

Advancing the Just Transition in SA

Closing the gap between climate change commitments and our emissions profile

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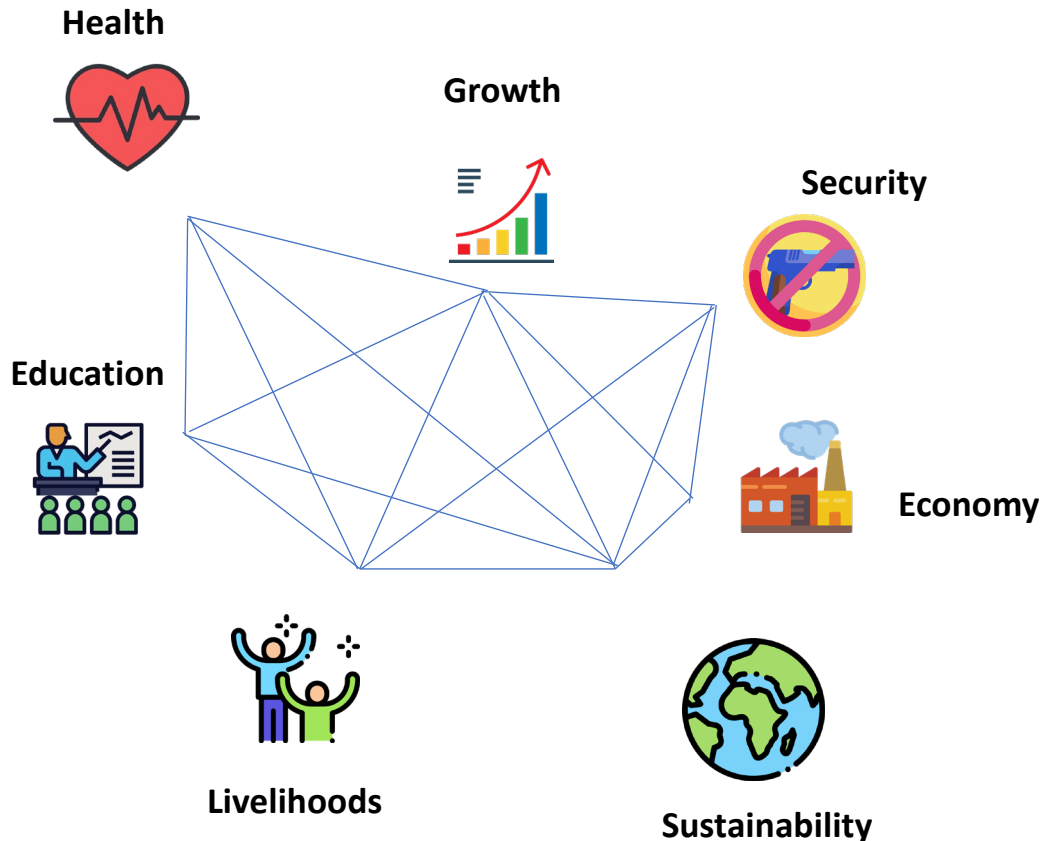
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What I'll be talking about today

