

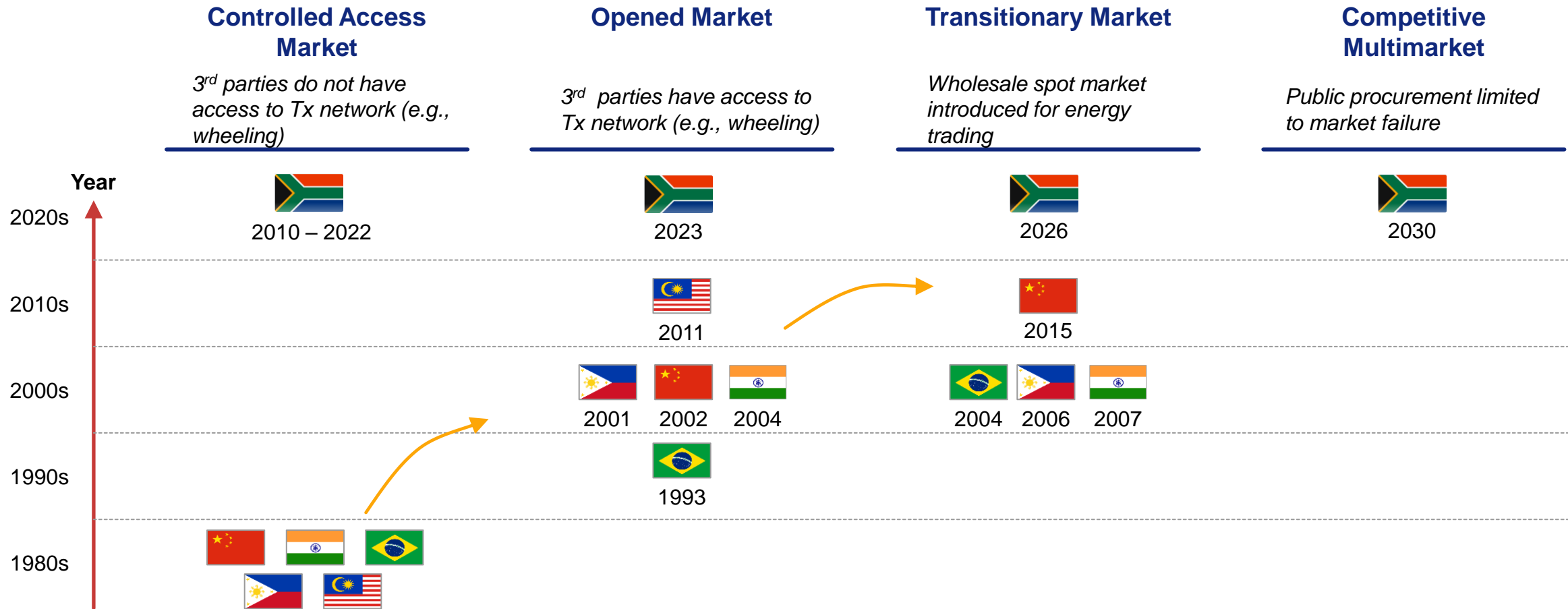
ENERGY COUNCIL OF SOUTH AFRICA

Operation Vulindlela Discussion

June 2024



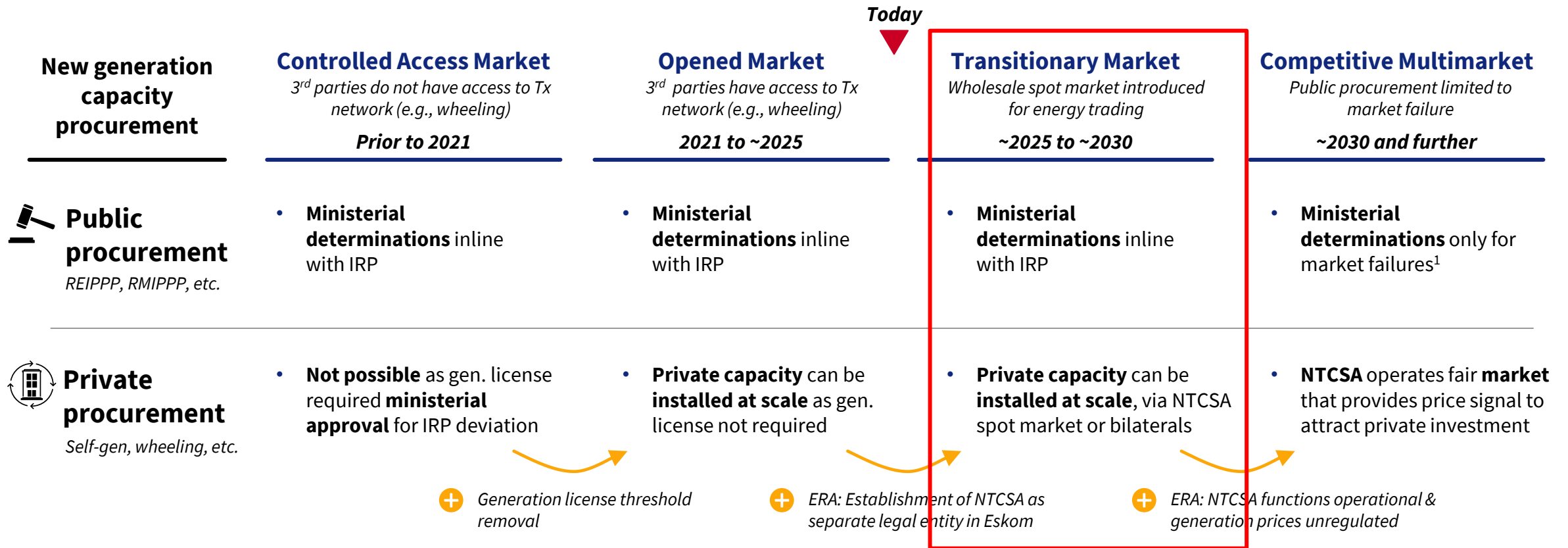
SA electricity market reform is 10-15 years behind peers



Note: Regulatory progression doesn't follow South Africa's exact steps, e.g., Malaysia introduced a single buyer model, but it does show the high-level progression

Source: National regulators, press search

Market reform was initiated by removing generation license threshold, but further reform needed to prevent two-tiered market



