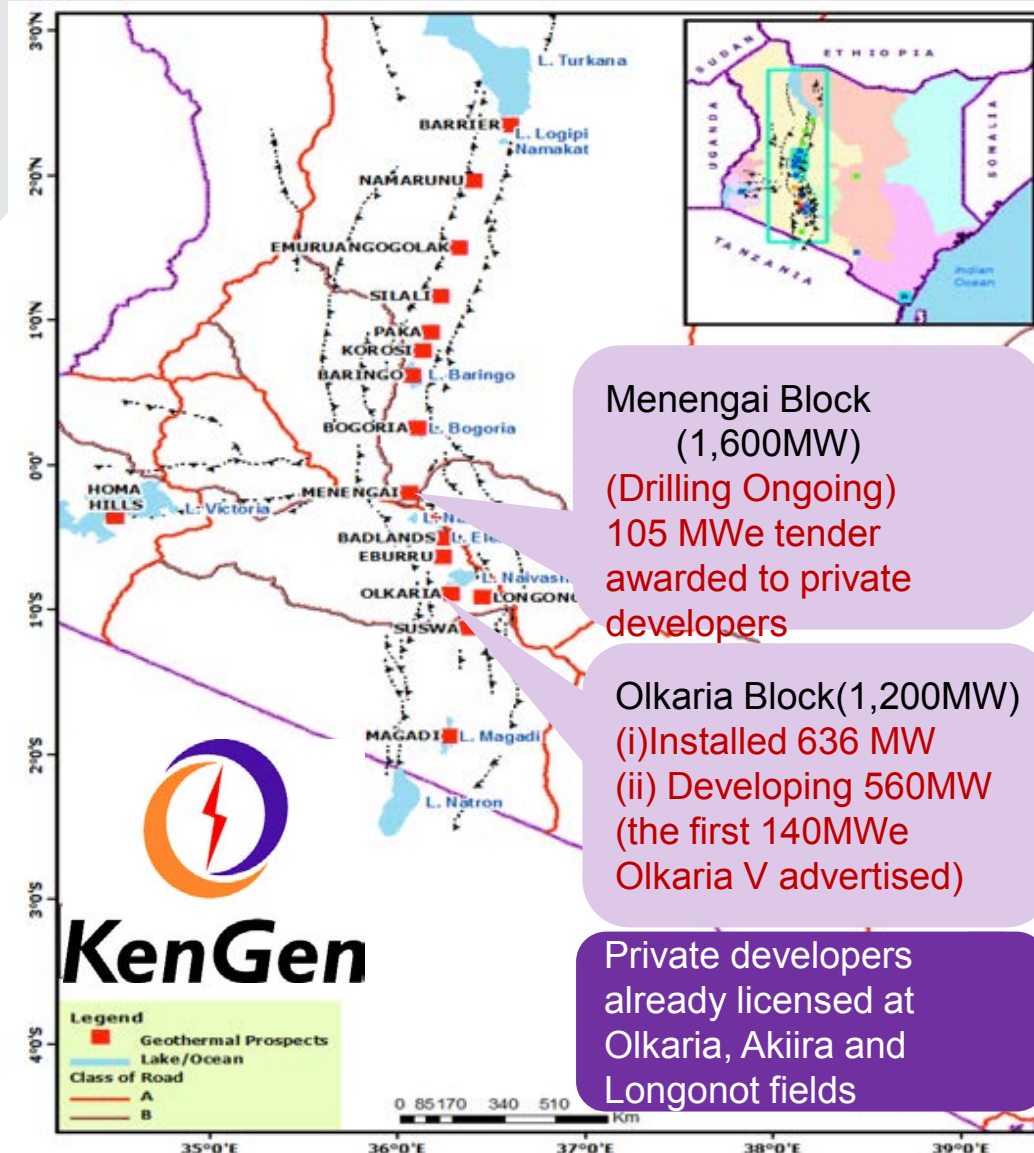
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GEOHERMAL POTENTIAL IN KENYA

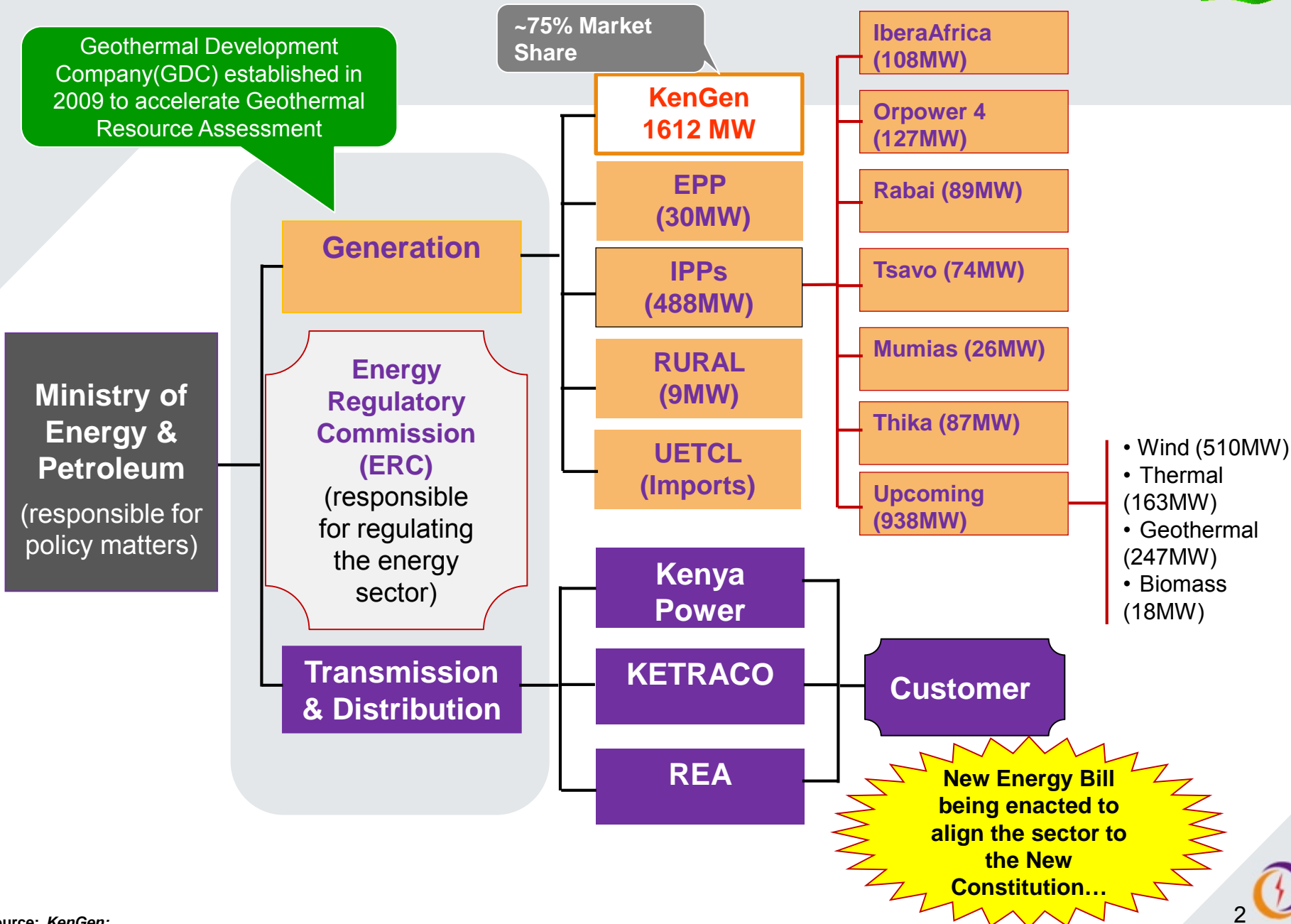


> 10,000MW in over 23 sites

- Suswa,
- Longonot,
- **Olkaria,**
- Eburru,
- Menengai,
- Arus-Bogoria,
- Lake Baringo,
- Korosi,
- Paka,
- Lake Magadi,
- Badlands,
- Silali,
- Emuruangogolak,
- Namarunu
- Barrier
- Mwananyamala
- Homa Hills
- Nyambene Ridges
- Chyulu Hills