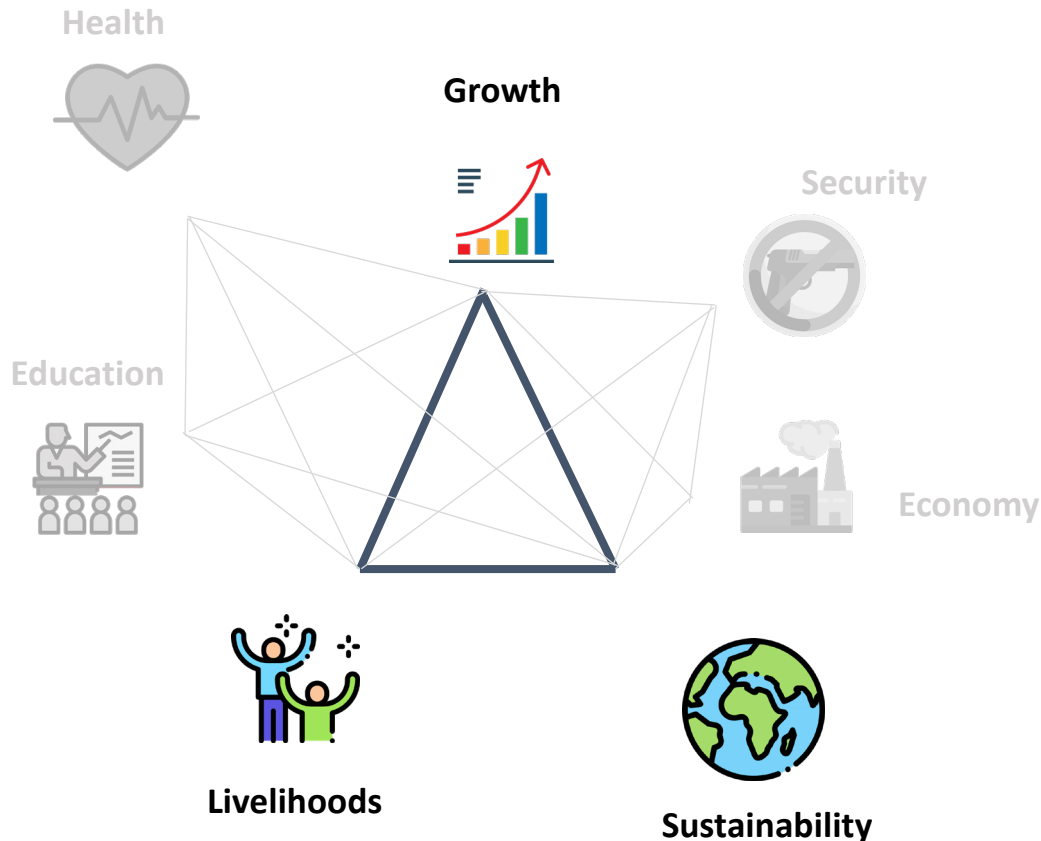
- Some context setting around wicked problems
- The connection between economic growth and power
- SA's power generation and emissions profile
- Our commitments to reducing CO₂ emissions
- The gap between our intentions and our aspirations
- Efforts to close this gap by government
- What the industry can do to help through clean coal technologies
- Wrapping it all up

We live in a world where all problems are interconnected



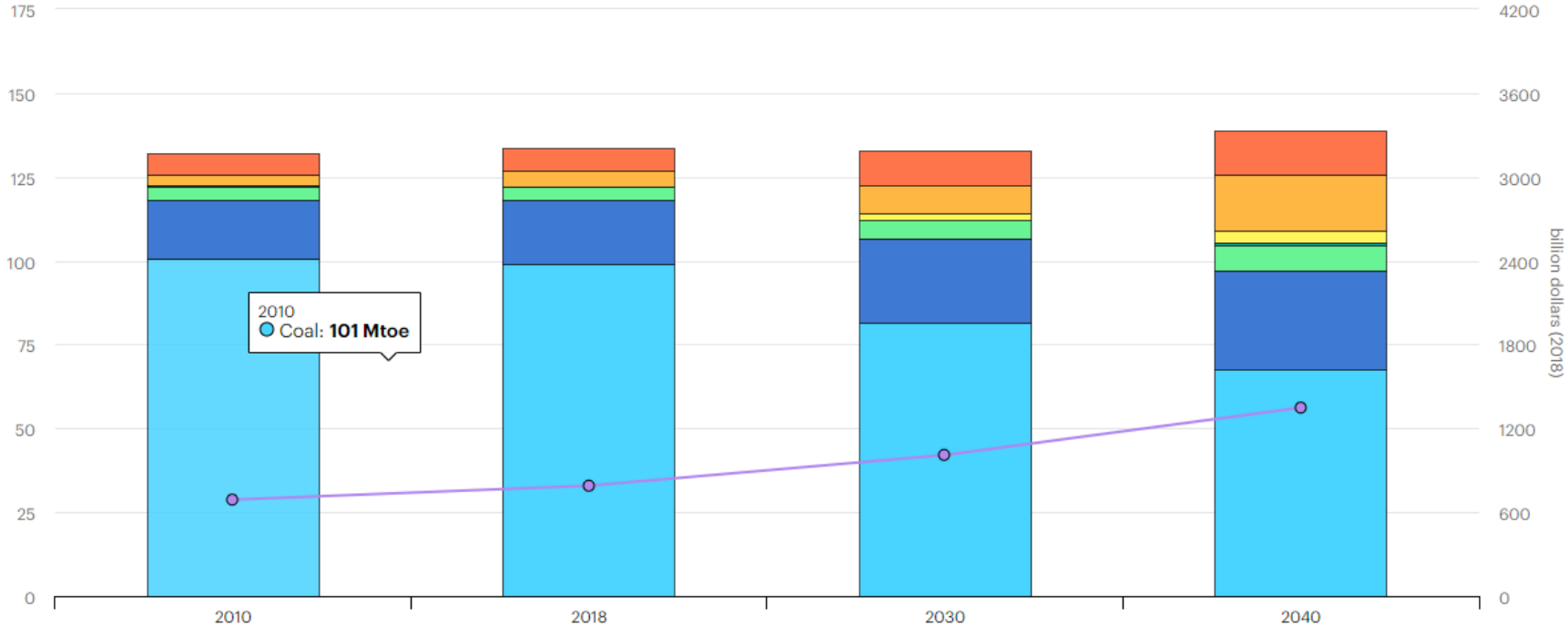
- Just as in natural ecosystems, every part of modern society is connected
- Point solutions help, but only systemic solutions really have long-lasting impact
- Real innovation therefore shifts systems, and not specific, individual issues