Today, only **individuals & companies with funds can procure and access** new low-cost technologies
 Estimate of only 3% of households can afford rooftop solar with BESS

Embedded Generation must grow at circa 1,5GW per annum



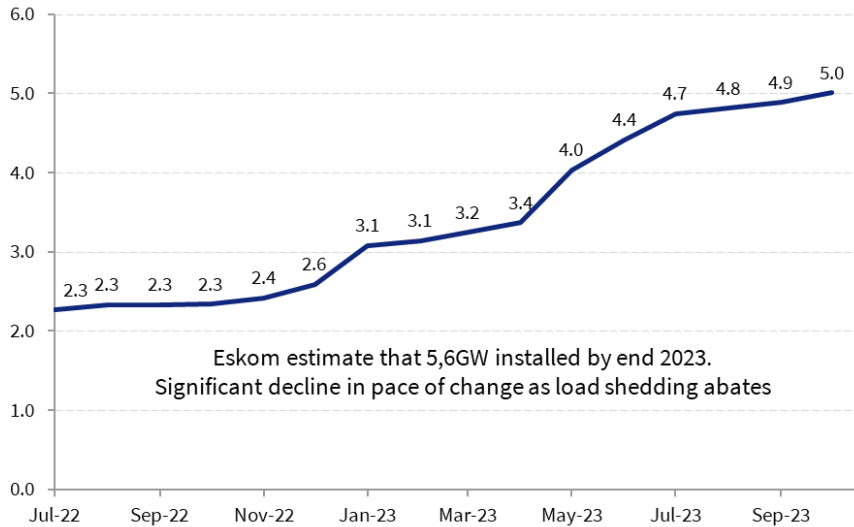
The amended ERA seeks to achieve:

- The Bill proposes amendments to the Electricity Regulation Act, 2007 (Act 28 of 2007).
- The proposed amendments broaden the national regulatory framework for the electricity supply industry.



