

Chapter 5

TRANSITION TO A LOW-CARBON ECONOMY

“We acknowledge that each and every one of us is intimately and inextricably of this earth with its beauty and life-giving sources; that our lives on earth are both enriched and complicated by what we have contributed to its condition.”

Introduction

South Africa has taken major steps to formulate and implement measures to adapt to and mitigate climate change. These steps are informed by the country’s commitment to reduce its emissions below a baseline of 34 percent by 2020 and 42 percent by 2025. This commitment will present challenges for the economy, which depends on fossil fuels, and will require the design of a more sustainable development path.

The approach to mapping out the transition to a low-carbon economy is informed by the need to reach broad consensus on the challenges and trade-offs involved in implementing South Africa’s climate policy. The commission undertook a year-long process engaging stakeholders on climate change, including three high-level workshops and five roundtable discussions with individual stakeholder groups. These consultations informed this chapter.

There are differences of opinion on how South Africa should move to a low-carbon economy, at what pace and how the costs and benefits are apportioned. However, there are several significant areas where consensus has been reached. We will continue to engage in wide-ranging discussion with all stakeholders to promote further agreement on climate change measures and how to deal with the transition.

Vision 2030

By 2030, South Africa’s transition to a low-carbon, resilient economy and just society is well under way. Having undertaken the difficult steps to adjust, all sectors of society are actively engaged in building a competitive, resource-efficient and inclusive future, and the country is starting to reap the benefits of this transition. South Africa has reduced its dependency on carbon, natural resources and energy, while balancing this transition with its objectives of increasing employment and reducing inequality. Development initiatives, especially in rural communities, are increasingly resilient to the impact of climate change, with mutual benefits between sustainable development and low-carbon growth quickly identified and exploited. The state has significantly strengthened its

capacity to manage the ongoing internalisation of environmental costs, and to respond to the increasingly severe impacts of climate change.

Key steps towards the vision

To achieve this vision South Africa will need clear long-term strategies for both adapting to the effects of climate change through adaptation policies and reducing its carbon emissions to a sustainable level through mitigation policies.

Adaptation

South Africa's primary approach to adapting to the impact of climate change is to strengthen the nation's resilience. This involves decreasing poverty and inequality, increasing levels of education, improving health care, creating employment, promoting skills development and enhancing the integrity of ecosystems. This strategy requires ensuring that local, provincial and national government embrace climate adaptation by identifying and putting into effect appropriate policies and measures.

Adaptation policies and measures include: adequate support for the vulnerable; equitable disbursement of financial assistance; significant investments in new adaptive technologies and techniques in the water, biodiversity, fisheries, forestry and agricultural sectors; early warning systems for adverse weather, pest and disease occurrence; disaster relief preparedness; and significant investment in conserving, rehabilitating and restoring natural ecosystems to improve resilience. Gene banks should also be expanded to conserve critically endangered species that are increasingly vulnerable to climate change.

Mitigation

South Africa's level of emissions will peak around 2025 and then stabilise. This transition will need to be achieved without hindering the country's pursuit of its socioeconomic objectives. This can be attained through adequate international financing and technological assistance, and a carefully aligned domestic policy and regulatory environment. Key contributors to stabilising emissions include: a commitment to undertake mitigation actions; an appropriate mix of carbon pricing mechanisms; policy instruments that support mitigation; an expanded renewable energy programme; an advanced liquid and bio-fuels sector; an effective mix of energy efficiency and demand management incentives; proactive local government climate change programmes in areas such as waste management and street lighting; regulation to promote green building and construction practices; investments in an efficient public transport system; and a robust and transparent monitoring, reporting and verification system. Additional investments in research and development, manufacturing, training and marketing are also critical.

These actions will need to take place in the context of an agreed international framework for mitigation that imposes an absolute constraint on greenhouse gas (GHG) emissions internationally from 2030 to 2050. This will help mitigation to become a key component of policy and planning. By 2030 a substantial proportion of the low-carbon infrastructure should be in place or at an advanced stage of planning, particularly in the energy and transport sectors. South Africa will need to allocate research and development resources strategically to low-carbon technologies, building on existing areas of competitive advantage. This will help the country to establish a vibrant market for low-carbon products and services for both domestic use and for export to southern African countries. The country will also need to ensure significant strategic streamlining of carbon-intensive investments.

