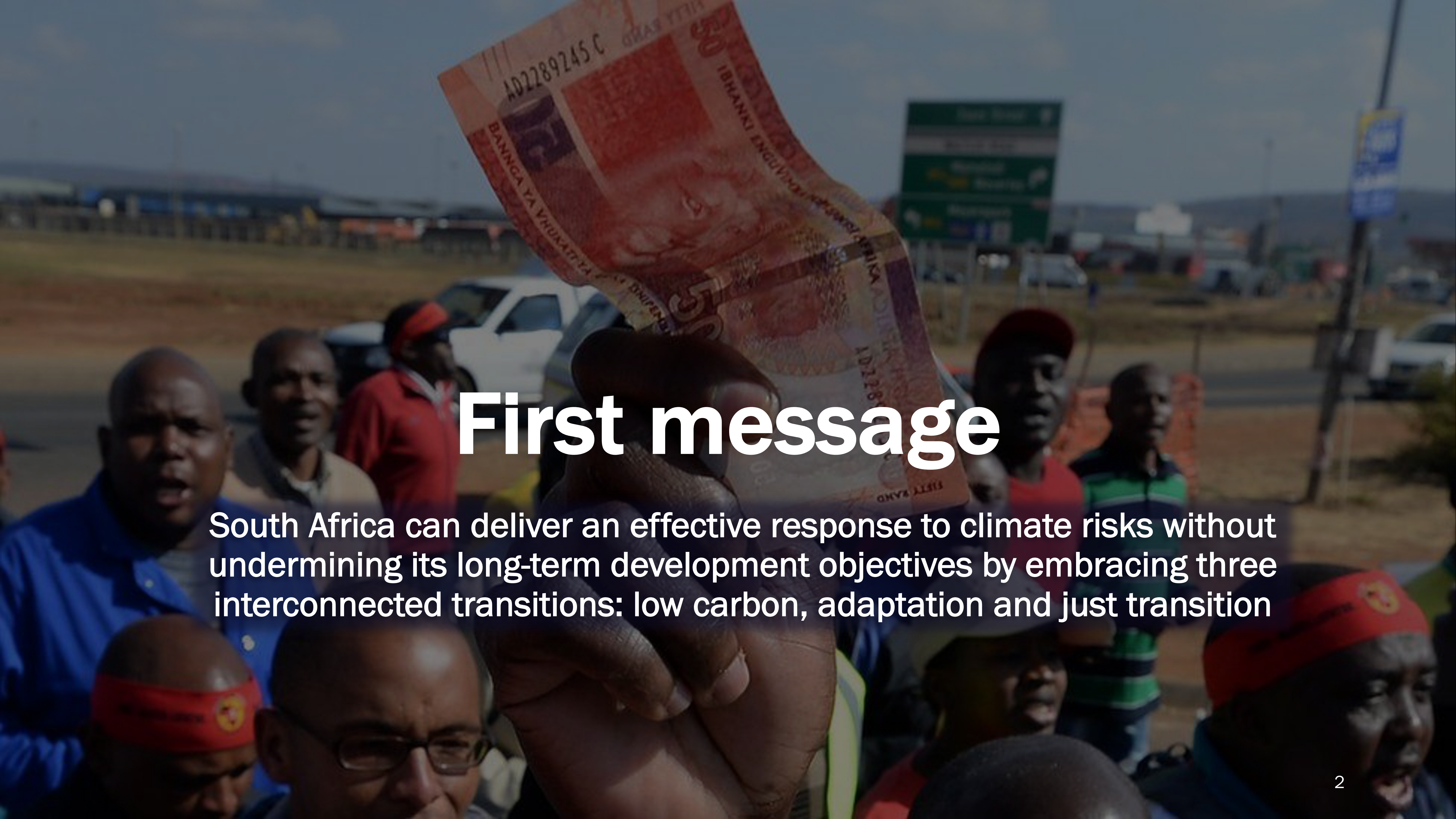
World Bank Group

COUNTRY CLIMATE AND DEVELOPMENT REPORT

South Africa

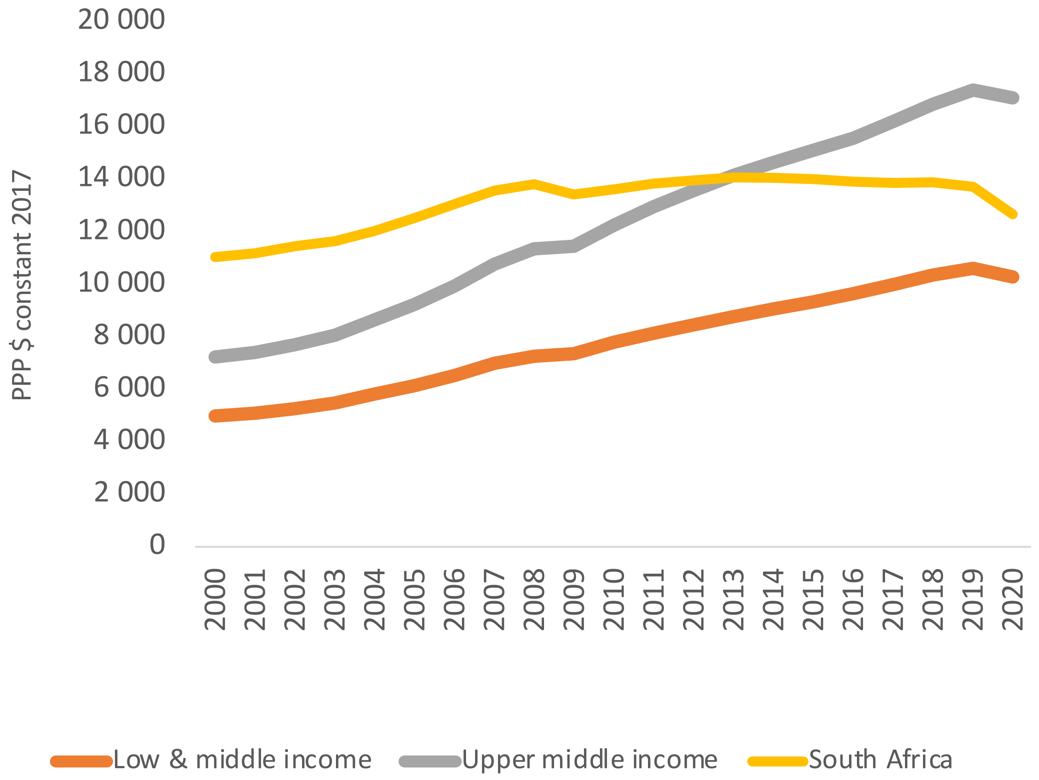


First message

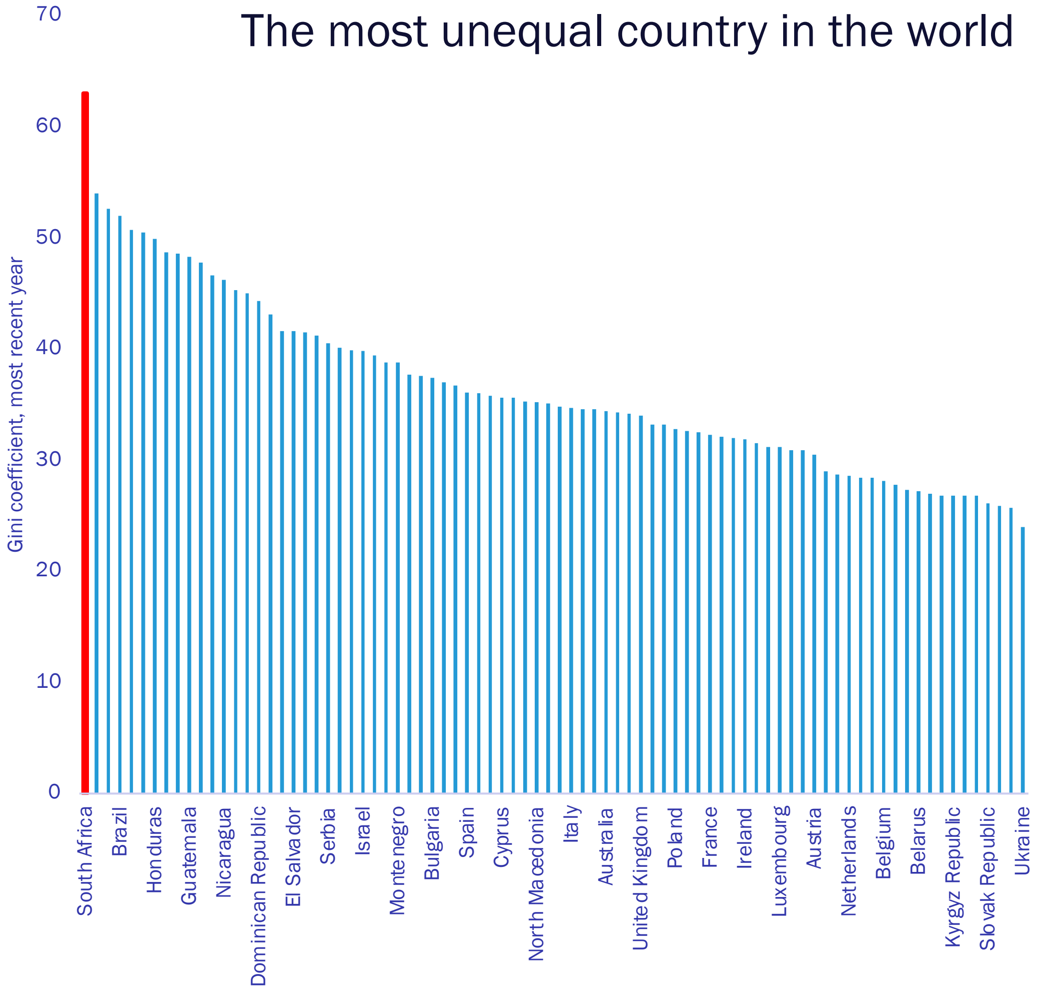
South Africa can deliver an effective response to climate risks without undermining its long-term development objectives by embracing three interconnected transitions: low carbon, adaptation and just transition

Economic challenge: An ailing economy lagging its peers over the past decade

A 5.5 % contraction of the income per capita since the mid 2010s



The most unequal country in the world



Mitigation challenge: loadshedding and coal dependance

- Loadshedding has devastating effects on the economy : it costs, by some estimates, over $200 millions per day.
- Environmental and health challenges: an estimated 20,000 premature death due to excessive air pollution every year. Coal related activities also pollute water and soil, with important health impacts, and water and food security of the country
- Reduced competitiveness as global consumers and investors are turning away from high-carbon products

Country	Carbon intensity (tCO_2/million $GDP)	Emissions per capita (tCO_2 per capita)	Share of global emissions (%)
South Africa	1,329.2	7.5	1.2
Russia	1,124.1	11.8	5.4
Vietnam	1,098.5	3.5	1.0
India	939.6	1.8	7.3
China	764.3	7.6	27.4
Indonesia	583.6	2.3	2.2
United States	254.8	14.7	13.0
Brazil	237.9	2.1	2.3
OECD	236.9	8.5	31.4
Germany	199.2	7.9	1.6
France	120.7	4.5	0.9
United Kingdom	116.7	5.2	1.0
World average	413.5	4.5	100