OVERVIEW OF POWER SUB-SECTOR TODAY





► DFIs SUPPORT – 210MW

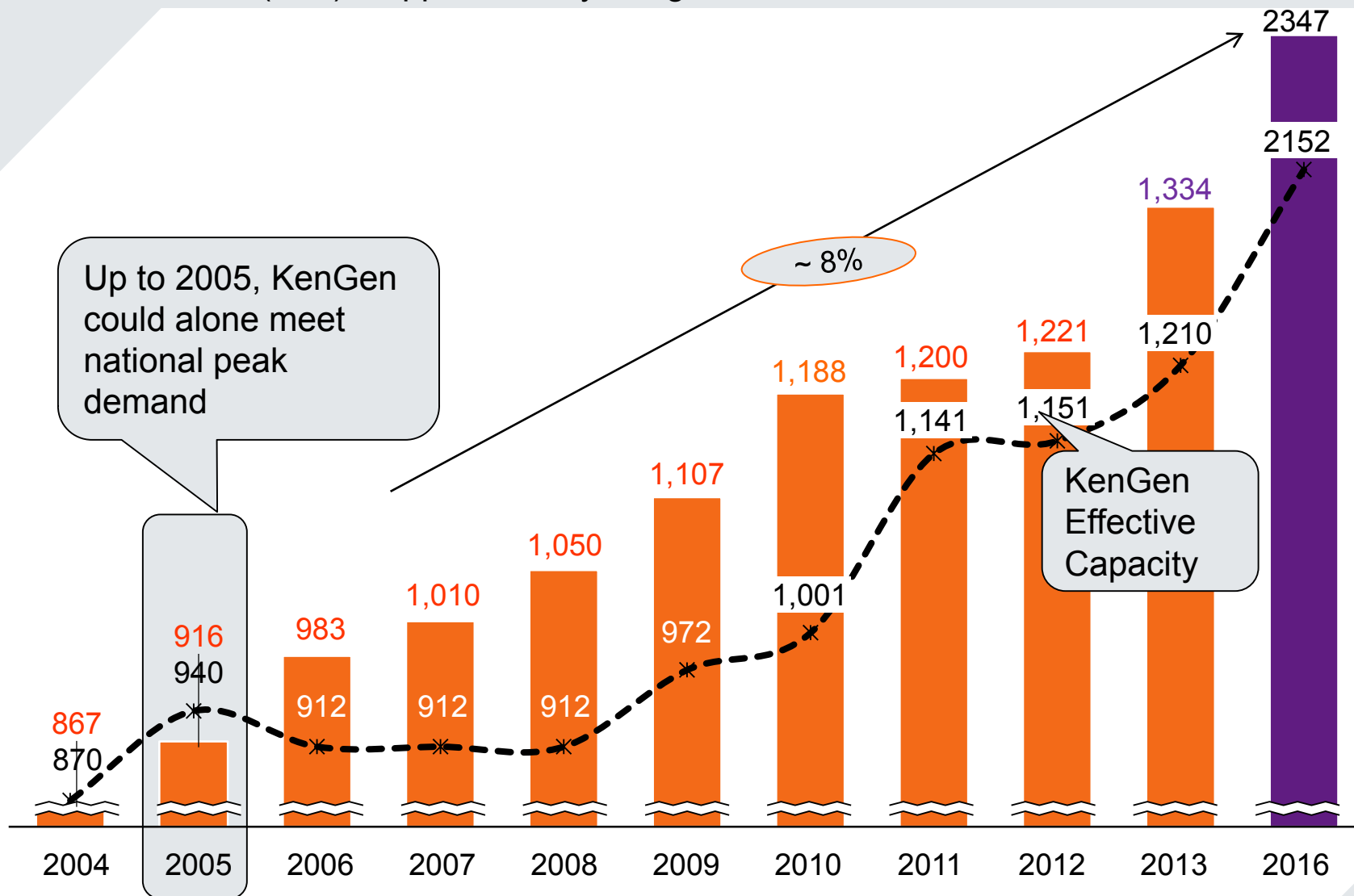
- ✓ No resettlement needed
- ✓ All NEMA approvals granted