The transition: storylines

Starting point

There are many medium- and long-term benefits to be gained from pursuing low-carbon growth, particularly given the links between climate change action, job creation, poverty reduction and economic competitiveness. Given South Africa's starting point, however, the country faces a particularly challenging transition to a resilient, low-carbon economy and society. From a mitigation perspective, South Africa is one of a relatively small number of countries with abundant coal, minimal hydroelectricity and little production of natural gas. South Africa's energy emissions account for over 70 percent of its total emissions and coal accounts for the bulk of energy supply. The country also holds some of the world's richest deposits of minerals, with mining and processing demanding substantial energy. The impact of these natural endowments has been heightened through historical policies that created a minerals and energy complex – a political, economic and institutional structure that lies at the heart of South Africa's economy, and creates a fundamental structural challenge in moving towards a lower carbon economy.

In addition, South Africa's apartheid legacy has resulted in unacceptably high levels of poverty and inequality, which also have structural characteristics. The pace and process of moving to a low-carbon and climate-resilient economy must be designed in such a way that it also contributes to the objectives of overcoming poverty and inequality.

South Africa has a systemic shortage of skills and capacity. The structural failure of the education system and continued high levels of poverty and unemployment have resulted in a poorly skilled workforce, which will require decades to transform. In addition, state capacity to administer regulatory processes is low. The transition to a low-carbon and resilient economy requires a capable state to lead, enforce the regulation of GHG emissions, and respond to the impacts of climate change. The transition to a low-carbon economy depends on the country's ability to improve skills in the workforce, at least in the early phases of the transition.

As noted in the *Diagnostic Report* and the Climate Change Response White Paper, South Africa accepts the science used by the Intergovernmental Panel on Climate Change and the resulting goal to limit global warming to below 2°C above pre-industrial levels. It is clear that action to address the causes and impact of climate change by a single country, or a small group of countries, cannot take place in isolation. This is a global problem requiring a global solution, through the concerted and cooperative efforts of all countries. The world is not currently on the right path to achieve this. Given that the effects of climate change will fall most heavily on the poor, South Africa needs to urgently strengthen the resilience of its society and economy, while developing and implementing ways of protecting the most vulnerable.

Mitigation policies and measures

Over the past few years, South Africa has increasingly stated its ambition to act responsibly to mitigate the effects of climate change. Domestic and international statements include, among others: the Long Term Mitigation Scenarios (2006-2008); the Mitigation Potential Study; Cabinet's vision of a peak, plateau and decline trajectory (2008); and South Africa's Copenhagen Pledge (2009). The National Climate Change Response White Paper clarifies this ambition through quantifying the business-as-usual trajectory, against which the efficacy of South Africa's collective actions to reduce GHG emissions is measured. This mitigation effort aims to achieve the peak, plateau and decline trajectory of the Copenhagen Accord, which serves as South Africa's long-term 2050 mitigation vision.

Achieving this is possible only with international support. This is challenging for domestic planning because it is unclear if the necessary financing and technology development and transfer support will be received in full, in part, or not at all. This is problematic as short-term decisions need to be made about large capital-intensive infrastructure investments that will commit the economy to a particular emissions path. It is likely that several such decisions will have to be taken before we know the extent or nature of the support South Africa will receive.

While the Long Term Mitigation Scenarios provided a useful starting point, more detailed analysis is needed to determine the optimal mix of mitigation actions to achieve the desired emission reduction outcomes for each sector and sub-sector of the economy. This work is needed to ensure that actions support job creation and take account of other relevant conditions related to the specific sector, sub-sector or organisation concerned. In the absence of more detailed analysis, certain stakeholder groups are apprehensive about what this commitment will really mean for South Africa in terms of economic growth and jobs. Initial findings from a commission study on the role of the mining and minerals beneficiation sector indicates that even under strong assumptions of energy intensity improvements and full implementation of the Integrated Resource Plan 2010, which covers the period 2010 to 2030, the sector significantly exceeds its emissions levels envisaged for the years 2020 and 2025 (based on current proportional emissions contributions). This sector is currently being

prioritised by economic policy for its contribution to economic growth and employment creation.