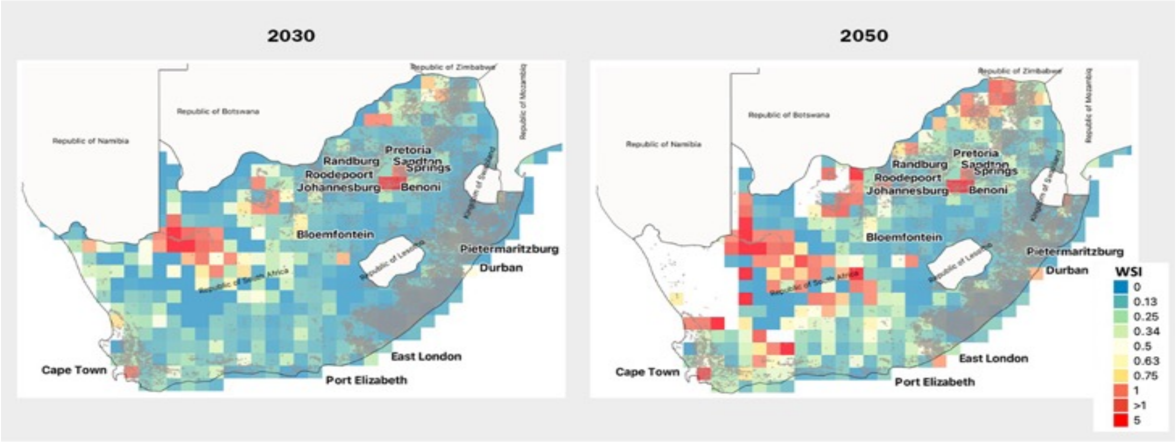
Adaptation challenge: the future is already the present

The country has been warming at twice the global average rate and, in 2021, declared its third national state of disaster for drought in the last four years.

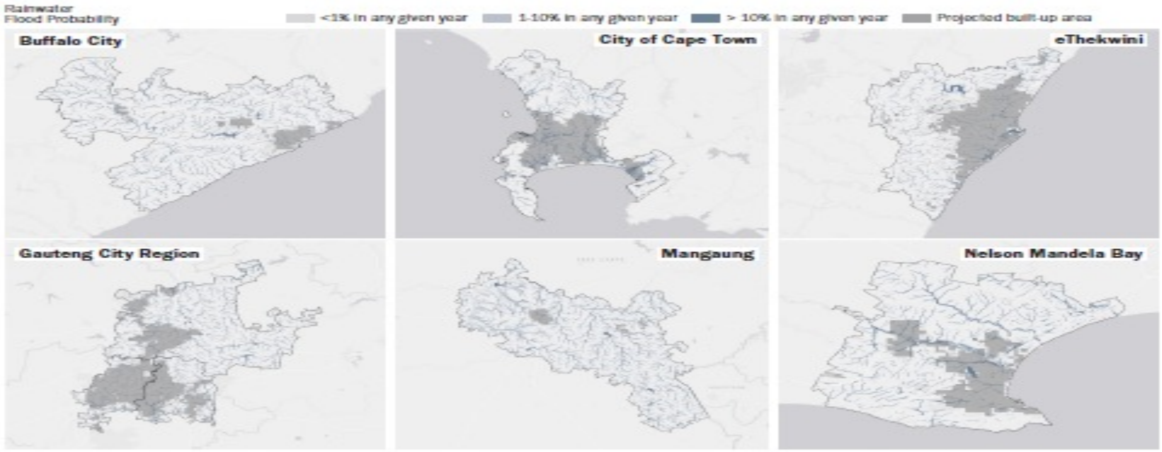
Extreme weather events and broader water scarcity have already caused significant damage (Cape Town Day Zero, Durban flooding).

Looking ahead, the impact of climate events is expected to be more pronounced in certain areas and sectors in South Africa.

Water stress on the rise



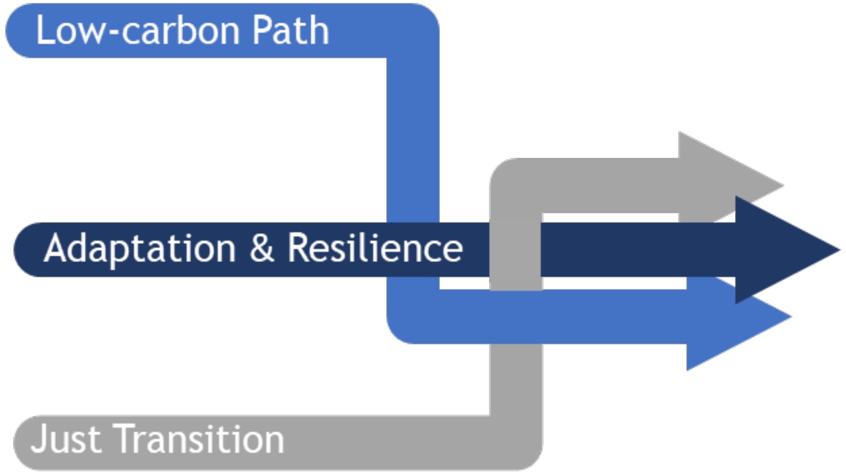
Major Flooding Risks in urban centers, 2050



Three interconnected transitions

South Africa Today

- Carbon intensive economy with frequent loadshedding
- High vulnerability to climate change
- Economy driven by low productivity public sector
- High inequality, poverty, and unemployment
- Decreasing per capita income
- Strong legal and strategic foundations for a just climate transition



South Africa 2050

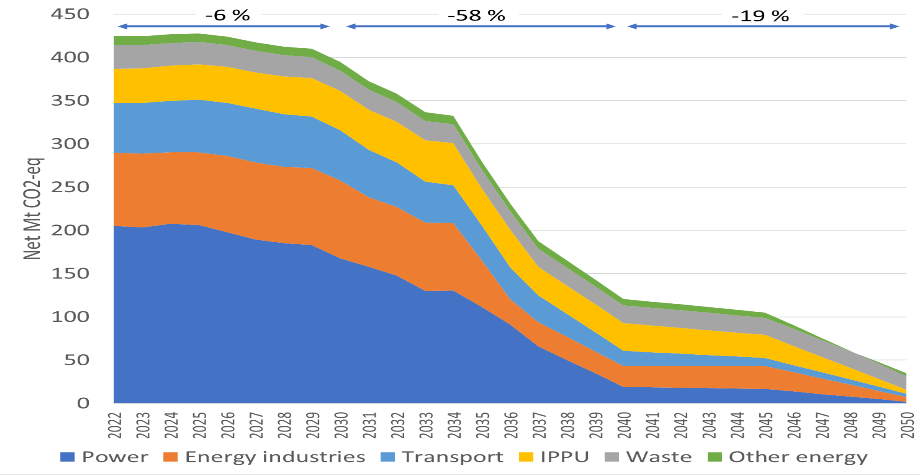
- Growing economy in a competitive manner
- Low carbon economy
- Private-sector led growth model with strong investment
- Economy and society resilient to climate risks
- Reducing unemployment, inequality and eradicating poverty