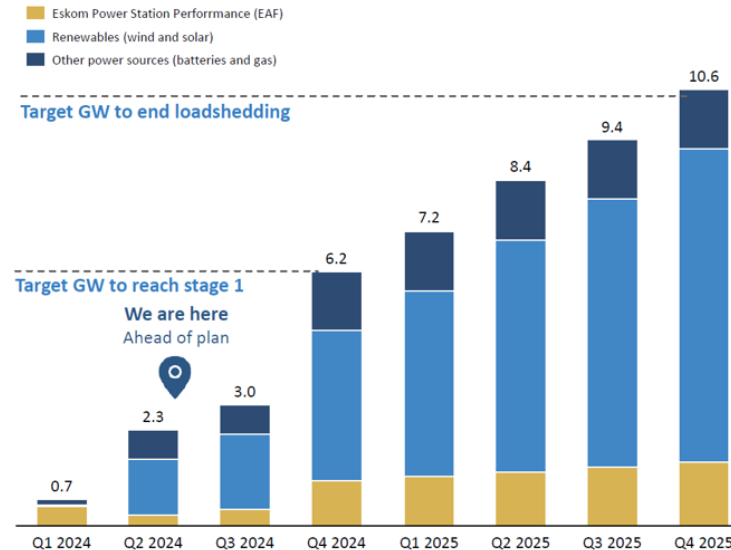
Actual Growth in Solar

Installed Embedded PV Generation, July 2022 - September 2023
(in GW installed embedded generation capacity)



Projected 2-year Growth

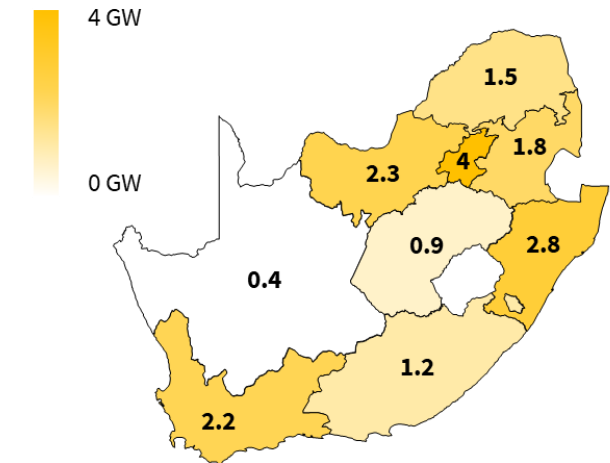
Targeted additional power to be added to the grid (GW)
Achieving this target depends on improving Eskom performance and adding new generation capacity