NATIONAL PEAK DEMAND

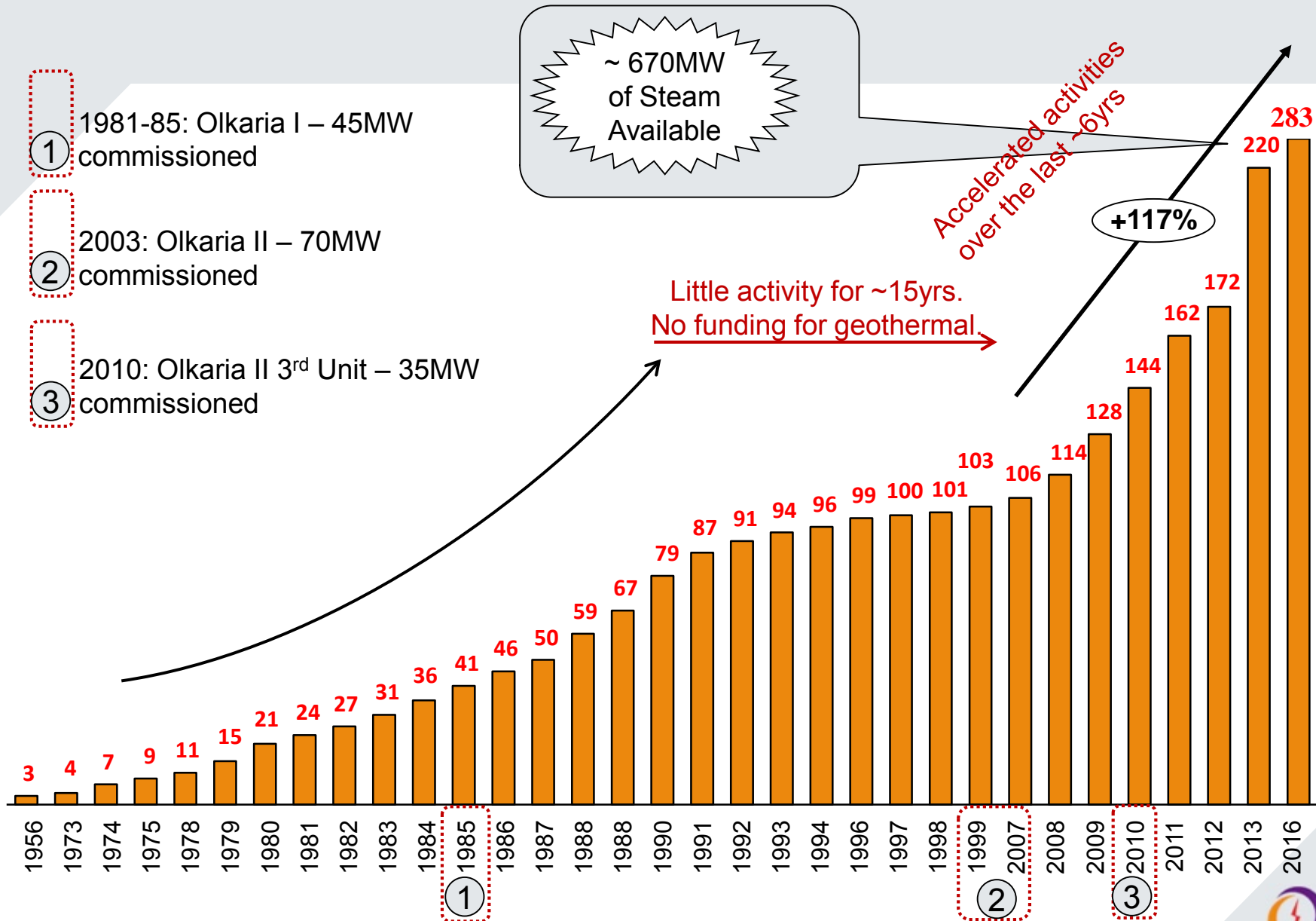


+ Suppressed peak demand

Peak Demand (MW) – approximately 8% growth

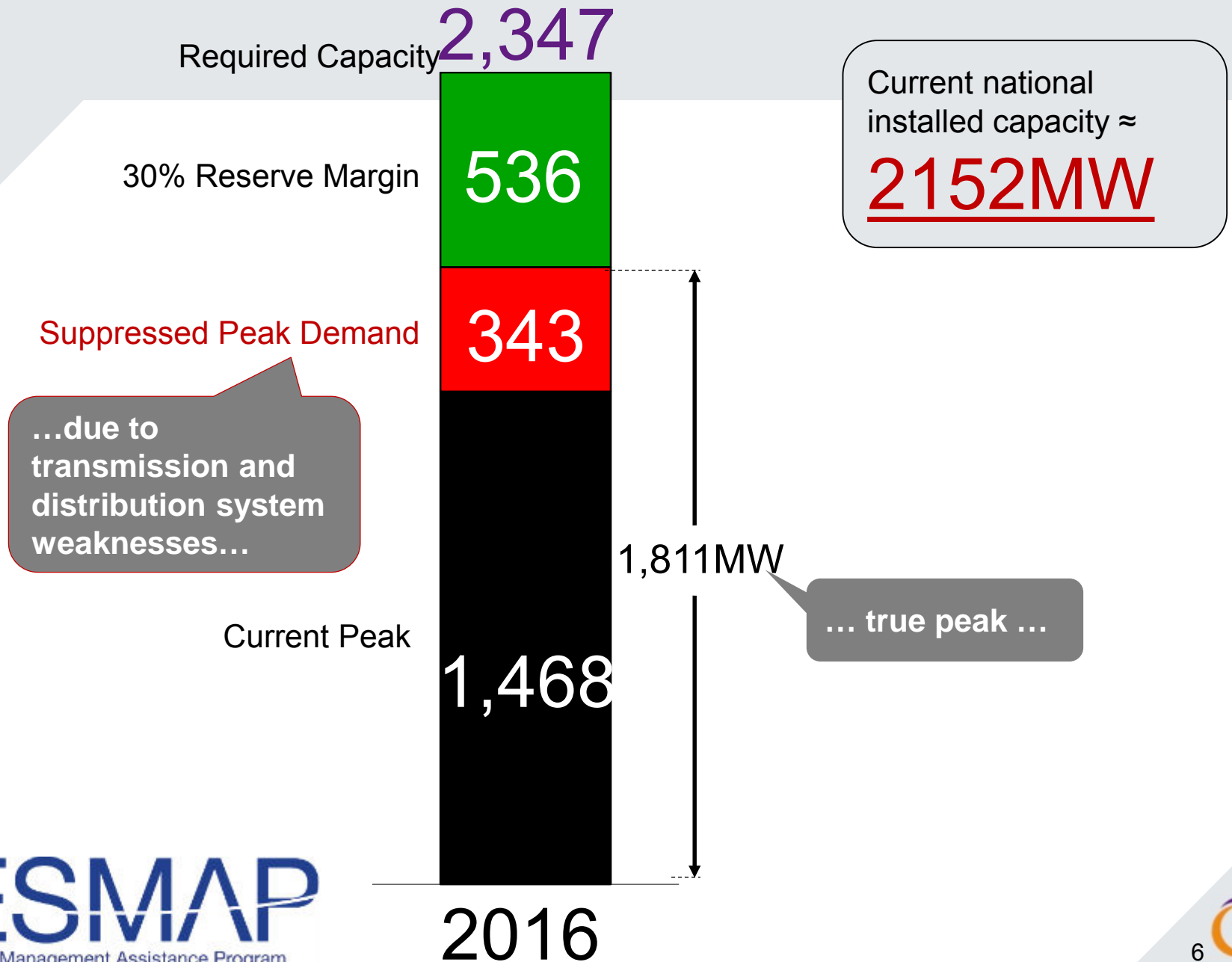


KENYA'S GEOTHERMAL JOURNEY FROM 1956 to DATE

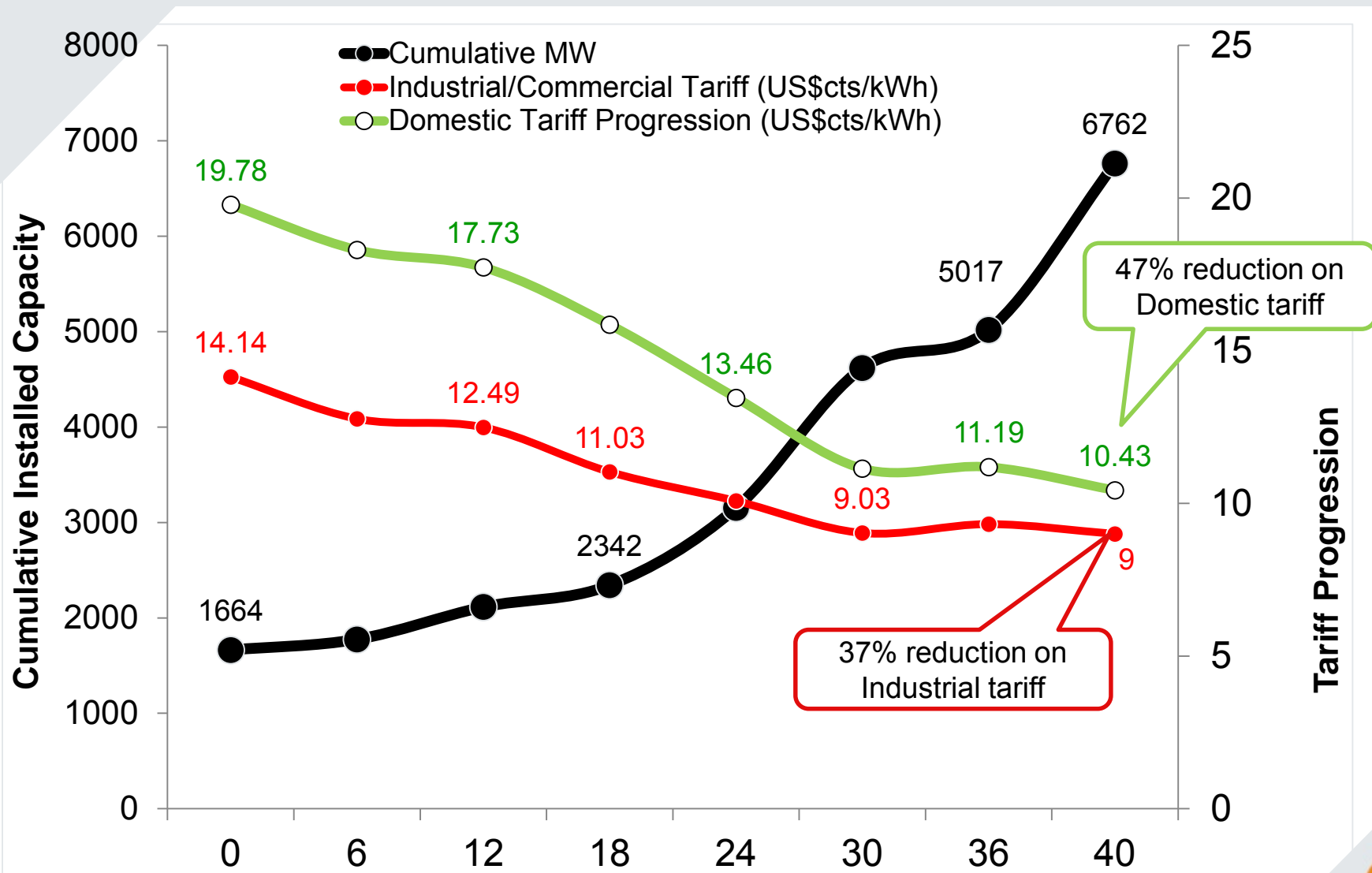




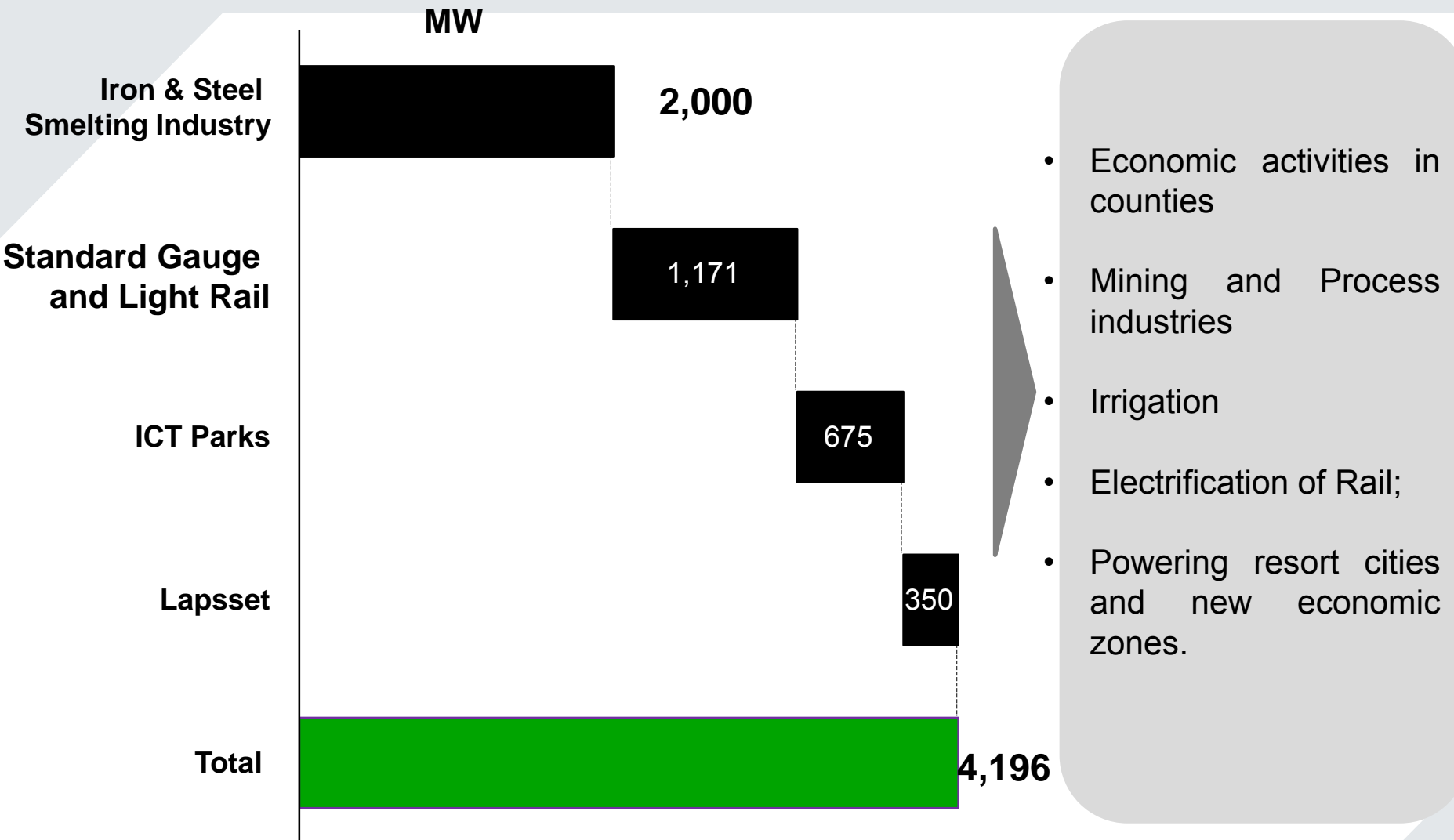
CURRENT TRUE PEAK DEMAND



GOVERNMENT TARGET ON TARIFF EVOLUTION WITH NEW CAPACITY THAT WILL DISPLACE FUEL COMPONENT:



POWER DEMAND DRIVERS BY YEAR 2016/17



40-MONTH GOVERNMENT 5000+MW STRATEGY



NEW CAPACITY ADDITIONS (MW)								
TIME IN MONTHS	6	12	18	24	30	36	40	TOTAL
Hydro	24	-	-	-	-	-	-	24
Thermal	87	163	-	-	-	-	-	250
Geothermal	90	176	190	50	205	150	785	1,646
Wind	-	-	20	60	300	250	-	630
Coal	-	-	-	-	960	-	960	1,920