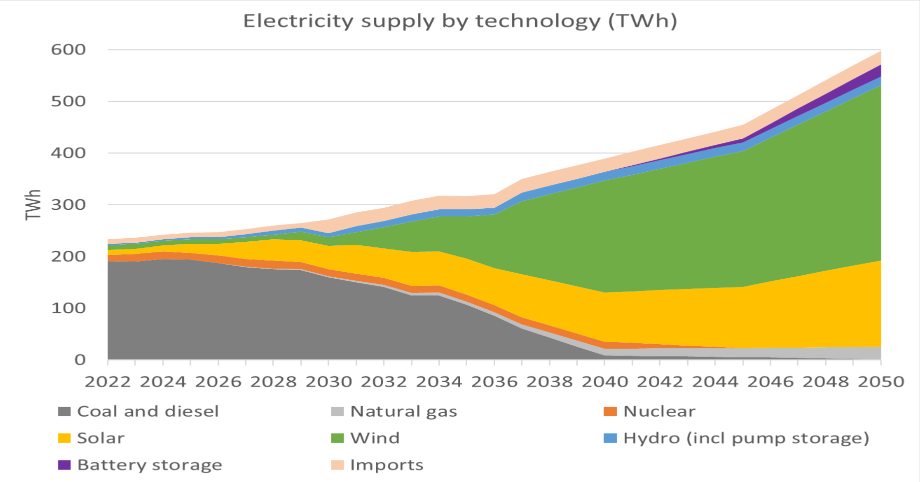
Second message

While South Africa’s climate transition will contribute to the global agenda, it is foremost in the country’s self-interest to implement mitigation and adaption measures with a sense of urgency.

The low carbon transition is a climate and economic decision

Heading toward net zero will start with the decommissioning of most coal power plants during 2030-40 followed by transport and hard to abate sectors (cement and steel)





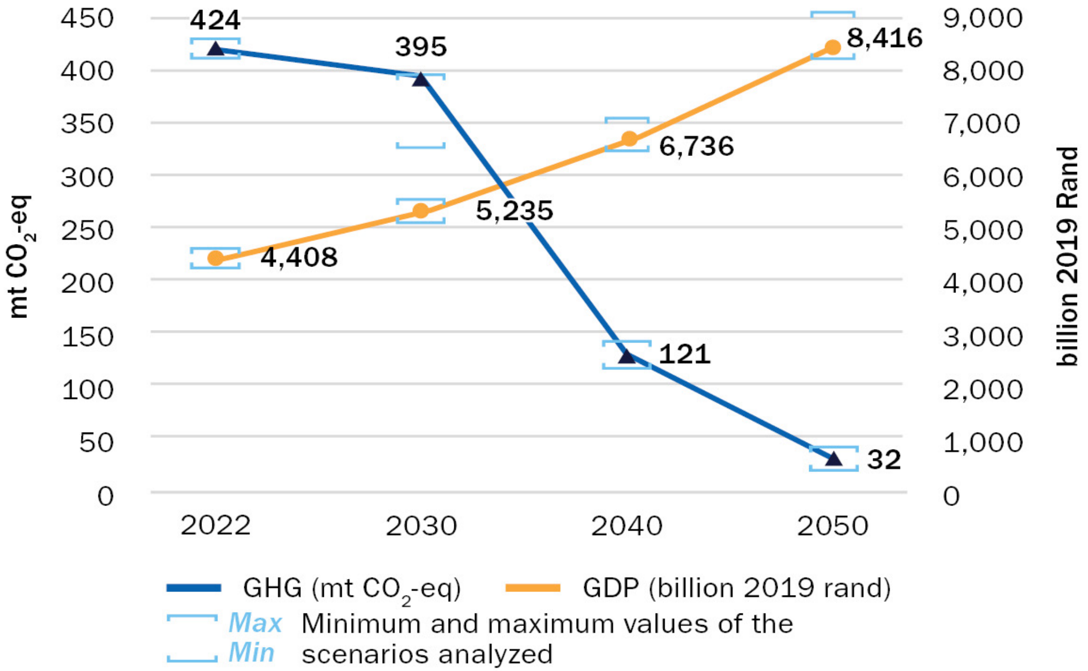
Moving away from coal will require significant investments in new green technologies, especially in renewables which will be accompanied by:

- Complementary use of low carbon technologies (natural gas and storage) and regional power market to provide system stability
- Substantial investments in transmission and distribution system to untap RE potential in the west
- Additional investment in RE for the (i) deployment of Electric vehicles; and (ii) development of green H2.
- Energy efficiency should be urgently promoted to reduce electricity demand and support economic development

Investing in renewable energy would be in the national best interest for three reasons:

- It is the least-cost and the fastest option to bring new generation capacity to address the current energy crisis. (IRP2019)
- Lower local air, water, and soil pollution; improve local health benefits and labor productivity.
- Improve economic competitiveness due to the change in consumers and multinationals' behaviors on global markets.

Lowering emissions could boost GDP growth to about 2.3 percent per year between 2022 and 2050



Source: SAGE and SATIM models.
Note: Data from net-zero reference scenario (excl. AFOLU)

Three main positive channels:

- Resolution of energy crisis through higher power supply
- Increased labor productivity through better allocation of resources and improved health of workers
- Net increase in jobs leading to higher income and aggregate demand

GDP growth can be enhanced by:

- Structural reforms to facilitate the mobility of workers across sectors and locations (more below)
- Efficiency gains in public spending or increased mobilization of foreign resources to reduce the crowding out of other productive investments.
- Facilitating innovation and diffusion of new technologies by the private sector to reduce costs
- A broadening of the carbon tax to incentivize behavioral changes and mobilize extra-revenue to finance the transition (including social costs).

