CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

THE CITY OF CAPE TOWN'S CARBON NEUTRAL 2050 COMMITMENT

Imagining a future Cape Town – from global climate crisis to local urban innovation

Making progress possible. Together.

Climate change response and the Covid-19 pandemic.

At the time of publication, Cape Town and South Africa are in the midst of meeting the very great challenge posed by the Covid-19 pandemic. After the lockdown period of preparing the public health system, the focus of planning here and around the world is shifting more to economic rescue and recovery. The suspension of normal activities, interactions and movements devastated many sectors at various scales, but particularly vulnerable micro-economies and livelihoods. Many leaders have urged that economic recovery stimulus should be a "green recovery as a bridge to a more resilient future"[2] or a programme to "build back better"[1], even a "great reset"[2] that transitions us to 'stakeholder' capitalism. Why? Firstly, there is an opportunity in crisis to do things differently with regards to sustainability and equity. In planning a future beyond Covid-19 it is, however, also critical to recognise that climate change poses a similar future risk to economic stability, life and livelihoods, but will be far harder to mitigate and adapt to once the projected effects are being experienced in earnest.

The managing director of the International Monetary Fund (IMF) told a World Economic Forum summit during April 2020 that "taking measures now to fight the climate crisis is not just a 'nice-to-have'. It is a 'must-have' if we are to leave a better world for our children."[2] Leading policy researchers have identified five areas where climate impact and economic stimulus could combine: green infrastructure, building efficiency retrofits, investment in education and training, natural capital[3] investment, and clean research and development.[4]

At the core of an economy is trade – the exchange of goods and services. The pandemic itself will pass, but the co-ordinated action between nations we have witnessed will likely remain and manifest in strengthened global climate policy. Corporations increasingly report their emissions across their greater supply chain and set targets for emissions reduction. Environmental, social and governance financing is growing, as are calls for an end to fossil fuel subsidies and new fossil fuelled plants. The world is changing technologically and politically, and the citizens of our city need to build prosperity in that world. A plan for adapting to the effects of climate change and achieving carbon neutrality is therefore an essential requirement for our enterprises to recover and trade competitively, whether it be construction, technology, food, film, tourism, manufacturing or any of the activities that sustain us.

1 https://sacoronavirus.co.za/2020/05/28/after-covid-19-africa-can-build-back-better/

2 IMF Managing Director, Kristalina Georgieva (30 Apr. 2020), https://www.weforum.org/agenda/2020/04/imf-pandemic-coronavirus-covid19-respone-battle-climate-crisis/

3 Natural Capital: The sum total of nature's resources and services, underpinning human survival and economic activity (e.g. agricultural crops, forests, soil, water, vegetation, wildlife, bio-energy, mineral deposits)

4 Hepburn, C., O'Callaghan, B., Stern, N., Stiglitz, J., and Zenghelis, D. (2020), 'Will COVID-19 fiscal recovery packages accelerate or retard progress on climate change?', Smith School Working Paper 20-02

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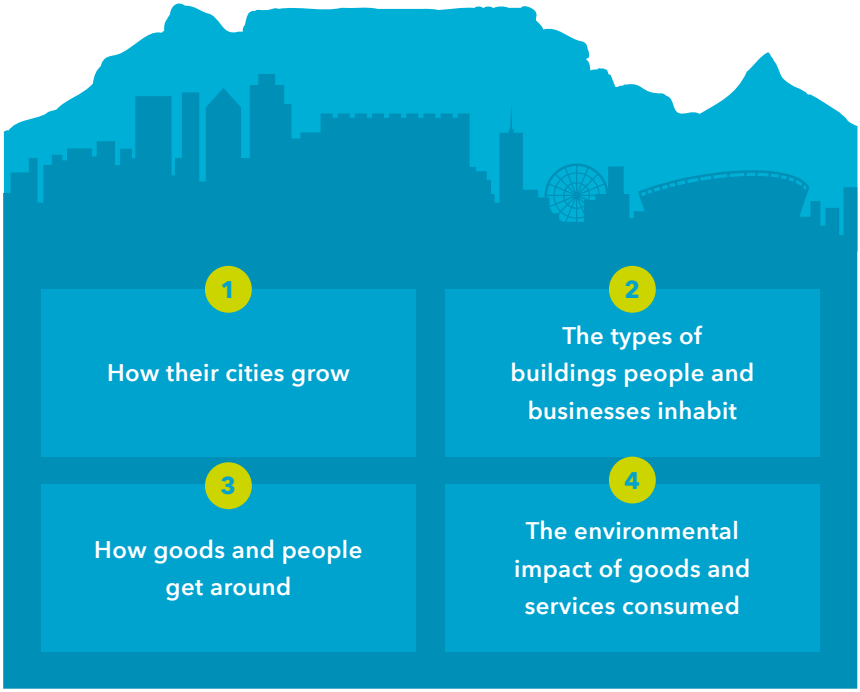
INTRODUCTION

