



THE LIKELY FUTURE PATH OF THE COAL INDUSTRY IN SOUTH AFRICA

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THE LIKELY FUTURE PATH OF THE COAL INDUSTRY IN SOUTH AFRICA

BASIS OF OPINION

- CAN I PREDICT THE FUTURE – NO, NO ONE CAN
- IS OUR CRYSTAL BALL BETTER THAN ANYONE ELSE'S – NOT LIKELY SO WE RELY ON CURRENT POLICIES AND FUTURE PROJECTIONS
- WE TRY TO AVOID MEDIA NOISE AND FOCUS ON REAL WORLD DATA
- WE AVOID POPULIST SOURCES AND LOBBY GROUP INFORMATION SOURCES
- WE REVIEW DATA FROM ACROSS THE SPECTRUM (ARCH CONSERVATIVE TO LEFT WING GREENY), IF THE DATA IS DEEMED CREDIBLE AND PROJECTIONS MODELLED ON A TECHNICALLY AND ECONOMICALLY SOUND BASIS
- WE TEND TO AVOID TRADER TALK FOR LONG TERM PREDICTIONS AS MOST OF IT IS SHORT TERM FOCUSSED



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APPROACH

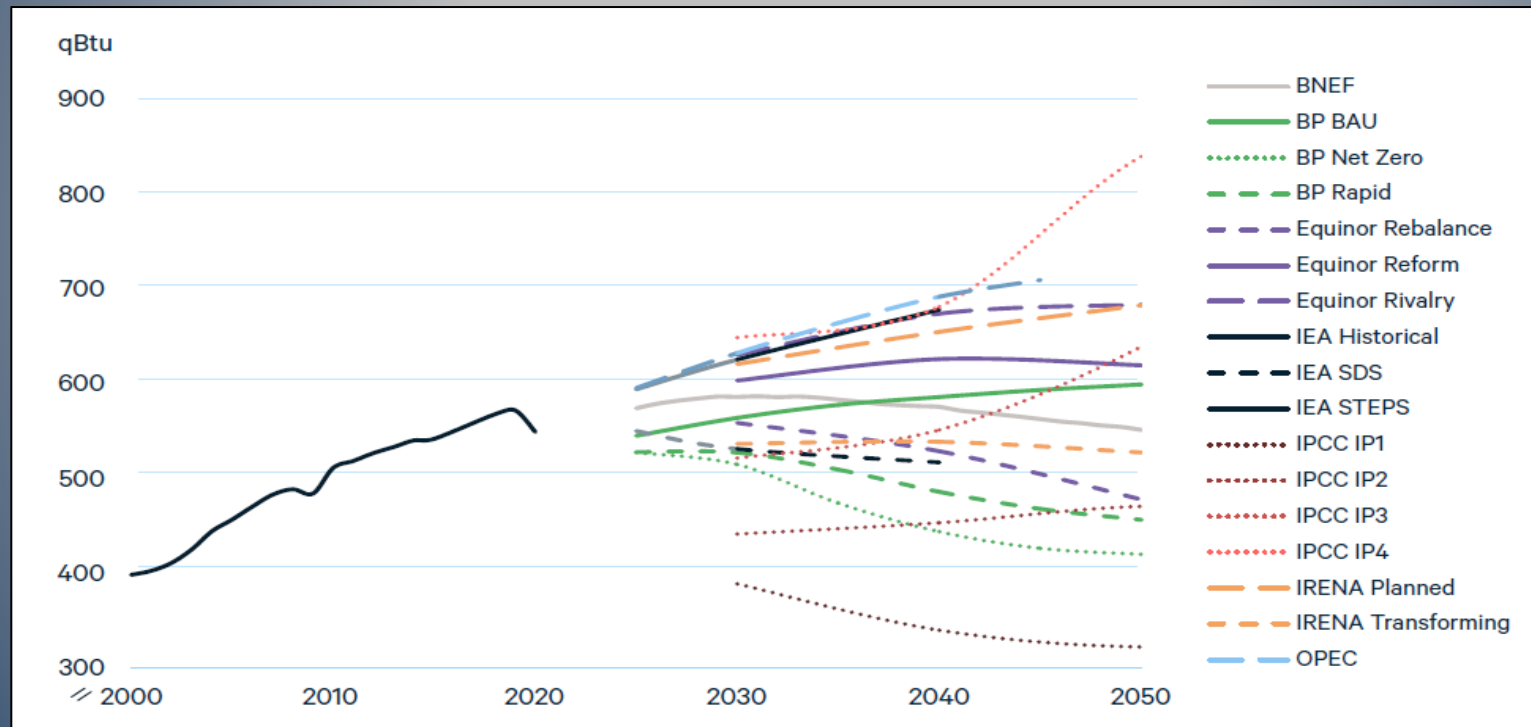
1. GLOBAL ENERGY DEMAND
2. GLOBAL COAL DEMAND
3. SA / REGIONAL COAL SUPPLY
4. SA / REGIONAL COAL DEMAND



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GLOBAL ENERGY DEMAND PROJECTIONS

SEVERAL GLOBAL INSTITUTIONS HAVE PROJECTIONS AS TO THE FUTURE GLOBAL ENERGY DEMAND ACCORDING TO VARIOUS POLICY SCENARIOS



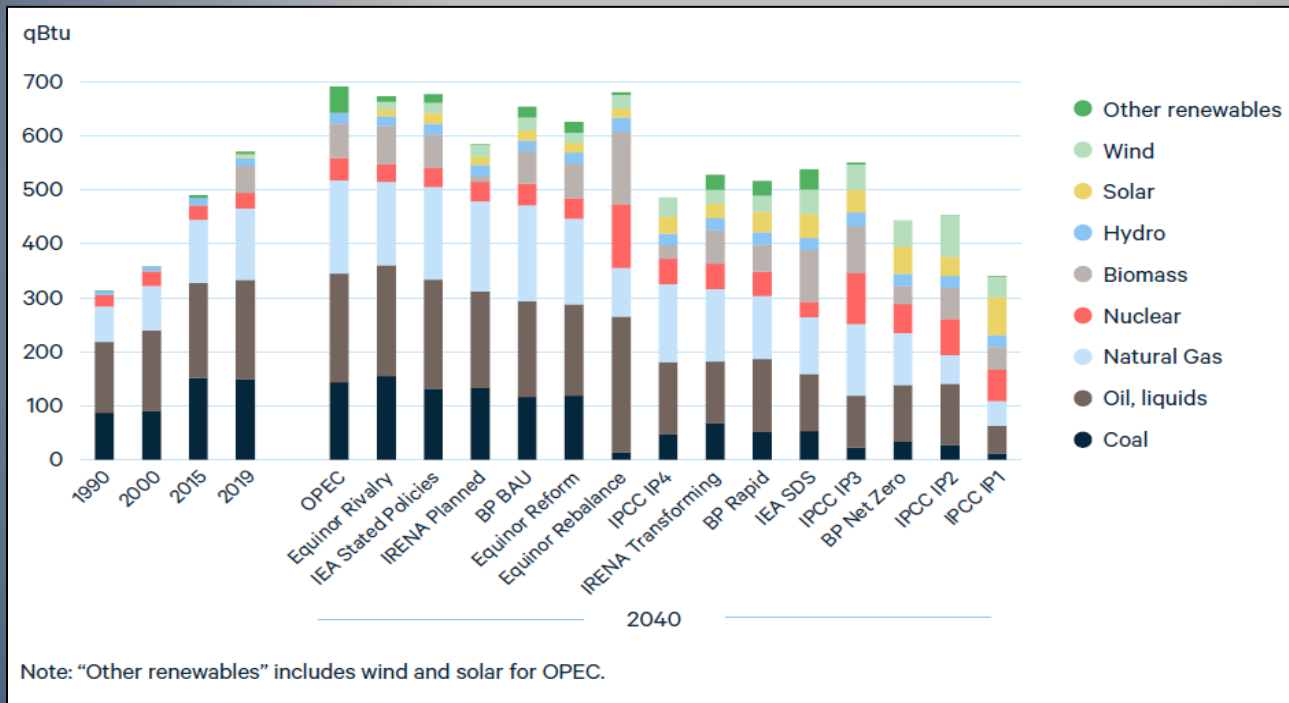
Global Energy Outlook 2021: Pathways from Paris (Newell, et al., (2021))



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GLOBAL ENERGY DEMAND PROJECTIONS

GLOBAL INSTITUTIONS EACH PROJECT A GLOBAL ENERGY SOURCE MIX ACCORDING TO THEIR POLICY SCENARIOS



Global Energy Outlook 2021: Pathways from Paris (Newell, et al., (2021)



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GLOBAL ENERGY DEMAND DRIVERS

GLOBAL ENERGY DEMAND DRIVES GLOBAL COAL DEMAND

THE DRIVERS OF GLOBAL ENERGY DEMAND ARE:

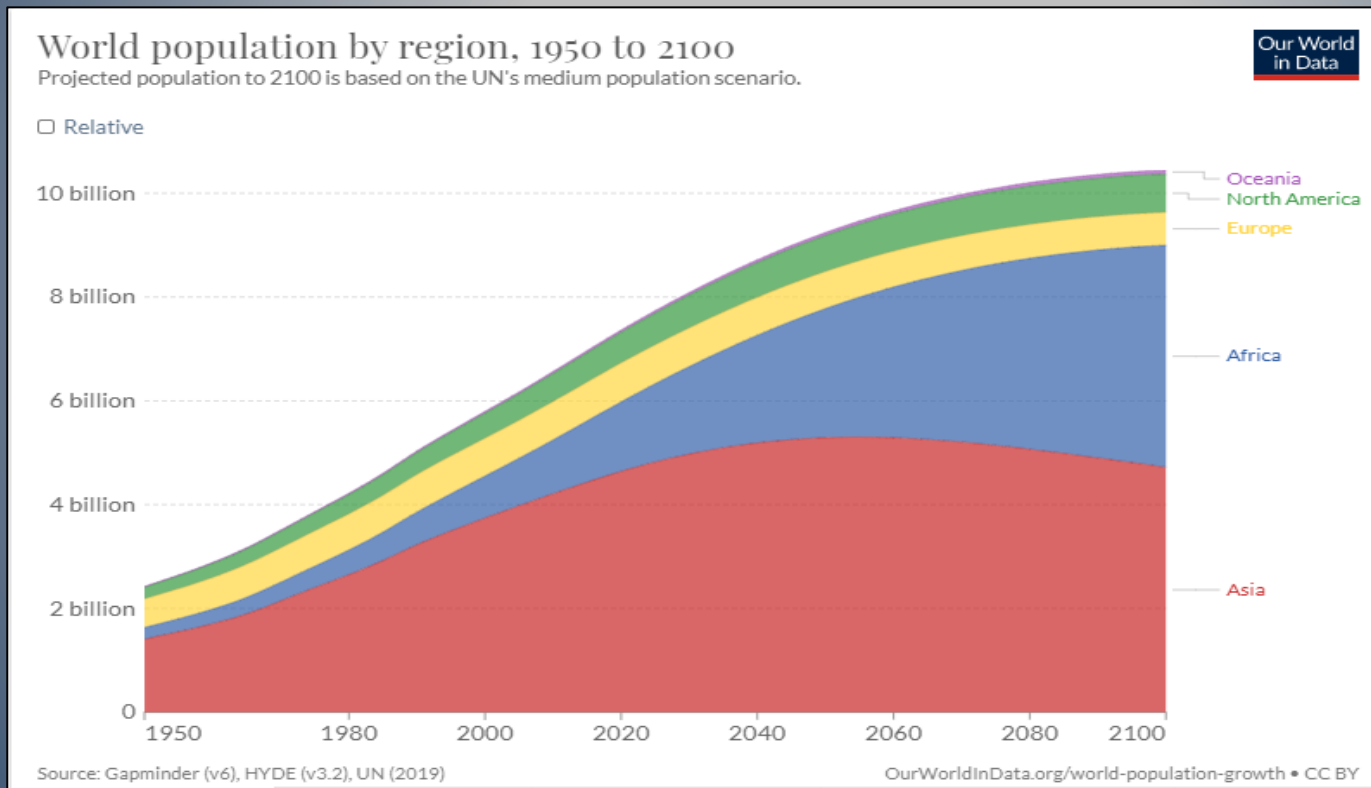
- POPULATION (GROWTH)
- POVERTY ALLEVIATION
- 4IR



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GLOBAL ENERGY DEMAND DRIVERS

POPULATION GROWTH



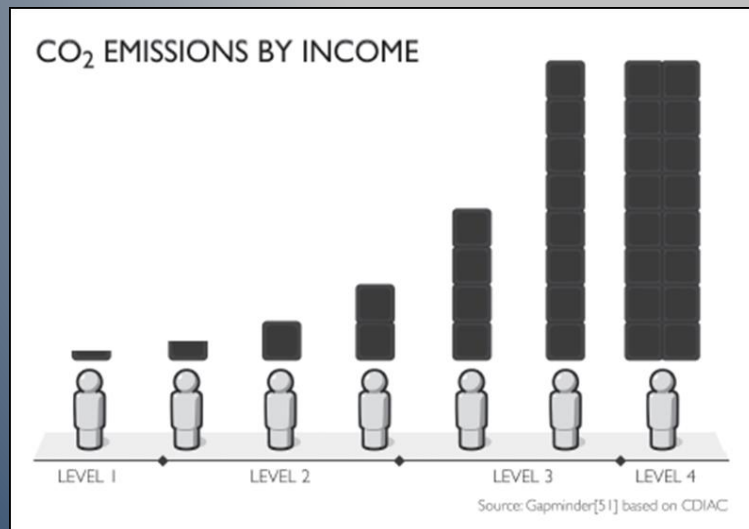
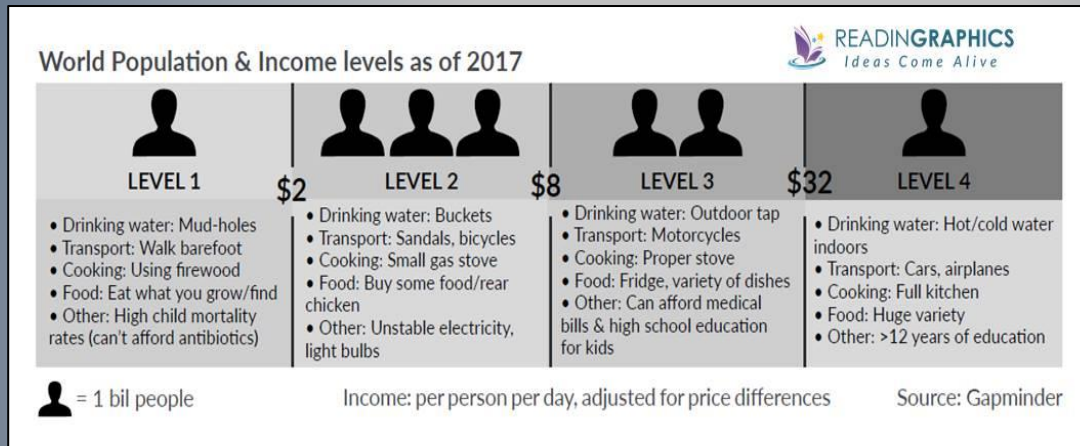
GLOBAL POPULATION AND ENERGY DEMAND HAVE AN APPROXIMATELY LINEAR RELATIONSHIP



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GLOBAL ENERGY DEMAND DRIVERS

POVERTY ALLEVIATION



ENERGY DEMAND HAS AN EXPONENTIAL RELATIONSHIP WITH DEGREE OF POVERTY ALLEVIATION – 50% OF EMISSIONS COME FROM THE RICHEST 14% OF THE POPULATION AND



Source: <https://www.gapminder.org/>, based on CDIAC (Carbon Dioxide Information Analysis Centre)

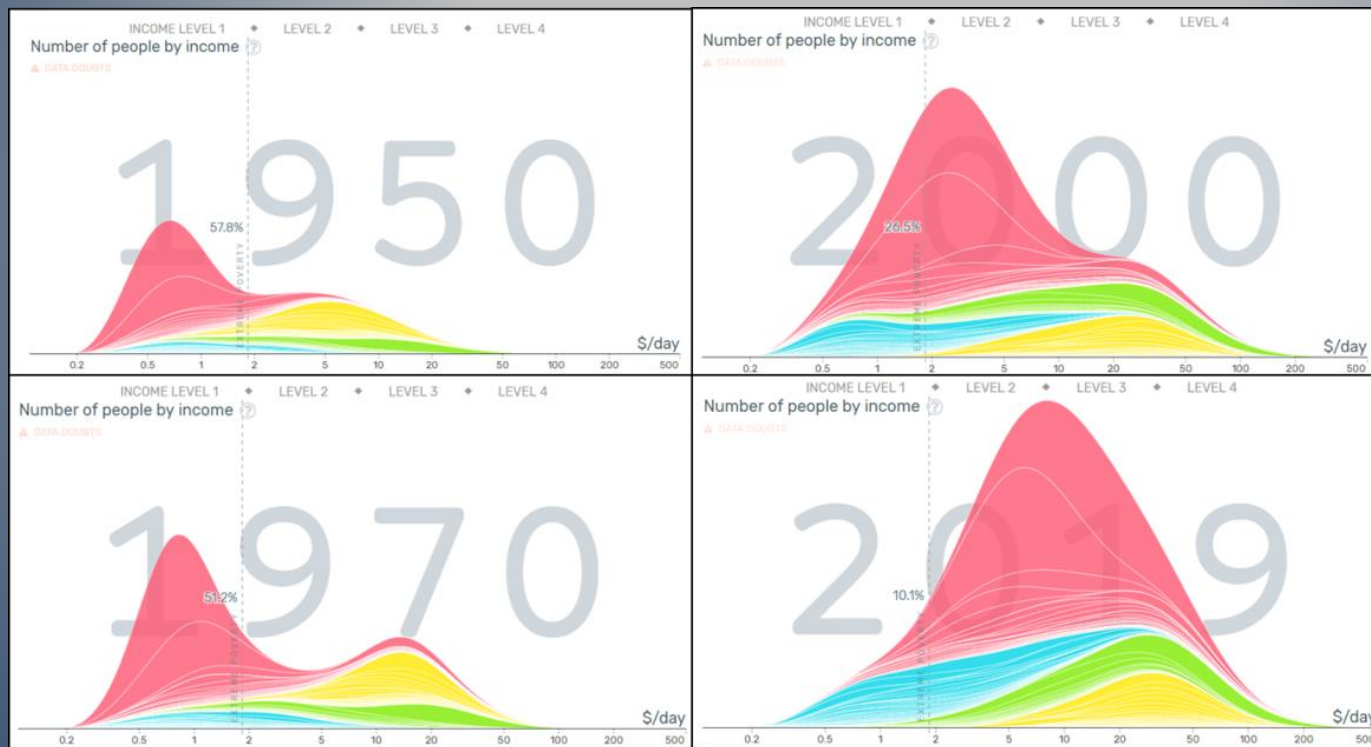


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GLOBAL ENERGY DEMAND DRIVERS