Given this and the current realities of international climate mitigation policy, it will be challenging to honour the commitment to reduce South Africa's emissions without compromising the overriding priorities to create jobs, address poverty, improve public health and grow an internationally competitive economy, without substantial international assistance. However, it is in the country's best interests that an absolute global emissions constraint is put into effect sooner rather than later.

Given these variables, more work is needed to understand how best to plan and manage the transition to a just, resilient and low-carbon economy. New and innovative policy approaches will be required, needing flexibility in the short and medium terms, while ensuring alignment with an absolute carbon emissions limit in the long term.

A just transition

The poor and vulnerable are, and will continue to be, disproportionately affected by climate change. Millions of people are employed in energy-intensive industries and the mining sector is a major contributor to South Africa's foreign exchange earnings. A judicious process of transition is therefore non-negotiable. In addition, the poor and vulnerable must specifically be protected from the transitional costs associated with mitigation, such as increased costs of energy, food and transport, job losses in carbon-intensive industries, and demand for different skills.

Build resilience

One of the main challenges of climate change is the high level of uncertainty about the exact impacts, its costs and the outcome of final global agreements. Building the resilience of both the economy and society is one of the best ways to manage this unpredictability. In this context, economic resilience refers to an economy that is competitive internationally, has a high level of energy, water, food and natural resource security, has strong innovative capacity, and is driven by a skilled and flexible workforce. A resilient society will be appropriately healthy, educated and prosperous.

“I think we haven't considered solar power, not solar panels, but heliostats, solar power towers. Together with hydro and wind power it can make a significant impact on our dependency on coal and nuclear resources. I will not give extensive details but I will say if Spain can power 25 000 households using a heliostat in a climate with less intense sunlight, why can't we? I was able to boil water using a heliostat made of foil in my back yard when I was an undergrad at university. The principal works and the resource is beaming down on us everyday whether we choose to harness it or not. To this end I would use the energy generated to split water from the ocean using the Deuterium to power fuel cells rather than use our valuable fresh water. With these changes in place it should actually cut the cost of electricity in the long run.

I am proudly South African, I believe that we as South African have the resources necessary to improve the lives of every South African. We should not wait for the developed world to show us the way forward when in fact we can lead.” – NPC Jam

To ensure that the transition is just, resilience should be built into all aspects of planning and policy. A regional perspective is also critical, as South Africa's neighbours face similar adaptation challenges, and their success is integral to our own. Cooperative regional development planning processes should point out possible partnerships that tackle both adaptation and mitigation challenges, to the benefit of all countries involved.

Some government departments have already made significant progress in singling out projects for implementation. Other projects are more difficult and costly, and will require careful consideration of how they should be financed, incentivised and managed. The White Paper singles out a number of flagship projects, including job-generating programmes such as Working for Energy, Water and Fire; accelerating the National Water Conservation and Water Demand Management Strategy; and energy-efficiency interventions in the residential housing sector through schemes such as the National Sustainable Settlements Facility of the Department of Human Settlements. The Department of Energy's solar water heating programme will be expanded with support from the Department of Trade and Industry to increase the domestic supply of parts for solar water heating. There are also initiatives under way to increase renewable energy and enforce mandatory energy-efficiency requirements for industry. In transport, an enhanced public transport and government vehicle efficiency programme will be implemented. Private sector initiatives such as the Carbon Disclosure Project show a similar commitment to taking action.

Structural change, trade-offs and lock-ins

The Long Term Mitigation Scenarios show that South Africa cannot achieve the post-2035 “decline” portion of the peak, plateau and decline vision within its current economic structure, which is centred primarily on energy- and carbon-intensive activities. Structural transformation of the economy is necessary and will require technological and infrastructural innovation and development. Transformation will inevitably necessitate short-term trade-offs and will have implications for industries unable to shift to new production approaches and technologies. Education and training are therefore essential for fostering innovation.

