

# THE SOUTH AFRICAN ENERGY OUTLOOK



Dr Penny Byrne  
[Penny.Byrne@sbgsecurities.com](mailto:Penny.Byrne@sbgsecurities.com)  
+27 79 522 3480

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<https://research.standardbank.com/ResearchPortal>

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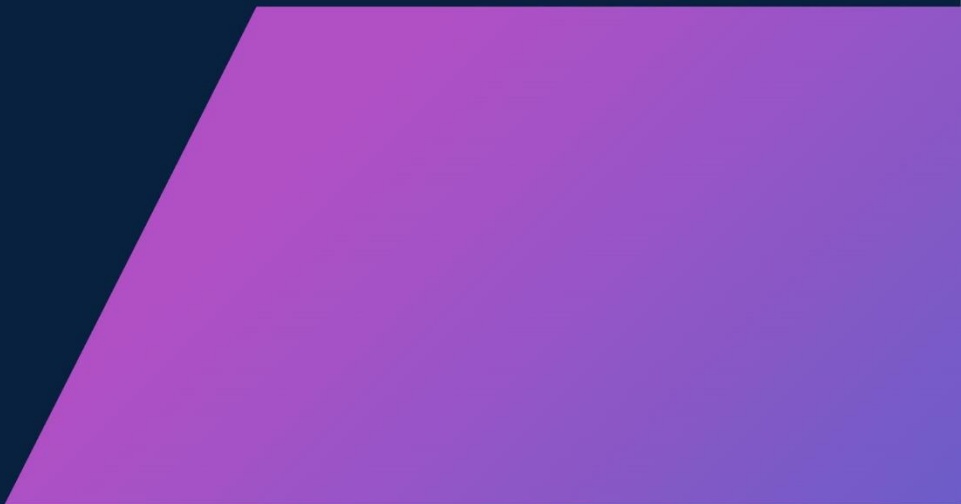


## CONTENTS

- State of the climate
- Climate policy and regulations
- Carbon credit markets
- Energy outlook for SA
- ENSO outlook for the 2023/24 season
- Conclusions



# STATE OF THE CLIMATE



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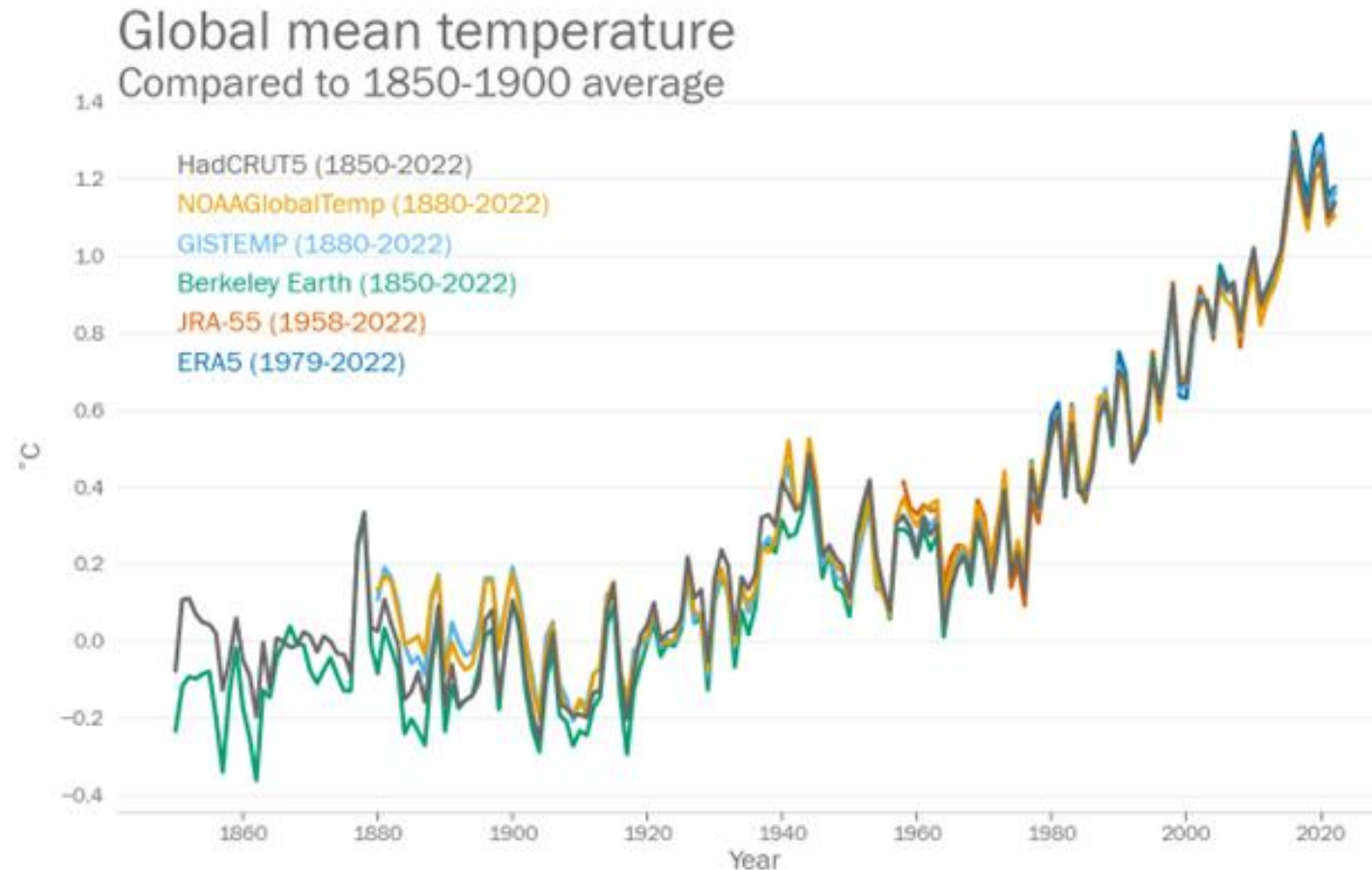
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## THE LAST 8 YEARS WERE THE HOTTEST 8 YEARS ON RECORD

2022 is estimated to be 1.02 – 1.28°C warmer than pre-industrial levels despite La Nina

Global average temperature anomaly compared to pre-industrial levels

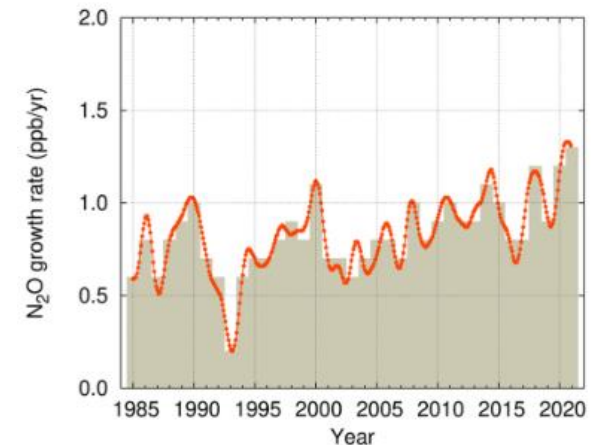
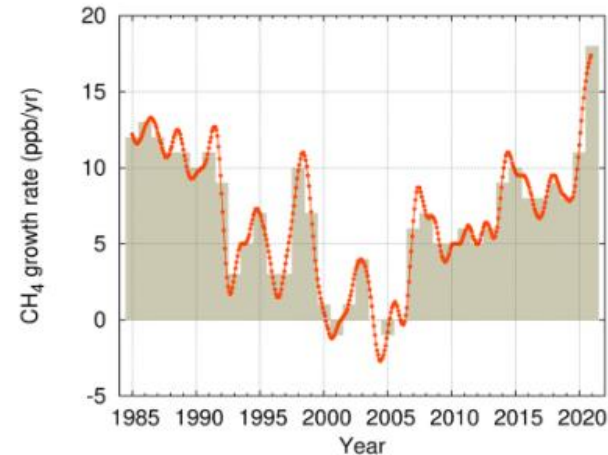
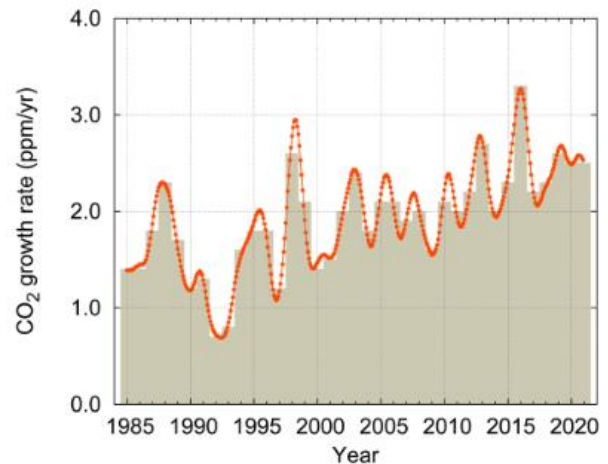
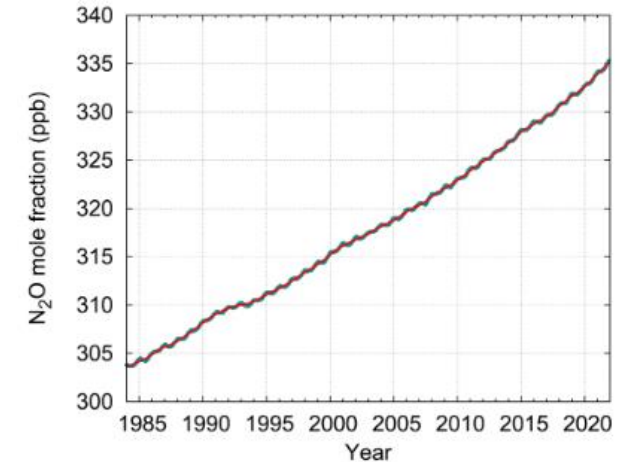
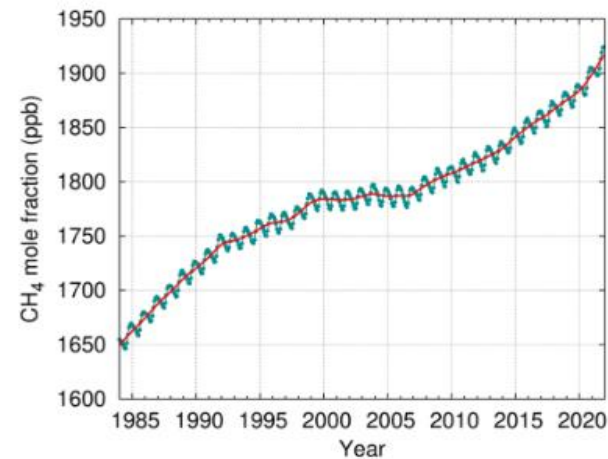
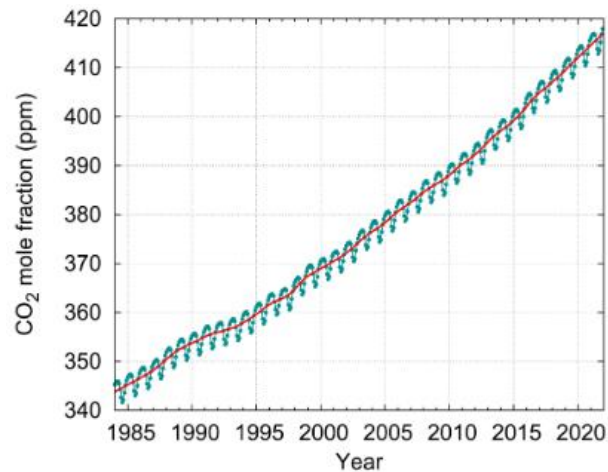




## ALL THREE MAJOR GREENHOUSE GASSES REACHED RECORD HIGHS IN 2021

Increasing emissions will lead to more global warming and climate change impacts

Atmospheric concentrations of CO<sub>2</sub>, methane, and nitrous oxide as well as their growth rates