Adaptation measures in key sectors

Water

- Mainstream climate change in existing and future water resources management plans
- Prioritize demand management for water security among competitive uses and for efficiency gains
- Develop innovative financing solutions for water resilient projects, including through PPP initiatives.

Agriculture

- Further invest in irrigation schemes to increase water efficiency and reduce costs.
- Support ecosystem-based interventions to increase land's water retention and build climate resilience.
- Increase investment in research and extension for development of heat tolerant breeds and seeds.
- Promote inclusive agricultural insurance programs.

Cities

- Align national and municipal strategies to improve coordination
- Integrate spatial planning in adaptation strategies to improve effectiveness of adaptation measures.
- Retrofit existing infrastructure and invest in new projects to build flood resilience
- Engage local communities in disaster risk management and evacuation procedures.

Transport

- Promote intermodal connectivity between roads, maritime, and railways networks.
- Introduce a life-cycle asset management approach for infrastructure.
- Improve capacity to forecast and assess climate change risks on transport infrastructure.
- Upgrade road assets to climate-resilient design standards.

Third message

The climate transition will create an opportunity to diversify the economy, but it will also significantly affect the labor market

Opportunities in a low-carbon world

Non-Coal mining

- South Africa can exploit its large minerals reserves (including platinum, manganese, palladium, rhodium, vanadium) that will be in high-demand during the energy transition around the world. To realize these opportunities, the country needs to develop competitive, low-carbon beneficiation and value-addition capabilities as well as lead regional economic integration and the easy flow of goods and services across its borders with neighboring and international suppliers.

Automobile

- The national uYilo eMobility Programme was established in 2013 to enable, facilitate, and promote e-mobility in SA. Mobility-as-a-service companies such as Uber, Lyft, and Bolt have made commitments to introduce electric or zero-emission vehicles. The Golden Arrow Bus Service has kicked off its electric bus pilot project and has several green initiatives, including installing a solar carport at its central engineering complex. Johannesburg's Metrobus has committed to buying electric buses from 2030 onwards. The Gautrain network will include electric buses powered by micro-grids.

Battery value chains

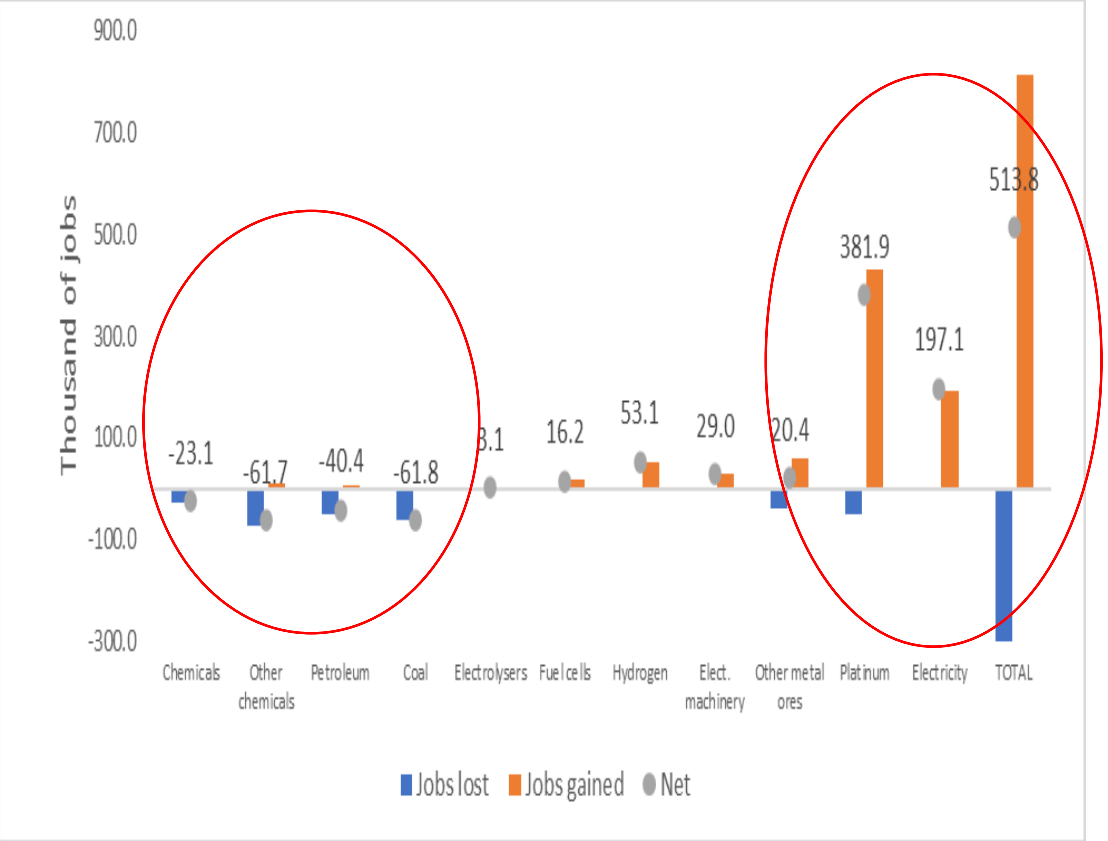
- A recent World Bank study estimated significant market opportunity for battery value chain development in South Africa. Although the current battery market is driven by behind-the-meter installations, grid scale front-of-the-meter and Electrical Vehicles offer large opportunities going forward. The country is well placed to capitalize on the development of the battery storage value chain, as it has many of the minerals needed to manufacture battery storage, including vanadium, manganese, nickel, and cobalt.