POVERTY ALLEVIATION

ENERGY DEMAND HAS AN EXPONENTIAL RELATIONSHIP WITH DEGREE OF POVERTY ALLEVIATION



THE GEOGRAPHY OF
FUTURE ENERGY
DEMAND IS
OBVIOUS



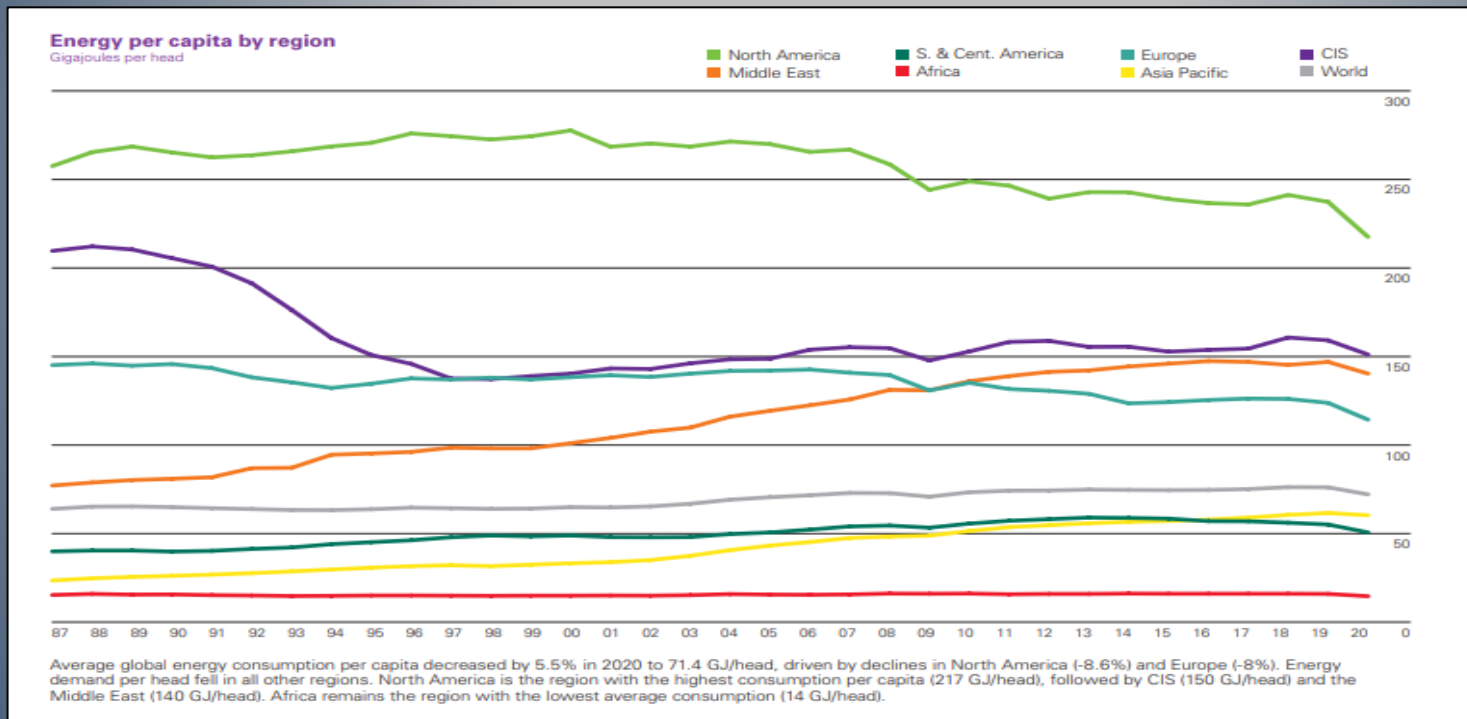
Source:- [https://www.gapminder.org/tools/#\\$chart-type=mountain](https://www.gapminder.org/tools/#$chart-type=mountain)



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GLOBAL ENERGY DEMAND DRIVERS

GLOBAL PER CAPITA CONSUMPTION OF ENERGY

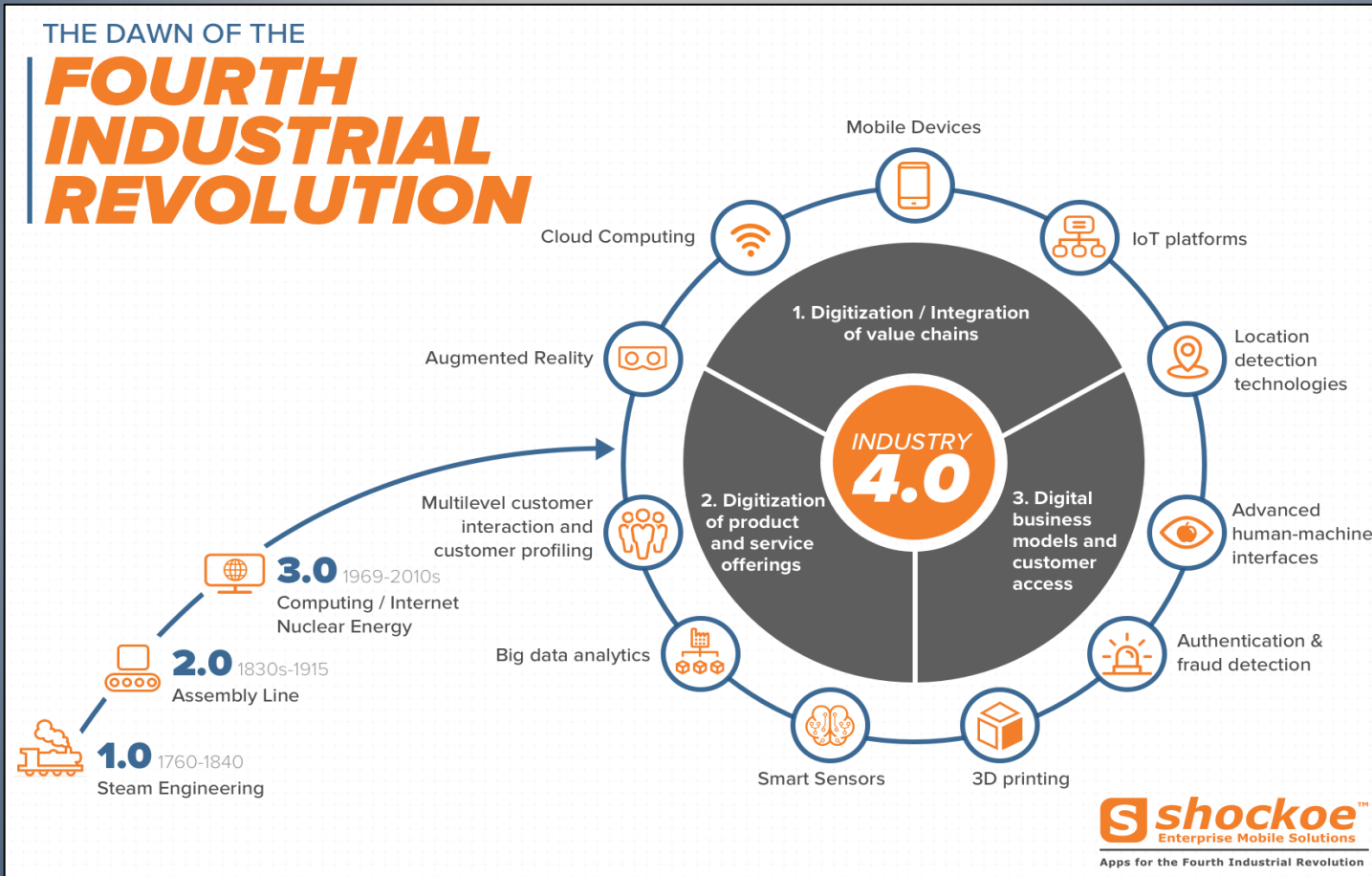


THIS IS IMPORTANT IN RESPECT OF WHICH COUNTRIES AND REGIONS ARE REQUIRED TO COMMIT TO REDUCING EMISSIONS MOST ACCORDING TO THE PARIS ACCORD AND SUBSEQUENT COP 21 COMMITMENTS



THE LIKELY FUTURE PATH OF THE COAL INDUSTRY IN SOUTH AFRICA

4IR



Source - Shokoe (2017)



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4IR



Technology drives the Fourth Industrial Revolution



Cloud Computing will likely consume more energy than Germany (the 6th largest energy consumer)



20 million electric vehicles to be sold by 2020 reducing the demand for oil and shifting it to static power sources



The impact of this revolution will increase the global energy demand

Source - Shokoe (2017)



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GLOBAL ENERGY DEMAND CONCLUSIONS

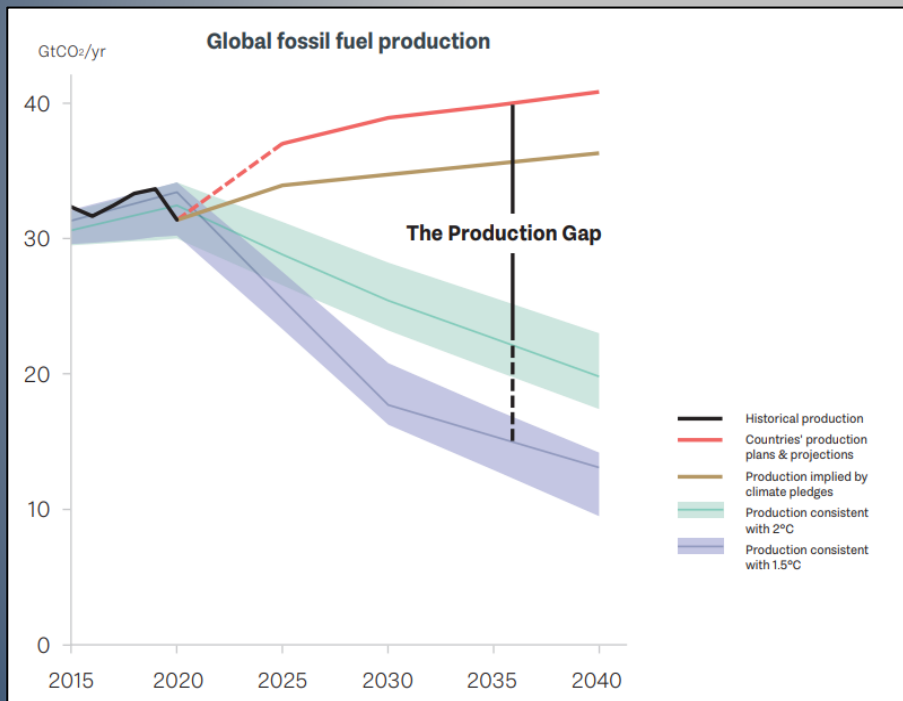
- POPULATIONS WILL GROW
- POVERTY ALLEVIATION IS ACCELERATING
- 4IR IS A REALITY
- ENERGY DEMAND WILL GROW
- PRIMARY ENERGY DEMAND WILL SHIFT FROM MOBILE TO STATIC PARTICULARLY IN TRANSPORTATION
- RENEWABLES WILL DEFINITELY INCREASE MARKET SHARE
- DEMAND WILL SHIFT EASTWARDS