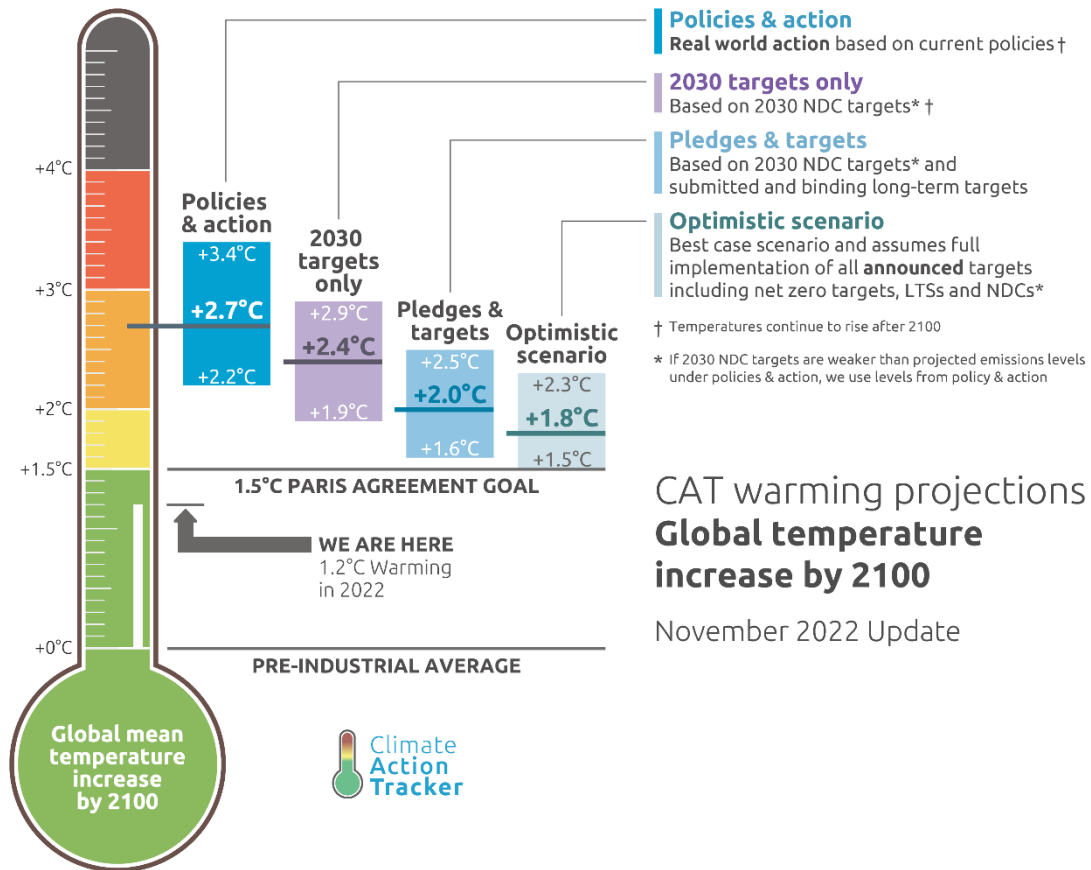




## NOT ON TRACK

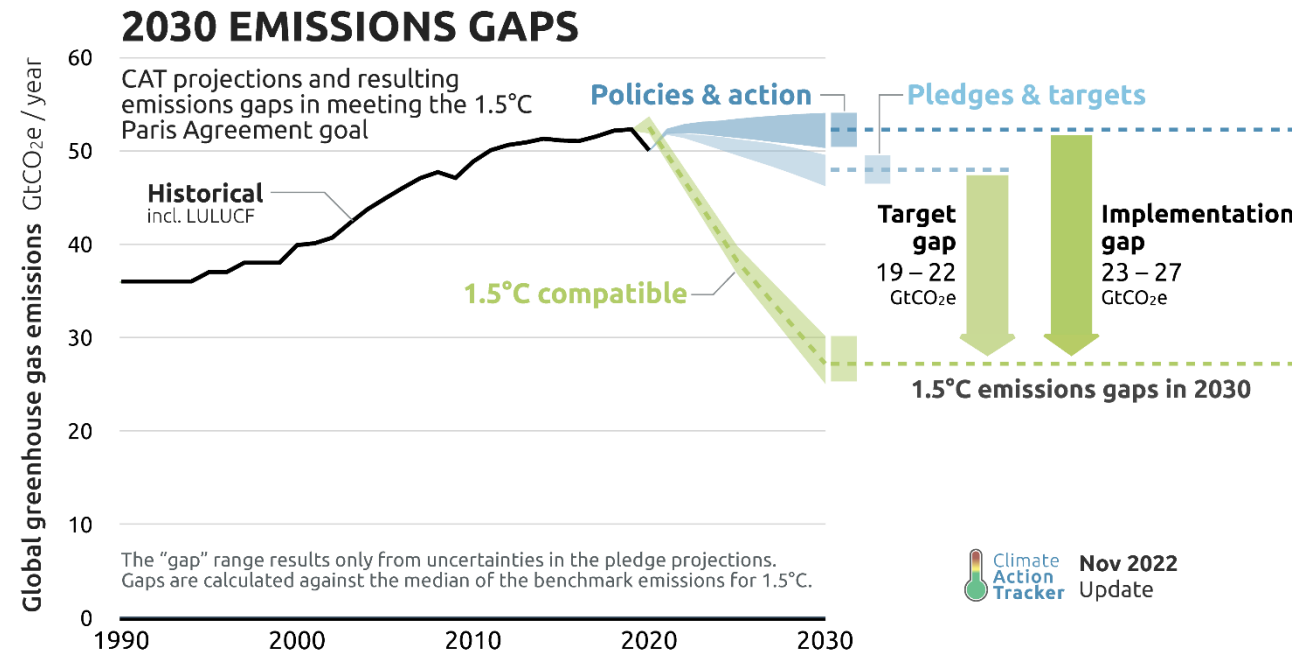
Current policies and action would see ~2.7°C of global warming

Insured losses are increasing, but this doesn't always capture the high social costs in developing nations



CAT warming projections  
**Global temperature increase by 2100**

November 2022 Update





# CLIMATE ACTION TRACKER FIND NO INDICATORS ON TRACK

None of the 40 indicators are on track at the pace required to achieve the 2030 targets

Summary of the assessment of global progress towards 2030 targets

## FIGURE ES-2 | Assessment of global progress toward 2030 targets



**ON TRACK:** Change is occurring at or above the pace required to achieve the 2030 targets

**No indicators** assessed exhibit a recent historical rate of change that is at or above the pace required to achieve their 2030 targets.



**OFF TRACK:** Change is heading in the right direction at a promising, but insufficient pace

For **6 indicators**, this rate of change is heading in the right direction at a promising but insufficient pace to be on track for their 2030 targets.



**WELL OFF TRACK:** Change is heading in the right direction, but well below the required pace

For **21 indicators**, the rate of change is heading in the right direction at a rate well below the required pace to achieve their 2030 targets.



**WRONG DIRECTION:** Change is heading in the wrong direction, and a U-turn is needed

For **5 indicators**, the rate of change is heading in the wrong direction entirely.



**Insufficient Data:** Data are insufficient to assess the gap in action required for 2030

For **8 indicators**, data are insufficient to assess the rate of change relative to the required action.





# THE WORLD AT 1.2°C OF WARMING

As extreme weather events increase in frequency and severity, so too does the cost

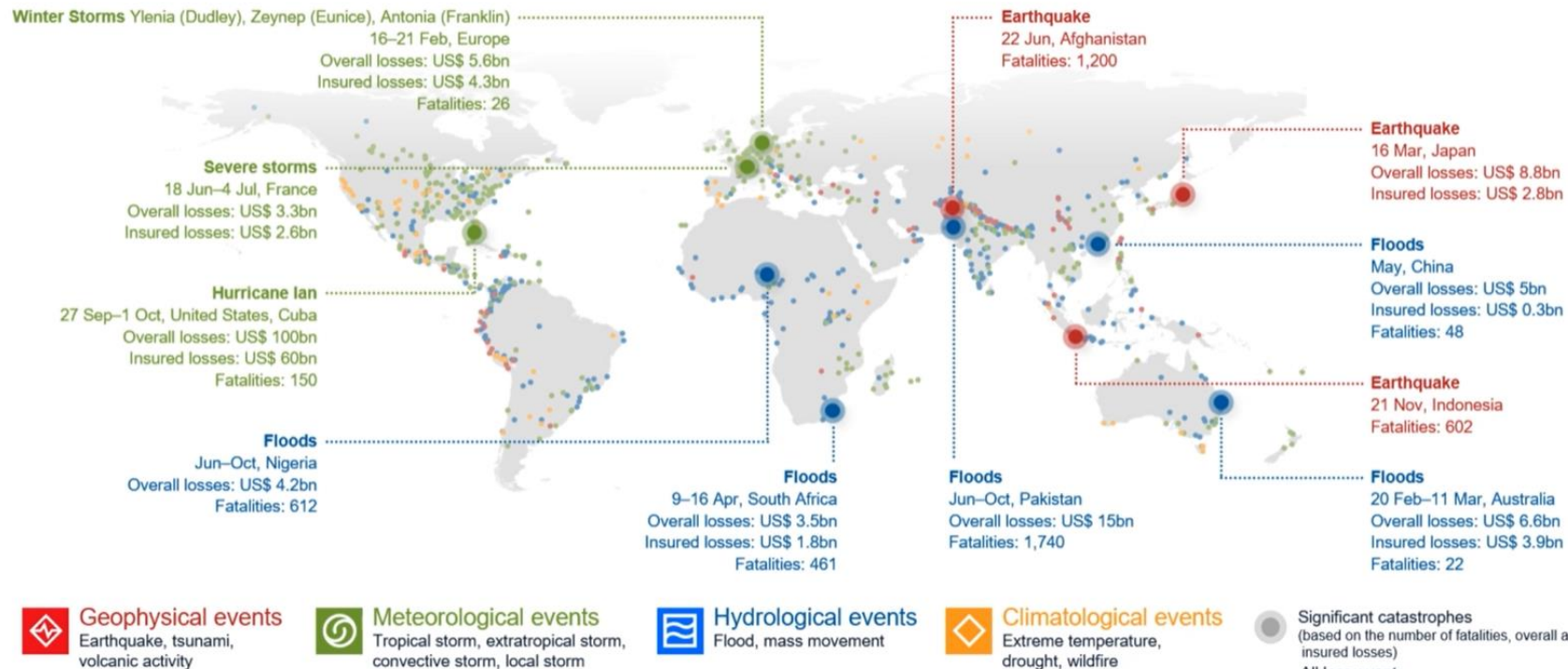
Insured losses are increasing, but this doesn't always capture the high social costs in developing nations

NatCatSERVICE

## Nat cat loss events 2022

Natural catastrophes caused overall losses of US\$ 270bn worldwide

Munich RE 



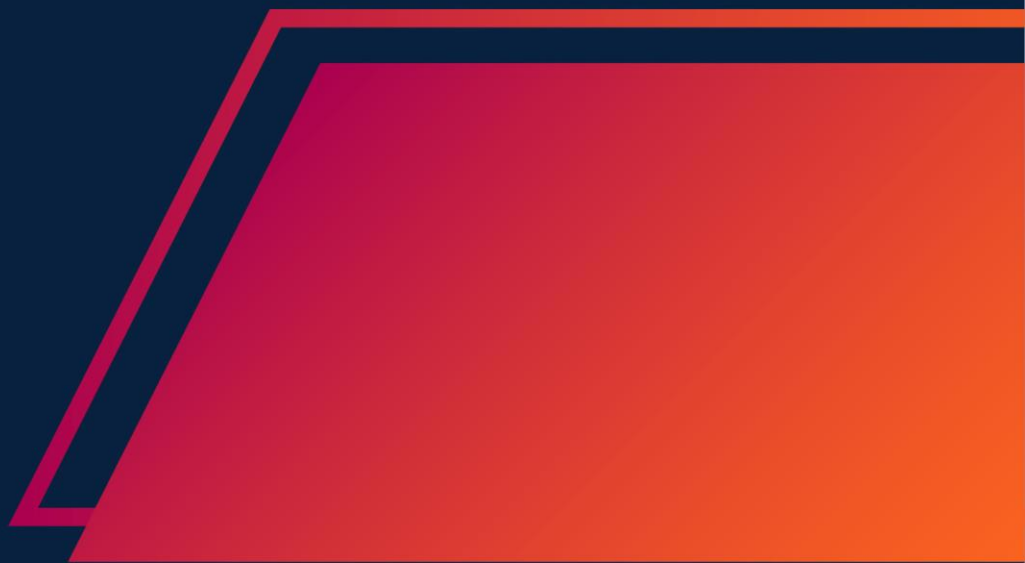
Insurance broker	Total losses	Insured losses
Swiss Re	\$268bn	\$122bn
Munich Re	\$270bn	\$120bn
Aon	\$313bn	\$132bn
Gallagher Re	\$360bn	\$125bn

Source: Munich Re, NatCatSERVICE, 2023





# SOUTH AFRICAN CLIMATE REGULATIONS



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## ESG REGULATIONS – SOUTH AFRICA

As governments legislate to meet climate targets, regulations are increasing

The Climate Change Bill public hearings take it a step closer to becoming a law

### CLIMATE CHANGE BILL (B9-2022)

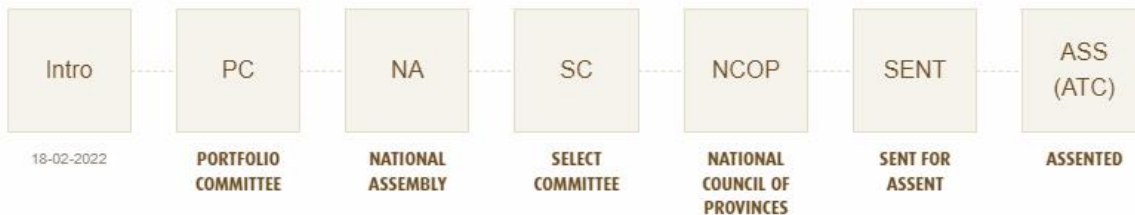
LEGISLATION » BILLS CURRENTLY IN PARLIAMENT » BILL

To enable the development of an effective climate change response and a long-term, just transition to a low-carbon and climate-resilient economy and society for South Africa in the context of sustainable development; and to provide for matters connected therewith.

B9-2022

NA

STAGE



The Climate Change Bill remains in the introductory stage.

Public hearings on the Climate Change Bill were held in October 2022 and September 2022.

The Climate Change Bill will include a national GHG emissions trajectory as well as sectoral emissions targets (SET) and an allocation of carbon budgets.

Individual national government departments will be tasked with developing and implementing policies and measures to ensure emissions from within a sector or sub-sector remain within SET limits.

SETs will be determined for three rolling five-year periods.

Carbon budgets will set a maximum volume of emissions that individual entities would be allowed to emit over three rolling five-year periods. This is intended to drive mitigation in the private sector, and the penalty for not complying will take the form of a carbon tax.