Green hydrogen

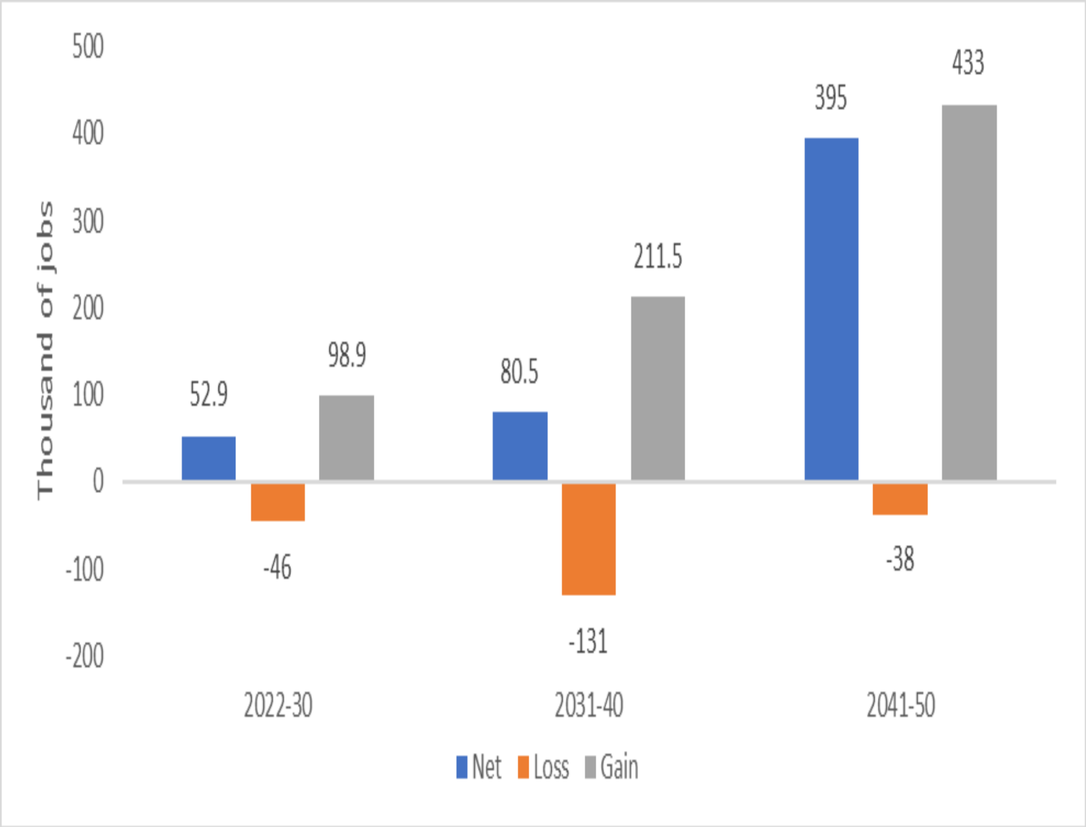
- A range of companies, including Anglo American, Hive Energy, and Sasol, are working with the government to produce green H2 to power mining haul trucks, which reduce diesel consumption by 80 percent. Anglo American plans to roll out a fleet of 40 such trucks at its Mogalakwena platinum mine in Limpopo province by 2024. To generate the fuel for the pilot, Anglo American built the largest electrolyzer in Africa.

Labor market adjustment during the low-carbon transition

Gains and losses in the labor market in key economic sectors, 2022-2050



Many job losses will occur before the gains



The Just Transition requires special attention on the labor market

For each job destroyed, about 2-3 jobs are expected to be created over the 2022-2050 period

- Direct job losses= 300,000; direct job gains= 800,000
- Total job losses= 600,000; total jobs gains= 1,600,000

In a perfect world (without friction), the labor market should adjust with net gains for the workforce and for SA's economy but:

- Timing challenge: many jobs will be destroyed before others will be created
- Location challenge: many jobs will not be created in the same location than those that are destroyed
- Skill challenge: many jobs will require new set of skills

The government should act on two fronts

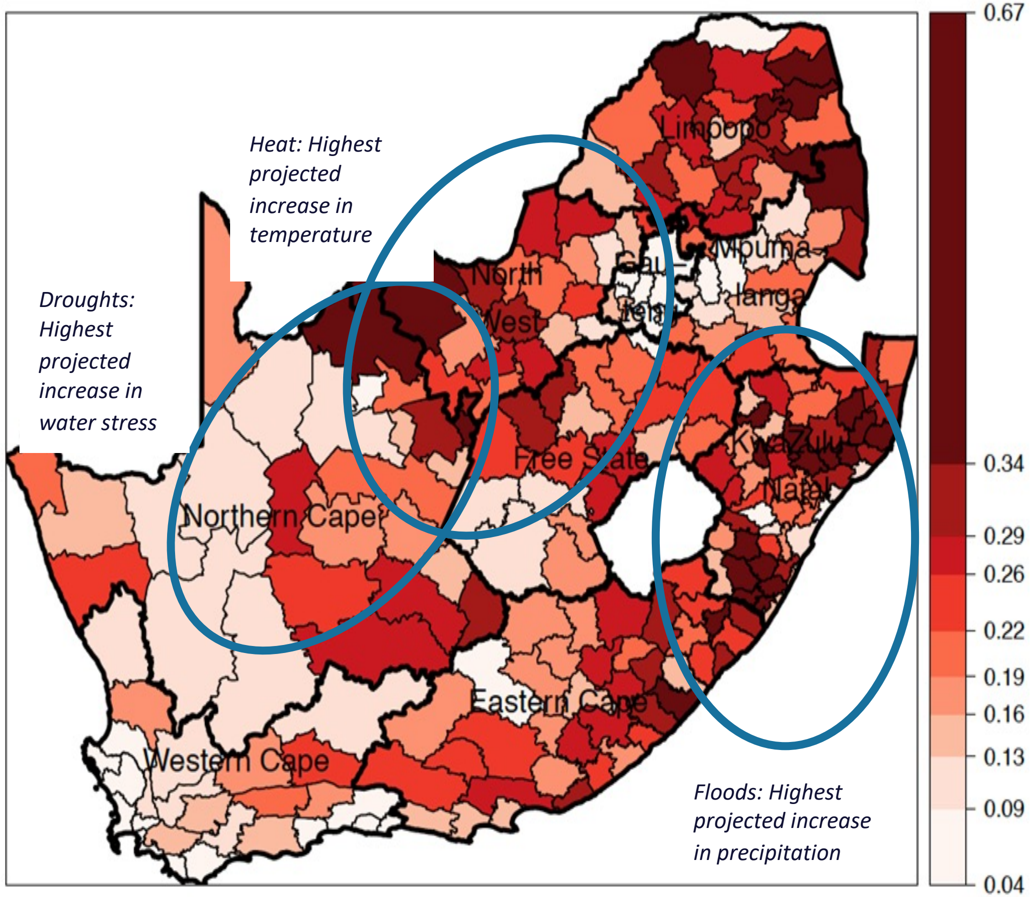
- **Ensure employment gains obtained from the low-carbon transition materialize in new jobs.**
  - Level the playing field between startups and existing firms by enhancing competition, improving the business climate, and facilitating access to finance and other inputs.
  - Make the labor market more flexible to absorb new workers and to facilitate movement across sectors and locations by improving collective bargaining processes and labor market intermediation services and reducing hiring costs.
  - Develop new skills by revamping the education system and technical and vocational education and training programs (in close coordination with private sector).
- **Minimize the economic losses of the transition on affected workers and communities.**
  - Facilitate the reconversion of dismissed workers by reskilling and retraining programs and intermediation and job placement programs. If displaced workers cannot move quickly into new jobs, the welfare impacts of the transition will be more severe.
  - Provide safety nets such as temporary income support, unemployment insurance, or early-retirement benefits workers who will be unable to find a new occupation quickly.
  - Focus on Mpumalanga where about 90 percent of the job losses will be concentrated with special support to local workers and communities (and affected municipalities)