Like all other South African cities and most of the developing world, Cape Town too faces many social and environmental challenges. The threats of unemployment and an underperforming economy loom large in the current public discourse; yet locally, certain sectors – notably food and beverages, tourism, financial services and information technology – have proved resilient in stormy waters. Cape Town's sustained growth and its beauty, diversity and amenities make it a truly international city. The profile of the city and its precious natural endowments, especially its unique floral kingdom, impose a responsibility on Capetonians to play an active role in maintaining the environment for future generations. The global climate crisis and its local manifestations pose direct and indirect threats to all aspects of the short and long-term well-being of the city, and so our responsibility includes addressing local concerns, while also doing our share to avert catastrophic climate change.

In 2018, Cape Town came uncomfortably close to being the first major modern city to run out of water. The severity and suddenness of this last drought compared to previous dry spells strongly suggests a link with global warming and is in line with everything scientists have been saying about the drying of our vulnerable local Mediterranean climate as global CO_2 levels rise. So, while Capetonians rallied together and adapted admirably to this crisis, the risks remain. Ongoing action is imperative both to become even more resilient and help reverse climate change. This is why the City of Cape Town has committed to becoming carbon neutral by 2050.

Globally, cities have stepped up to the challenge of stemming the climate crisis, by acknowledging their ability to act faster than national governments and by being in closer proximity to the citizens they serve. City governments have a mandate to deliver services, and to control and influence society through regulation and policy.

A city government typically has responsibilities in these areas:



The four large South African metros (Cape Town, Tshwane, Johannesburg and eThekwini) have committed to C40's Deadline 2020 programme. This programme entails developing an ambitious climate action plan by 2020 that achieves the adaptation and mitigation goals of the Paris Agreement. Such a plan requires Cape Town to considerably extend its former Energy2040 mitigation goal to achieve carbon neutrality by 2050. This target can only be reached through significant transitions in urban form, energy sources, transportation and resource efficiency.

WHAT IS CARBON NEUTRALITY?

In simple terms, being carbon neutral means that, after taking into account any potential carbon sinks (vegetation that absorbs carbon), the net greenhouse gas (GHG) emissions from all sources are zero (or as close as possible to zero). We track our progress towards carbon neutrality by measuring our carbon footprint on a regular basis.

GHGs are emitted from various sources, including industrial processes, decaying organic waste, the emissions from combusted fossil fuels, and changes in land use. However, the equation in South Africa is fairly simple compared to many other places. Our coal-powered electricity system is by far the dominant source of GHG emissions and makes our economy one of the most carbon-intensive in the world. The next biggest contributor is fossil fuels used for internal combustion engine powered transport, which is exacerbated by the sprawling design of our cities, and the long distances freight has to travel across our expansive country. At the city level, waste – particularly organic waste – is another significant source of emissions.

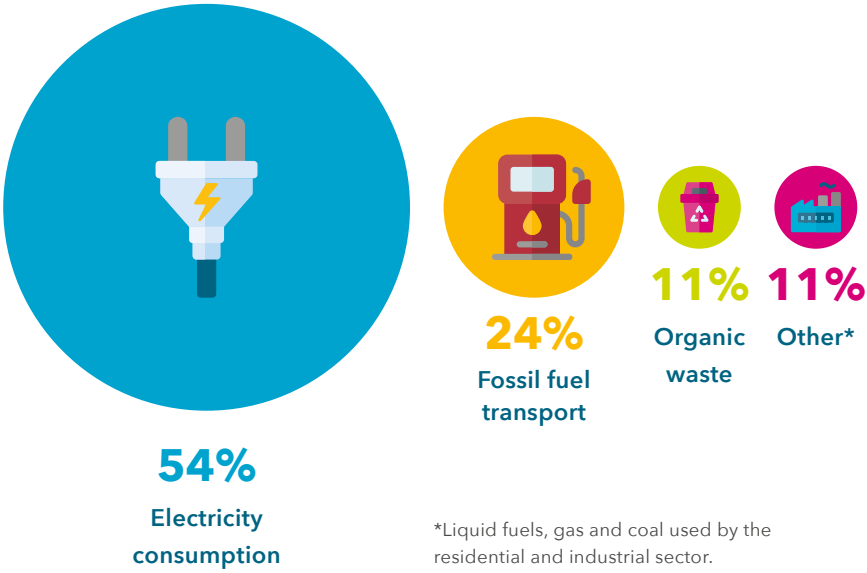


Figure 1: For South African cities, the sectoral priorities for cutting emissions are abundantly clear (Cape Town carbon emissions by energy source, 2017).