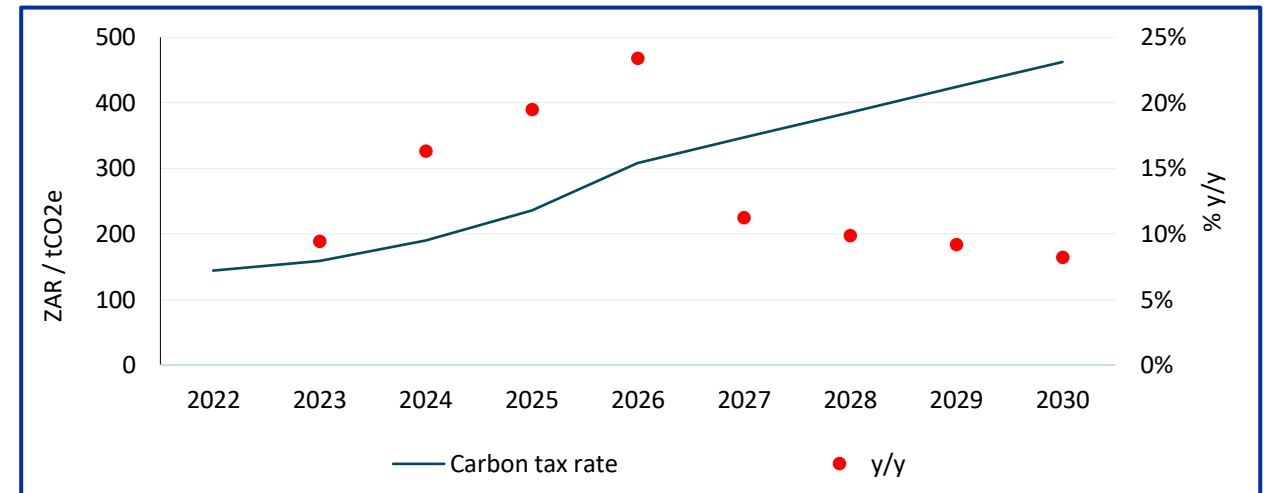


## ESG REGULATIONS – SOUTH AFRICA

The Carbon Tax Act has been amended to include the annual increases to meet the 2026 target price

The Carbon Tax Act amendment calls for a faster increase than the originally mooted CPI + 2% to meet the 2026 target price

- The first phase of The Carbon Tax Act was extended by three years in the 2022 Budget.
- Originally the tax was set to increase by CPI + 2% annually, with the aim of getting to \$20 in 2026, US\$30 by 2030, and up to \$120 by 2050.
- The new annual rate increase is more aggressive in the years up to 2026.
- Tax-free emissions allowances, ranging from 60% to 95% will continue in phase 1.
- A paper is to be published this year to establish how they will be re-structured going forward. The intention is to gradually reduce allowances from 2026 to 2030.
- The allowances currently include (basic 60%, process and fugitive 10%, trade exposure 10%, performance 5%, carbon offsets 5-10%). It has also been proposed to increase the carbon offset allowances by 5%.



- Agriculture and Eskom remain exempt in the first phase of the tax.
- Primary agricultural production is unlikely to be taxed directly, but agricultural waste may be subject to the carbon tax in phase 2.

Year	ZAR/t	y/y
2022	144	
2023	159	9%
2024	190	16%
2025	236	19%
2026	308	23%
2027	347	11%
2028	385	10%
2029	424	9%
2030	462	8%



# CARBON CREDIT MARKET



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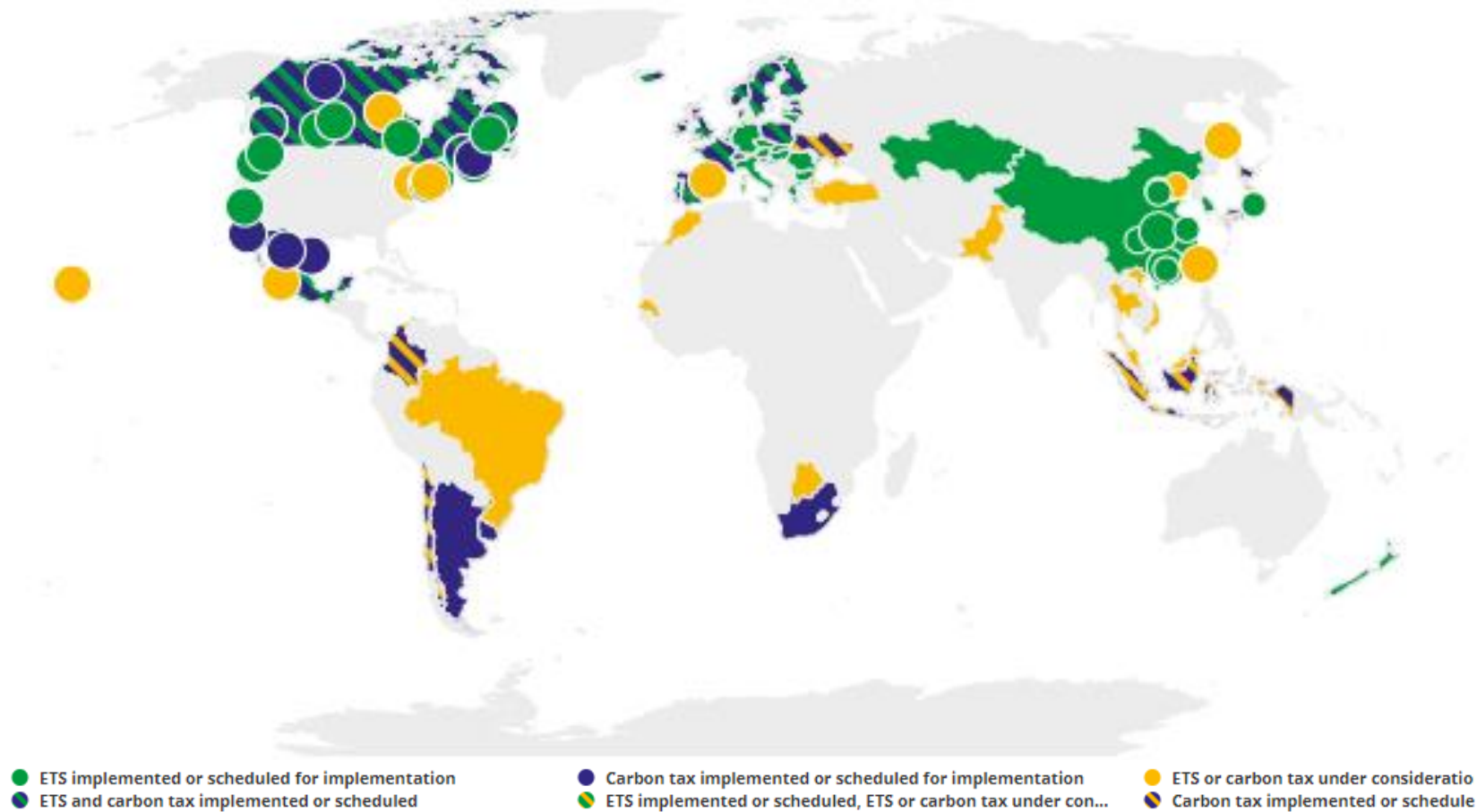
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## CARBON PRICING

Carbon pricing is intended to help reduce emissions by making polluters pay

Summary of regional, national, and subnational carbon pricing initiatives



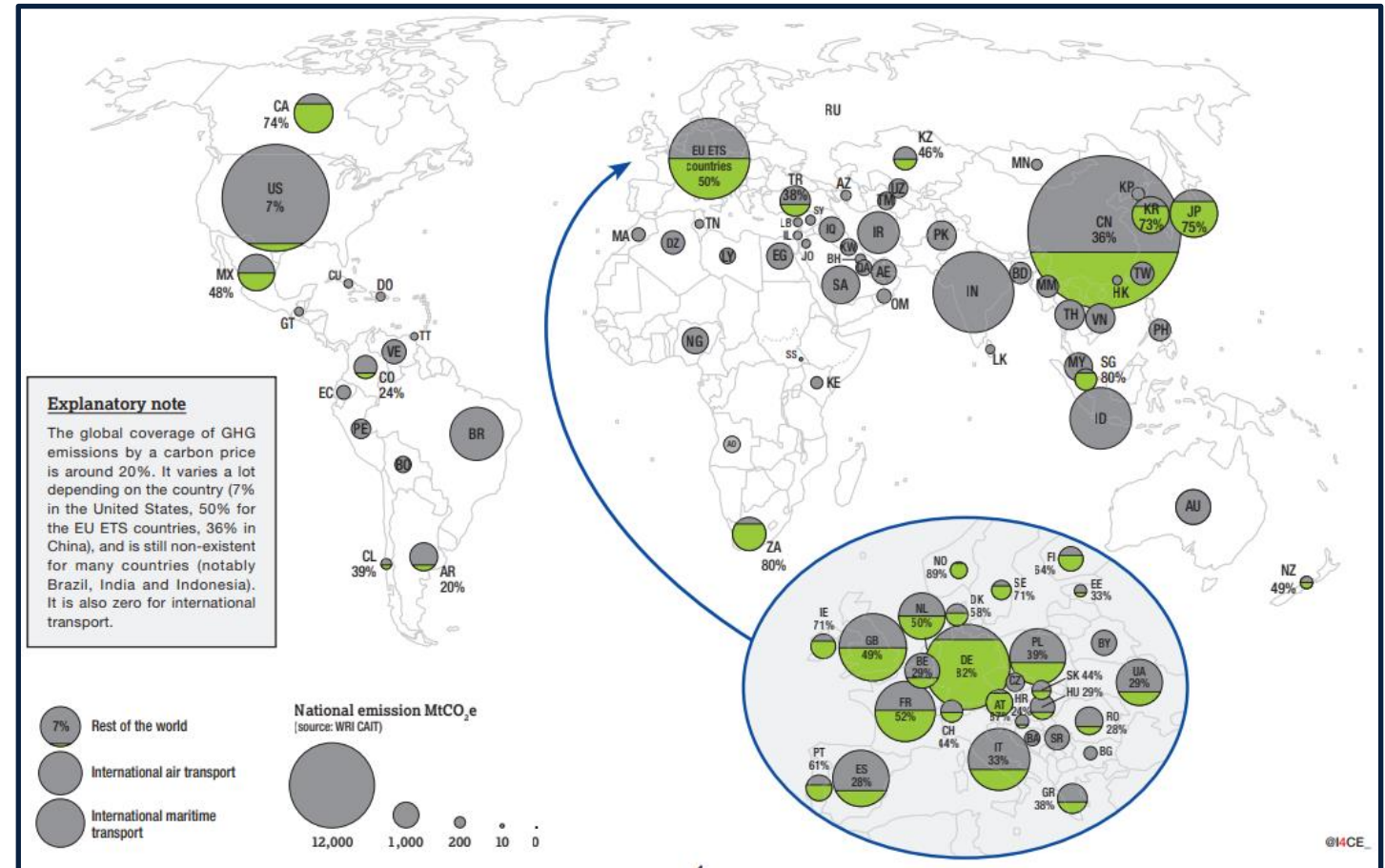
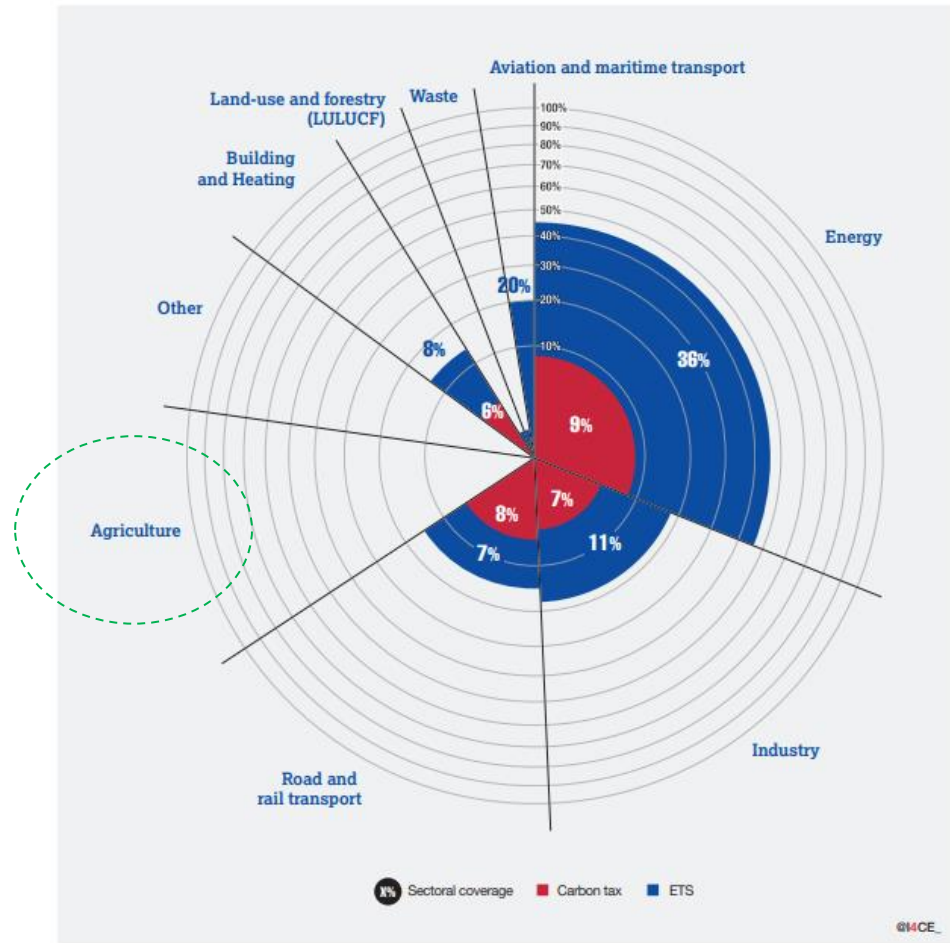