Fourth message

Climate risks will affect all citizens, but disproportionately more the poorest that must be at the center of the transition, while Mpumalanga will require specific attention

Protecting the poor and risk-prone areas against climate shocks

The poorest regions are facing greater risks



Source: World Bank and STATS SA. Notes: Municipal-level poverty maps constructed with 2011 Census and 2010/2011 HIES. The projections for water stress, temperatures, and precipitations are done for the SSP3-7.0, dry over the period 2040-59.

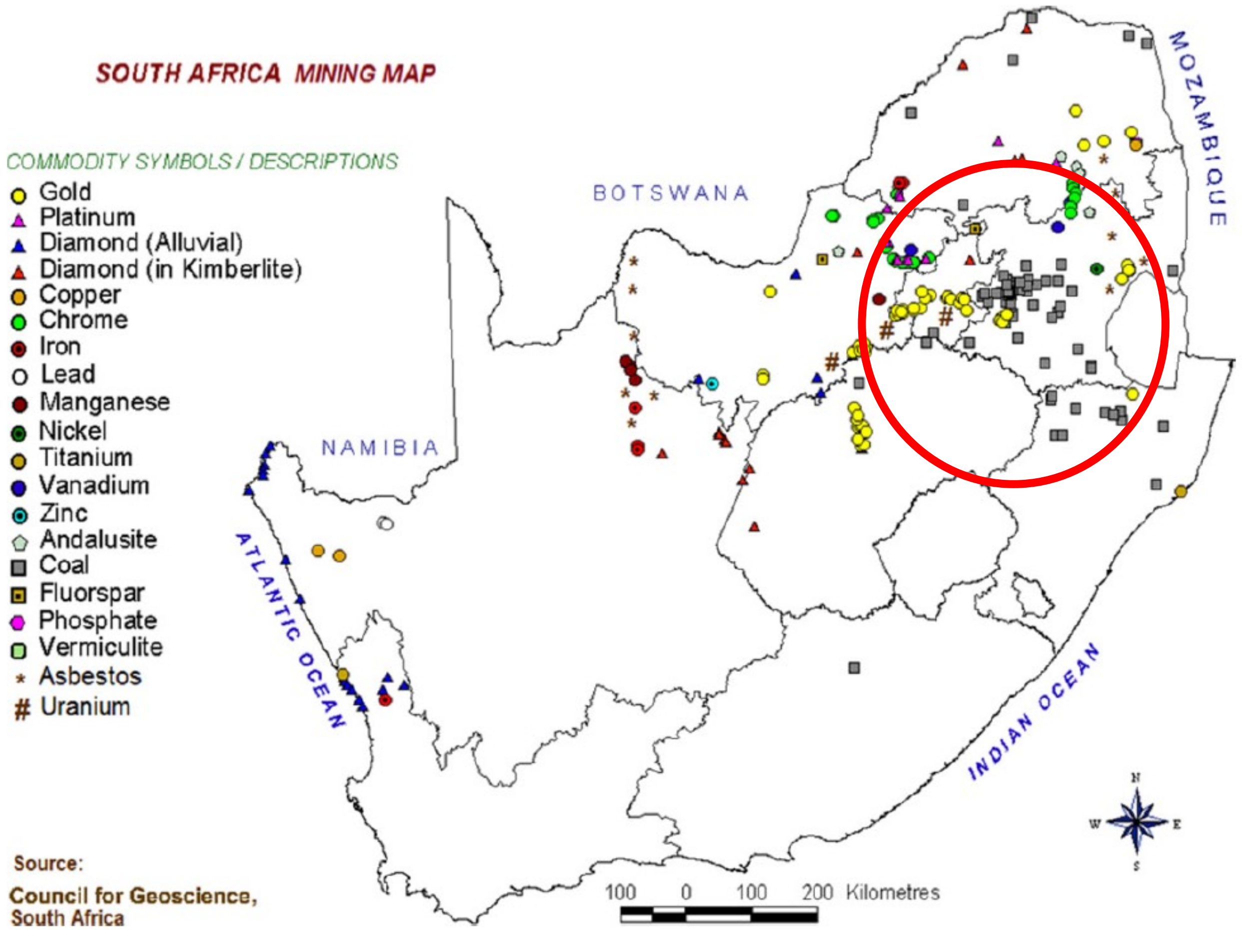
Solutions

- **Invest in digital technology to improve weather risk forecasting and early warning systems** as there is a need to address vulnerabilities of poor groups through a robust and coordinated communication system, combining disaster literacy and the use of digital tools.
- **Prioritize investments in resilient infrastructure and social services in :** (i) the poorest provinces facing increases in temperatures and longer dry spells; and (ii) major urban settlements that are exposed to flooding (Durban) or water stress (Cape Town).
- **Develop an insurance market for climate risks** following the examples of the Turkish Catastrophe Insurance Pool and the Mongolian Livestock Insurance Pool as good examples of PPPs that have substantially increased insurance penetration at the local level, including poorest households.
- **Improve the adaptiveness (shock-responsiveness) of the social assistance system including** by implementing the new SRD grant legislation, adopted in May 2022, including the practical operationalization of targeting and payment processes