The Growth-Livelihoods-Sustainability triad is complex



- Economic growth can be measured by the energy intensity of an economy - growth is enabled by power, and constrained by the lack thereof
- Livelihoods are built through value creation, and value is created through building viable businesses
- Sustainability is enabled when environmental impacts are balanced with commercial imperatives - and transparently calculated and accounted for

We know that SA has committed to using our abundant coal resources to meet the needs of our citizens

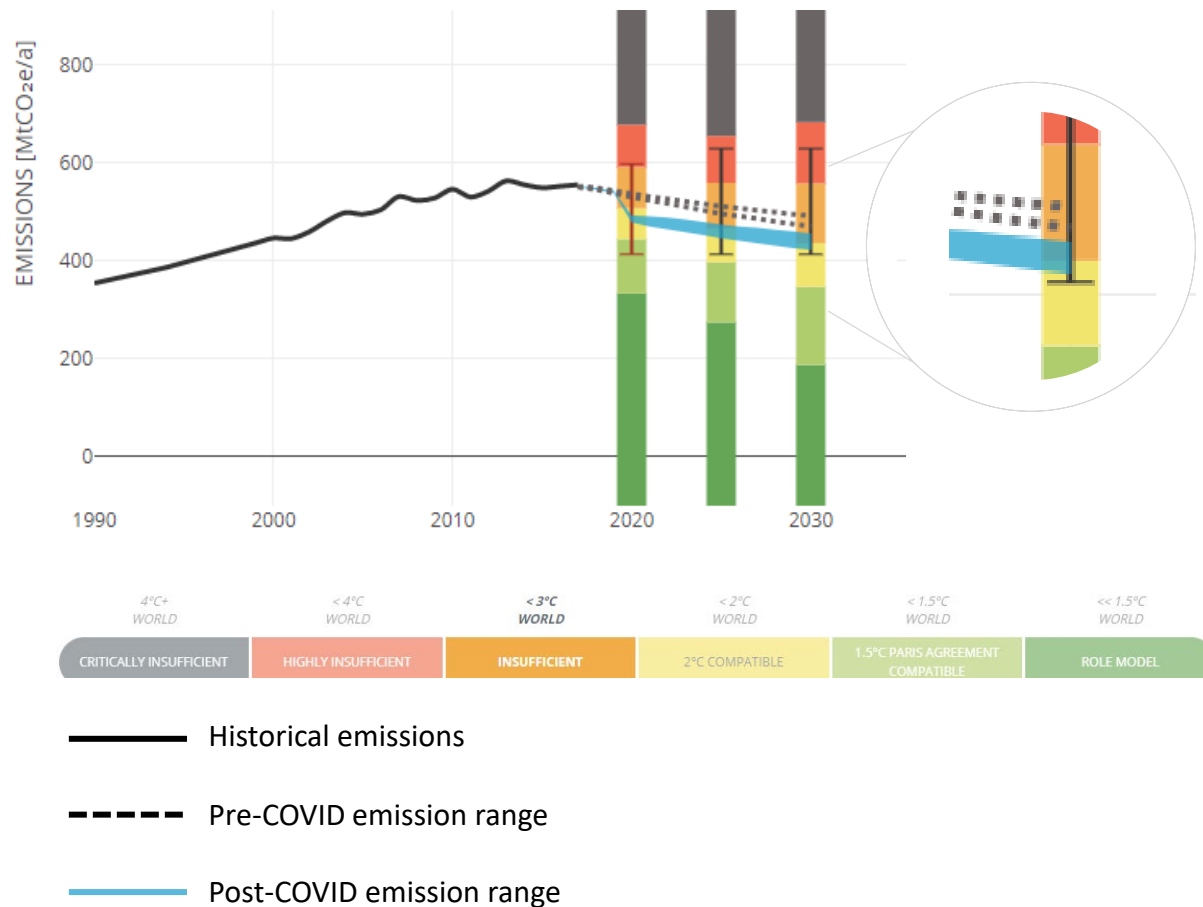


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Coal Oil Gas Hydro Solar PV Other low-carbon Bioenergy GDP (right axis)



Which in turn is going to make it rather difficult to meet our emissions targets as a country



- At best, SA is going to be at the upper end of a 2°C impact range
- More likely we will be in the 'insufficient' range that will lead to a >3°C global climate
- This assumes that **everything** goes right in terms of SA's attempts to reduce carbon emissions
- Even in the best case scenario - **we have a gap of around 80MtCO₂e per year**

What is government doing? Will it succeed?