# CARBON PRICING COVERAGE

Intensity of emissions coverage varies by sector and jurisdiction

Global emissions coverage by carbon pricing







# ENERGY OUTLOOK FOR SOUTH AFRICA



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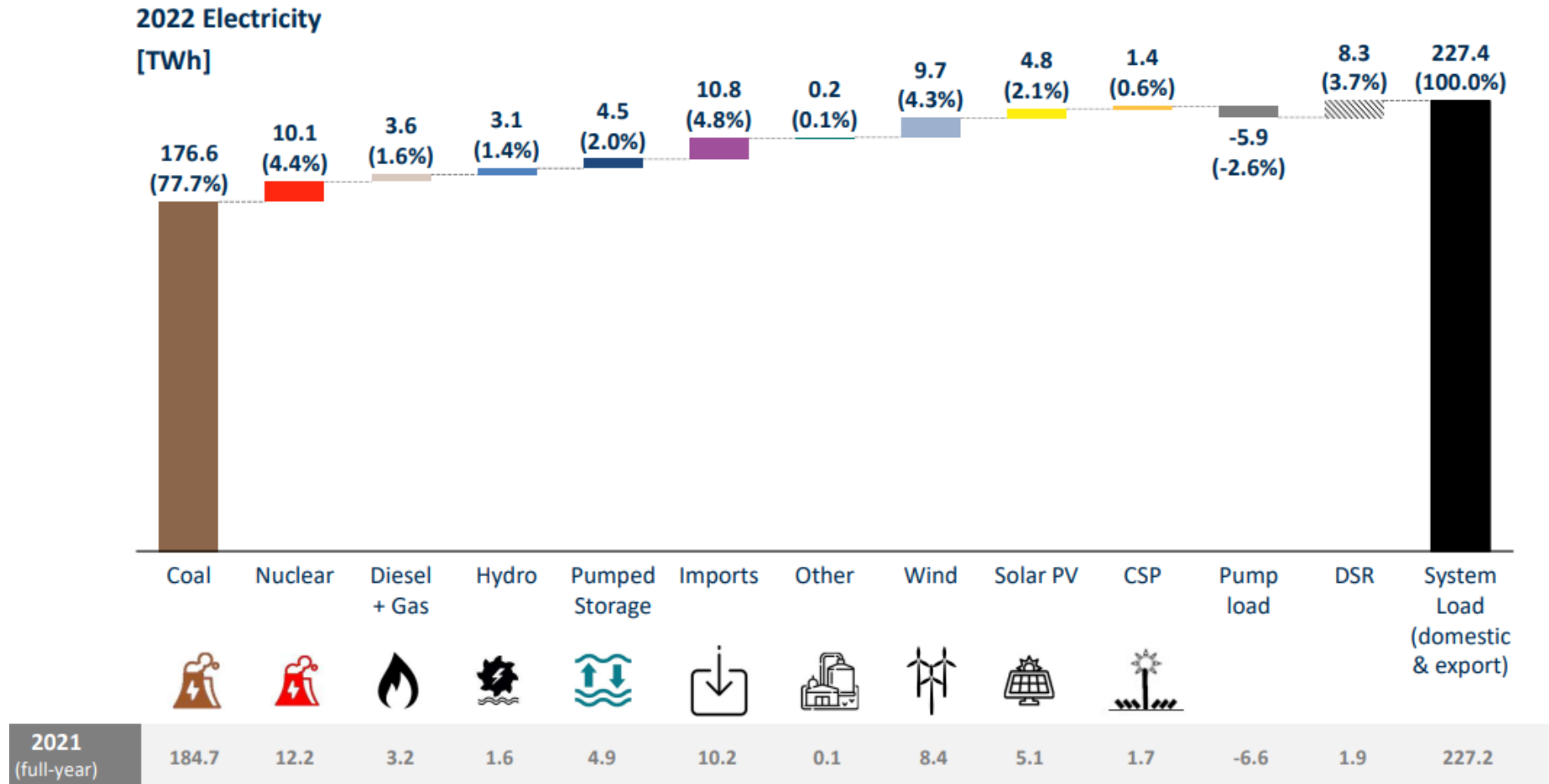
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## ENERGY OUTLOOK FOR SOUTH AFRICA

### 2022 electricity production in South Africa by type

Coal made up under 80% of total system load for the first time; PV, wind, and CSP contributed 7%

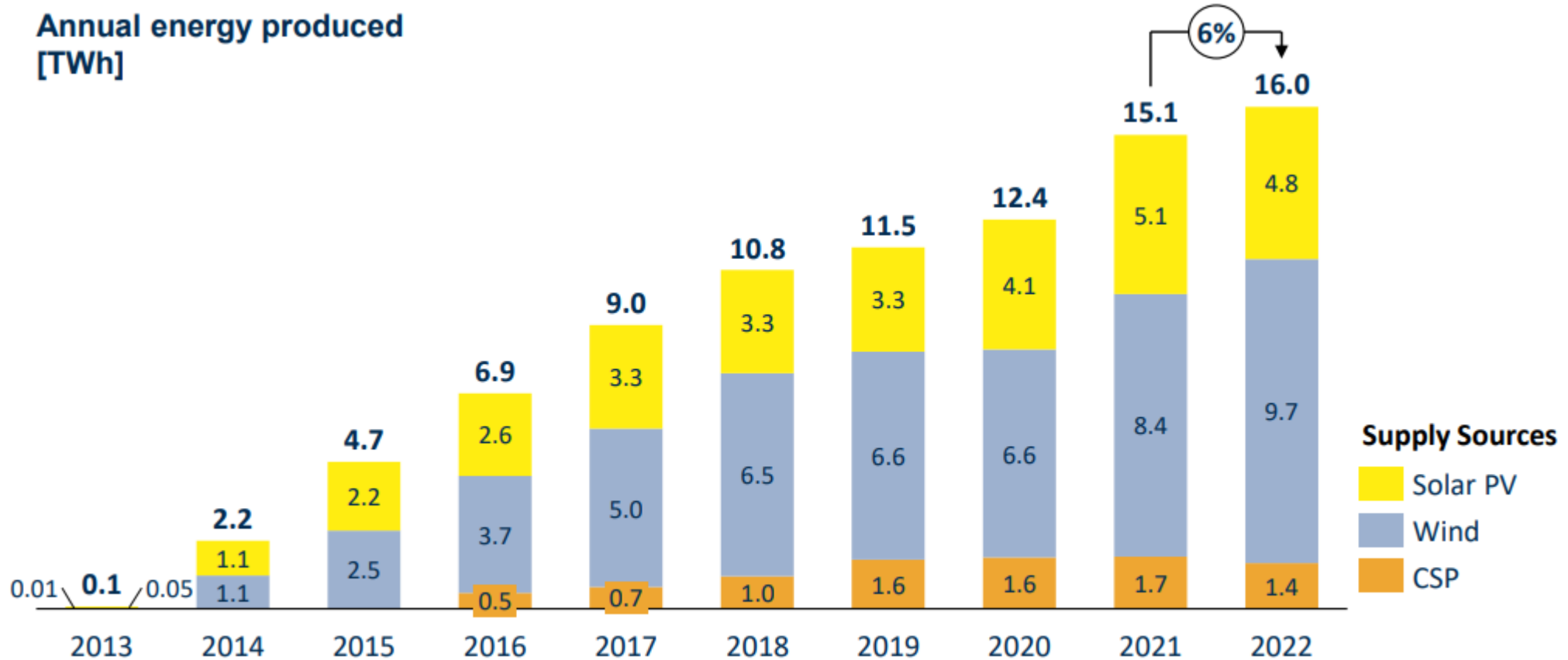




## ENERGY OUTLOOK FOR SOUTH AFRICA

Renewables production is increasing rapidly, but remains too slow

Solar PV, wind, and CSP (Concentrating Solar Power) produced 6% more electricity in 2022 compared to 2021



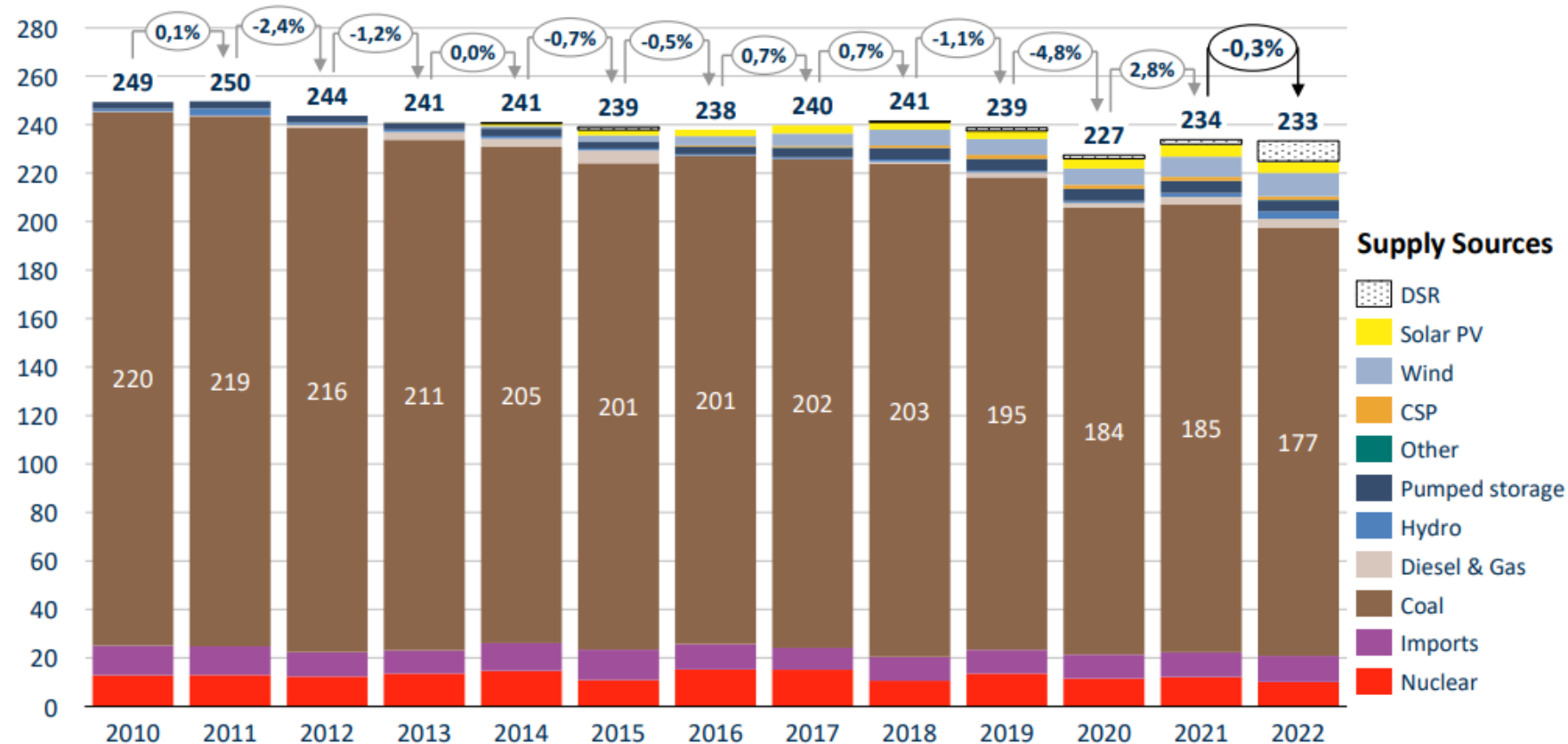


## ENERGY OUTLOOK FOR SOUTH AFRICA

Production in 2022 was constrained

Historical annual electricity production per supply source

Annual electricity production  
[TWh]



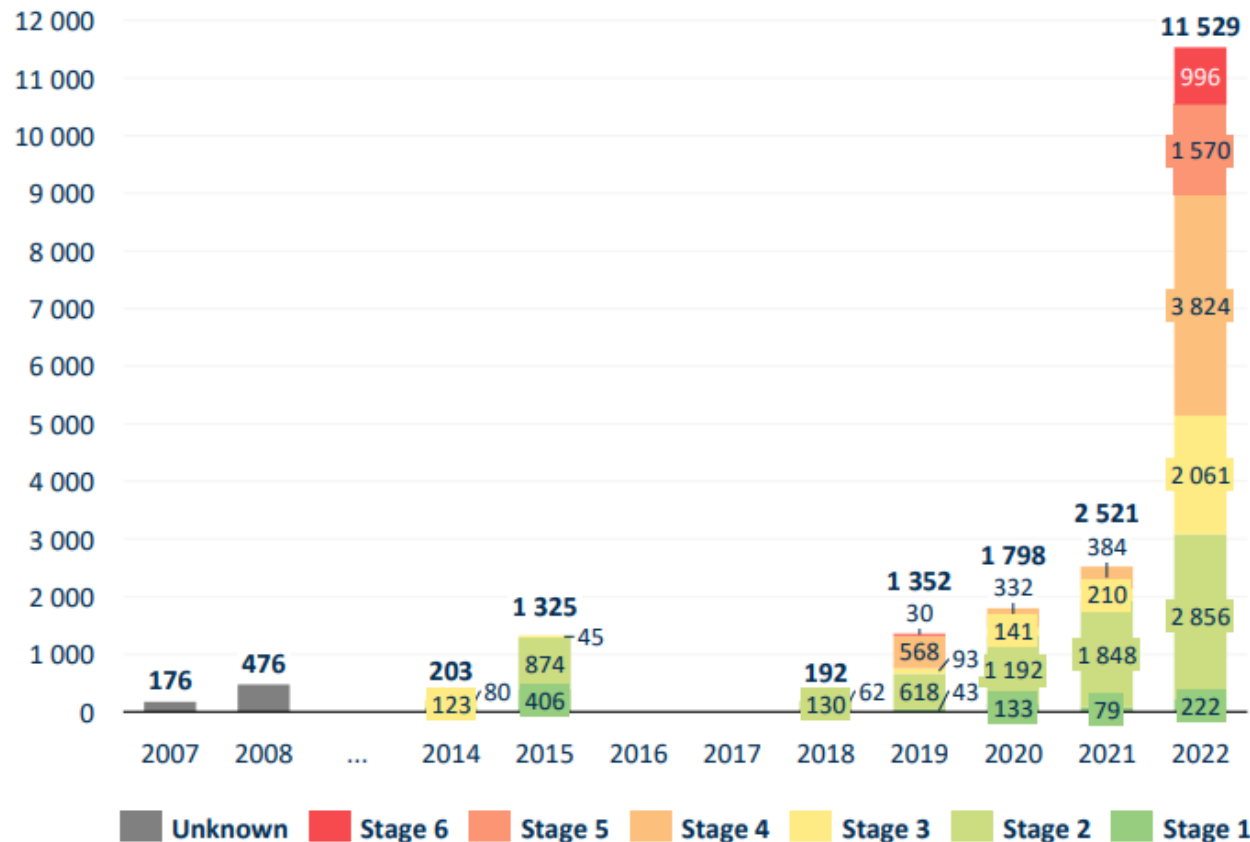


## ENERGY OUTLOOK FOR SOUTH AFRICA

Most of the loadshedding experienced in 2022 was stage 4 for the first time

### Loadshedding by year

Load shed, upper-limit [GWh]



Year	Duration of outages (hours)	Energy shed (GWh)	DSR (GWh)
2007	-	176	Not available
2008	-	476	Not available
....	....	....	....
2014	121	203	Not available
2015	852	1 325	Not available
....	....	....	....
2018	127	192	392
2019	530	1 352	1 362
2020	859	1 798	1 426
2021	1 169	2 521	1 936
2022	3 773	11 529	8 301