LNG	-	-	-	700	350	-	-	1,050
Co-Generation	-	-	18	-	-	-	-	18
Total	201	339	228	810	1,815	400	1,745	
Cumulative Additions		201	540	768	1,578	3,393	3,793	5,538

61% is Renewable Capacity and KenGen is a key player in this strategy...

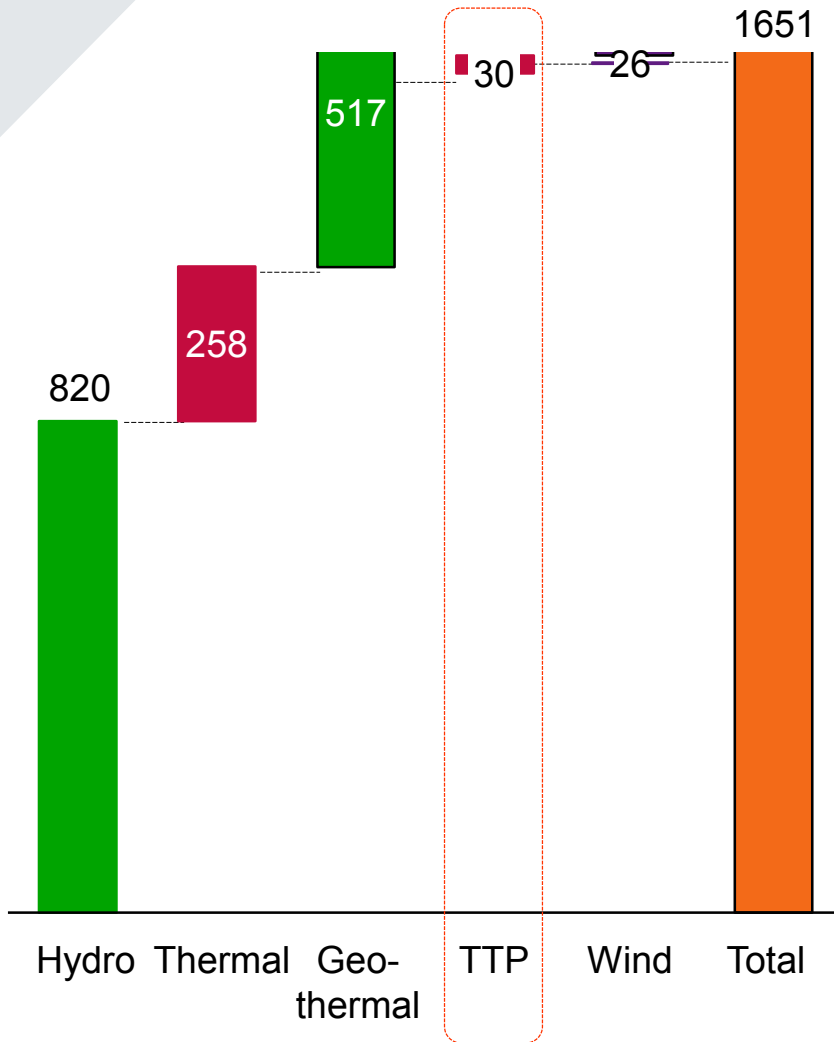


- ▶ • In our 61st Anniversary;
- ▶ • 70% Government-owned
- ▶ • ~75% market share of Installed Capacity
- ▶ • A member of Nairobi Securities Exchange since 2006
- ▶ • ~ 1,612 MW (~ 49 % Hydro);
- ▶ • ~ 2,800 Staff Compliment;
- ▶ • ~ US\$ 3.40 billion Asset Base;
- ▶ • ~ US\$ 310 million Annual Turnover;
- ▶ • An ISO 9001:2008 & ISO 14001:2004 Company

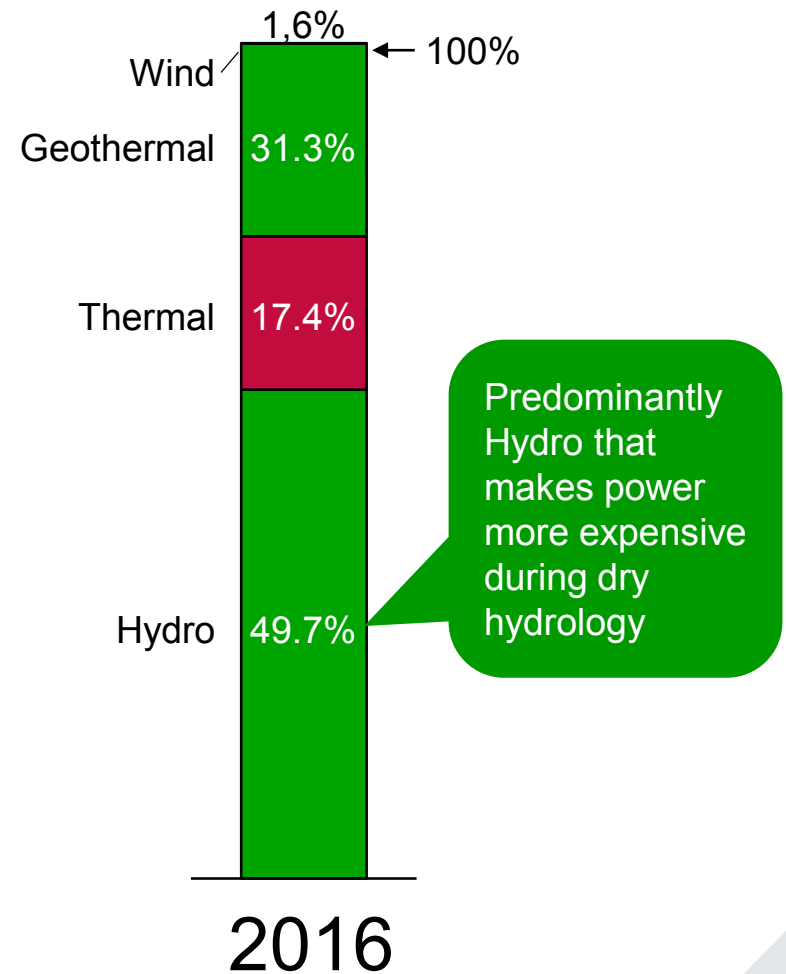
OUR GENERATION PORTFOLIO



Generation Portfolio (MW)



