

SMALL BUSINESS INSTITUTE (SBI)

Eskom Stakeholder Engagement

20 June 2023



1. Generation Recovery

2. Just Energy Transition (JET)

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Progress to Date

- 1 Activated relationship with the Energy Council**, and agreement reached on immediate support, encompassing OCGT diesel supply chain, Kusile duct recovery, and power plant support (technical and mentorship of plant managers)
 - **OCGT diesel optimization at Ankerlig and Gourikwa:** a private sector team has been deployed, commencing work on 05 June 2023 and expecting to be completed in 3 weeks, with quick win implementable recommendations provided. The objective is to achieve higher utilisation of the Eskom OCGT plants to reduce loadshedding.
- 2 Kusile duct replacement programme:** temporary stacks are being erected and the first stack (Unit 3) is 50% complete and on track for November 2023, and other 2 stacks scheduled for December 2023. EC team to review the design and methodology for the permanent stacks.
- 3 Majuba gets localization variation for filter bags.** The plant has been losing approx. 1000MW due to the unavailability of filter bags locally. Last week, DTIC provided a variation and Eskom has placed an international order - bags due in July.
- 4 Power Station Support.** Support teams to be deployed at Matla, Kriel, Majuba, Kusile, Kendal and OCGT's.

Highlights Against the Winter Outlook

- ✓ **Power stations showing consistent performance:**
 - Medupi, Peaking
- ✓ **Stations showing positive improvement trajectory**
 - Duvha, Majuba, Arnot, Tutuka
- ✓ **EAF for June is trending above 60%. Gx last achieved 61.39% in August 2022.**
 - Breakdowns are trending at 15 500 MW. Generation is on track to achieve 13 691 MW by December.
 - Planned maintenance is trending at 2 400 MW

Commitment to increase available generation by reducing unplanned losses in the generation fleet to below 15 000 MW (breakdowns)

- ✓ Breakdowns averaging at 15 500 MW (June '23 MTD)

Managing planned maintenance to below 3 000 MW over winter

- ✓ Planned maintenance trending at 2 400 MW

Increasing diesel burn at the open cycle gas turbines to a load factor of 20% over winter period and securing OCGT budget of R20bn

- ✓ Funding secured to support increased diesel burn over the winter period

Leadership stability: Fill leadership vacancies

- ✓ Permanent appointments of GM's at Lethabo, Tutuka, PED & HR

Skills interventions

- ✓ Identified vacancies in engineering, ops and maintenance - expediting the recruitment process for the six priority stations. In the short term this will be complemented by Crowd Sourcing