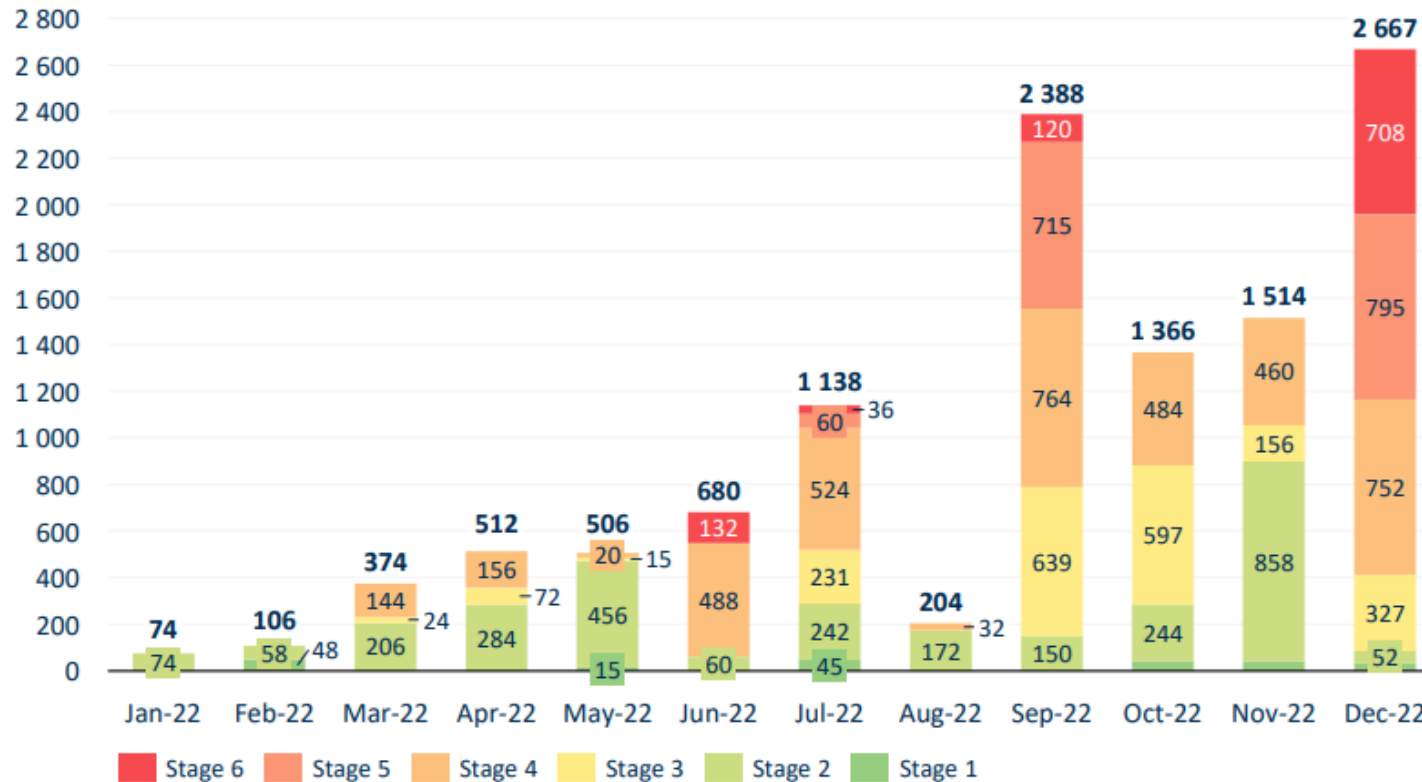


## ENERGY OUTLOOK FOR SOUTH AFRICA

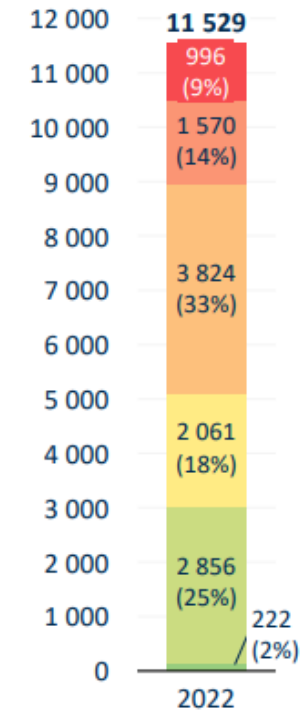
The monthly breakdown shows that loadshedding was more severe in the last 4 months of the year

### Monthly loadshedding by stage

#### Monthly loadshedding (upper-limit) [GWh]



#### Annual loadshedding (upper limit) [GWh]





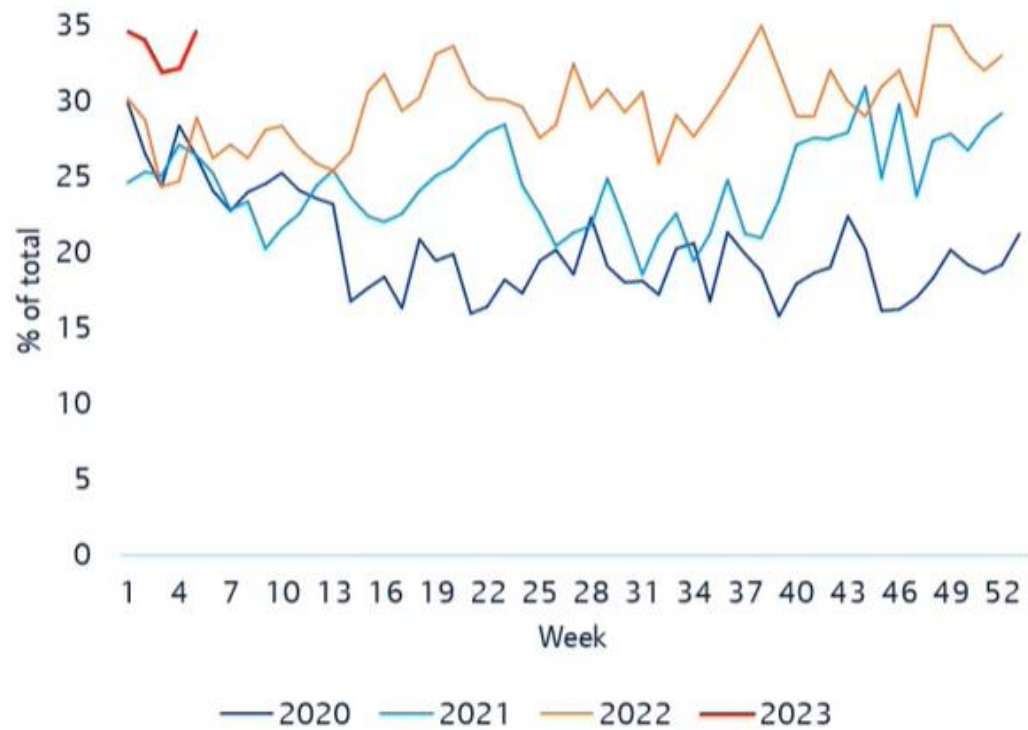


## ENERGY OUTLOOK FOR SOUTH AFRICA

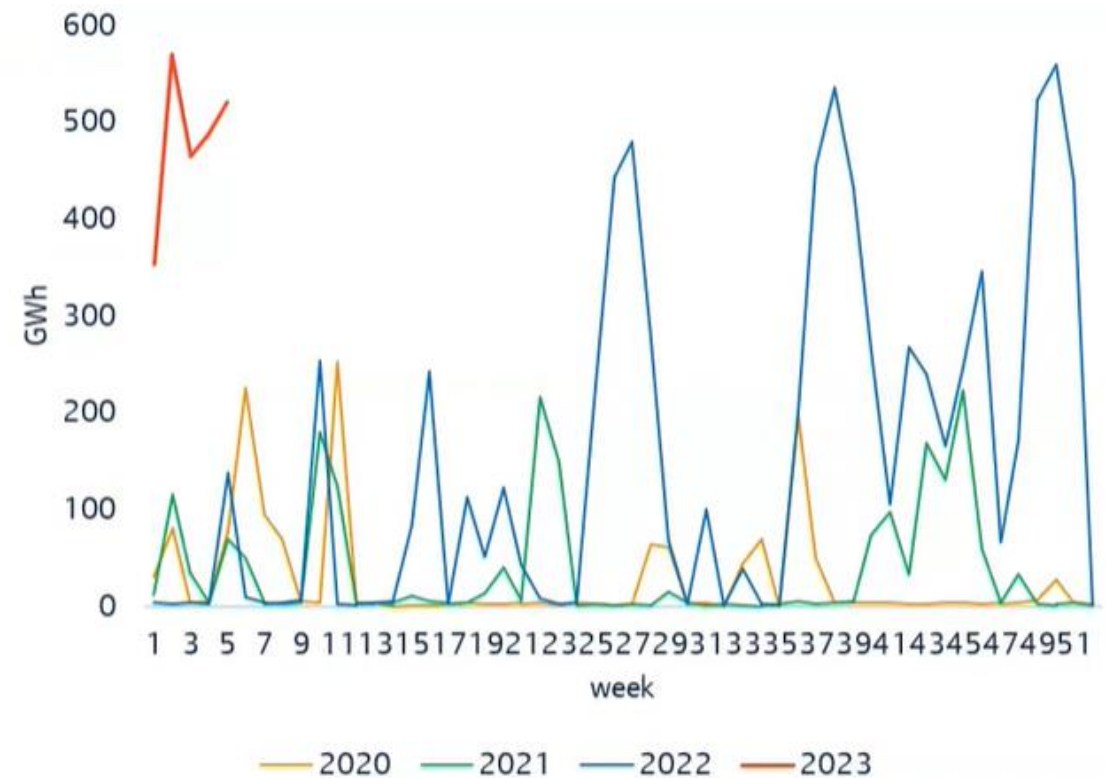
More breakdowns, higher levels of loadshedding expected to impact growth

Increasing breakdowns and higher levels of loadshedding

Unplanned maintenance (breakdowns)



Loadshedding





## ENERGY OUTLOOK FOR SOUTH AFRICA

Less electricity available, use of open-cycle gas turbines increasing as is the cost

Ergergerg??

Electricity availability



Open-cycle gas turbine usage

	2020	2021	2022	2023 YtD
GWh	1 328	1 457	1 826	
Load factor	6.3%	6.9%	8.7%	±15%

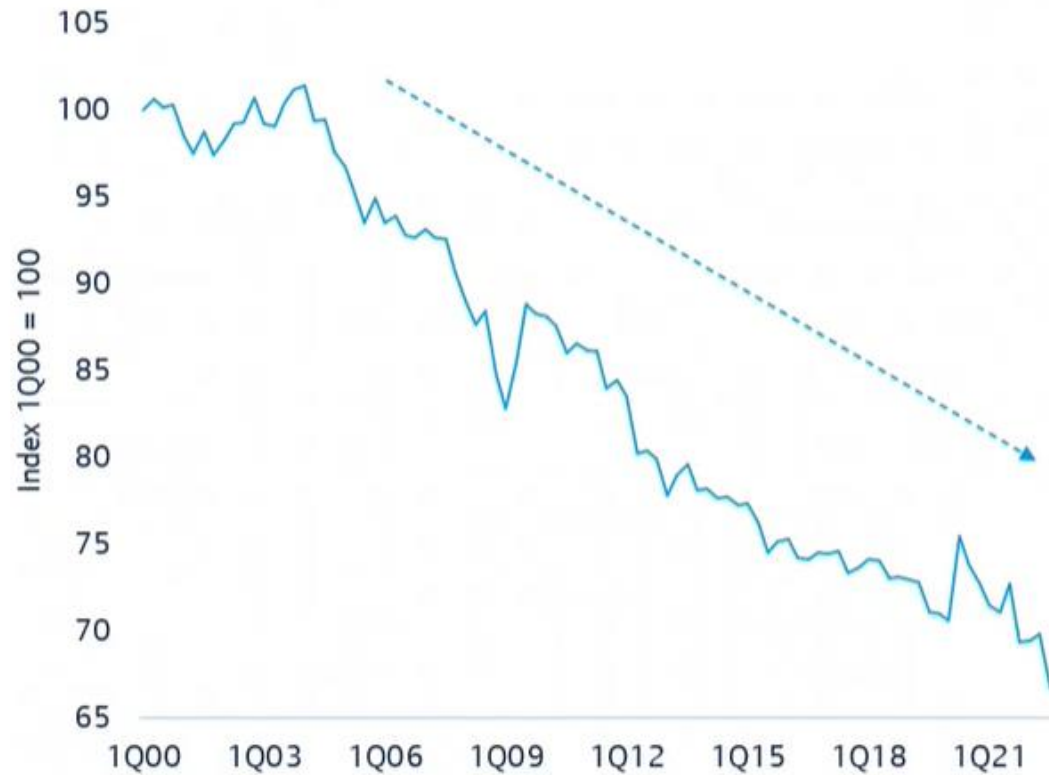


## ENERGY OUTLOOK FOR SOUTH AFRICA

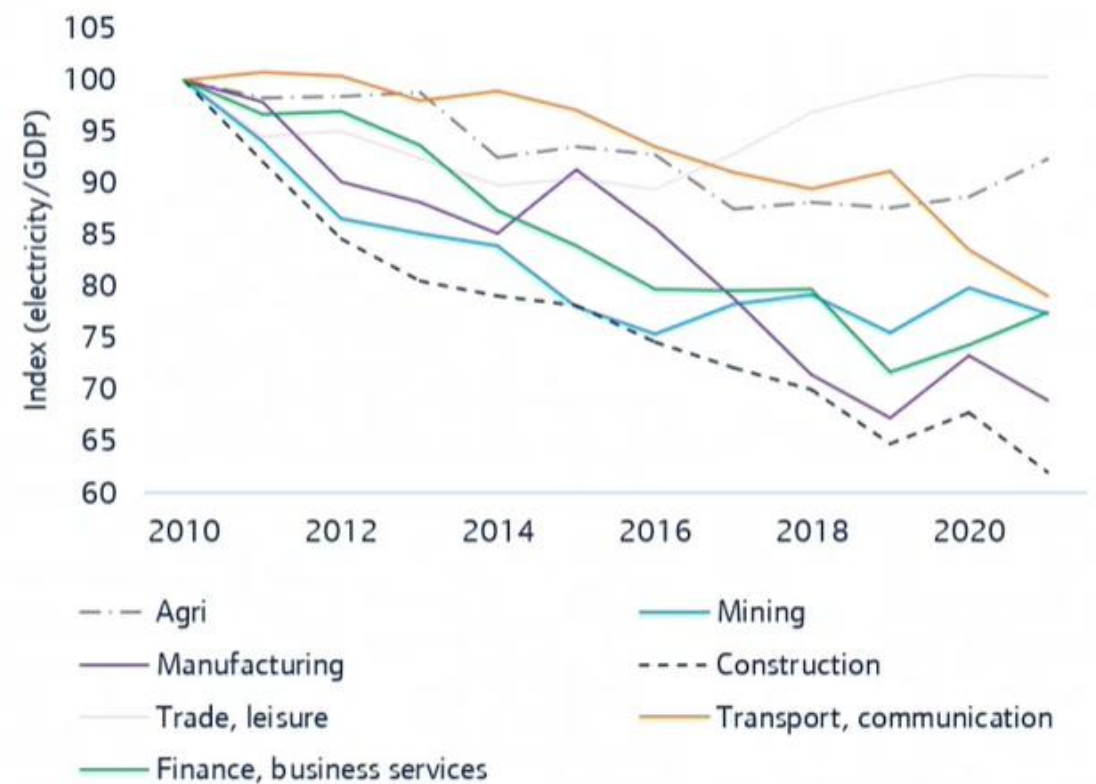
Less electricity available, use of open-cycle gas turbines increasing as is the cost

Ergergerg??