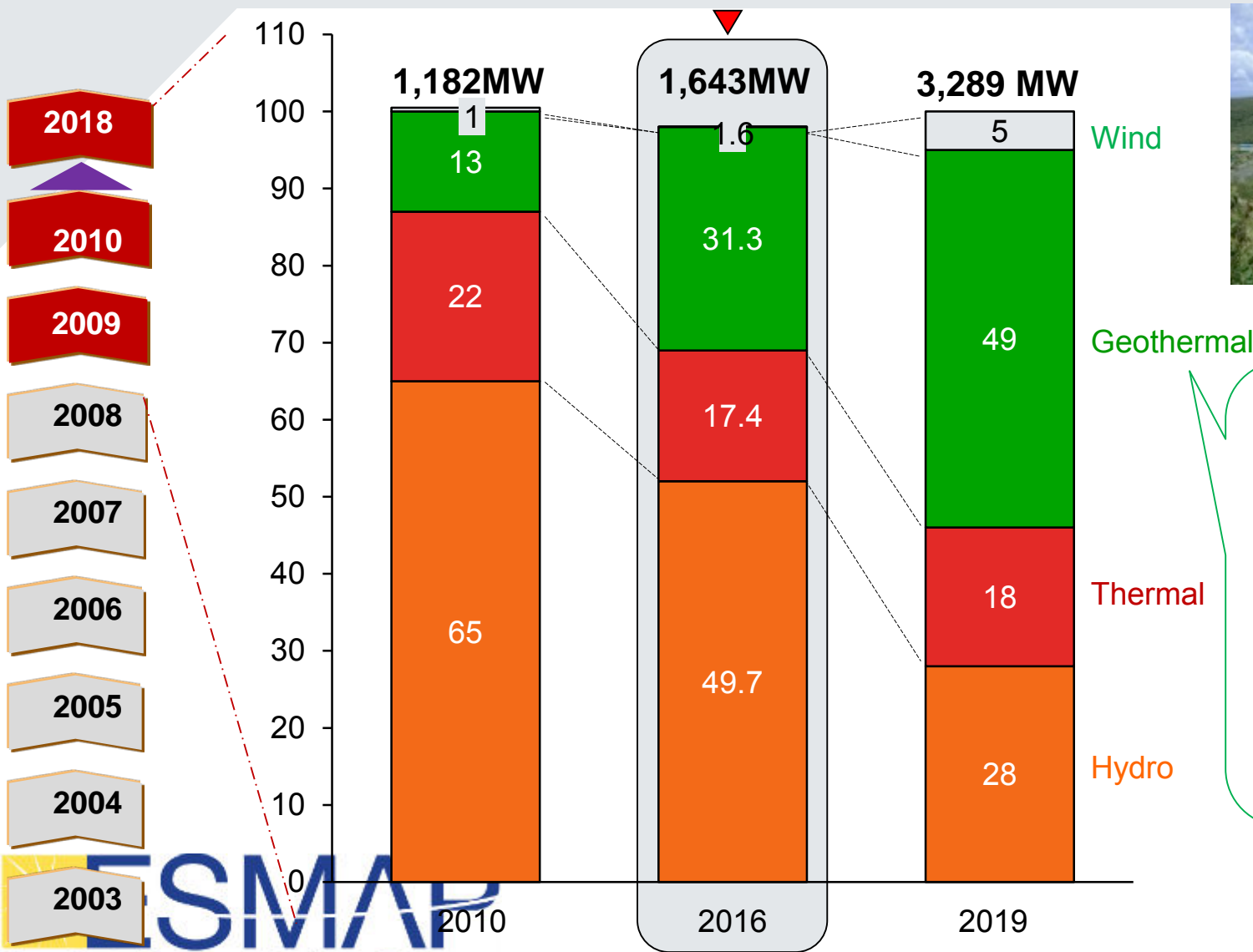
Generation Portfolio (%) – excludes TTP*



A GREEN KENGEN WITH GEOTHERMAL BASE-LOAD CAPACITY



Generation Mix Movement



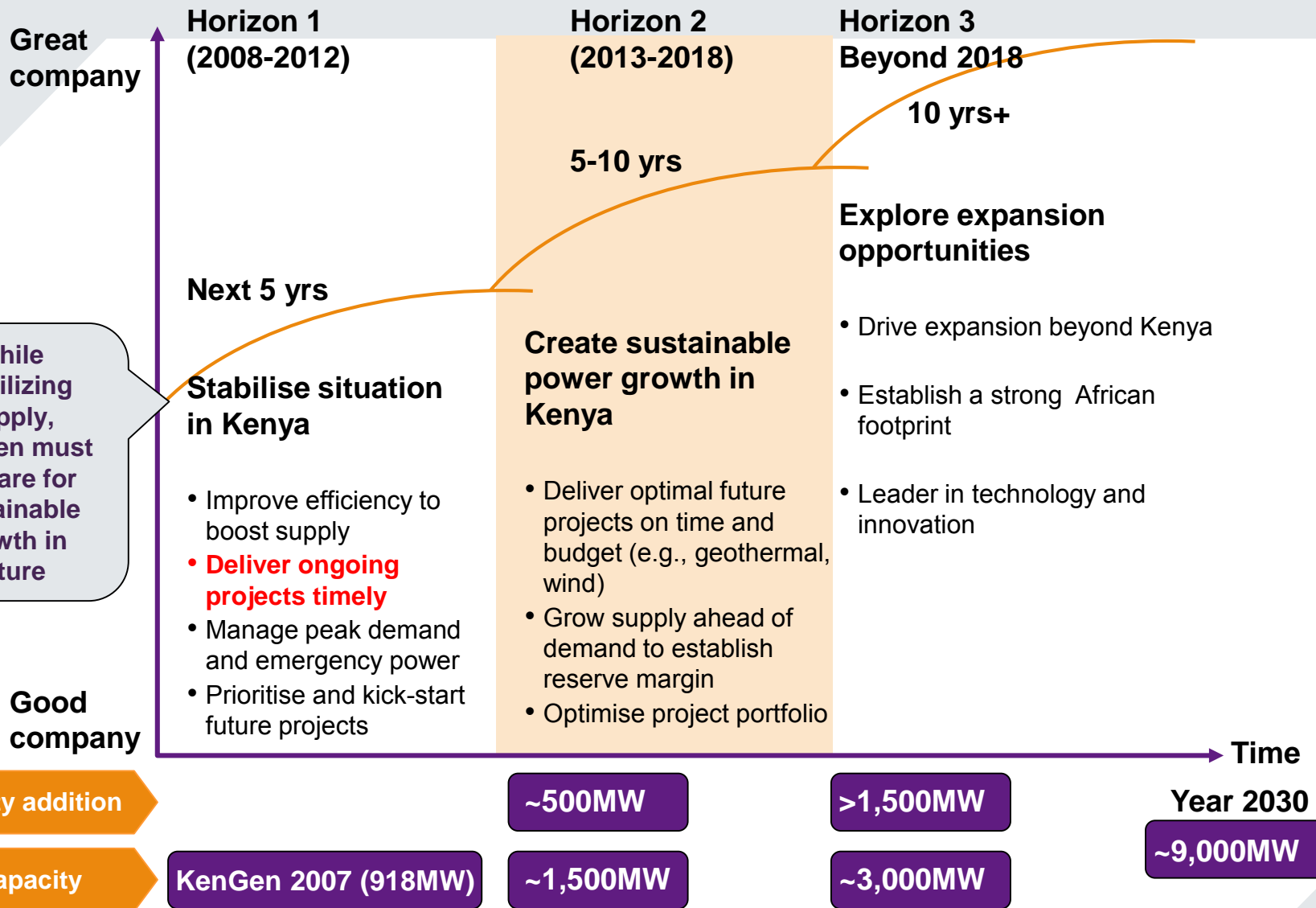
- A green KenGen by 2018 with ~50% of installed portfolio from geothermal...
- Carbon credits will also boost revenues