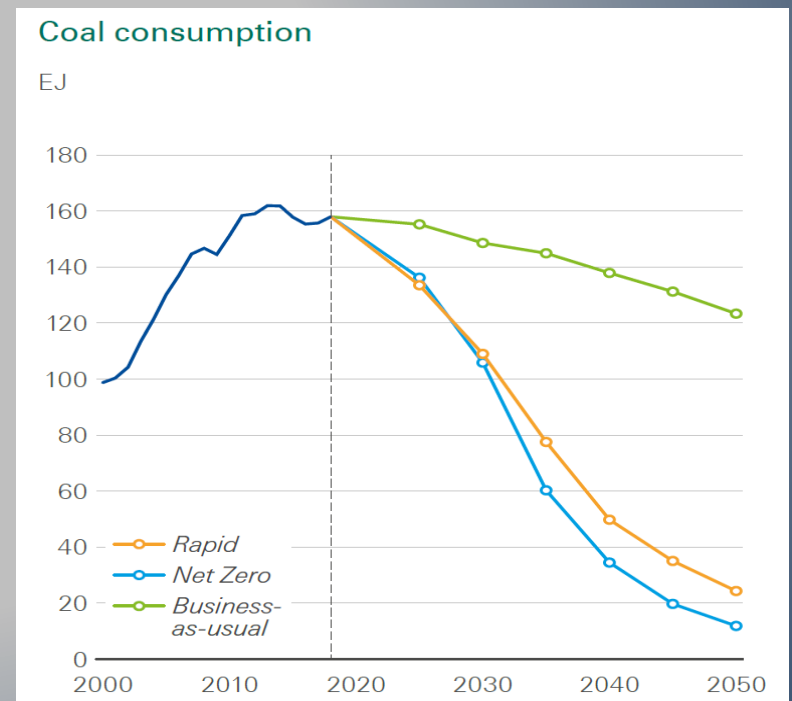
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GLOBAL COAL DEMAND

PARIS AGREEMENT OF 2015 - PARIS COMMITMENTS AND ACTUAL BEHAVIOUR ARE MATERIALLY DIFFERENT



Source:- The Production Gap Report: 2020 Special Report, SEI, IISD, ODI, E3G, and UNEP. (2020).