Grid electricity intensity of GDP has declined...



...the decline is quite broad-based across sectors

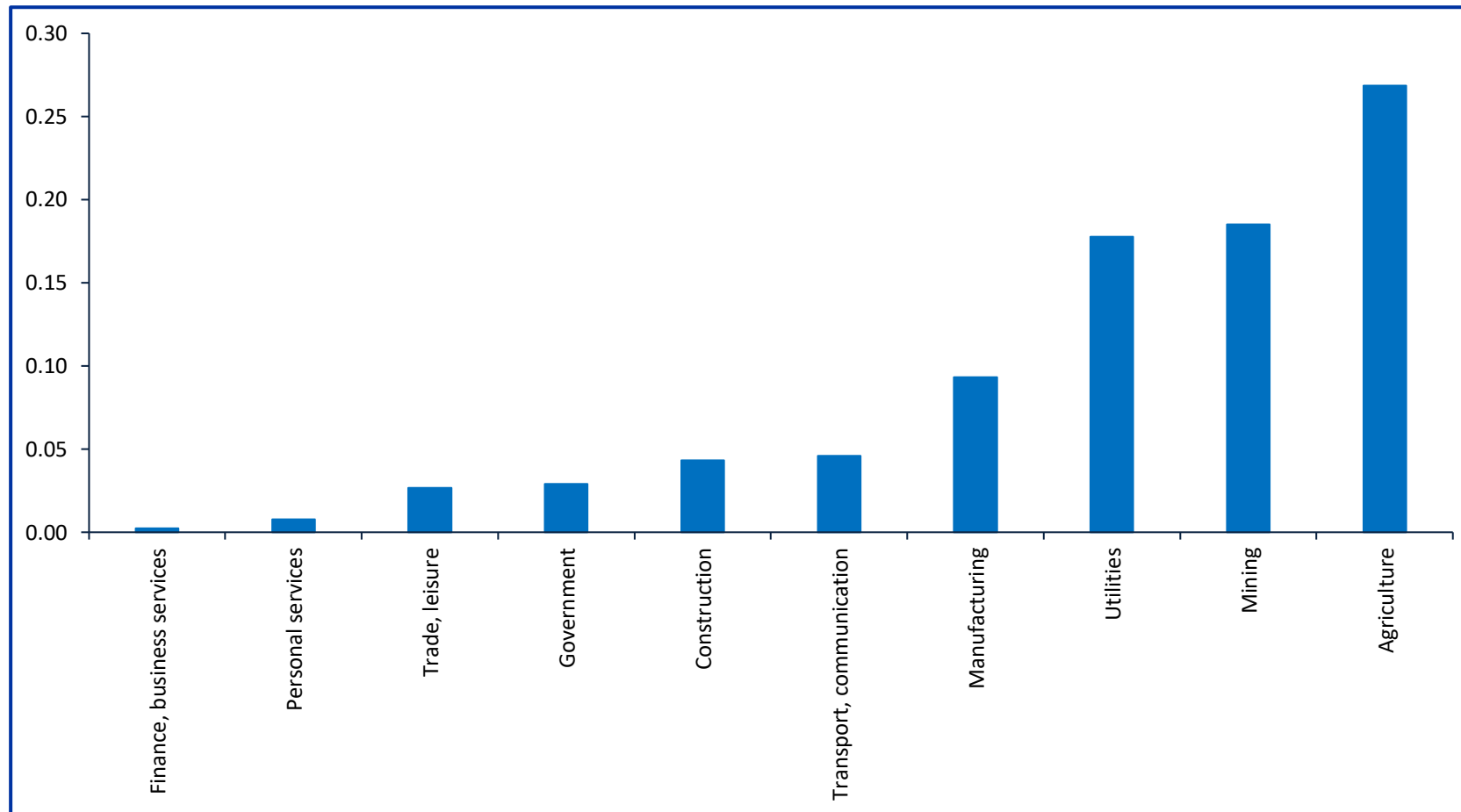




## ENERGY OUTLOOK FOR SOUTH AFRICA

The agriculture sector loses ~0.27% of annualized GDP growth for 1 stage of loadshedding

Negative growth impact of 1000MW loadshedding – higher impact on goods producing sectors



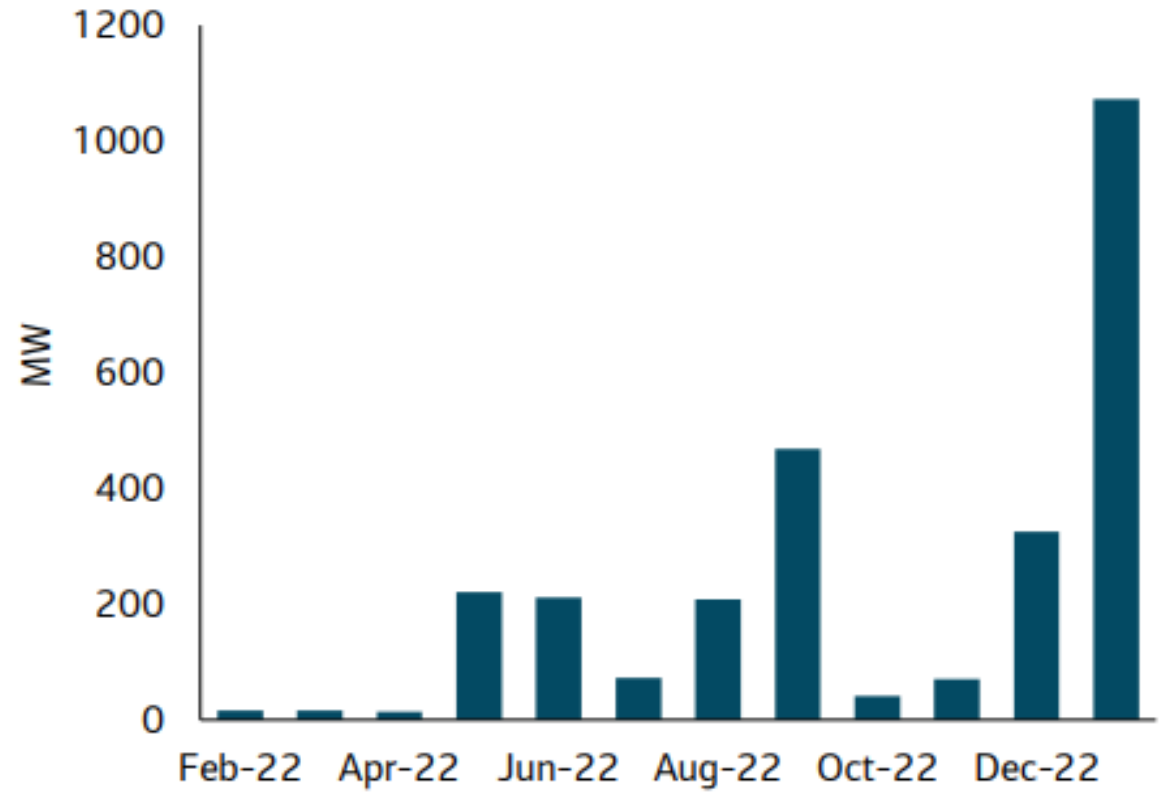
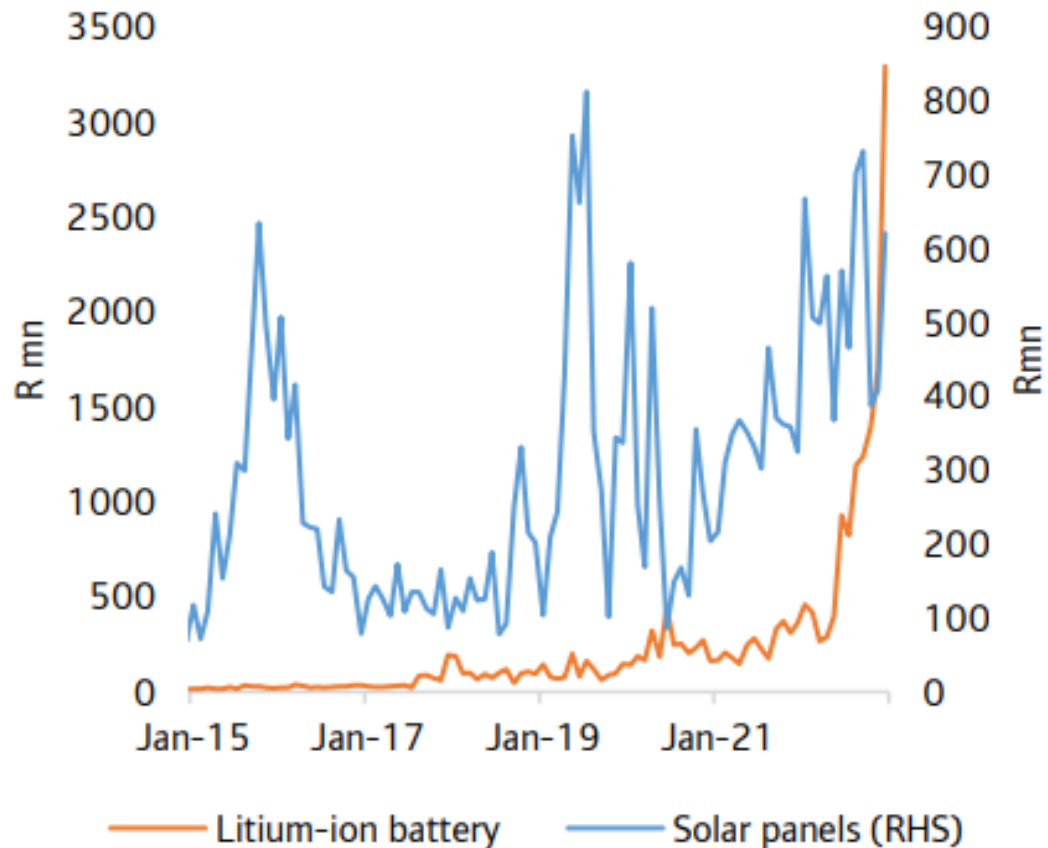


## ENERGY OUTLOOK FOR SOUTH AFRICA

Embedded generation increasing which should help alleviate loadshedding in time

Growing imports of solar panels and batteries reflect growing private sector electricity generation and storage capacity

Large number of embedded generation projects registered with Nersa points to a boost to fixed investment and loadshedding relief in the short to medium term



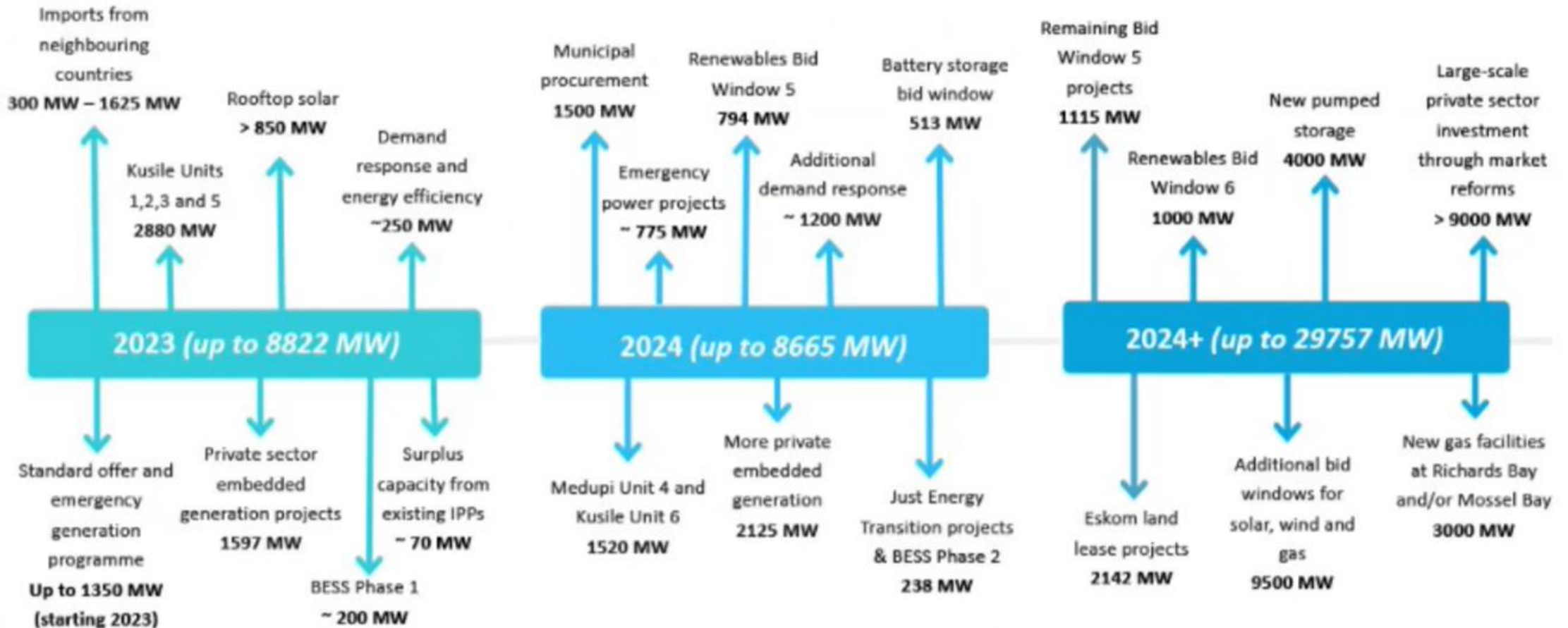




## ENERGY OUTLOOK FOR SOUTH AFRICA

The NECOM plan seems optimistic rather than realistic

NECOM plan to add 8822 MW in 2023







## ENERGY OUTLOOK FOR SOUTH AFRICA

SBR feels that most growth will be bolstered given all the self-generation that is coming online