Progress against Energy Action Plan

Objective 1: Fix Eskom and improve availability of existing supply

On track

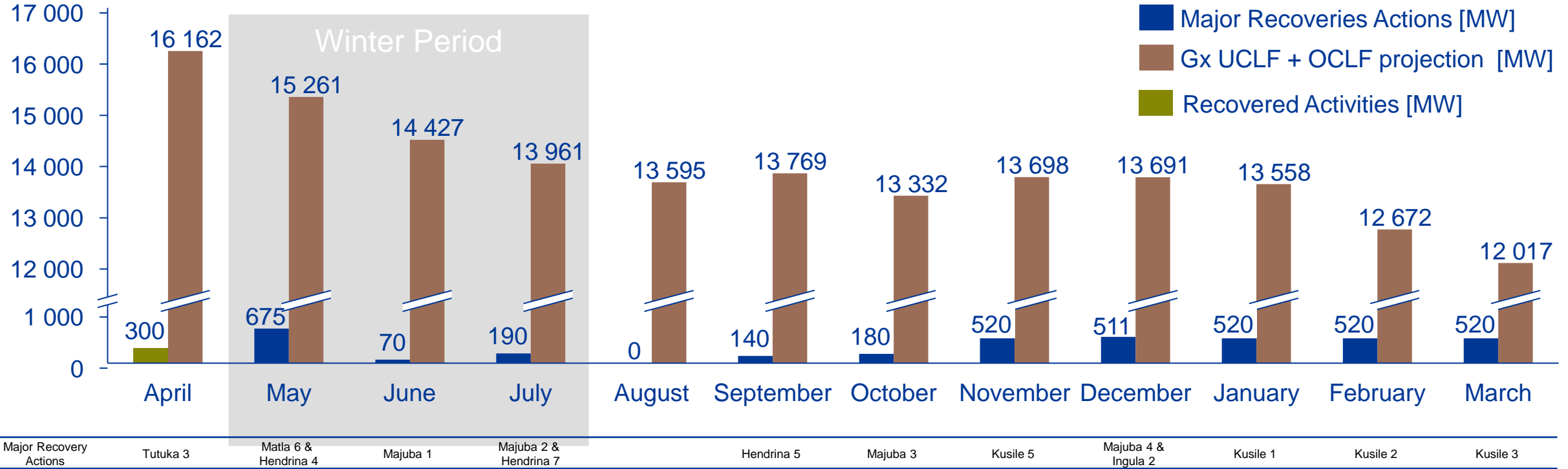
Some delays requires intervention

Some delays, no intervention

Critical challenges

WS	Project	Expected MWs	Progress to date	Challenges	Status
ESKOM					
1	Reduce level and frequency of breakdowns to increase EAF	975 MW (end June 2023)	835 MW Recoverable actions have been executed	Performance remains unpredictable with continue loadshedding Breakdowns averaging at 15 500 MW (June '23 MTD) against an expectation of 1 4 427 MW Interventions to address systemic issues through the Generation Recovery Plan	
1	Improve diesel availability for increase in Open Cycle Gas Turbines load factor (LF)	N/A LF - TBD	Eskom and National Treasury have finalized a funding (R20 bn) to secure supplies of diesel for the rest of FY24		
1	Independent review of plant performance & recommendations	N/A	Two independent reviews underway, reporting to the Eskom Board and National Treasury		
1	Secure additional capital to enable maintenance programmes	N/A	Debt relief will enable further allocation of funding to maintenance		
1	Improve availability of spare parts & expertise from OEMs through more agile procurement	N/A	Process underway to source services from OEMs at Tutuka, Majuba, Kendal and Kusile		
1	Ensure remaining units at Kusile are brought online as soon as possible	2 080 MW (4 x 520MW)	1 st Sync of Kusile Unit 5 planned for October 23; Unit 3 for end November 2023; and Units 1&2 for December 2023	FGD plant design constraints limits output Currently being assessed	
1	Ensure Medupi unit is brought online as soon as possible	720 MW	An interim solution has been found to expedite the return of Medupi Unit 4 from August 2024 to July 2024.		

FY2024 Gx Projected Recovery plan and Unavailability - month on month plan



Major Recovery Actions	Tutuka 3	Matla 6 & Hendrina 4	Majuba 1	Majuba 2 & Hendrina 7	Hendrina 5	Majuba 3	Kusile 5	Majuba 4 & Ingula 2	Kusile 1	Kusile 2	Kusile 3
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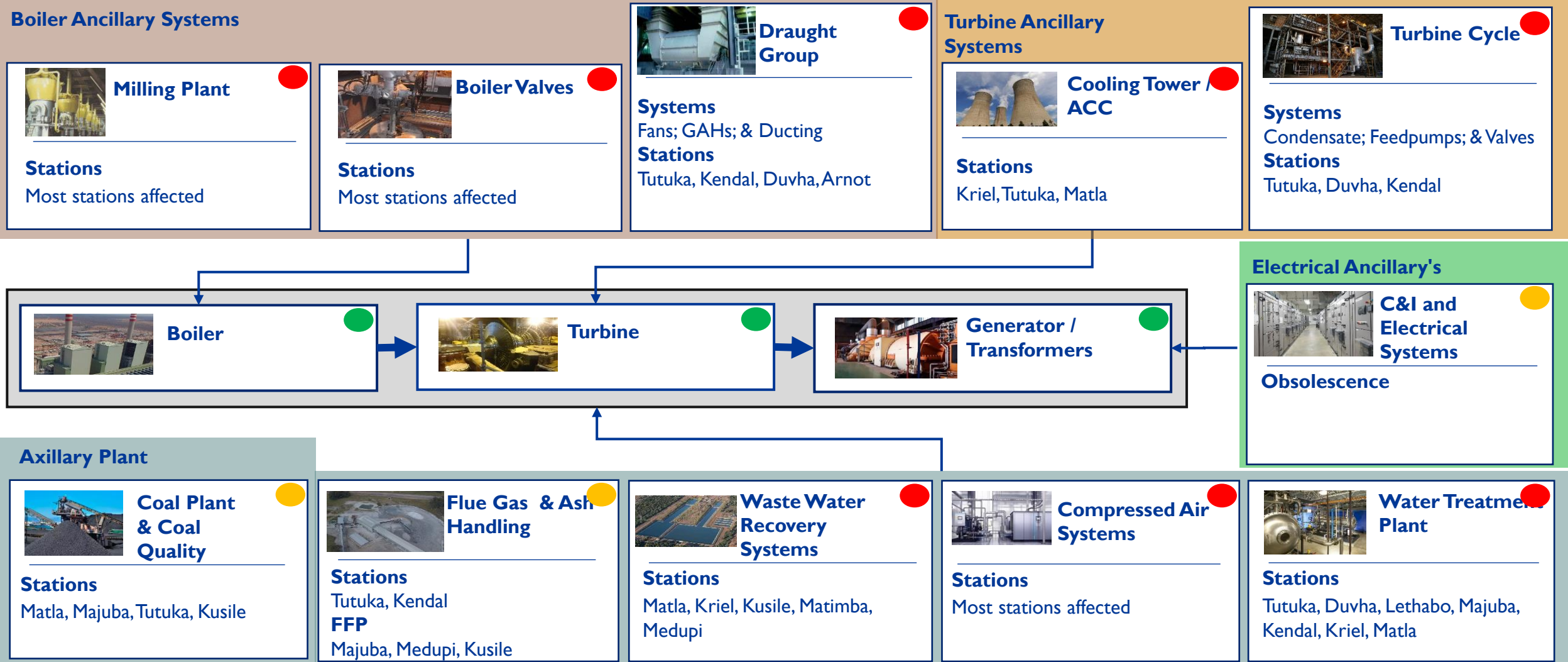
Notes:

- Gx UCLF + OCLF projection is total of major and minor activities, seasonal effect are also considered.
- Tutuka 3 recovery of 300 MW from FY2023 was only recovered in FY2024 (April 2023)
- Hendrina units recovery also depicted as they are major recovery efforts that fall outside of the Priority-6 plans
- Given the performance of UCLF being above projection, Gx is not realising the MW gains as per recovery plans

Multiple issues have hindered progress on the recovery projection, thus the benefits of MW recovered have not yet been materialised:

- Kusile 1, 2 & 3 failure of 2 160 MW from 17 November 2022 - open
- Matla 6 fire damage of 575 MW from 14 December 2022 – RTS in progress (03.05.23)
- Medupi 6 outage slip of 720 MW from 25 February 2023 – RTS (31.03.23)
- Ingula 2 generator circuit breaker fault 26 March – open
- Lethabo 6 fire right hand side ducting 28 March 2023 – RTS in progress 03.05.23