The key challenge is de-linking economic activity from environmental degradation and carbon-intensive energy, while remaining competitive and reducing unemployment, poverty and inequality. To plan for the transition, a better understanding is needed of the nature of competitiveness in the new global economy, as well as impediments to transition, and how to overcome these. How South Africa’s existing set of endowments is used in building a low-carbon economy and society is critical. Ideally, economic activity will expand, while consumption of non-renewable natural resources in the form of fossil fuels and negative environmental impacts such as water contamination will be reduced. These changes may require a more radical rethink of the scope of action required to transform the economy.

Money invested in the current economic structure runs the risk of being a sunken cost if spending is not aligned with the country’s future goals. There is the additional risk that South Africa is locked into an economic pathway that could undermine its competitiveness and flexibility in taking up future opportunities. Policy instruments and mechanisms will need to factor in the long-term costs. Areas of existing and possible future lock-ins and trade-offs that require investigation include electricity, transport, liquid fuel supply, the coal sector, and expanding energy-intensive industry. Some examples include:

“A shift to a green economy and more sustainable practices in general should not be seen in opposition to development, job creation and economic growth. Nor should it be seen as a nice-to-have or merely an additional sector of the economy. With all the development challenges in SA the only way to really advance environmental sustainability is to tie it clearly to human and economic development. For some the link is obvious, but sadly many people still see the two as opposing. When making new policy and proposing changes this link should be shown clearly.

Only if people are convinced that it is about people first and foremost will they really be willing to make the necessary changes.” – NPC Jam

- The extent to which energy intensity needs to be constrained, if at all, during the transition.
- Future energy sources – the extent of the use of coal, nuclear, hydro, gas, bio-fuels and renewables.
- The impact of hybrid technologies, which combine conventional fossil generation with renewable energy.
- The potential role of nuclear power.
- How to best use some or all of the mineral sub-sectors and smelters to facilitate the transition, and whether there is still a role for them in the long term.
- The use of market mechanisms for mitigation.
- The impact the envisaged transition may have on land use.

Manage the transition

The costs of proactively building a just, low-carbon and resilient economy and society are likely to be far lower than the costs of an unplanned response. However, the transition will not be easy. Given South Africa's starting point, it is likely to be both challenging and contested, with difficult choices along the way. Planning must therefore follow rigorous and transparent processes, with full stakeholder engagement, and decisions based on a detailed analysis of the evidence.

The state's guiding role

While the responsibility for the transition should be borne collectively by all stakeholders, the state will have to facilitate and guide the process. It has the constitutional and moral imperative to act in the interests of the nation, finalising a national approach that balances the difficult trade-offs with issues of equity and responsibility to its citizens, future generations and regional and global partners.

Government has a key role to play in developing the necessary skills and institutional and cultural capacity to support this transition. The scale and significance of this role should not be underestimated. Insufficient capacity and poor governance could jeopardise efforts to meet the country's climate commitments. Existing institutions should be restructured and further capacitated to advance key areas of the transition.

The design and implementation of the country's climate change policy would benefit from public input. In many cases, this participation is ineffective or superficial. It is government's role to ensure participation is meaningful and that there is sufficient public support for the chosen policy. Involving business entities in mitigation and adaptation is critical as projects are more likely to succeed if business entities work closely with government in design and implementation.

Government intervention may also be needed to encourage research and development in low-carbon and adaptive technologies. South Africa does not have the resources to support leadership in all possible areas of technological development, so it is important that decisions are informed by the country's natural endowments, skills and areas of existing capacity and competence.

Align and mainstream existing policy

A crucial constraint that affects the state's ability to lead is a lack of coordination between government departments. Information on the availability of measures to support investment in low-carbon and clean technologies, as well as where such measures are needed, is scattered across national government departments, provinces, municipalities and agencies. The relevant mandates of these institutions tend to be loosely defined, often resulting in a duplication of roles. Aligning and coordinating existing and future policy is therefore essential.

The Climate Change Response White Paper proposes a long-term framework for institutional coordination to implement the National Climate Change Response Policy. This oversight and coordination function at a meta-departmental level is critical. Economic policy departments, in particular, should be appropriately represented and involved in future planning.