The Mpumalanga Challenge

- **Champion urgently the just transition agenda in Mpumalanga** by developing a provincial development roadmap with a **clear and costed implementation plan and accountability framework.** This roadmap should be **owned by the government and its social partners.**
- The roadmap should not only **manage the impacts of the transition**, but also seek to **develop new opportunities** building on comparative advantages offered by the province by combining:
  - *(i) Temporary financial assistance to affected workers* through the Unemployment Insurance Fund, severance payments to formal workers, and short-term grants to informal workers.
  - *(ii) Scaling up active labor programs*, including those managed by the Department of Employment and Labour's labor centers and of the Expanded Public Works Programme and Community Works Programme.
  - *(iii) Targeted support to informal and small enterprises* to encourage economic diversification to other mining activities, renewables, manufacturing, and agriculture, including by transferring productive assets to local entrepreneurs and communities.

About 80 percent of coal related activities are concentrated within 100 squared kilometers involving about 200,000 jobs

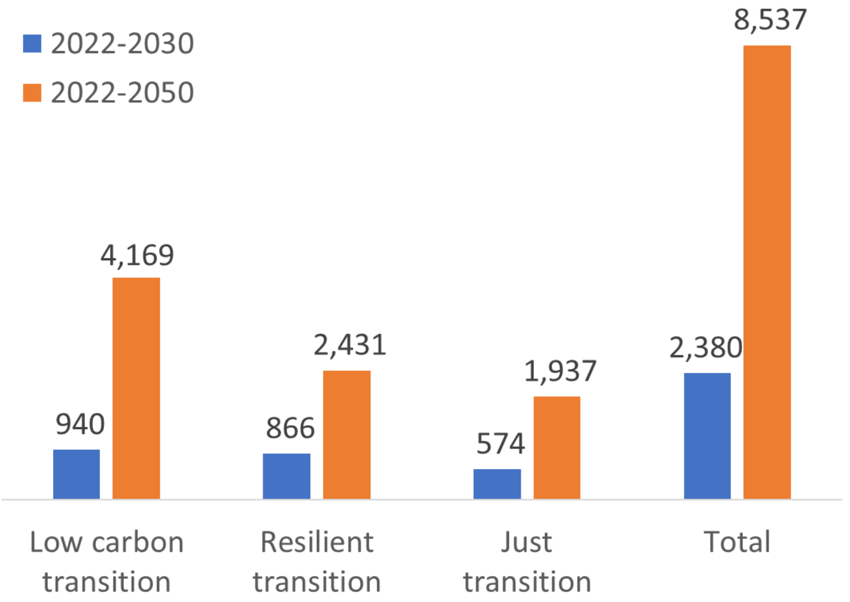


Fifth message

How to make it happen: mobilizing resources and institutional reforms to address implementation challenges

How Much Will It Cost and financing options?

The total financing needs are projected at about R8.5 trillion (or 4.4% of GDP) between 2022 and 2050, with about 1/3 required before 2030



Net present value at 6% discount rate

Top priorities

- **Encouraging domestic private investment to shoulder the three transitions by:**
    - Using pricing instruments (through taxation and subsidization) to shift capital toward climate-related projects;
    - Greening the financial sector (including taxonomy and disclosure);
    - Developing market-based instruments and de-risking tools (such as insurance products) to better share the burden of risk between the public and private sector.
    - To further mobilizing private savings, the government could also prepare a list of bankable green infrastructure transactions (including through PPPs).
- **Increasing public financing for the just transition and for the collective investments required by the low-carbon and resilient transitions:**
    - Due to limited fiscal space, the government should aim at repurposing existing spendings toward climate related expenditures and realizing efficiency gains in government's spending by adjusting the procurement rules and the transfers to provinces and state-owned enterprises
    - Broadening the application of the carbon tax, which can help collect up to 1.4 percent of GDP per year in additional revenue.
- **Garnering more resources from multilateral and bilateral development partners and tap into foreign direct investment inflows and capital from institutional investors including:**
    - Issuance of climate-themed bonds on international markets.
    - External resources (grants and concessional loans) are needed not only for affordability—the country does not have enough domestic savings—but also to share responsibility as climate risks are a global challenge.

Top institutional priorities for effective implementation

Strengthen SOE Governance

- Complete Eskom's unbundling and create an independent transmission system operator
- Improve the operational and financial performance of SOEs (Eskom and Transnet in particular)
- Ensure independence of regulators

Implement Climate Change Bill

- Mandate local and provincial governments to assess climate change needs and to develop climate change response implementation plans.
- Provide specific green targets for the government within stringent timeframes.
- Facilitate the finalization of climate-relevant sectoral plans.

Improve Coordination

- Clarify further the roles and responsibilities for Presidency and key actors such as national and line departments, and advisory bodies
- Strengthen mechanisms to support coordination horizontally and vertically

Build Capacity

- Identify key gaps between the human and financial resources required and those available to deliver on new climate-related mandates
- Support subnational governments with targeted climate change transfers based on annual targets/key performance indicators.

Increase Participation

- Mobilize support from a broad coalition of stakeholders, including the private sector and organized labor
- Develop a comprehensive communication strategy to reduce the disconnect between public perception and the government's actions.
- Improve data collection and sharing mechanisms.

Conclusion

- The CCDR provides not only a long-term vision for South Africa, but it also identifies the most urgent measures to be taken over the next few years with the identification of five priority packages to be implemented in the next 1-3 years.
- Moving fast will reduce the costs of inactions as the costs associated with higher local carbon emissions and climate risks will increase over time.
- The CCDR calls on the government of South Africa to act quickly as early positive results will demonstrate that the climate transition will be people-centered and offers new opportunities to all. This will be critical to rally broader support for the transition in the world most unequal economy.

South Africa

Thank You