The focus now is on improving performance on the ancillary plants



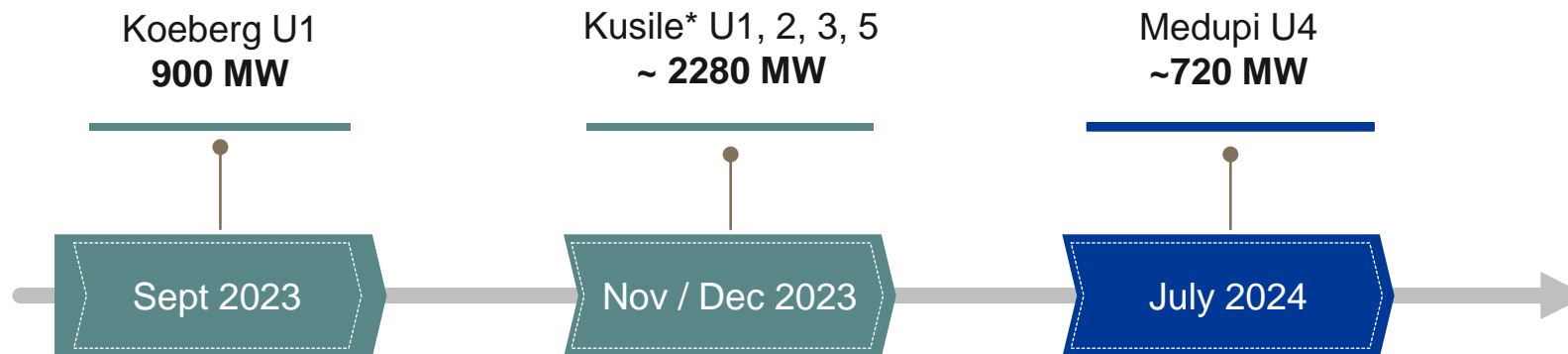
Ancillary Systems is critical plant for electricity generation
GAH – Gas Air Heaters

● Minor challenges
 ● Moderate challenges
 ● Major challenges

We will return four Kusile units and Koeberg unit I before the end of 2023



Units on long term outage - return dates



Key insights

Kusile Temp Stack Construction Commencing in parallel with Environmental Approval

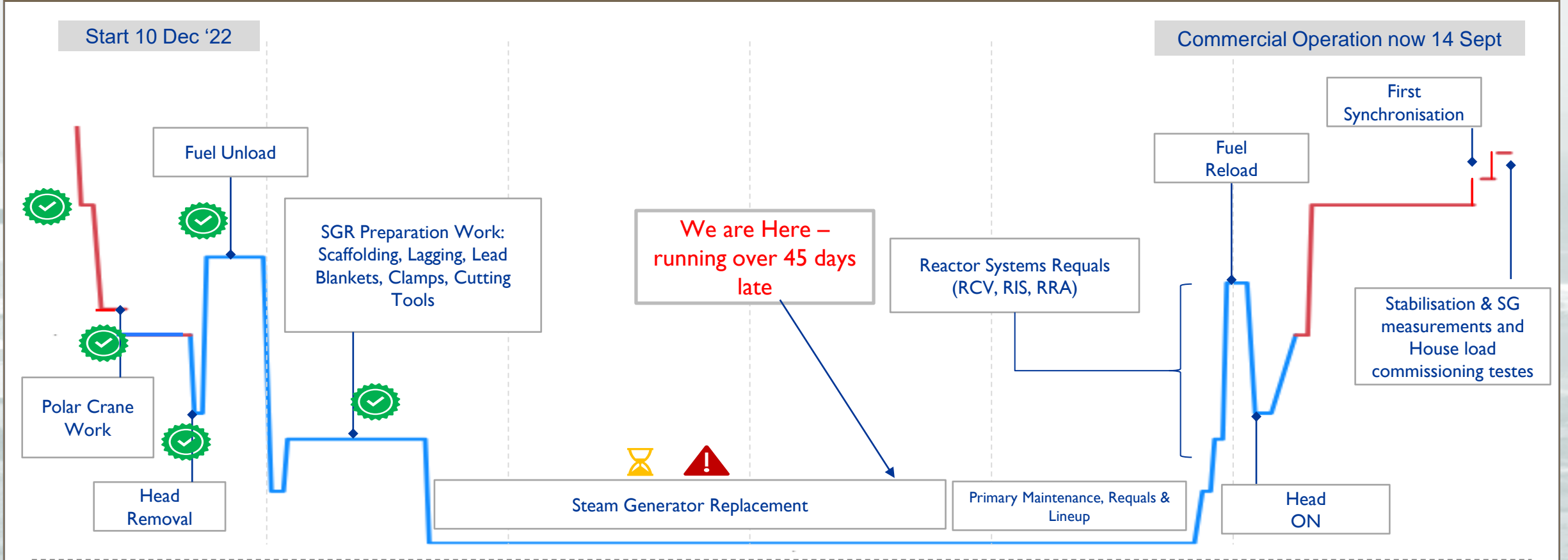
- Construction - 149 Days (Mar - Nov 2023)
- Commissioning - 66 days (Oct – Dec 2023)
- Piling and Foundation completed ahead of schedule
- Erection started ahead of schedule (temp stack)
- Unit 3 Sync Date – 28 Nov 2023
- Unit 1 Sync Date — 11 Dec 2023
- Unit 2 Sync Date — 24 Dec 2023

Kusile U5 will be synchronised to the grid by November 2023 and will provide 720MW

Medupi U4 will be operational in July 2024 with the second-hand stator

Due to the delays being experienced in replacing the steam generators at **Koeberg U1**, **commercial operation forecast 14 September 2023 (details on next slide)**

High-level Outage Execution windows: O126 Critical Path



Legend:

Completed

In Progress

Delayed

Plant shutdown:

Steam Generator Replacement and Maintenance Window:

Start-up

Risks

- SGR & related daughter modifications Risks: A key risk is Schedule Adherence. The Contractor & its subcontractors are unable to meet their target schedule. The current execution rate leads to a 30-40% loss of schedule adherence. This slow progress is undermining the initiatives deployed to minimise delays to return to service date of 14 September 2023.