Required Growth in Solar

Total embedded Solar PV target
17 GW embedded Solar by 2034

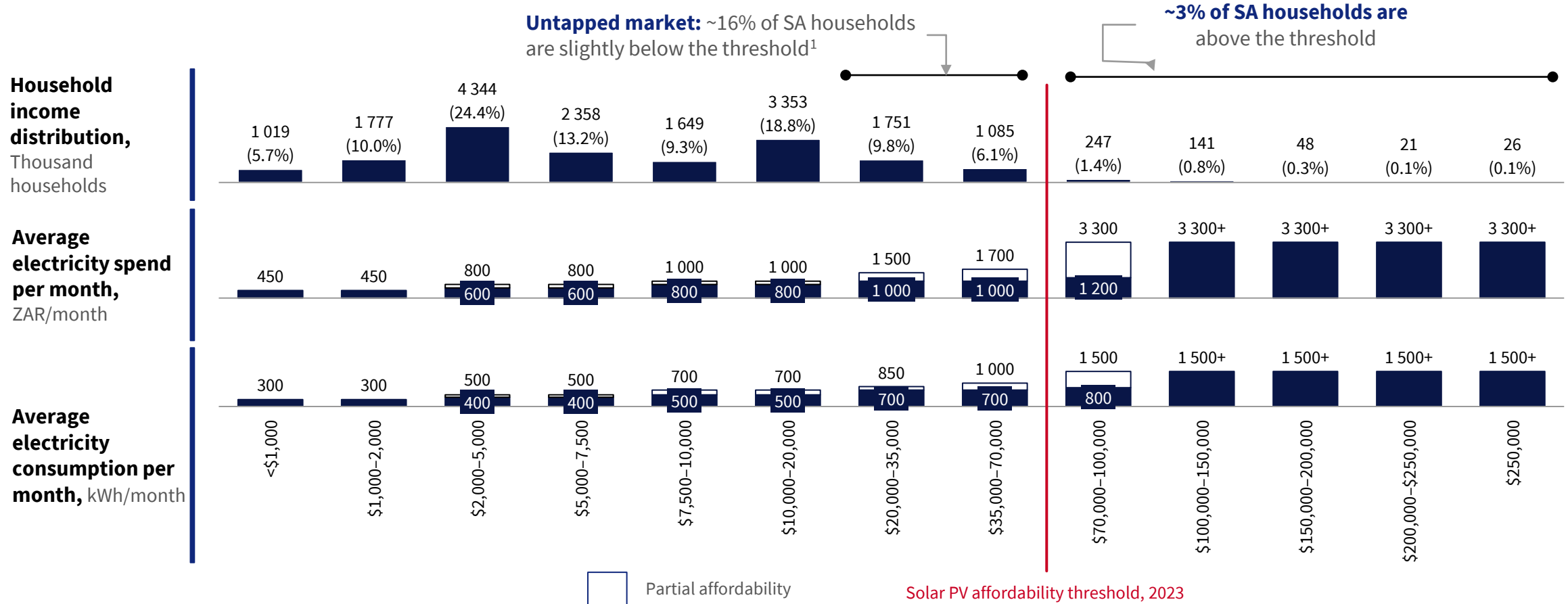
Embedded solar PV installed capacity, 2034
(in GW)



Only 3% of SA households can currently afford solar PV



16% additional market could be unlocked through financial innovation



1. Assumptions: Using avg. cost of R80k -R100k (\$5k - \$8k) for a 5-6 kW solar PV installation in SA. Affordability threshold is estimated at installation cost of ~10% of annual income. Estimated affordability threshold is ~R800k (~\$50k); Source: Energy Council Project Team

Need for continued policy reform



Reframing the energy debate from one of “threat” to “opportunity”

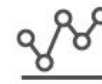
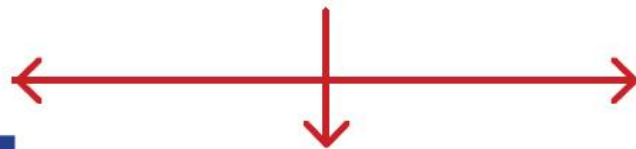
Energy Transition Roadmap (ETR) Project

Three delivery channels have emerged following detailed analysis work and member consultation



1 Communications

Detailed, simplified and factual information on key energy sector topics to inform and stimulate discussion



2 Energy data and modelling

Platform providing data ranges and key modeling assumptions, independently benchmarked across industry role-players



3 Focus areas critical to delivery

Interventions for the Energy Council to implement in the next two years to achieve the minimum energy transition pathway



1. **Energy as an integrated system** – Shifting from polarised “supply-mix” ideology to a practical, integrated system planning and delivery approach.
2. **Our vital emissions obligations** – South Africa has committed to a net-zero. We are challenged by high emissions intensity and slow transition.
3. **Our ongoing coal dependency** – Reliable and extended coal will be required for energy security, but decommissioning is fundamental to emissions reduction.
4. **Bridging the transition with gas** – South Africa needs a balanced power system and has industrial gas needs. Indecisive planning and fossil fuel ideology have stalled the role of gas.
5. **Scaling renewables and storage** – Achieving a five times increase in clean technology procurement requires total system modernisation and must deliver industrialisation and jobs.
6. **We are moving to a market-led system** – Energy is being decentralised but risk of market failures must be centrally planned and managed through efficient regulations.