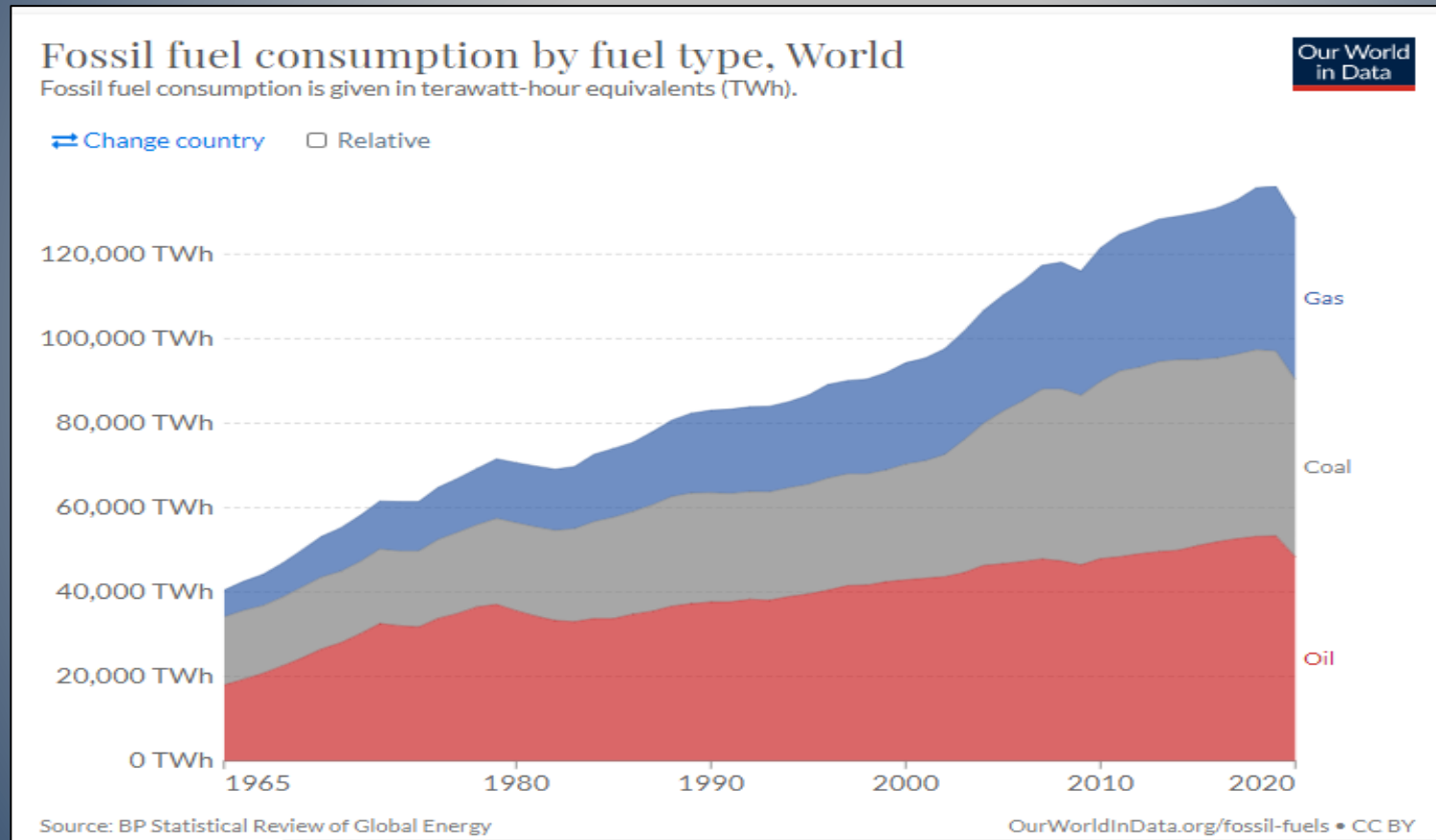


Source: BP WEO 2020



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GLOBAL COAL DEMAND

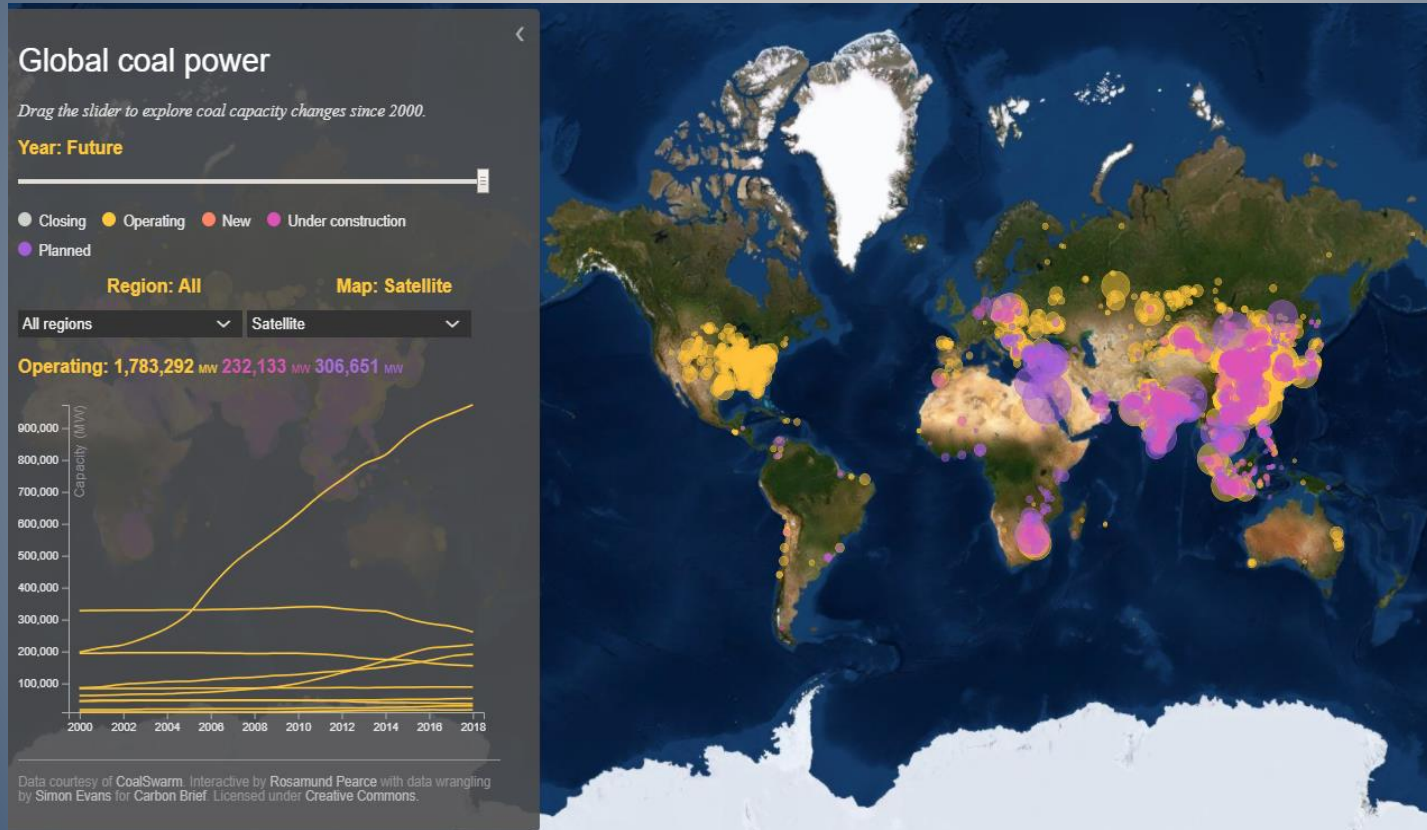


Source:- <https://ourworldindata.org/grapher/fossil-fuel-consumption-by-fuel-type>



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GLOBAL COAL DEMAND

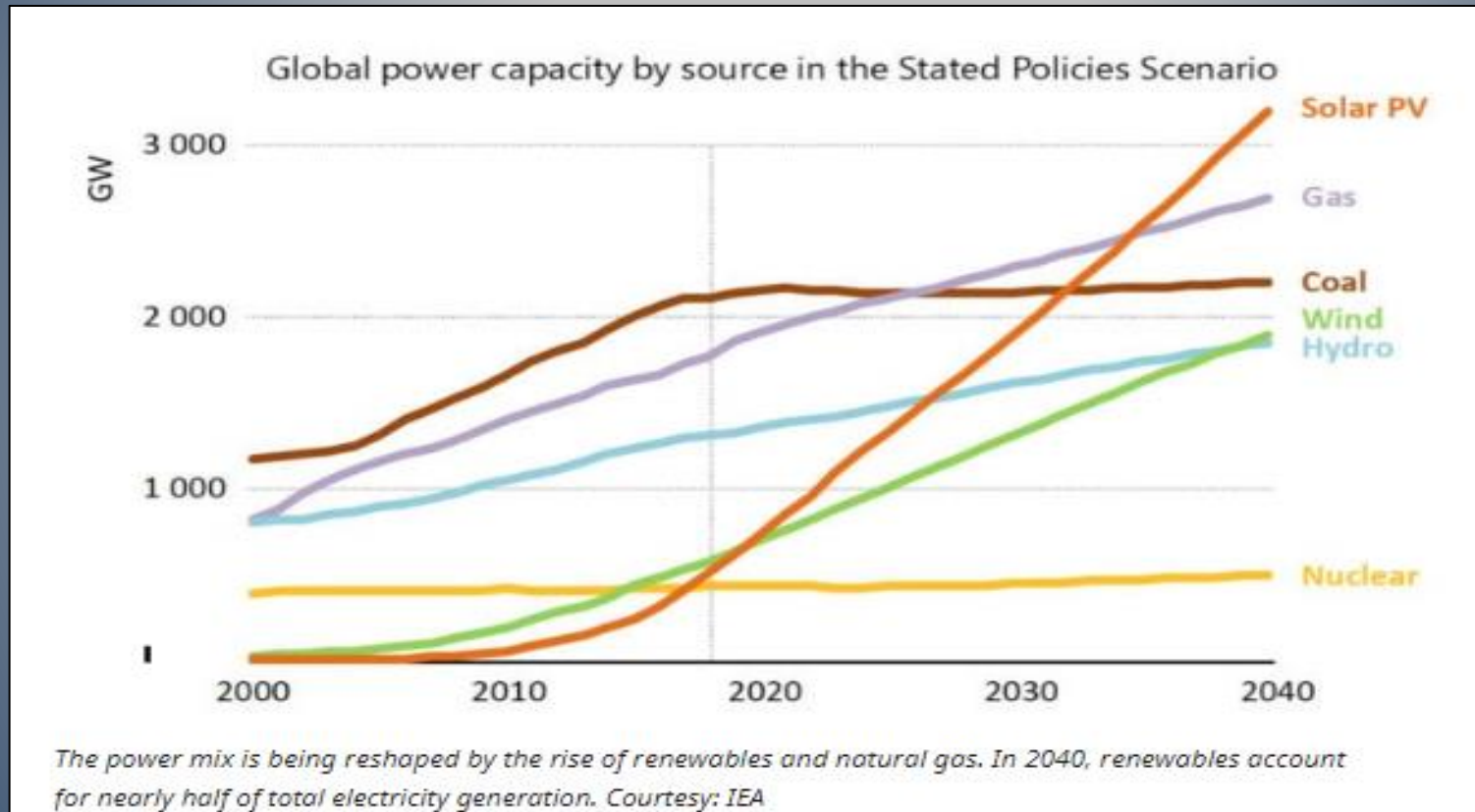


Source: <https://www.carbonbrief.org/mapped-worlds-coal-power-plants>



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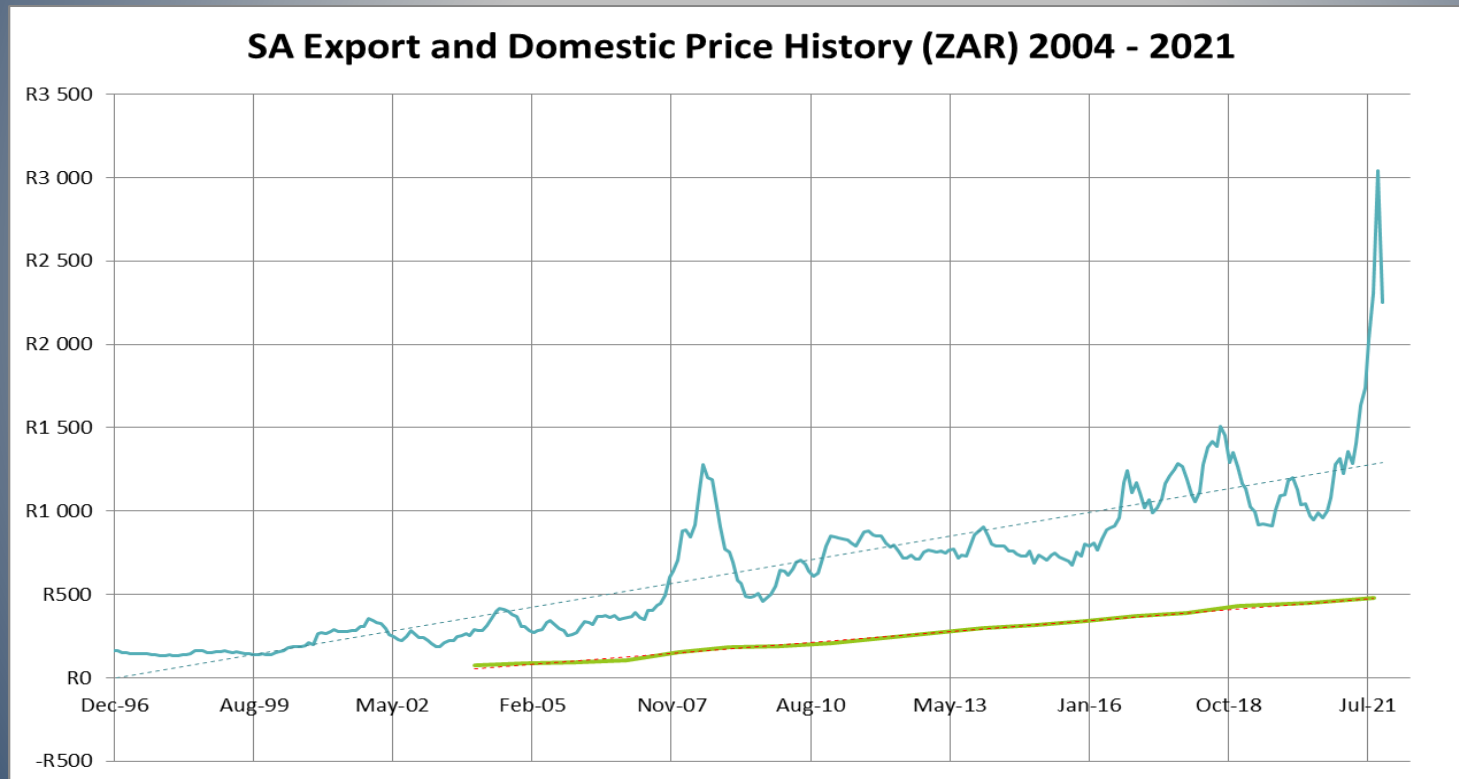
GLOBAL COAL DEMAND