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- Maintenance, Post Maintenance & SGR Requalification Risks: delays experienced on the secondary systems due increase scope, e.g. LP Turbine centreline and engineering assessment, Moisture Separator Reheat system piping replacement and actuator overhauls on motor operated valves.

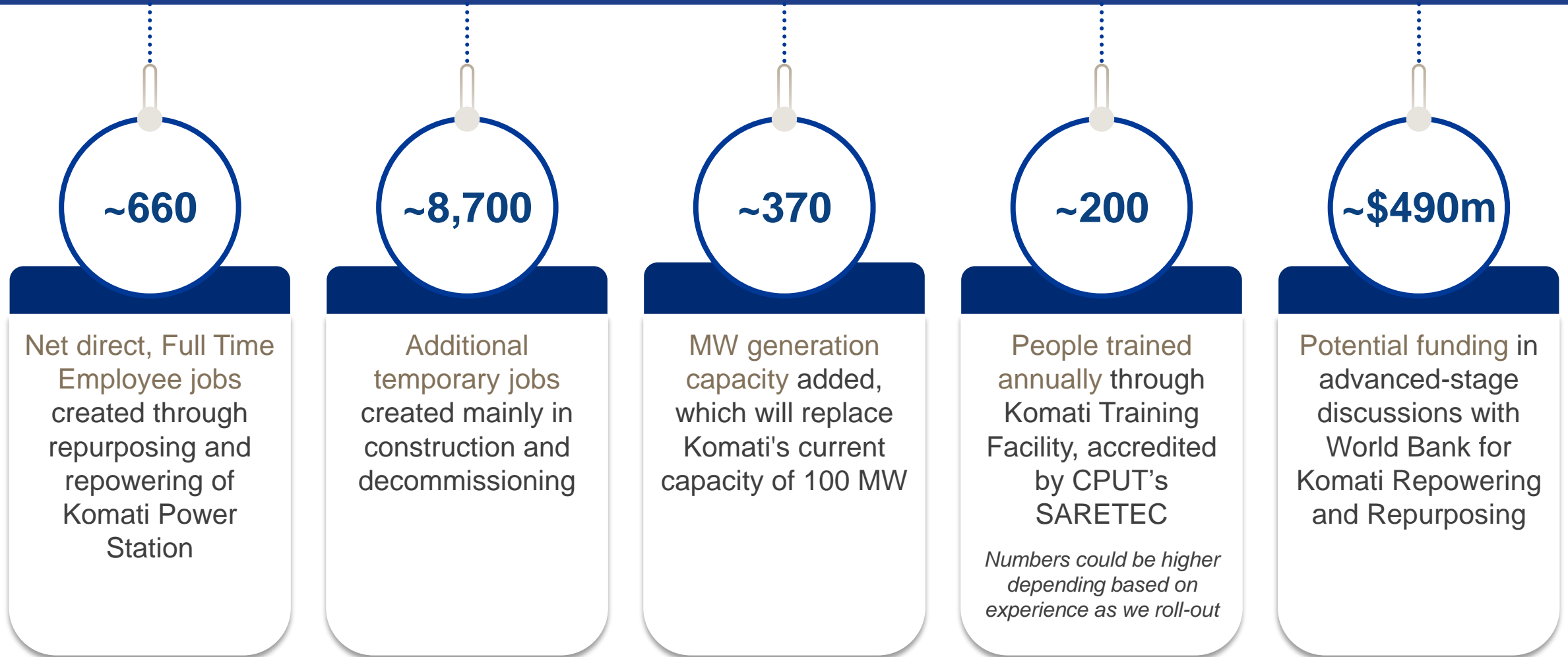
Risk Mitigation & Optimization Opportunities

- Eskom has included a time risk allowance for low schedule adherence.
 - Increased Oversight: The contractor's performance has led to the project team increasing its level of supervision and management oversight to 24/7 intrusive monitoring over key activities of the SGR execution.
 - Improving preparation and anticipation of upcoming activities by more focus on the look ahead.
 - Perform reactor building maintenance work in parallel with the ongoing SGR window to reduce the activities on the outage critical path.
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- Arrange for off-site support from the Contractor for any potential SGR commissioning issues.
 - Deploy the Prompt Response team to gear up for addressing potential defects promptly. The team will consist of experienced individuals from Operating, Maintenance, and Engineering.
 - Continue Senior Management oversight on outage activities over weekends and oversee complex technical challenges.