2028–2030 highlights further energy security risk if we do not rapidly increase the speed and scale of investment

Energy growth requires over R1,8 trillion in investment through market-led structures and private-sector



Infrastructure/utility

- At least **34 GW** of increased grid connection by 2030 (43 GW by 2035)
- Unbundling of Utility and related restructuring
- Modernisation and digital reform
- Municipal utility reform



Supply

- ~**5 GW** of RE per annum to **2035** (5 GW RE in interior by 2027. ~1,5 GW p.a. embedded RE)
- At least **5,4 GW** of GtP by 2028
- At least **3 GW** of BESS by 2030 (12 GW by 2035)



Demand

- At least **130 GWh p.a. of Demand Side Response** by 2030
- Exponential demand outlook from electrification and Transport pivot (2–3 times growth by 2050)



Market transition

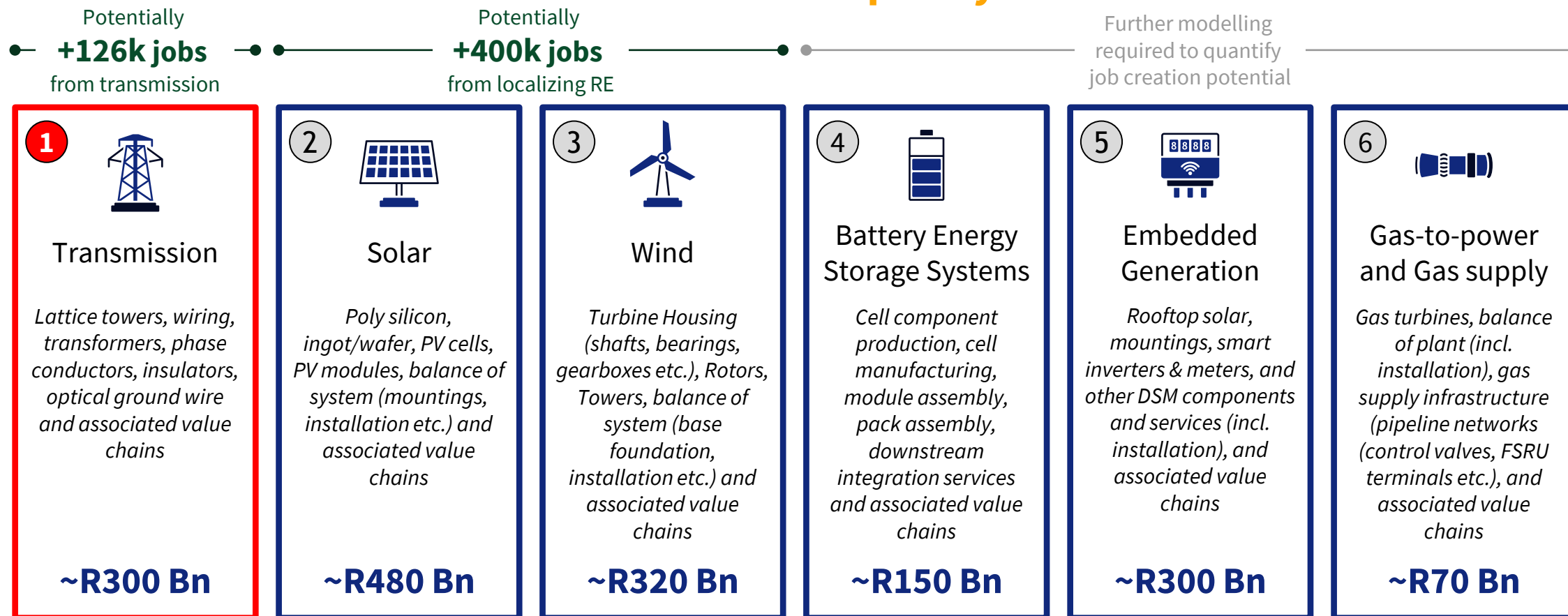
- Efficient and independent **wholesale market** and ancillary services market
- **Reformed Regulatory** functions
- Digital capability and innovative **financial instruments**

Note: 2023 realized 2600MW of rooftop solar, accelerated by load shedding and incentives. This is rapidly declining in 2024 with abatement of load shedding and estimate of circa 3% of households can afford rooftop solar and BESS