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GLOBAL COAL DEMAND

COAL PRICES REMAIN STRONGEST EVER – DOES NOT SUGGEST DROPPING DEMAND

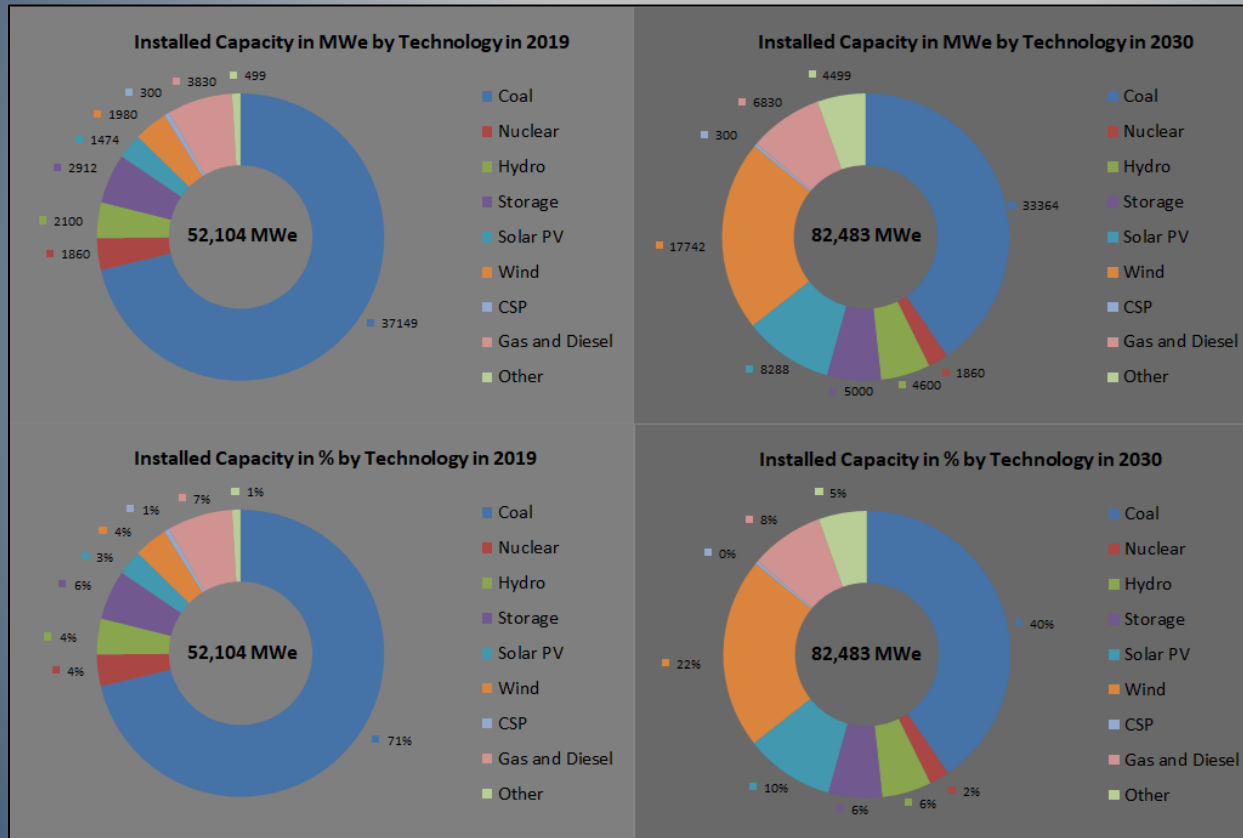


Source: SRK, SACR, Sourcemarkets , 2021



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COAL DEMAND - ESKOM

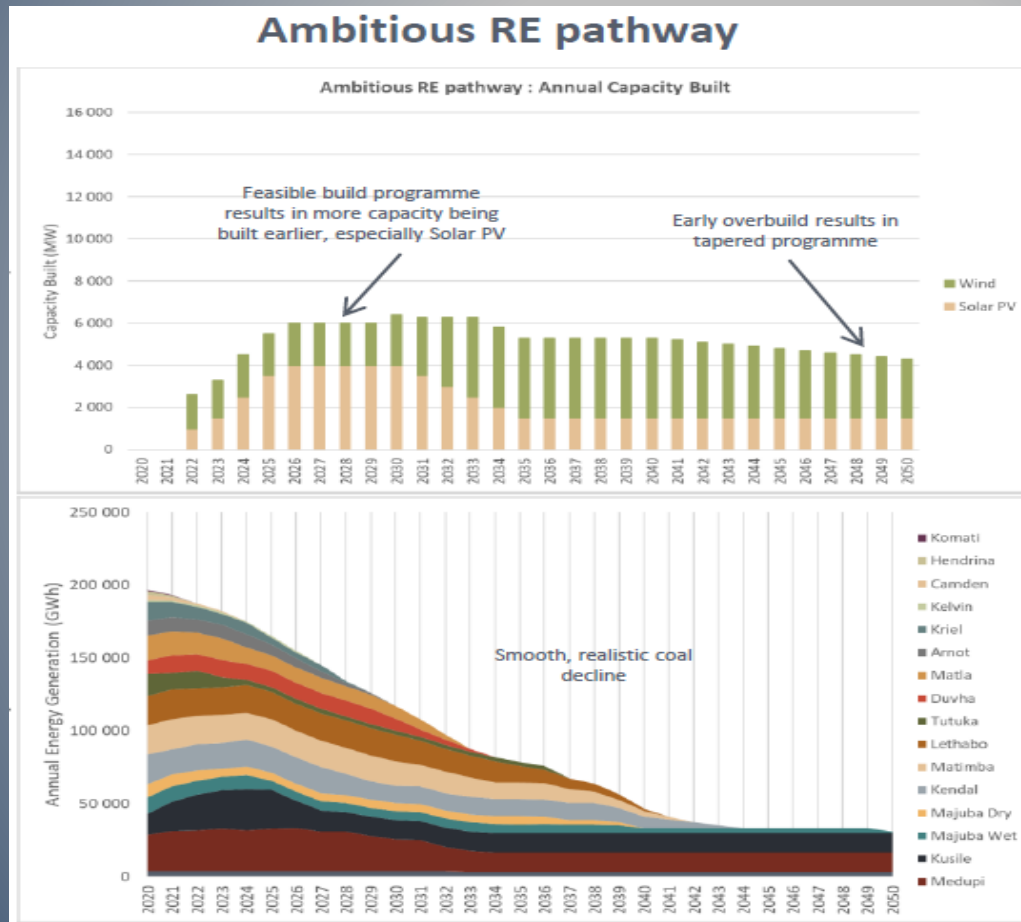


Source: IRP 2019



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ESKOM DECOMMISSIONING PROGRAM



EVEN UNDER THE AMBITIOUS RENEWABLE ENERGY PATHWAY ESKOM COAL DEMAND IS STRONG UNTIL 2040



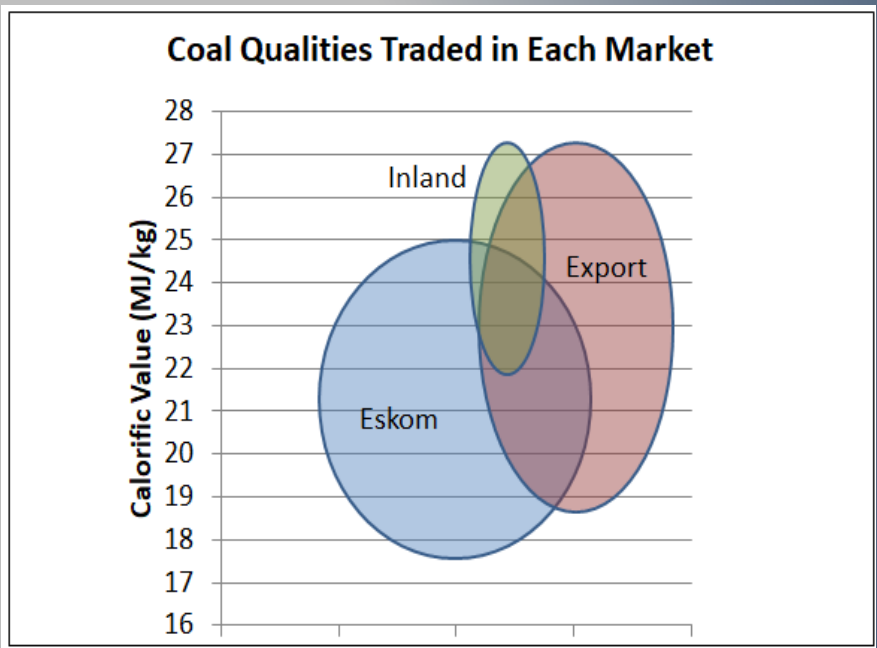
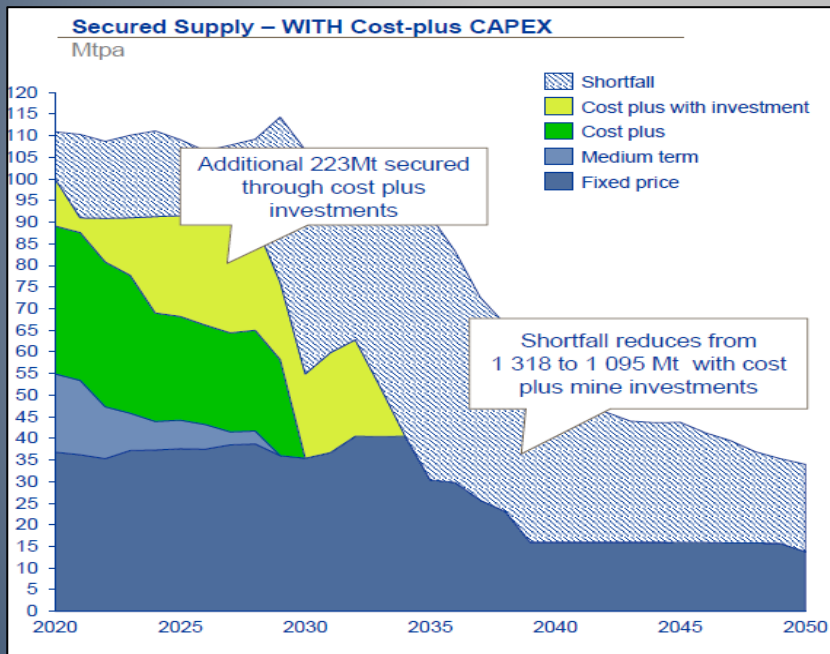
Source: MERIDEAN ECONOMICS 2020