1. Generation Recovery

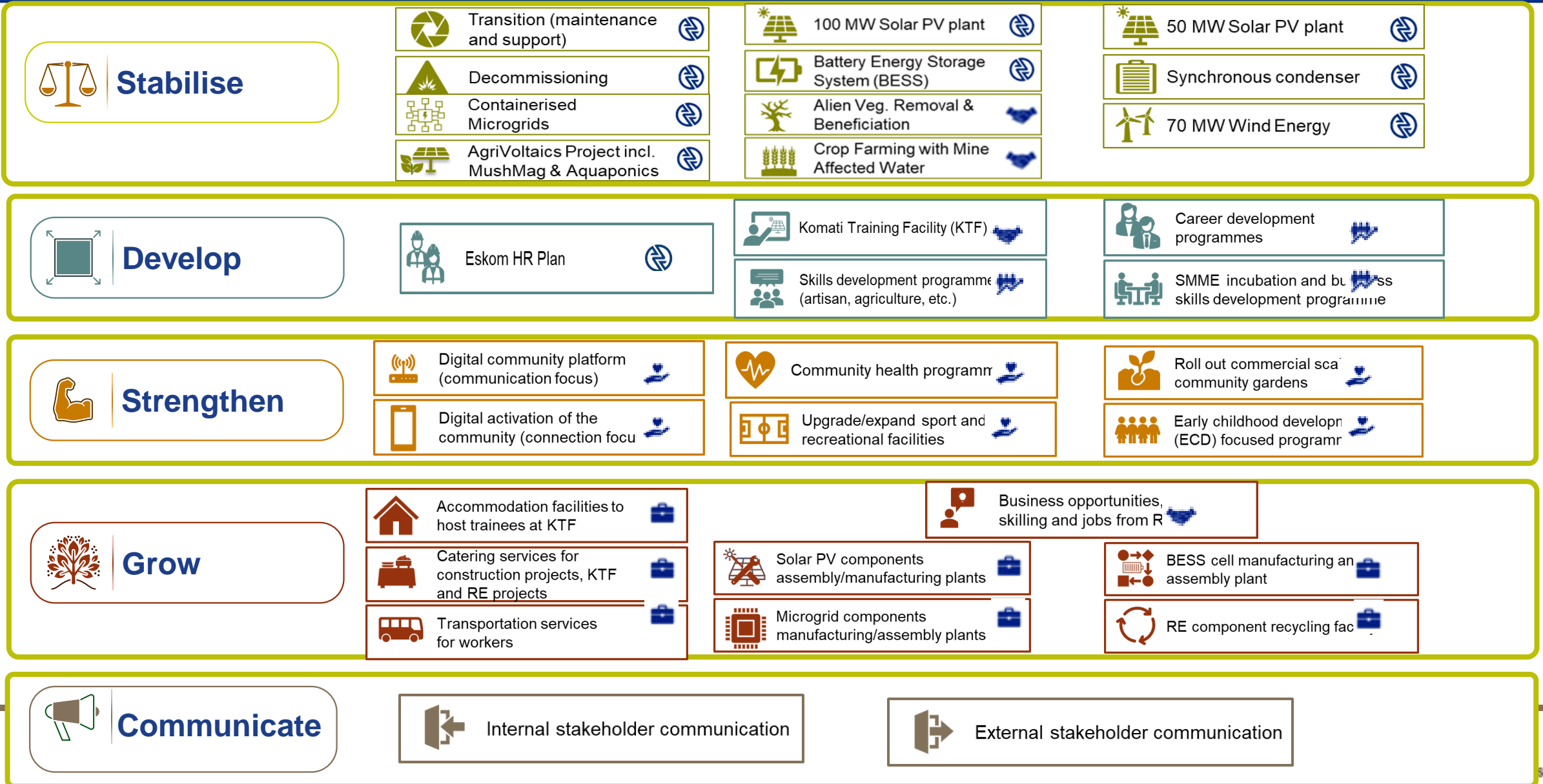
2. Just Energy Transition (JET)

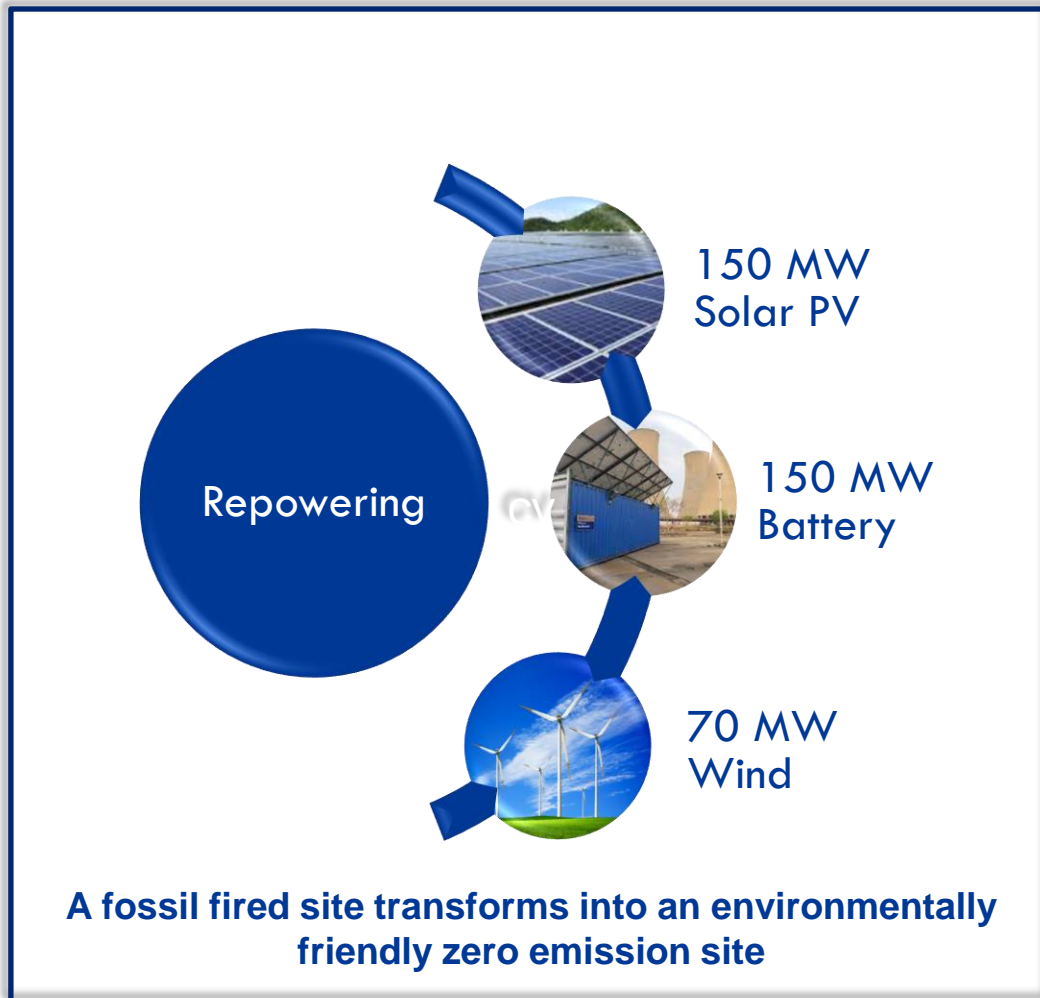
By 2030, the project will have significant positive impact for the local communities