Mobilising local supply chains and workforce is good for the economy and critical to delivery

+500K jobs upside from localising value chains

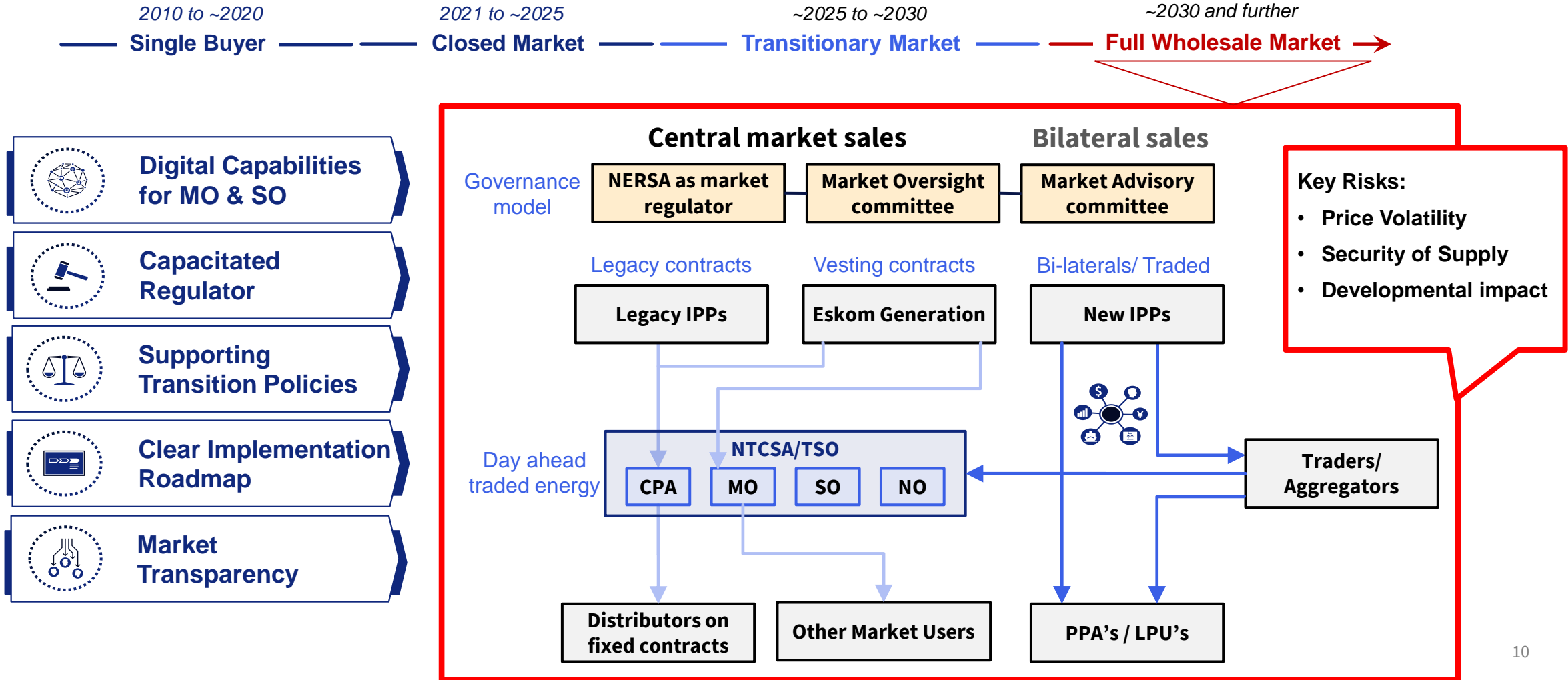
~ZAR 1.8 Tn Capex by 2030



1. Cost estimate for GtP only, not supporting gas infrastructure. Direct capital cost estimated at R1.6Tn excludes
Source: Energy Council Plexos Model

5 success factors critical for South Africa's market reform

Market system prioritises transparency and efficiency but requires big data and high digitalisation



Thank you

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