“The challenge in climate change is more about looking at the integrated system and optimizing the resources within the system. In this system we need to simultaneously think of energy, water, food security, waste management, population growth, land utilization, economic growth, etc. This requires our government to forget the silos and integrate the policies and programmes to manage the system.” – NPC Jam

There is a risk that the government's climate policy may go unimplemented if actions are not understood in the context of addressing South Africa's key challenges of poverty and inequality. Mainstreaming mitigation and adaptation considerations into the activities of all government departments and across local, provincial and national government is necessary to achieve the transition as efficiently as possible.

Build an evidence base

Planning for the transition requires a foundation of trustworthy data and analysis, neither of which is reliably and transparently available in South Africa. In particular, there is a need for thorough and in-depth analysis on the economic implications of reaching the country's mitigation ambition, and the options to achieve the required structural change.

Collecting reliable data on all aspects of climate change is a priority. This requires data collection mechanisms, including urgently setting up mandatory monitoring, evaluation and reporting processes for all relevant stakeholders.

Monitor, report and verify

Understanding South Africa's progress against national goals is critical in moving towards the envisaged economy and society – especially given the number of relevant mitigation variables. The Climate Change Response White Paper proposes mechanisms through which this can occur. It is important that South Africa's system of monitoring, reporting and verifying is compatible with systems evolving internationally, to simplify the process of receiving international support for mitigation actions.

Proposed mitigation instruments

Carbon-budget approach

South Africa is one of a community of developing countries actively considering a carbon budget for the economy. A carbon budget sets the amount of carbon that can be emitted in a given amount of time. This would provide direction and certainty to business and government. Given how international and domestic economic and policy environments are evolving, however, it is important that the carbon budget be subject to regular monitoring and review of targets. This flexibility is necessary for South Africa to design and implement policy responsively, in the context of a clear long-term policy direction.

A well-designed carbon budgeting system would:

- Benchmark South Africa's total carbon budget against the national GHG trajectory range.
- Consider the cumulative nature of the carbon budget over the entire period under the national GHG trajectory range.
- Use a bottom-up approach (initially), while still considering the long-term limitations of South Africa's emissions space.
- Provide flexibility for achieving reductions in different sectors of the economy and over time.

The last point is particularly important given that South Africa's energy- and carbon-intensive sub-sectors face the greatest challenge in reducing their emissions. The carbon budgeting approach to mitigation must efficiently and appropriately apportion carbon space to the sectors and activities that add the greatest value, using a transparent set of criteria and indicators that include developmental criteria. This will help to maintain and build South Africa's competitiveness in a low-carbon future. Although this is critical for achieving a sustainable outcome, it will not be easy given the influential interests in some of the most carbon- and energy-intensive sectors.

Commit to a domestically established mitigation target

An additional proposal that emerged from the stakeholder process is for South Africa to commit to a domestic mitigation target to signal the country's resolve to transition to a low-carbon economy and build the confidence needed to unlock further international support and investment. This target would be implemented regardless of the external financial support South Africa receives and would be developed from a sound evidence base and in the context of the long-term 2050 peak, plateau and decline trajectory. It should be sufficiently ambitious to be viewed as a serious contribution to limiting global warming to less than 2°C but would need to take into account the country's socioeconomic and developmental priorities. How this commitment could be expressed is still unclear, but it should be aligned with the carbon-budget approach for policy consistency and implementation.

Carbon pricing

International experience shows that the most effective way to achieve a just and managed transition to a low-carbon economy is to internalise the social and environmental costs of GHG emissions. International best practice has also established that adequately pricing GHG emissions is one of the most effective ways to encourage polluters to change their behaviour.

National Treasury, in its 2010 discussion paper on reducing GHG emissions, proposes a carbon tax approach. The commission supports this. Treasury is also developing a discussion document on potential market-based pricing mechanisms. If South Africa is to manage the transition in the least disruptive way possible it will need to introduce a broad-based carbon-pricing regime that covers all relevant sectors at one consistent price. This approach will need to include a range of temporary incentives and support mechanisms. This regime may need to be aligned with a carbon budget for specific sectors. Some of the revenue could be used to subsidise low-income households and fund rebates for clean technologies, further strengthening the price incentives. Over the long term, the rebates, supporting policies and incentives will be phased out, leaving a carbon price that will be close to the social cost of carbon internationally.