2,500 MW of new hydro capacity being built by 2030



6,814 MW of new PV capacity being built between 2019 and 2030



15,782 MW of new wind capacity being built between 2019 and 2030



300 MW of Concentrated Solar Power to be built in 2019



Energy Efficiency programmes (mainly around buildings)



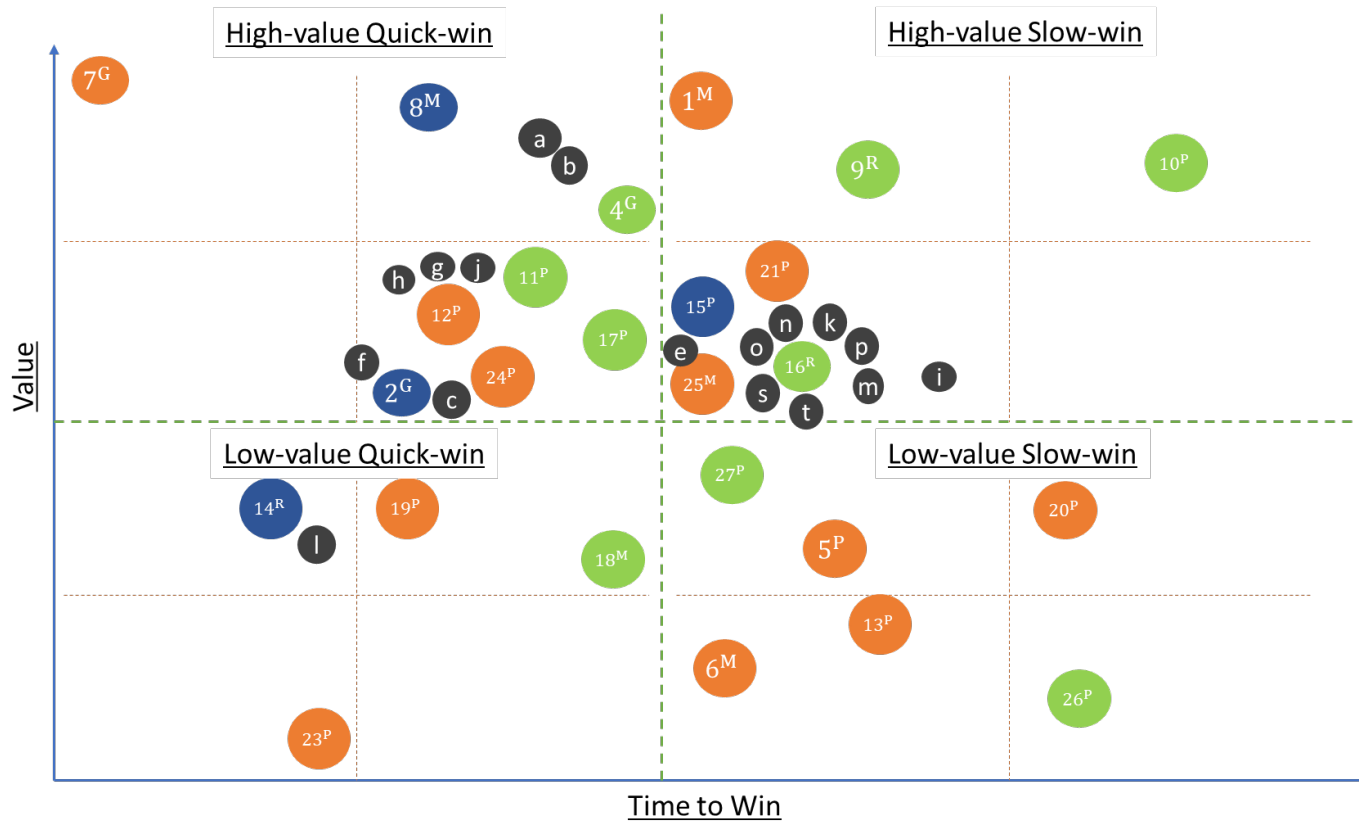
Cleaner mobility



Tax incentives / tax policy

- Government has put in place a wish-list for changing the energy mix...
- ...but has not demonstrated a track record of following through on that
- While a positive externality arising from COVID-19 is our net reduction in emissions - this also resulted in a far higher risk investment environment for SA, given the state of government finances
- In addition, social pressures may shift government more towards 'livelihoods' and away from 'sustainability'