Standard Bank Research's macroeconomic forecasts

%, average	2020	2021	2022f	2023f	2024f
GDP	-6,3	4,9	2,3	1,2	1,7
Household consumption expenditure (HCE)	-5,9	5,6	2,8	1,3	1,7
Gross fixed capital formation (GFCF)	-14,6	0,2	4,6	3,2	4,1
CPI	3,3	4,5	6,9	5,9	4,7
Repo rate (year-end)	3,50	3,75	7,00 <sup>a</sup>	7,50	7,00
R/\$ (year-end)	14,86	15,89	17,29 <sup>a</sup>	16,50	16,40
R/€ (year-end)	18,09	17,96	18,30 <sup>a</sup>	19,14	20,17
R/£ (year-end)	19,98	21,15	21,04 <sup>a</sup>	21,12	23,29
10-year generic bond yield (YE)	9,06	9,76	10,86 <sup>a</sup>	10,35	10,25



# ENSO OUTLOOK FOR 2023/24 SEASON



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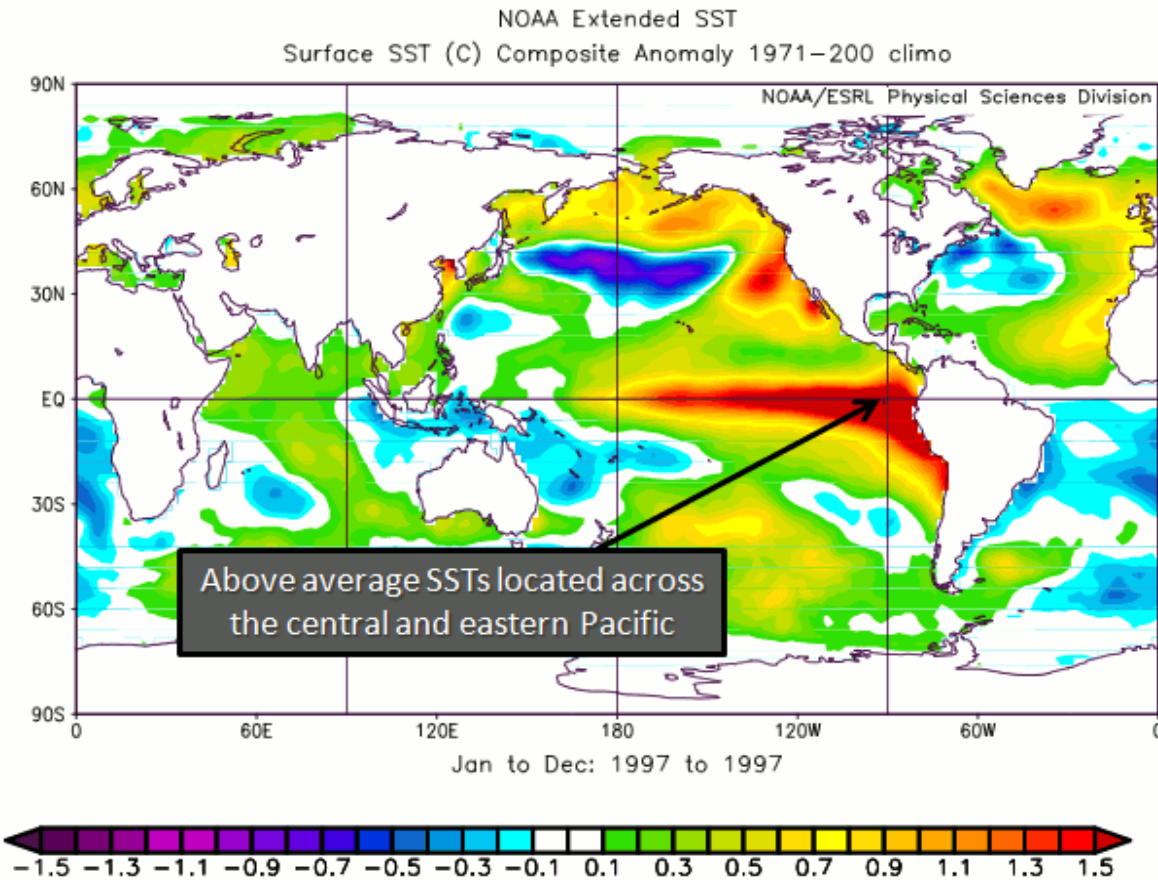
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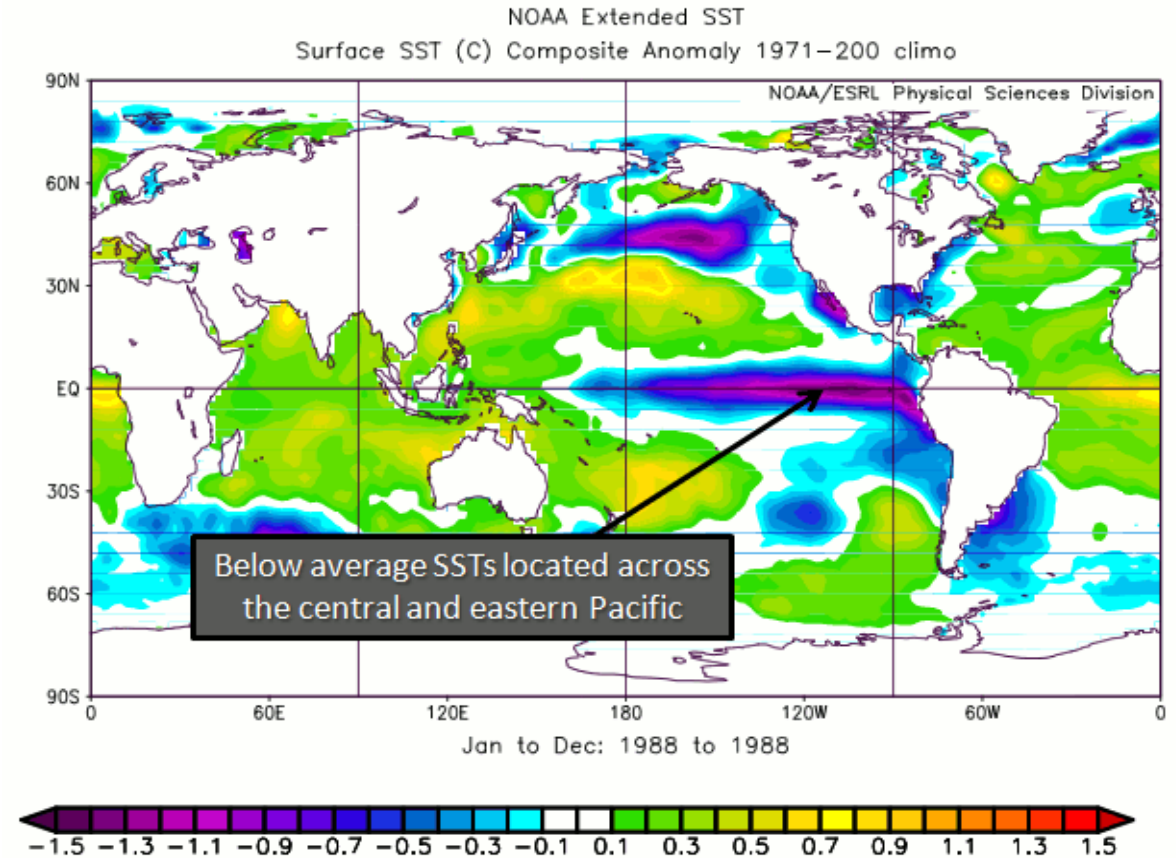
## EL NIÑO, LA NIÑA, DA NADA?

El Niño Southern Oscillation has three flavours: El Niño; La Niña; and ENSO-neutral

El Niño – warm SSTs over the equatorial Pacific Ocean



La Niña – cool SSTs over the equatorial Pacific Ocean

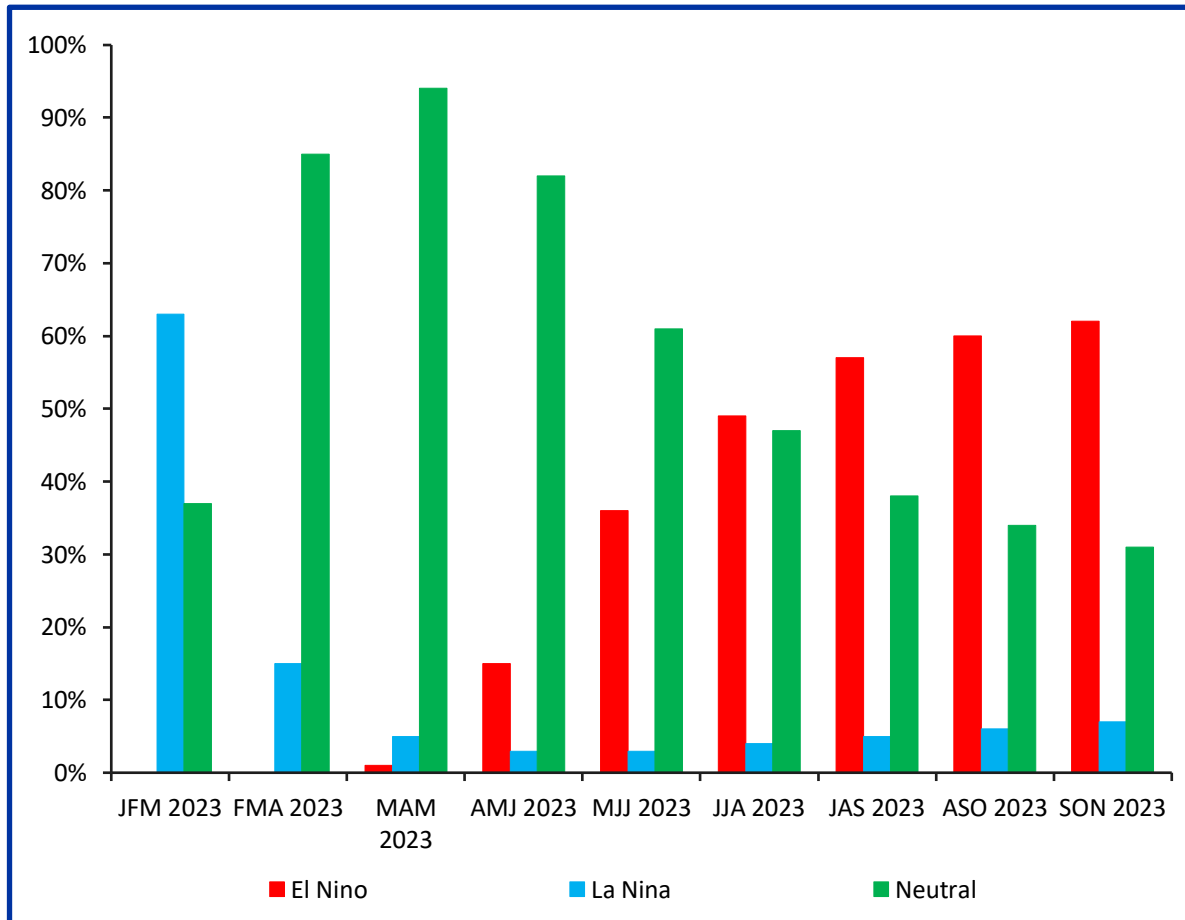




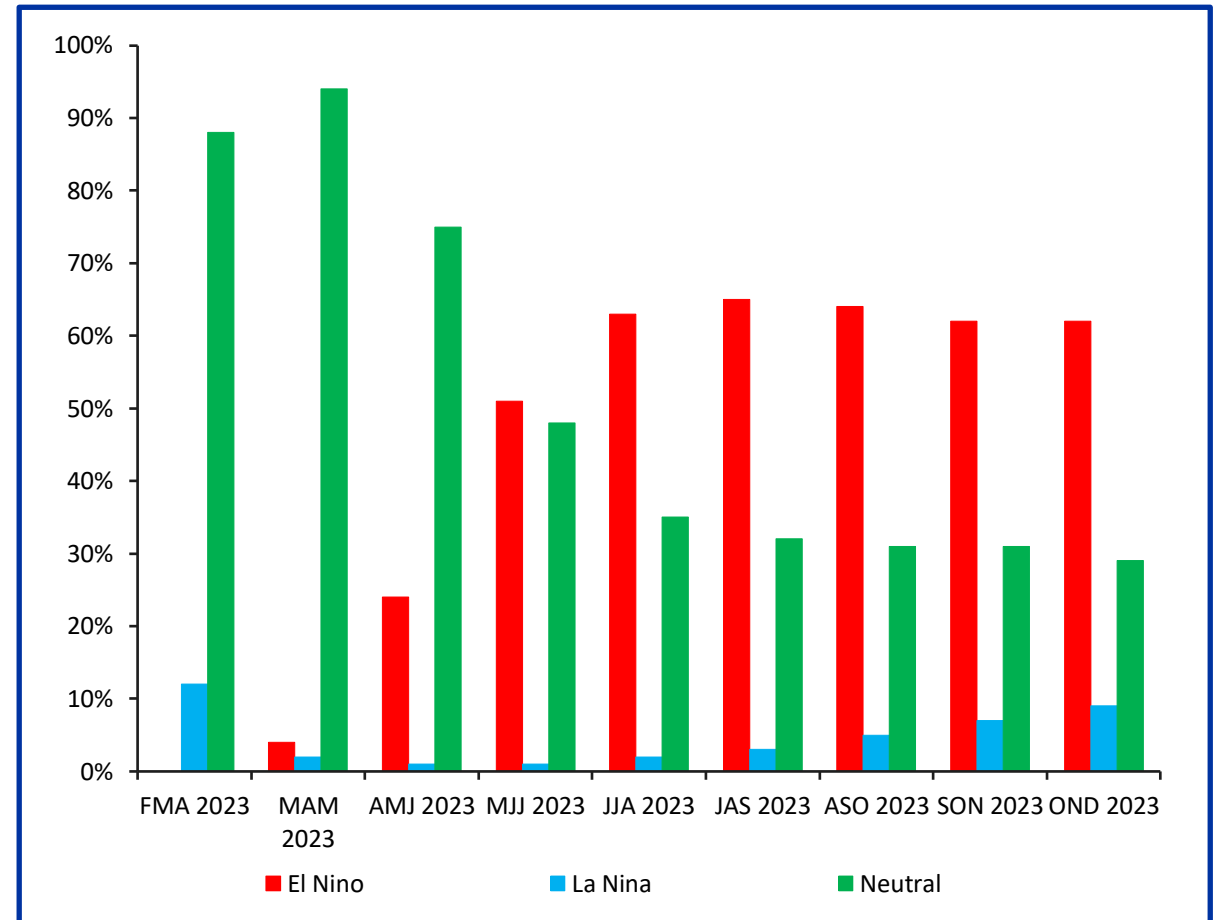
## EL NIÑO, LA NIÑA, DA NADA?