OUR STRATEGY TO 2018



KenGen Today
~ 1,405MW



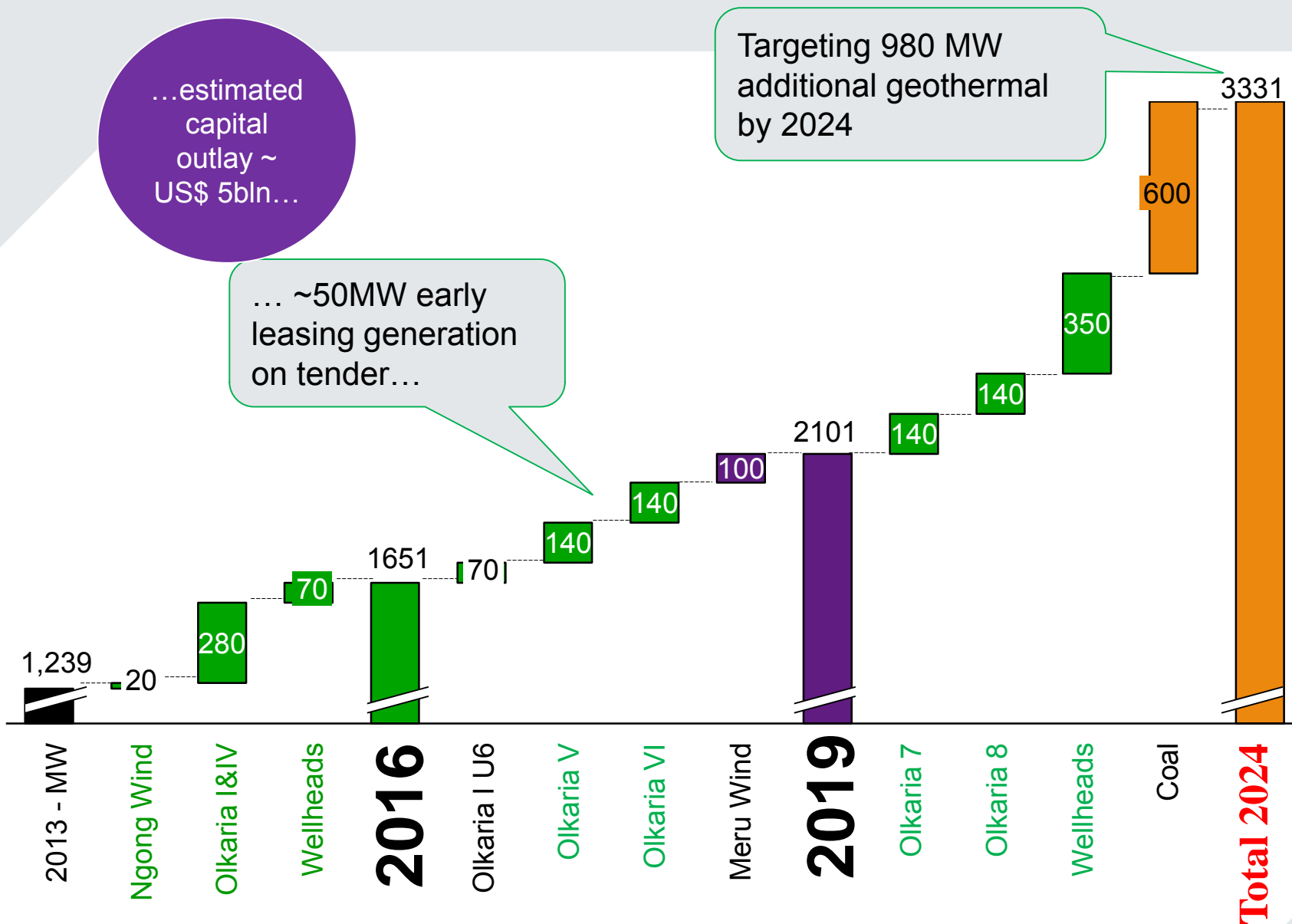
OUR GROWTH STRATEGY



...estimated capital outlay ~ US\$ 5bln...

Targeting 980 MW additional geothermal by 2024

... ~50MW early leasing generation on tender...



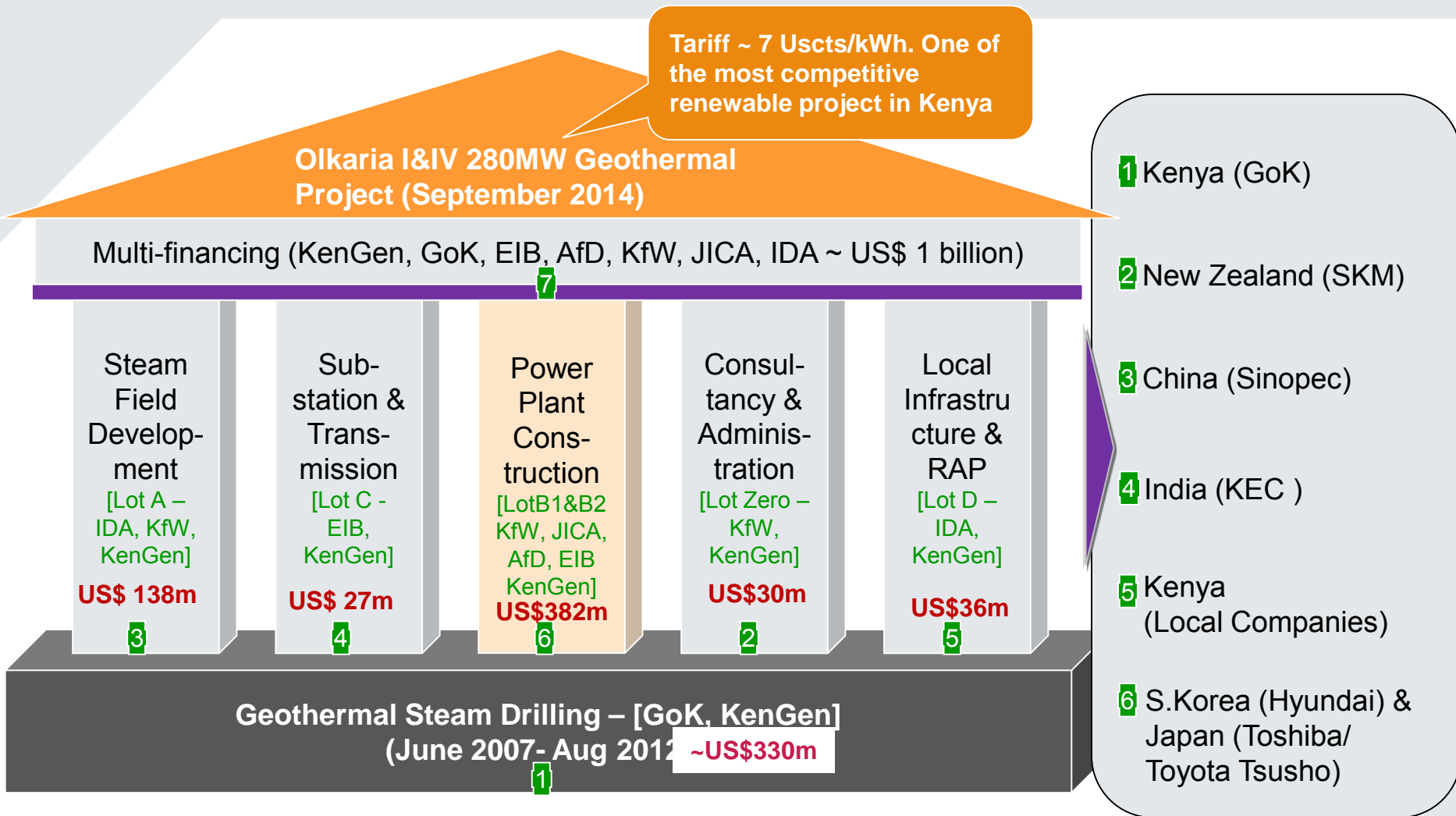
COMMITTED GEOTHERMAL PROGRAMME



No.	Plant	Capacity (MW)	Estimated Cost MUSD	Comm year	Status
1	Olkaria IV unit 1&2	150	491	2014	Commissioned
2	Olkaria I unit 4&5	150	491	2014	Commissioned
3	Wellhead	70	130	2015	Construction in progress (67MW Commissioned)
4	Olkaria I Unit 6	70	194	2016	Construction to start 2016
5	Olkaria V	140	491	2019	Construction to start 2016
6	Olkaria VI	140	491	2019	Drilling & JV Partner/Financing
	Sub-Total	700	2,165		



OLKARIA I&IV 280MW PROJECT: Utilizing a Cross-Continental Collaboration both engineering and financing



Olkaria IV: 150MW – Commissioned



OLKARIA IV GEOTHERMAL POWER PLANT

CAPACITY : 2 x 70MW STEAM TURBINE GENERATOR

CONSTRUCTION PERIOD : DEC. 2011 TO JUN. 2014



Olkaria I UNIT 4 & 5: 150MW – Commissioned



OLKARIA IAU GEOTHERMAL POWER PLANT

CAPACITY : 2 x 70MW STEAM TURBINE GENERATOR

CONSTRUCTION PERIOD : MAR. 2012 TO SEP. 2014



KenGen

New Discoveries: 30 MW Well (among the largest Geothermal Wells in the World)



Direct Cash Savings by
Striking one 30MW Well

USD 35 Million!