“South Africa's propensity for change in the way it produces and consumes goods is related to the mechanisms we structure to incentivise all sectors of society to work collectively to address environmental sustainability - we need tax breaks for green businesses and for people who minimise their carbon footprint. Government cannot charge people the same municipal rates for recycling collection services as those for sending tons of waste to landfills.” – NPC Jam

There is some debate as to whether the tax can be effective when the electricity generation sector in South Africa is subject to regulated pricing. A highly uncompetitive and monopolistic structure challenges the effective application of a pricing instrument. Given that electricity represents the source of most of South Africa's national emissions as well as much of its mitigation potential, it is critical that the sector is subject to an appropriate carbon price, though the effect may only be realised in the medium to long term. A possible way of dealing with this would be to provide a tax rebate to the sector, with the Integrated Resource Plan remaining the primary mitigation instrument. The plan provides for building generation plants that will increasingly incorporate lower emissions technologies because of the carbon price consideration.

As seen in other countries (most recently, Australia), the introduction of a carbon price must be handled carefully. Caution is particularly needed in South Africa's context of rising electricity prices. The carbon price would need to be phased in to protect the economy and consumers from further crippling increases. Ultimately consumers will face an increased cost through the tariff mechanism to encourage a change in consumer behaviour, while the poor would be given relief under the household energy poverty interventions. This mechanism would need to be reviewed as the electricity sector becomes increasingly competitive in structure.

Additional policy instruments should also be considered to support industry to achieve mitigation targets, especially in sectors where the price is insufficient to change investor or consumer behaviour. For example, in the transport sector, accelerated emissions-intensity penalties for motor vehicles at the point-of-sale could be implemented.

Financing

Finance for the transition will come from a combination of measures including re-aligning existing budget line items to the country's mitigation ambitions and its resilience and adaptation priorities; domestic sources such as carbon pricing; and international aid. Using public sources of funding to leverage private investments is critical if adequate resources are to be mobilised. It is crucial that current government spending is aligned with the requirements of the vision for mitigation and adaptation, to ensure sound fiscal management and prevent lock-in through investment in infrastructure that is inconsistent with these objectives. To address this, there is a need to ensure that policy, planning and regulations are aligned to the climate change

“Be brave and tax cars that are heavy on petrol and tax them heavily - don't be shy about it. The tax should be high enough to cause a major swing away from large luxury vehicles, to smaller, lighter (but safe) cars. Sorry, guys, but no one driving in a city NEEDS a 4x4, and unless you're intending to fight in Afghanistan over the weekend, no one needs a Hummer. Ban the importation of "ego" vehicles that chew petrol. In a country suffering massive poverty and inequality, it is not appropriate to flaunt a Maserati.” – NPC Jam

response at every level. This includes the phased removal of existing subsidies and incentives that perpetuate a high-carbon economic structure.

It is not clear how the necessary international funding can be accessed or how much is needed. However, some financing has started to flow, and it is important that South Africa positions itself favourably to receive this assistance. The carbon budget process should help and encourage government departments, sectors and firms to access and secure such aid through developing nationally appropriate mitigation actions, the clean development mechanism, and adaptation funds or other mechanisms as they become available. These proposals should be underpinned by South Africa's objectives of reducing poverty and inequality.

It is anticipated that limited domestic revenue sources will be generated by the carbon pricing system. Other climate-related taxes and levies should be applied in alignment with sound fiscal policy and principles on government investment in climate change.

Guiding principles for the transition

The commission proposes that the following principles should augment those set out in the Climate Change Response White Paper and guide all aspects of the transition, from policy, to process, to action:

- **Just, ethical and sustainable** – Recognise the aspirations of South Africa as a developing country and remain mindful of its particular starting point.
- **Global human solidarity** – Protect and promote the interests of South Africa's citizenry, in the context of global human solidarity.
- **Ecosystems** – Acknowledge human wellbeing as dependent on the wellbeing of the planet.
- **Strategic planning** – Apply a systems perspective, while ensuring an approach that is dynamic, with flexibility and responsiveness to emerging risk and opportunity, and effective management of trade-offs.
- **Transformative** – Address all aspects of the current economy and society, requiring strength of leadership, boldness, visionary thinking and innovative planning.
- **Manage transition** – Build on existing processes to attain gradual change and a phased transition.
- **Opportunity focus** – For business, growth, competitiveness and employment creation, and for South Africa to attain comparable equality and prosperity.
- **Full cost accounting** – Internalise externalities through full cost accounting.
- **Effective participation of social partners** – Be aware of mutual responsibilities, engage on differences, seek consensus and expect compromise through social dialogue.
- **Balance evidence-collection with immediate action** – Recognise the basic tools needed for informed action.