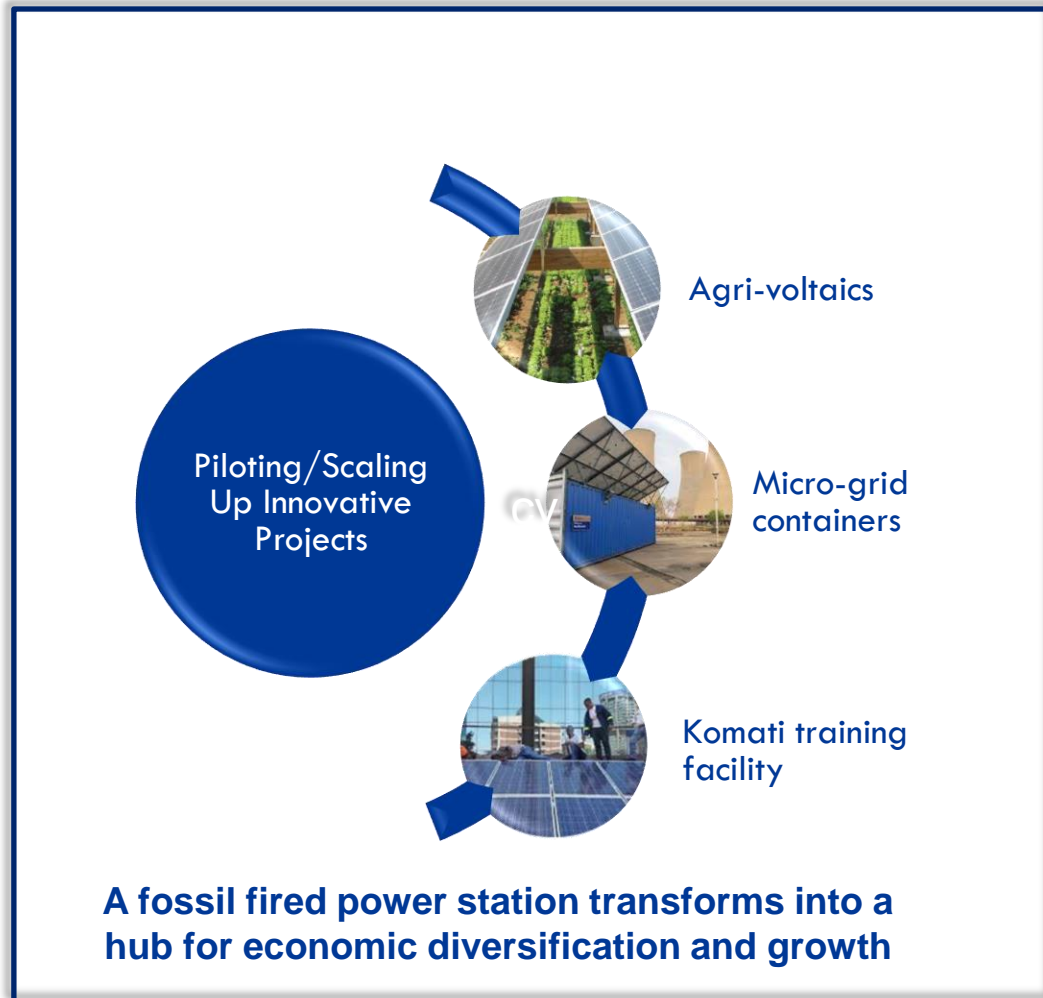
Komati has not shutdown. Komati is transitioning, and JET provides a second life to the station

Achieving JET at Komati will require that all stakeholders work together to implement the R&R strategy





- **Section 34 Ministerial approval obtained for PV and BESS.**
- **Owner’s Engineer appointment expected in August 2023 to support development and execution of repowering initiatives.**
- **Environmental scoping report submitted to and accepted by DFFE for PV & BESS. Their approval and consultation process is continuing.**
- **Market engagement for PV & BESS expected Q2 2024.**
- **Market engagement for Wind expected Q3 2024.**