Stakeholder Management

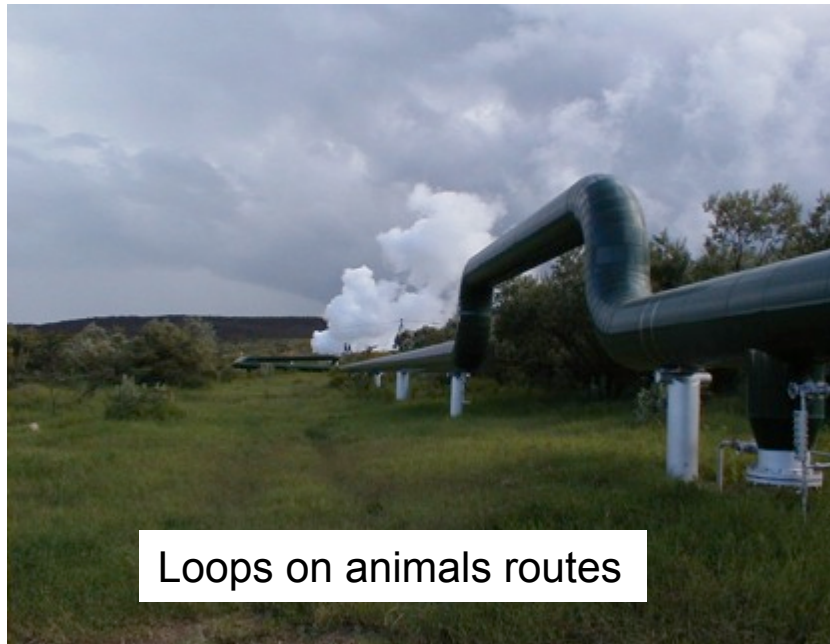
- Creating mechanisms to deal with local community issues
- Environmental & Social Impact Management
- Dealing with regulatory authorities and government institutions



KenGen/PARK INTERACTION



- Hells Gate National park since 1984
- KWS-MoU since 1994
- ESIA's always undertaken
- Mitigation measures implemented continuously



Loops on animals routes

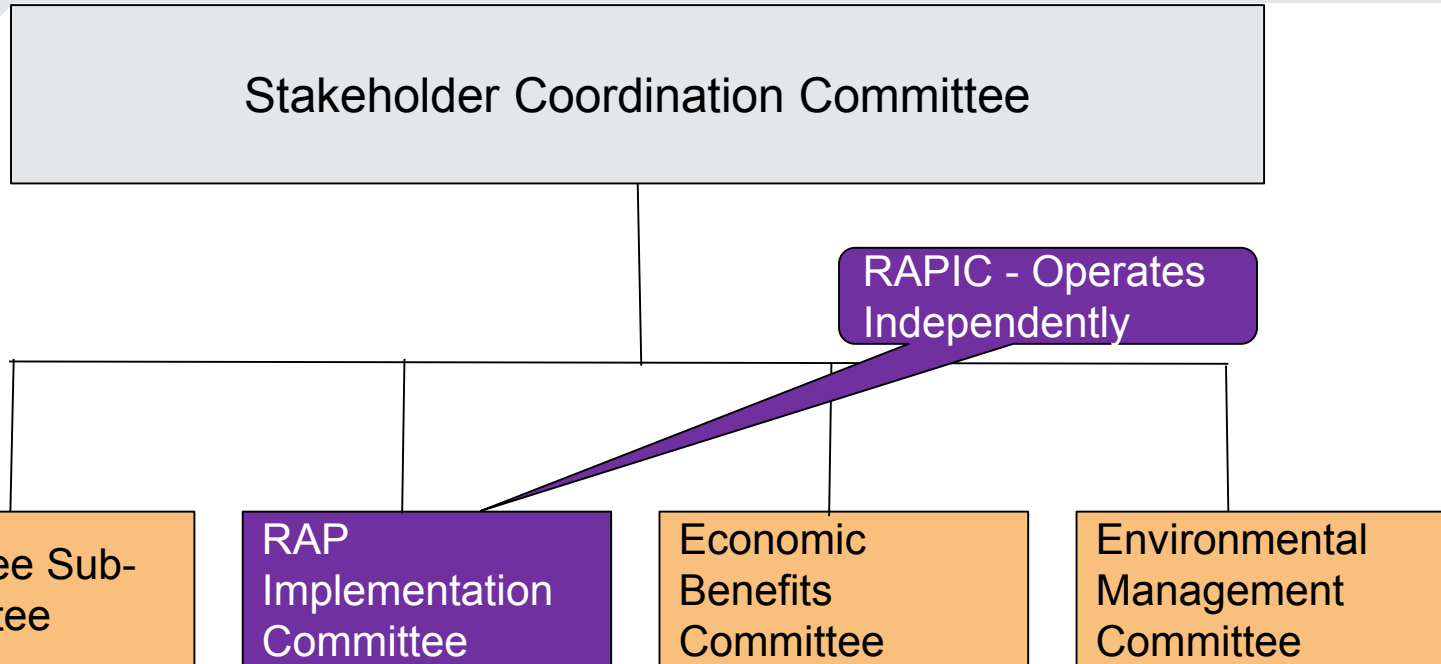
Meeting between Consultants,
KenGen and KWS



1. Elaborate Resettlement Action Plan (RAP) and all inclusive Stakeholder Committees
2. Education
3. Health
4. Water
5. Transport
6. Roads
7. Environmental conservation

Built Schools





TRANSFORMING LIVES





Old School



TRANSFORMING LIVES



New School



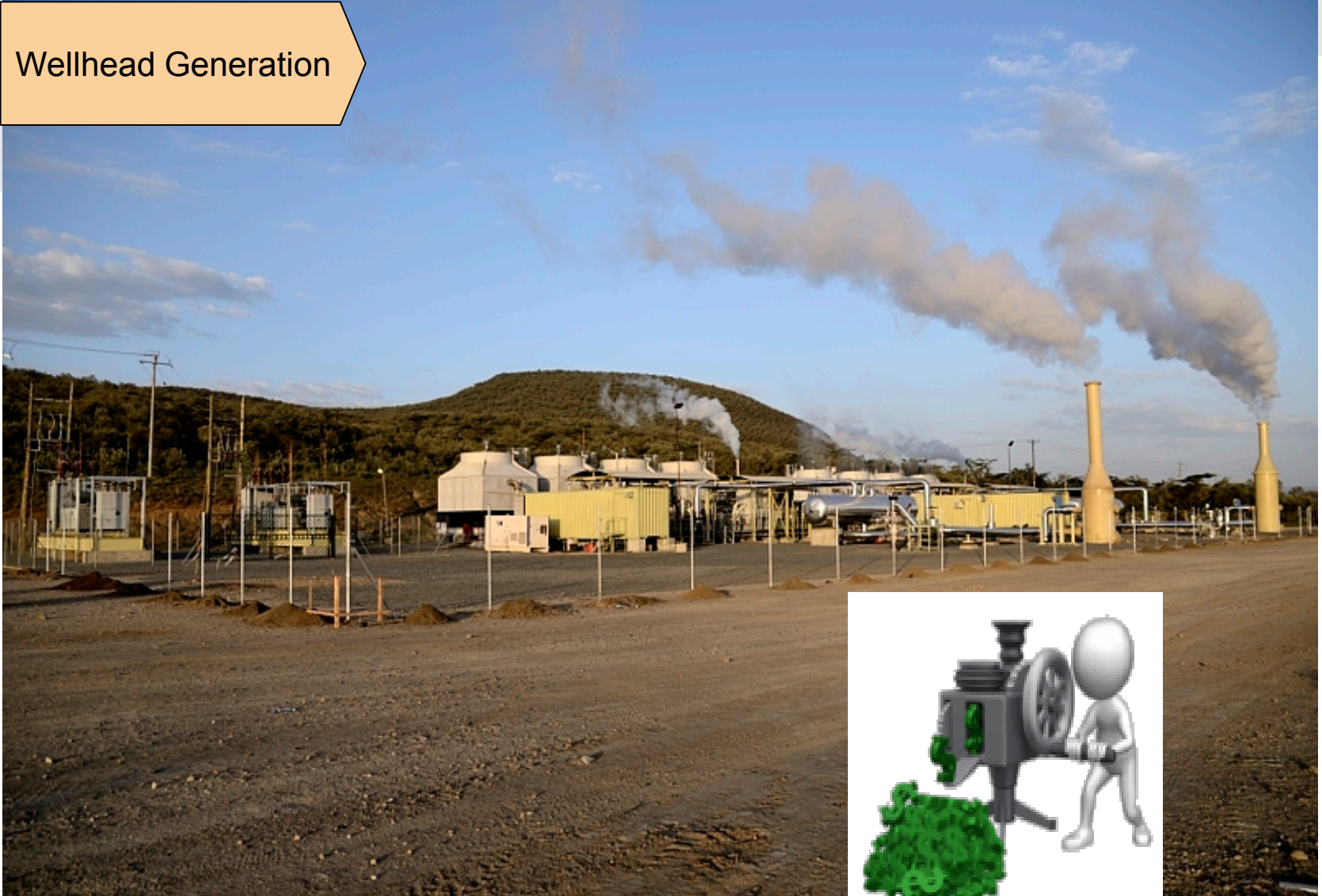
KENGEN OLKARIA GEOTHERMAL SPA



THE ONGOING WELLHEAD 70MW PROJECT...