There are a large number of opportunities that the sector can explore to close this 80Mt gap



Extraction

- Hot hole management
- Mapping of underground Bord and Pillars

Waste Management and Use

- Valorisation of waste
- Heavy metal filtering
- Circulation fluidised combustion
- Heap leaching

Coal Processing

- Dry Processing
- Coal ore scrubbing
- Optical sorting

General

- Adoption of digital tech e.g. big data / ML
- Entrepreneur / technology accelerators

Generation

- In-situ gasification
- Waste heat recovery

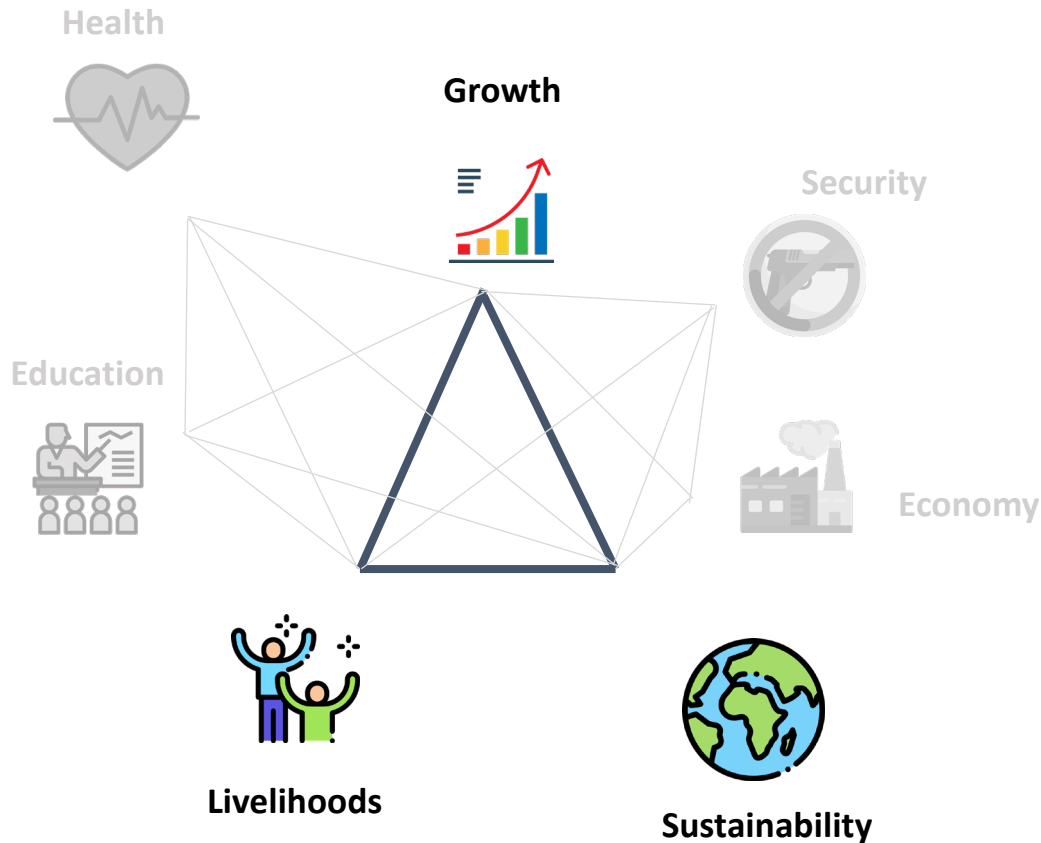
Emission Control

- Carbon Capture and Storage (CCS)
- Oxy-fuel combustion
- Methane Capture
- High Efficiency, low emissions (HELE)

Rehabilitation

- Biotechnology for Rehabilitation
- Soil Regeneration
- Solar farm civils

In summary...



- Where do we operate in the growth-livelihoods-sustainability triangle; this is a choice we can make
- There is a real gap between what we know will happen, and what we want to happen
- Our aspirations are not just arbitrary targets, but represent the best opportunity for a world in future
- The coal industry can be an active participant in that process, in a way that makes commercial sense