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CONTRACTED COAL SUPPLY – ESKOM

ESKOM, DESPITE THEMSELVES STILL FACE A COAL SUPPLY CLIFF – IGNORE THE NOISE FOCUS ON FACTS. THEY ARE HOWEVER COMPETING WITH OTHER MARKETS FOR COAL



- ESKOM HAVE A LOWER THAN MODELLED EAF
- THEY HAVE NOT INVESTED IN ANY COST PLUS MINE SIB CAPITAL
- ESKOM NEEDS BETTER COAL ALL OF THE TIME TO NURSE THEIR PLANTS TO END OF LIFE
- THE LOW GRADE RAW RESOURCES DO NOT MEET ESKOMS NEEDS ANYMORE
- ESKOM WILL NEED TO PROCURE MORE PROCESSED COAL



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COAL DEMAND CONCLUSIONS

1. WHAT IS COMMITTED TO AT COP CONFERENCES AND WHAT HAPPENS ON THE GROUND ARE VERY DIFFERENT
2. COAL WILL LOSE ITS MARKET SHARE HOWEVER IN REALITY DEMAND IS LIKELY TO REMAIN FAIRLY CONSTANT TO 2040
3. CURRENT COAL PRICES SUPPORT THIS NOTION
4. THERE REMAINS ROBUST DEMAND FOR COAL FROM ESKOM DESPITE ESKOM BEING A VERY DIFFICULT CUSTOMER
5. ESKOM IS COMPETING WITH OTHERS FOR BETTER QUALITY COAL



THE LIKELY FUTURE PATH OF THE COAL INDUSTRY IN SOUTH AFRICA

COAL SUPPLY

COAL IS NO LONGER SEXY AND IS DEEMED TO BE AN UNATTRACTIVE INVESTMENT BY FUNDS



Source: MSA (2019)

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COAL SUPPLY

LACK OF INVESTMENT LEADS TO LACK OF SUPPLY

Investments in coal remain constrained

Supply growth limited

GLOBAL THERMAL EXPORT MINE CAPITAL EXPENDITURE VS NEW CASTLE COAL SPOT PRICE FOR 6,700 KCAL/KG



Source: Banpu based on Woodmac



Source: IEA (2019)



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SA COAL SUPPLY

- WITBANK AREA HAS LIMITED LIFE LEFT WITH FEW LARGE FUNDABLE PROJECTS REMAINING. IF THEY WERE REALLY ATTRACTIVE THEY WOULD HAVE BEEN MINED
- FUNDING IS DIFFICULT TO OBTAIN
- WATERBERG COAL IS UNLIKELY TO COME TO PASS BEYOND GROOTEGELUK – POOR QUALITY , NO WATER, POOR ECONOMICS. GROOTEGELUK IS A SUBSIDISED PROJECT NOT DRIVEN BY MARKET ECONOMICS. THERE ARE NO MORE COAL DUSTBINS IN THE FORM OF POWER STATIONS PLANNED
- FREE STATE RESOURCES ARE TOO POOR QUALITY TO BE ECONOMICAL
- LIFE OF MINE FOR THE GOOD RESOURCES OF MOST BIG PLAYERS END AROUND 2028 – 2035
- IF PRICES REMAIN ROBUST, LIFEX AND GREENFIELD PROJECTS MAY MATERIALISE BUT SA RESOURCES ARE NOT PARTICULARLY ATTRACTIVE
- AVERAGE STRIP RATIO FOR ESKOM, (BASED UPON COST ESTIMATES) IS NOW 4.0 – 5.2
- AVERAGE STRIP RATIO FOR EXPORT, (BASED UPON COST ESTIMATES) IS NOW 5,5 – 6,5
- LIFEX PROJECTS ARE NOT LIKELY TO IMPROVE THOSE
- COAL PRICES WILL DRIVE ECONOMICS
- THERE WILL BE A REGIONAL SHIFT IN SUPPLIERS
- LOGISTICS WILL BECOME MORE IMPORTANT THAN ON SITE OPERATIONS
- UNFORTUNATELY TFR WILL PLAY A BIGGER ROLE IN THE FUTURE OF COAL



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SA COAL SUPPLY

NET ENERGY AND ZIVUMA HAVE DONE EXTENSIVE WORK EVALUATING THE FUTURE REGIONAL COAL AND ENERGY MARKETS CONSIDERING:

- THE ROLE OF COAL IN THE ENERGY FUTURE
- REMAINING NATIONAL AND REGIONAL RESOURCES
- OPERATING MINES AND THEIR LOM STATEMENTS
- NEW POTENTIAL PROJECTS AND THEIR LIKELIHOOD OF SUCCESS AND PRODUCT MIX.
- ECONOMICS OF NEW PROJECTS AND THEIR LIKELY ABILITY TO BE FUNDED

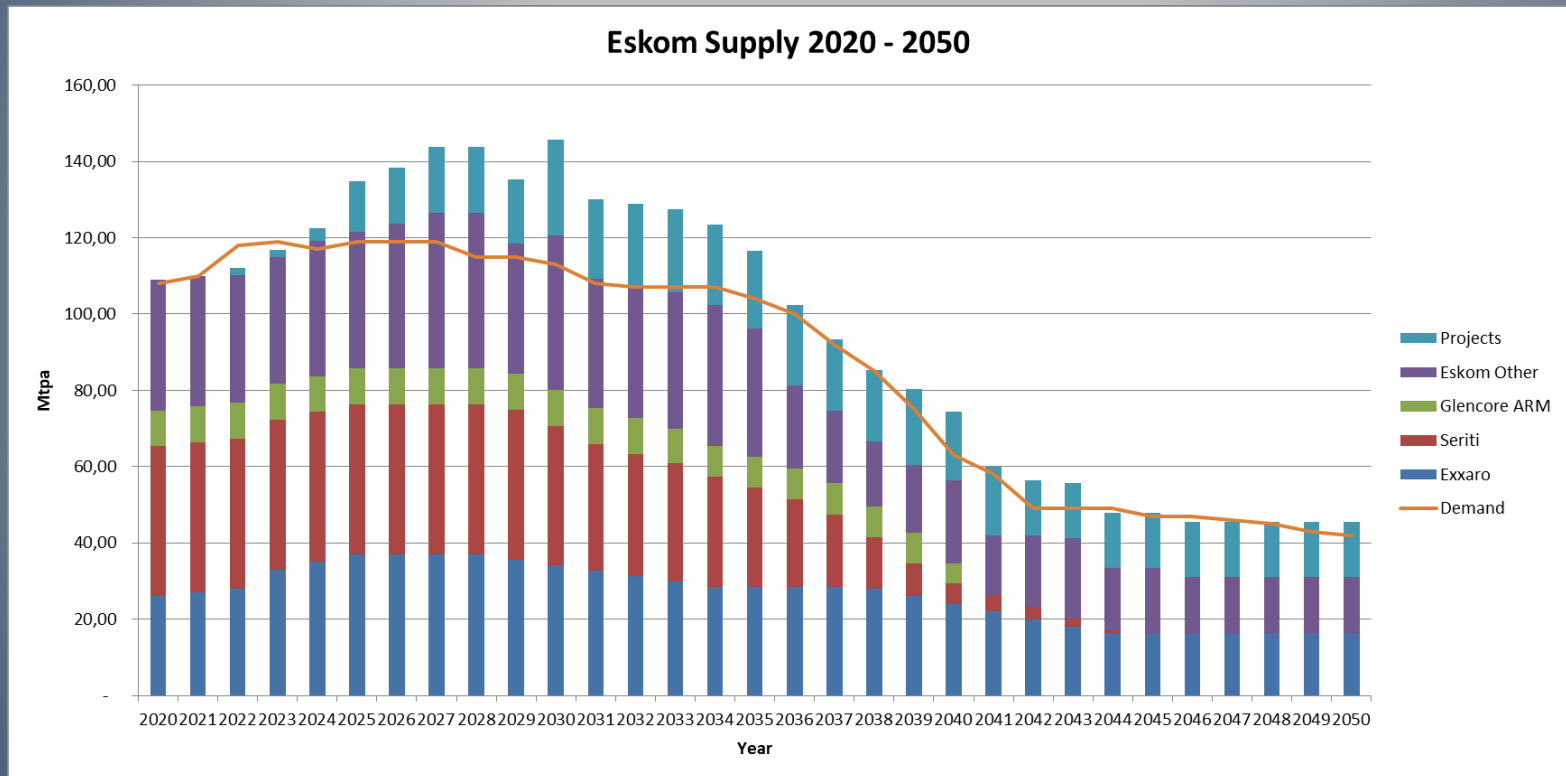
THE FOLLOWING SLIDES PRESENT OUR CONSOLIDATED OUTLOOK FOR COAL

IT SHOULD BE NOTED THAT THESE PROJECTIONS ARE BASED UPON A LONG TERM AVERAGE EXPORT PRICE RANGE OF AROUND \$90/TON - \$105/TON, (UP FROM A PROJECTION OF \$85/TON IN 2020)



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ESKOM SUPPLY AND DEMAND OUTLOOK