Wellhead Generation

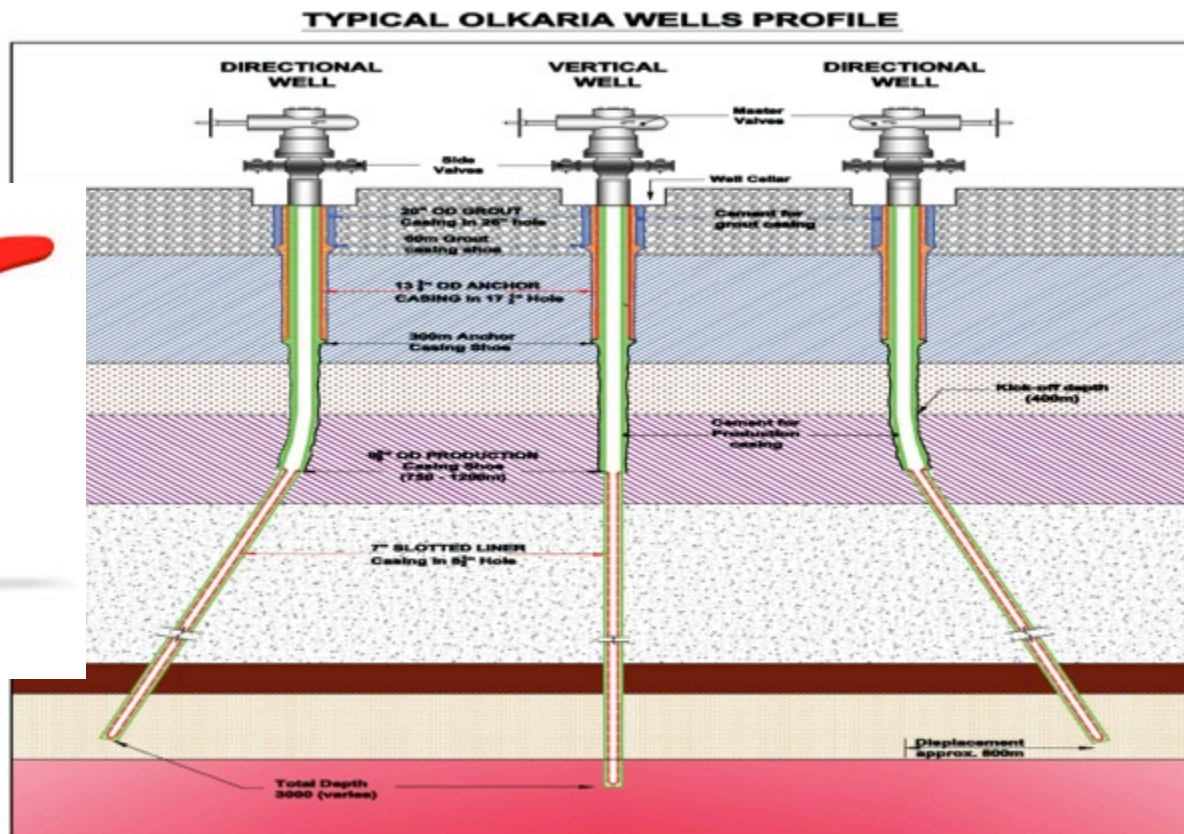


OUR INNOVATION IN GEOTHERMAL

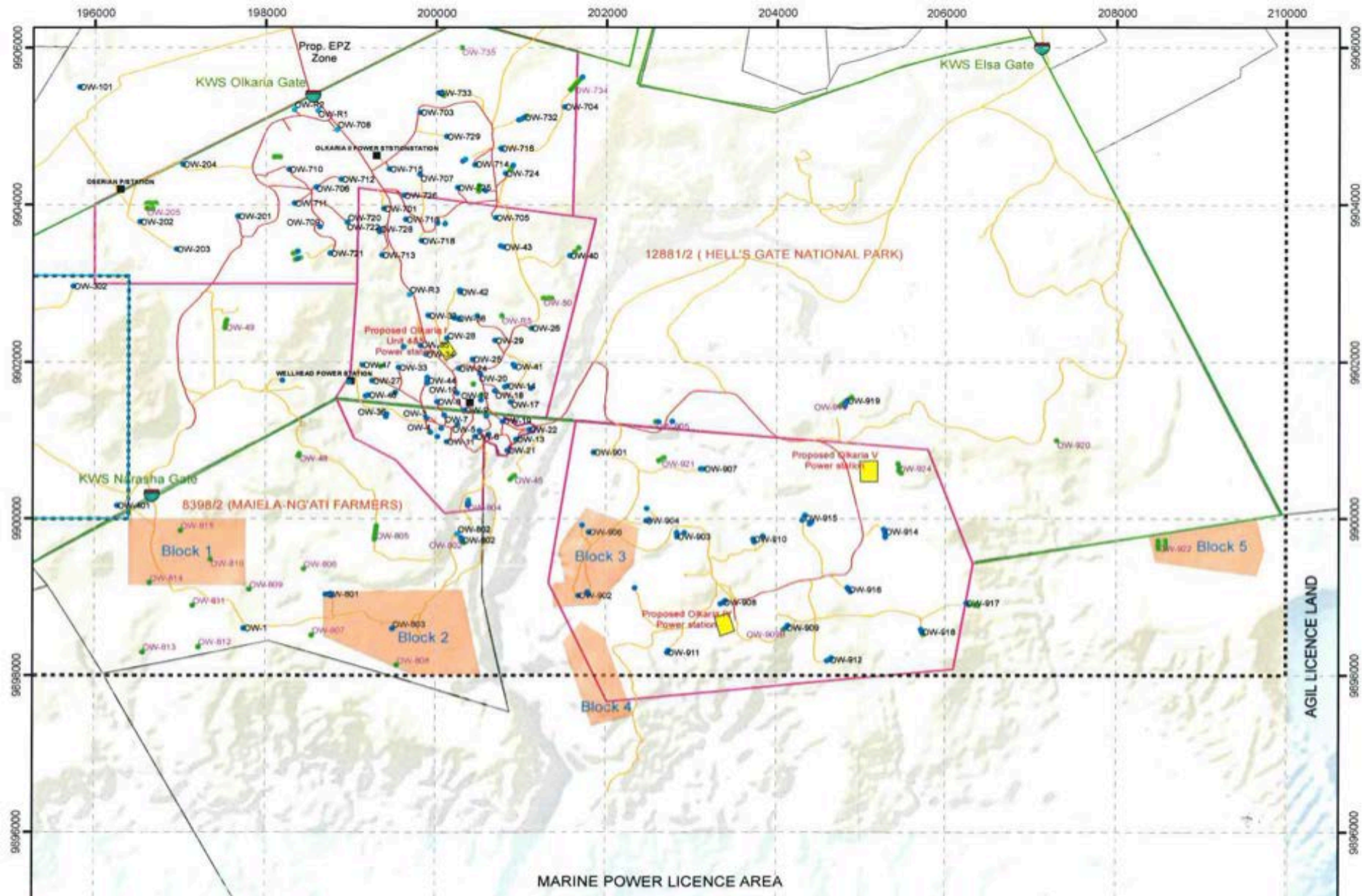


Directional Drilling

- This reduces drilling cost by optimizing time, civil and rig-move expenses.



PROPOSED KenGen INDUSTRIAL PARK



OLKARIA IAU GEOTHERMAL POWER PLANT

CAPACITY : 2 x 70MW STEAM TURBINE GENERATOR

CONSTRUCTION PERIOD : MAR. 2012 TO SEP. 2014



THANK
YOU.

God Bless Kenya



KenGen