- **Sound policy-making** – Coherent and aligned policy that provides predictable signals, while being simple and implementable, feasible and effective.
- **Least regret** – Invest early in low-carbon technologies that are least-cost, to reduce emissions and also position South Africa to compete in a carbon-constrained world.
- **A regional approach** – Develop partnerships with neighbours in the region to promote mutually beneficial collaboration on mitigation and adaptation.
- **Accountability** – Lead and manage, as well as monitor, verify and report on the transition.

Phasing

The transition to a low-carbon, resilient economy and society requires careful phasing of strategic planning, evidence gathering, and investment. While the aim is to reduce emissions immediately and provide relief for those already affected by environmental impacts, important work is simultaneously needed to lay the groundwork for future emission reductions and climate resilience, through investment in low-carbon and climate-resilient infrastructure. Attention to phasing and sequencing will therefore be an important part of the climate change planning process. Certain sectors will require carbon space now while they build the low-carbon infrastructure of the future. The phasing required is outlined below.

By 2015:

- The roles and institutional arrangements indicated by the Climate Change Response White Paper have been established, institutionalised, legislated, staffed appropriately, and have developed processes and systems to carry out their mandate.
- There is a comprehensive, trusted and expanding evidence base for climate change policy-making in relation to adaptation and mitigation.
- South Africa's mitigation commitment is defined and actions are being taken to achieve it.
- A process to understand the implications of mitigation effort between sectors and economic activities within a limited carbon space has been established through the carbon-budget approach. This guides infrastructure spending, anticipation of lock-in investments and business plans for appropriate mitigation actions.
- Policy and regulation are aligned to the common purpose of a just transition.
- Potential policy and investment lock-ins have been identified, the trade-offs managed and sunken costs avoided.
- A carbon tax is in place, and a wider suite of mitigation policy instruments that target specific mitigation reduction opportunities aligned with the carbon-budget approach.

- Flagship mitigation and adaptation projects established in the Climate Change Response White Paper are well under way.
- South Africa is starting to access international assistance for adaptation and mitigation actions.
- Climate change issues are well represented at forums for regional cooperation.
- Two further integrated resource plans are complete and include carbon constraints appropriate to South Africa's overall mitigation effort and the price of carbon.
- Significant investment programmes are in place for climate-related research and development, and skills development.
- Institutional capacity is starting to emerge, based on a just and resilient low-carbon economy and society.

By 2020:

- The carbon-budget approach has evolved into an important and trusted planning tool, informing ongoing policy development and implementation, and feeding into South Africa's international commitments.
- Plans to strengthen state capacity are starting to pay off, and rigorous skills development interventions are active across the country.
- Annual data on emissions levels and climate impact feeds into policy and regulatory processes.
- International assistance has been secured for a number of mitigation projects, setting the path for alignment with global mitigation objectives.
- Resilience planning is integrated into all planning processes in the country.
- Planning is starting for the post-2030 period, with a strong regional perspective.
- A culture of energy efficiency in society is well established.

By 2025-2030:

- Investment in low-carbon and climate-resilient infrastructure in the previous decade is starting to pay off.
- The state is well capacitated and comfortably manages its policy, regulatory and support functions.
- South Africa has secured substantial international assistance and is aligned with objectives defined in its vision of mitigation.
- The transition has been reconciled with South Africa's efforts to address poverty and inequality. Indeed, the benefits of building resilience are evident in the strides towards a flourishing and prosperous South Africa.
- The carbon-budget approach has matured and is aligned with international best practice, guiding the allocation of absolute carbon constraints in the international climate mitigation policy framework. South Africa is well positioned to meet its commitments, given the early adoption of a carbon budget framework.