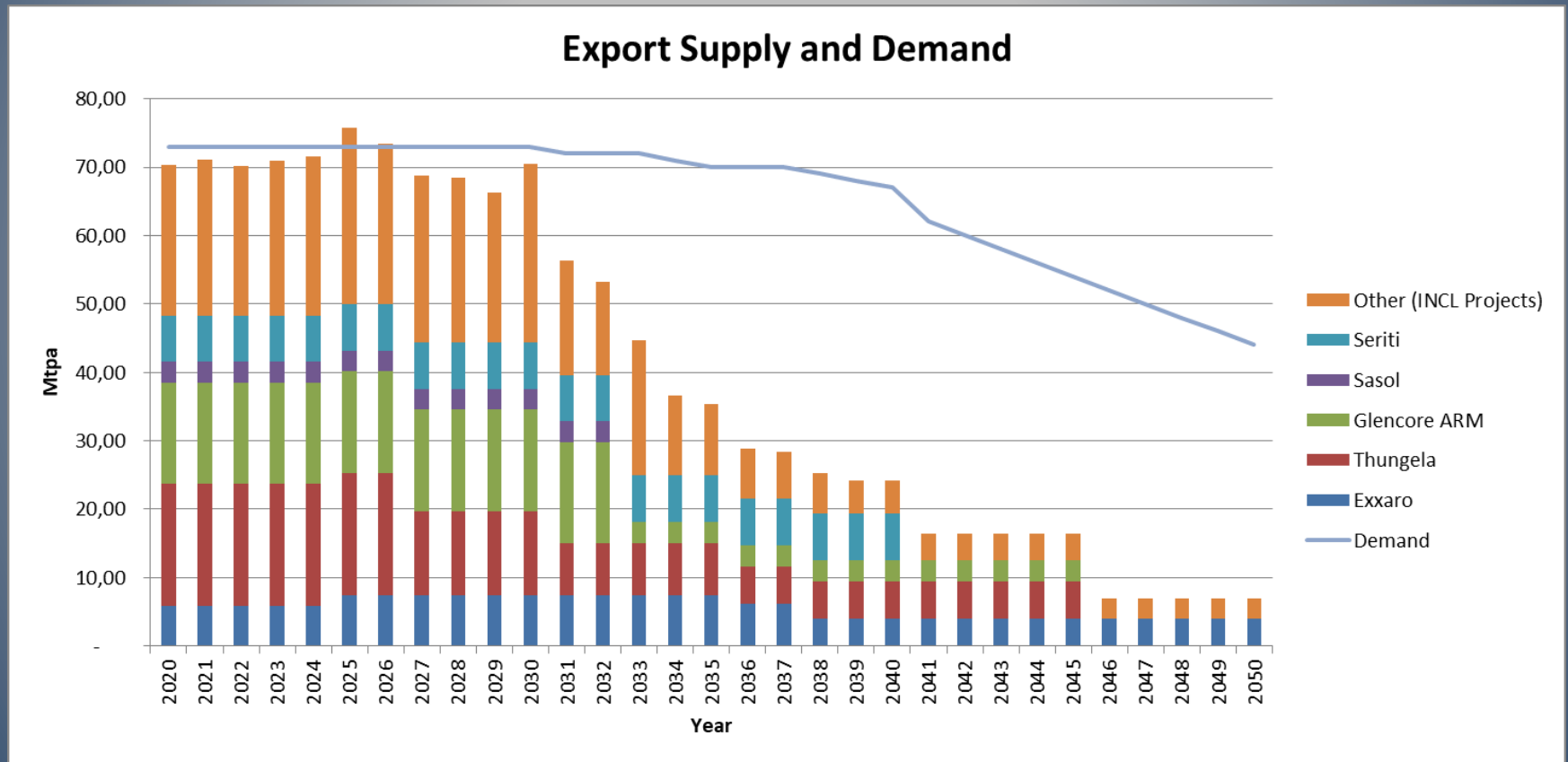


THERE IS SUFFICIENT COAL, HOWEVER ESKOM REMAINS A DIFFICULT CUSTOMER THAT CANNOT BE RELIED UPON, AND AS AN ANCHOR CLIENT IS LARGELY UNFUNDABLE AS A GUARANTOR FOR PROJECTS



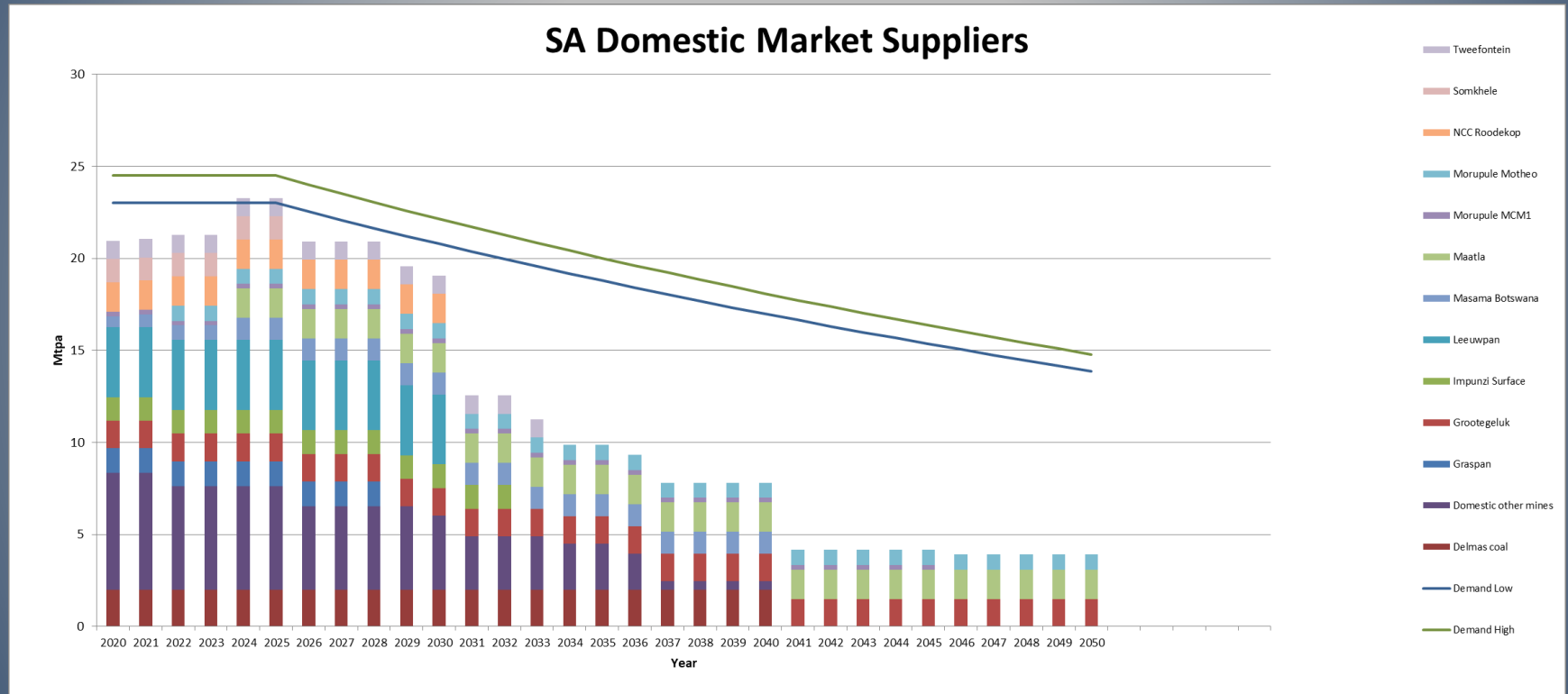
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EXPORT SUPPLY AND DEMAND OUTLOOK



THE LIKELY FUTURE PATH OF THE COAL INDUSTRY IN SOUTH AFRICA

DOMESTIC SUPPLY AND DEMAND OUTLOOK



THE LIKELY FUTURE PATH OF THE COAL INDUSTRY IN SOUTH AFRICA

A NOTE ON THE JUST ENERGY TRANSITION (JET)

- THE JET IS NOT A THREAT TO THE COAL INDUSTRY
- IT CAN BE VIEWED AS HIGHLY BENEFICIAL FORM OF PRODUCTIVE REHABILITATION , SOMETHING THAT PARTICULARLY THE MINING INDUSTRY HAS HISTORICALLY BEEN VERY SHORTSIGHTED ABOUT
- IT ADDRESSES THE SOCIO ECONOMIC FUTURE OF THIS REGION – BE GRATEFUL AND UPSKILL
- IT SEEKS TO MAKE BEST USE OF EXISTING ENERGY INFRASTRUCTURE FOR PRODUCTIVE USE
- AS SOUTH AFRICAN’S WE SHOULD CELEBRATE EVERY MEGAWATT OF ANY SOURCE BEING PUT ONTO THE GRID
- AS COAL PEOPLE WE SHOULD STOP SEEING THE INDUSTRY AS A VICTIM AND START TO INNOVATE TO UTILISE THE RESOURCES IN A MORE INTELLIGENT AND EFFICIENT MANNER



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THE FUTURE OF COAL – CONCLUSIONS

- GLOBAL AND REGIONAL ENERGY DEMAND IS SET TO RISE
- NOT ALL OF THE ENERGY DEMAND CAN BE TAKEN UP BY RENEWABLES
- THERE IS A ROBUST FUTURE FOR COAL FOR THE NEXT 20 YEARS
- SUPPLY IS BY FAR A BIGGER CONCERN THAN DEMAND
- COAL PROCESSING WILL PLAY A BIGGER ROLE GOING FORWARD AS ESKOM SEEKS BETTER COAL, IN SITU QUALITIES DECLINE AND LOGISTICS PLAYS A BIGGER ROLE
- THERE WILL BE A MATERIAL REGIONAL SHIFT FROM THE CURRENT COAL HUBS
- FUNDING IS A CONSTRAINT BUT WILL FAVOUR SMALLER, LOW STRIP RATIO EASY TO MINE OPTIONS
- THE JET IS NOT A THREAT, IT IS AN OPPORTUNITY FOR SKILLED PEOPLE