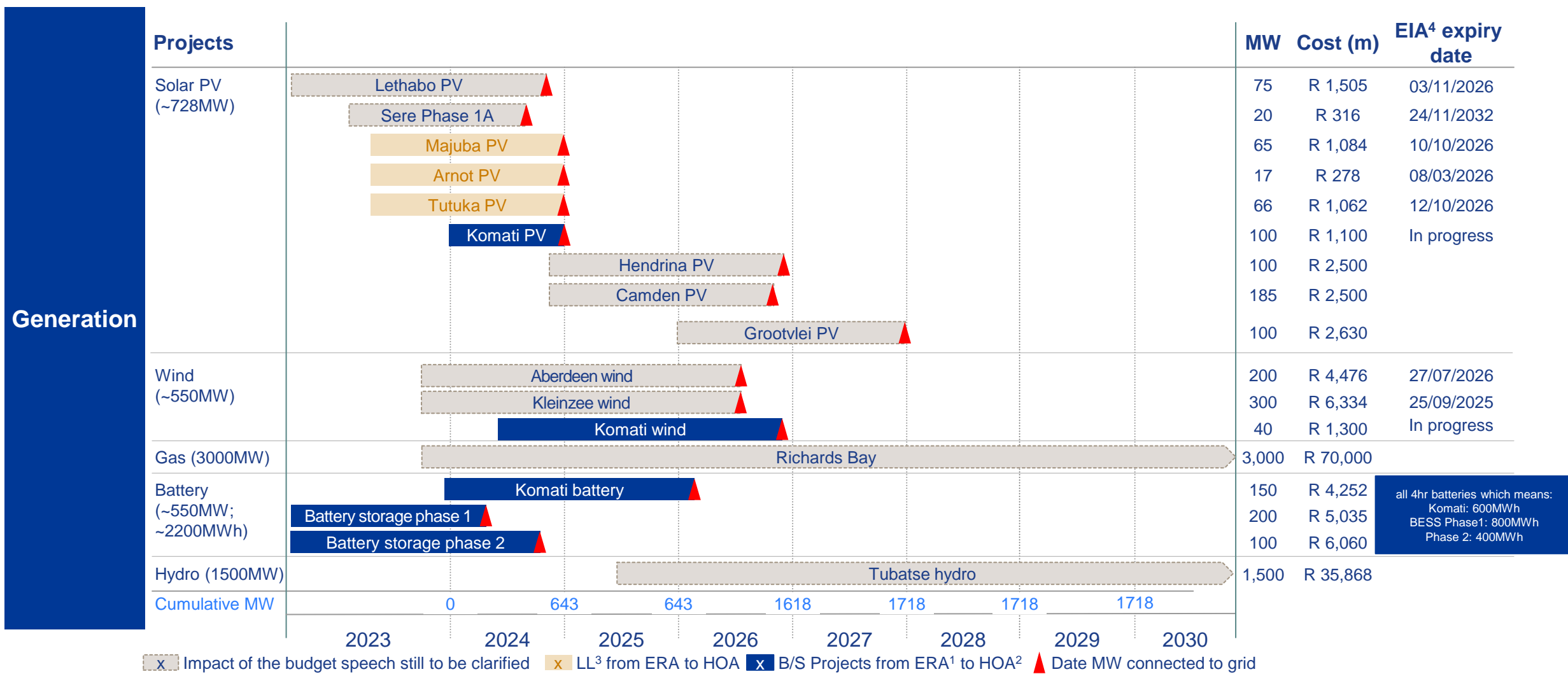
- **Construction of PV component of Agrivoltaics plant is in progress - to be commissioned and handed over to Eskom in July 2023**
- **Commissioning of aquaponics system expected November 2023**
- **Microgrid business case for large scale rollout is in progress. 5 CMGs manufactured at Komati.**
- **Eskom Academy of Learning will extend Eskom soft skill courses to community members. Call for applications to be issued shortly with training commencing Aug 2023**

- **Eskom's Repurposing and Repowering initiative at Komati does not only focus on the employees and contractors.**
- **Communities established during the running of the power stations should not be left behind during the transition.**
- **Economic diversification is key to economic growth,**
- **An expression of Interest to be issued shortly for the procurement of the services of an Implementing Agent to drive these programmes and facilitate community engagement**



The transition leaves no one behind

Pre-debt relief Eskom JET Generation infrastructure plan from 2023 to 2030 with a combined capacity of ~6328 MW



1. ERA is the execution phase of a project which includes activities such as procurement, site preparation and connection to the grid 2. HOA is the handover stage of a project where the project is closed out 3. LL= Land Lease; 4. EIA=Environmental Impact Assessment
 Note: Limited data sources since project managers unable to share detailed data reports

Detailed Project Progress for new Gx Capacity



Project	MW	Capex (Rb)	When	Progress	Focus
Richards Bay Gas-to-Power Combined Cycle Power Plant	3000	±R70 billion	2028	<ul style="list-style-type: none"> – Use of Land Agreement – Environmental Approvals (EAs) – Functional Specification – Ready to go to market to appoint Transaction Advisor (TA) 	<ul style="list-style-type: none"> – NT support for PPP approach – NERSA decision on concurrence re Section 34 determination – Litigation on Plant EA – Expedite Transmission connection, appoint TA
Tubatse Pump Storage Scheme in Steelpoort Limpopo	1500	±R30 billion	2035	<ul style="list-style-type: none"> – Land purchased – Initial designs done – Substation under construction – Environmental and Social studies update in progress 	<ul style="list-style-type: none"> – NT support for PPP approach – Section 34 application – Appointment of TA
Komati Repowering	PV -150 BESS - 150 Wind - 70	R7.98 billion	2026	<ul style="list-style-type: none"> – Owners Engineering (OE) appointments in process – Section 34 approvals obtained 	<ul style="list-style-type: none"> – Appoint OEs – Design – Go to market to appoint EPC contractors
Land Lease	1800	N/A	2026	<ul style="list-style-type: none"> – 5 developers signed – Transmission connection planning in process 	<ul style="list-style-type: none"> – SIP Status - expedited approvals – Transmission connection applications – Construction
Hendrina, Camden, Grootvlei Repowering	TBC	TBC	Depending on station shut-down dates	<ul style="list-style-type: none"> – Grant funding obtained – Request for appointment of Transaction Advisor in the market 	<ul style="list-style-type: none"> – NT Support for PPP approach – Appoint Transaction Advisor – PPP strategies to be developed
Sere PV Lethabo PV	19.5 75	R0.3 billion R1.4 billion	2025	<ul style="list-style-type: none"> – Section 34 approvals obtained – Environmental approvals obtained – Investment approval granted – Design work discontinued (NT debt relief conditions) 	<ul style="list-style-type: none"> – NT support requested to do on balance sheet, otherwise – Take to Market as PPP
Arnot PV Duvha PV Majuba PV Tutuka PV	17.2 23.5 30 30	R0.32 billion R0.37 billion R0.56 billion R0.56 billion	2026	<ul style="list-style-type: none"> – Environmental approvals obtained 	<ul style="list-style-type: none"> – NT support for PPP approach – Appointment of TA – Section 34 application if required
Kleinzee Wind Aberdeen Wind	300 200	R6.3 billion R4.5 billion	2026-2028	<ul style="list-style-type: none"> – Environmental approvals obtained 	<ul style="list-style-type: none"> – NT support for PPP approach – Appointment of TA – Section 34 application if required