El Niño conditions expected into the 2023/24 summer season

IRI/CPC early-February official ENSO forecast



IRI/CPC mid-February model-based ENSO forecast



\*SON – September, October, November average; OND – October, November, December average etc.

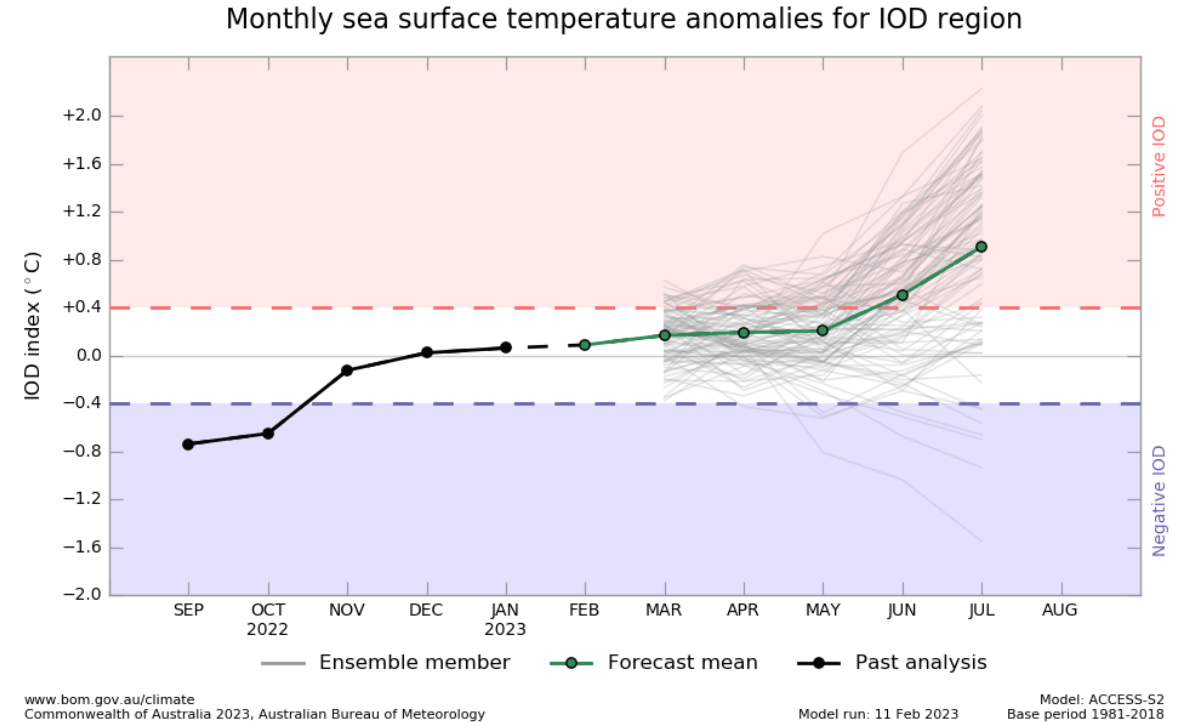
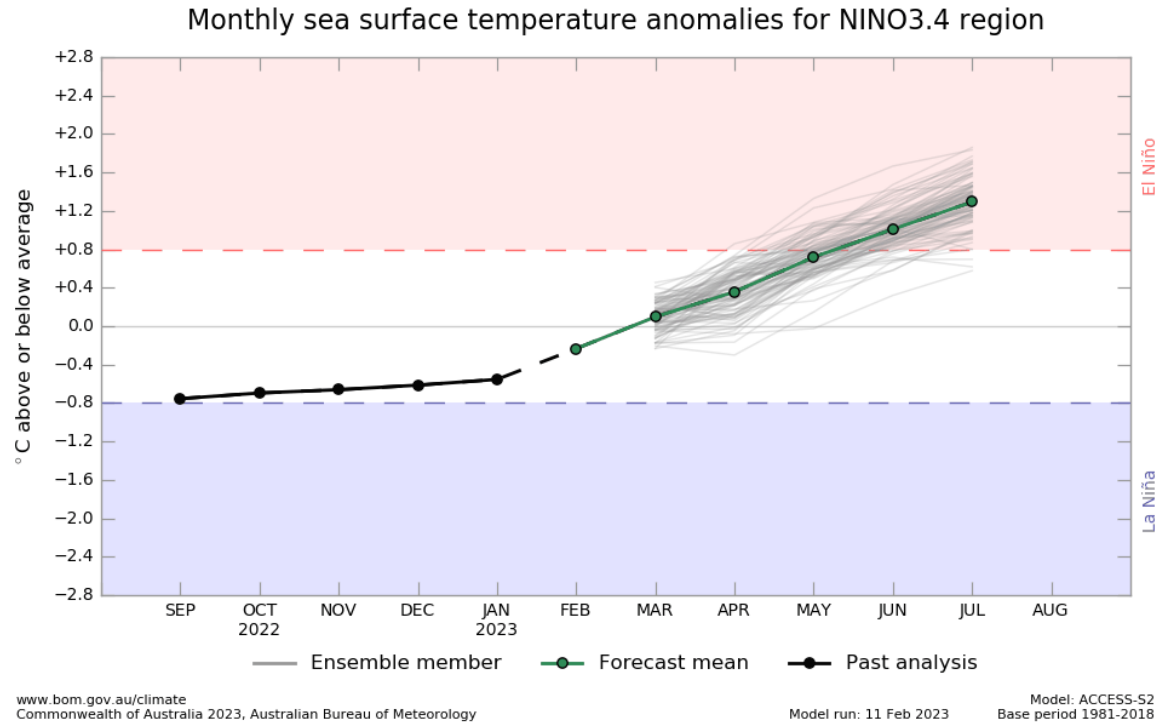


# EL NIÑO, LA NIÑA, DA NADA?

Australian Bureau of Meteorology forecasts El Nino and a positive TIOD

Australian Bureau of Meteorology ENSO forecast on 11 Feb

Australian Bureau of Meteorology TIOD forecast on 11 Feb







## La Niña impacts on rainfall globally with months impacted



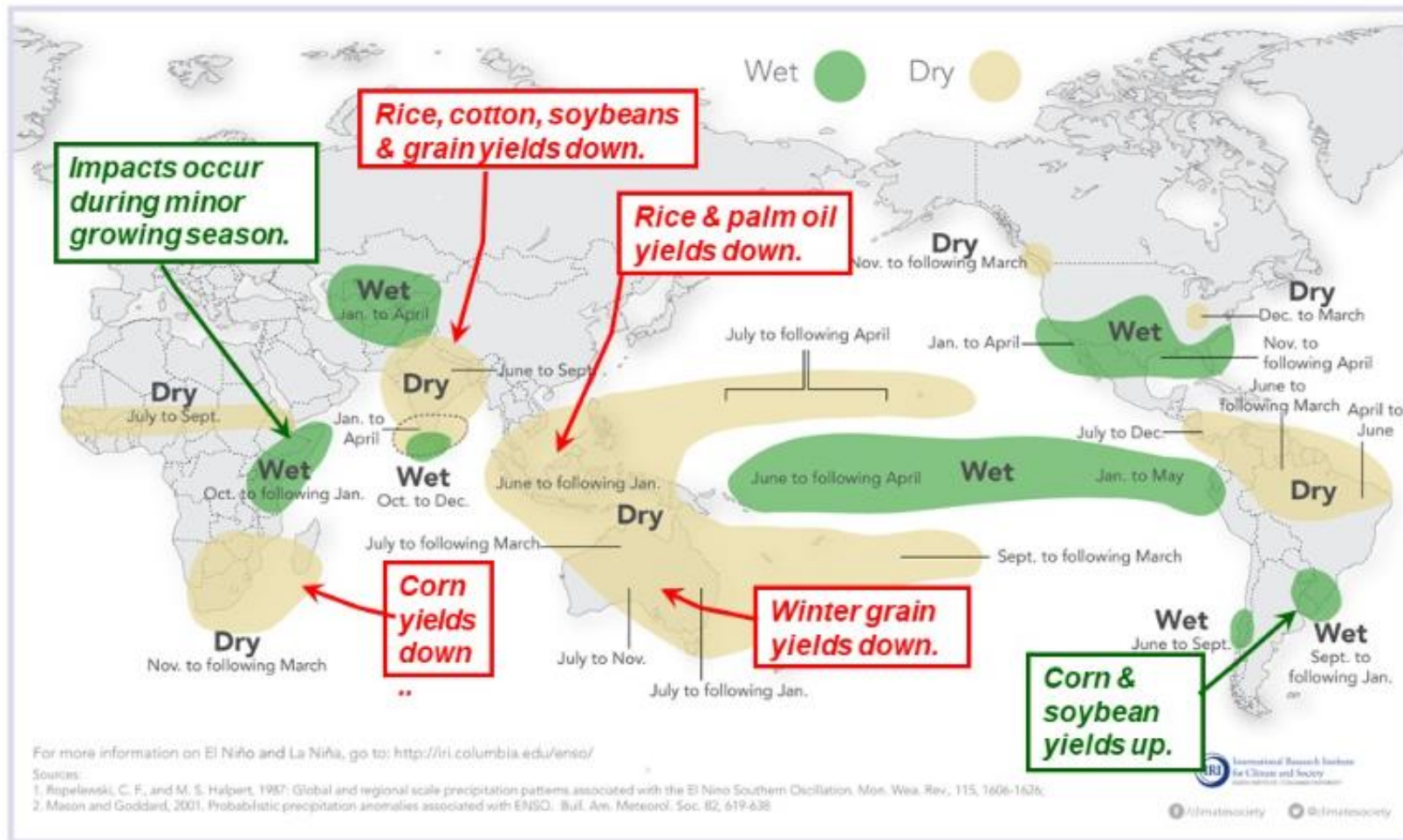




## EL NIÑO, LA NIÑA, DA NADA?

El Niño is usually associated with below-average rainfall over South Africa during summer

El Niño impacts on rainfall globally and the typical impact on growing





# THANK YOU





## Disclosure Appendix

### Analyst Certification and Important Disclosures

#### Analyst(s) Certification(s)

The following analyst/s: Penny Byrne certify, with respect to the companies or securities under analysis, that (1) the views expressed in this report accurately reflect their personal views about all of the subject companies and securities and (2) no part of their compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this report. SBG Securities Analyst receive compensation that is based, in part, on the overall firm revenues, which include investment banking revenues.

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Buy (B): The stock's total return\* is expected to be more than 20% (or more, depending on perceived risk) over the next 12 months.

Hold (H): The stock's total return is expected to be in the range of 10-20% over the next 12 months.

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As of 15 June 2011, SBG Securities ratings are based on (1) a stock's absolute/total return potential to its current share price and (2) the relative attractiveness of a stock's total return potential within an analyst's coverage universe\*\*, with Buys representing the most attractive, Holds the less attractive, and Sells the least attractive investment opportunities. In frontier markets like Kenya and Nigeria ratings may fall outside the absolute total return ranges defined above, depending on market conditions and industry factors, for these countries a 25% and 15% threshold replace the 20 and 10% level in the Buy and Sell stock rating definitions, respectively, subject to analysts' perceived risk. The 25% and 15% thresholds replace the +10-20% and -10-20% levels in the Hold stock rating definition, respectively, subject to analysts' perceived risk.

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Hold (H): The stock's total return is expected to be in the range of 10% to 14% over the next 12 months.

Sell (S): The stock's total return is expected to be less than 10% over the next 12 months.

Investment ratings are determined by the ranges described above at the time of initiation of coverage, a change in investment and/or risk rating, or a change in target price (subject to limited management discretion). At other times, the expected total returns may fall outside of these ranges because of market price movements and/or other short-term volatility or trading patterns. Such interim deviations from specified ranges will be permitted but will become subject to review by Research Management. Your decision to buy or sell a security should be based upon your personal investment objectives and should be made only after evaluating the stock's expected performance and risk.

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Overweight: Industry expected to outperform the relevant broad market benchmark over the next 12 months.

Market Weight: Industry expected to perform in-line with the relevant broad market benchmark over the next 12 months .

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All Recommendations (%)	52.1	6.8	27.4	9.4	4.3
Recommendations with investment Banking Relationships (%)	56	38	59	55	100

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