Overview of JET funding

- Eskom has secured c.R16.1 billion in funding for its Just Energy Transition (JET):
 - **c.R6.6 billion** for its **Battery Energy Storage System (BESS) Phase 1**
 - **c.R9.5 billion** for the **repurposing and repowering** of Komati Power Station.
- **Significant appetite both globally and domestically** to fund the transition away from coal fired power. This appetite is represented by requirements in terms of existing facilities that Eskom not develop new coal fired power stations, and by initiatives on the part of multilateral and bilateral institutions to make concessional funding available to fund the transition away from coal fired power.
- **International Partners group**, represented by France, Germany, the United Kingdom, the United States of America, and the European Union, have undertaken to make c. **R162 billion (US\$8.5 billion) in funding available to aid South Africa** in its just transition. South Africa's JET Investment Plan, which intends to leverage this funding, earmarks R647 billion of investment in electricity infrastructure.
- **National Treasury's recent Debt Relief, although highly appreciated, has restricted Eskom from borrowing over the next three years** and from developing new generation capacity.
- Accordingly, this **new Generation Infrastructure may have to be funded by way of public private partnerships.**

Implications of the Debt relief conditions

- Eskom's **capital expenditure is restricted to transmission and distribution**
 - The only capital expenditure that may be undertaken for generation relates to minimum emissions standards, flue-gas desulfurisation and required maintenance
 - No other greenfield generation projects will be allowed during the debt-relief period
- **No new borrowing will be allowed from 1 April 2023** until the end of the debt-relief period, unless written permission is granted by the Minister of Finance.

From a JET Funding perspective this means:

1. **Eskom can only execute and fund on balance sheet JET projects in place prior to 1 April 2022.** These include:
 - US\$487 million Komati PV & BESS project financed by the World Bank; and
 - c.R5.4 billion Battery Energy Storage System (BESS) Project financed by World Bank CTF, AfDB CTF and NDB
2. **Balance of the projects will have to be funded through off balance sheet public private partnership's (PPP's)**
 - NT has indicated its support for the use of PPP's to accelerate the role-out of Transmission infrastructure
 - NT has been approached to support the use of PPP's in bringing generation projects to market

Project	Details of facilities
Battery Energy Storage System (BESS – Phase 1)	<ul style="list-style-type: none">▪ Eskom has negotiated and concluded loan agreements for the amount of circa R6.6 billion with the World Bank (US\$215 million) and African Development Bank (US\$58 million), both in their capacities as administrators of the Clean Technology Trust Fund and New Development Bank (R1.4 billion).▪ The proceeds of the loans will be used to fund the development of BESS Phase 1.
Komati PV and BESS	<ul style="list-style-type: none">▪ Eskom has negotiated and concluded loan agreements for the amount of R9.5 billion (US\$497 million) with the IBRD (part of the World Bank group).▪ Loans comprise (i) an IBRD loan in the amount of R8.3 billion (US\$439.5 million), (ii) a loan from the CCEF in the amount of R902 million (US\$47.5 million), and (iii) an Energy Sector Management Assistance Program (“ESMAP”) grant in the amount of R190 million (US\$10 million), for the Eskom Just Energy Transition Project (“Komati Project”).▪ The proceeds of the loans and the grant will be used to fund the Komati Power Station renewable energy conversion and BESS projects, which includes the costs in connection with minimizing the social and economic impact of the project on the surrounding communities.▪ The last of the condition's precedent relating to the facility, including receipt of the Government Guarantee, must be fulfilled by 27 July 2023.

International Partners Group Funding, November 2021

- At the UNFCCC COP26 in November 2021, the governments of South Africa, with France, Germany, the United Kingdom, the United States of America, and the European Union – together forming the International Partners Group (IPG) – announced a long-term Just Energy Transition Partnership (JETP) to support the Republic of South Africa’s (RSA) decarbonization effort, including transitioning its economy towards cleaner energy sources.
- The IPG has undertaken to mobilise an initial amount of R162 billion (\$8.5 billion) over the 3-5 years to advance the Partnership.

US\$ millions	Grants / TA	Concessional Loans	Commercial Loans	Guarantees	Total (source)
CIF/ACT (\$500m to leverage an additional \$2.1bn)	50	2 555	0	0	2 605
European Union – EIB	35	1 000	0	0	1 035
France	2.5	1 000	0	0	1 002.5
Germany	198	770	0	0	968
United Kingdom	24	0	500	1 300	1 824
United States ¹⁴¹	20.15	0	1 000	0	1 020.15
Total (instrument)	329.7	5 325	1 500	1 300	8 455

- As part of the 2030 National Development Plan, South Africa has formulated a Just Energy Investment Plan (JET IP), which in part deals with the deployment of the R162 billion (US\$8.5 billion) as part financing of this plan.
- Although the plan identifies R647 billion of spend in electricity infrastructure, Eskom has to date not benefitted from any of this funding.

Note: Eskom is in discussions with USTDA and KfW with respect to grant funding of circa R160 million in grant funding.