A comprehensive, cross-sectoral action plan for carbon neutrality needs to be in place by 2020 and updated every five years to ensure that we meet the interim targets by 2030, and reach carbon neutrality by 2050.

CARBON NEUTRALITY means introducing new technologies to completely clean up the fuels and activities that currently cause GHG emissions, while enhancing our social, economic and environmental goals.

HOW DO WE ACHIEVE CARBON NEUTRALITY? IS IT EVEN POSSIBLE?

Carbon neutrality represents a profound paradigm shift in the way the reduction of GHG emissions has been tackled thus far. Previous plans tended to add together many incremental measures, such as commercial and industrial energy efficiency, increased public transport, and modest goals in rooftop solar uptake. The result was typically a modestly reduced emissions trajectory, or, at best, a stabilisation of emissions. Carbon neutrality, on the other hand, starts with an end state of net zero GHG emissions, and then asks what measures are required to achieve this.

Until fairly recently, such thinking was economically impossible for a developing city such as ours.

Now, however, three technological disruptions have made it possible:

1. **Renewable electricity technologies.** These are now competitive and in certain circumstances cheaper than fossil fuel technologies.

2. **Battery storage.** While our wind and solar resources are among the best in the world, they are variable; so battery (and other forms) of storage will be required to store renewable energy for when it is needed.

3. **Electric vehicles.** The advent of these vehicles at steadily dropping prices means that our people and goods can be transported using clean, renewable electricity.

While technological revolutions unfolding around the world make the commitment to carbon neutrality by 2050 technically and economically feasible, they do, however, introduce two important contingencies, with the growing social, economic and governance crisis in South Africa underpinning a third:

A. South Africa is heavily invested in the coal electricity value chain, which centres on a centrally planned grid with a single buyer, who also happens to be the main generator. While the current central plan (the Integrated Resource Plan, or IRP) does involve decarbonising the grid, it does not do so quickly enough. **Therefore, attaining the commitment is highly contingent on Cape Town being able to procure its own renewable power and ensuring the existence of transmission infrastructure to bring this power to the city.**

B. South African and, indeed, Cape Town-based businesses – particularly refineries – are heavily invested in the fossil-fuelled transport system. Currently, a very limited number of imported electric passenger car models are available, and these are in the upper-midrange cost segment on a cost-of-ownership basis. **This means that attaining the commitment is highly contingent on local manufacturers and importers of buses, cars and trucks not isolating themselves from the trend towards transport electrification in the rest of the world.**

The effect of GHG emissions are cumulative, so it remains essential to implement measures that reduce energy and resource use and improve urban form and public transport as in the City's previous plans. The end goal of carbon neutrality, however, means that the new plans must also tackle the two contingent measures of removing very nearly all carbon from grid power and electrifying transport. Transport is the second-largest source of emissions.

Moreover, the transport systems and infrastructure lie within the city, and the mandate for operating them lies partially with the local and provincial governments. Therefore, generally speaking, public transport is a major area of activity for a carbon neutral plan; not only because of its mitigation potential, but because of all the co-benefits, including greater economic efficiency, improved social equity, and reduced local air pollution.

Cape Town has an excellent endowment of electric rail infrastructure, which has been the backbone of transport in the city and remains the cornerstone for transport planning. Yet the service, which is operated by Metrorail, a division of the state entity PRASA (Passenger Rail Agency of South Africa), is in abject crisis, with PRASA citing "unprecedented levels of vandalism".[5] While the causes are not well understood in the public domain, the crisis in rail is a stark warning that ambitious plans require a society where all stakeholders collaborate to make things work for the common good.

C. Therefore, the commitment to carbon neutrality requires stakeholders in state agencies (particularly utilities) to forge collaborative working relationships and sound institutions to secure public assets in well-run systems. This requires improved institutional governance, community engagement, security, policing and prosecution, combined with a high-functioning social contract with citizens.

5 PRASA, "High levels of vandalism severely affecting rail services across the regions", 10 January 2020, https://www.prasa.com/News%2039.html.

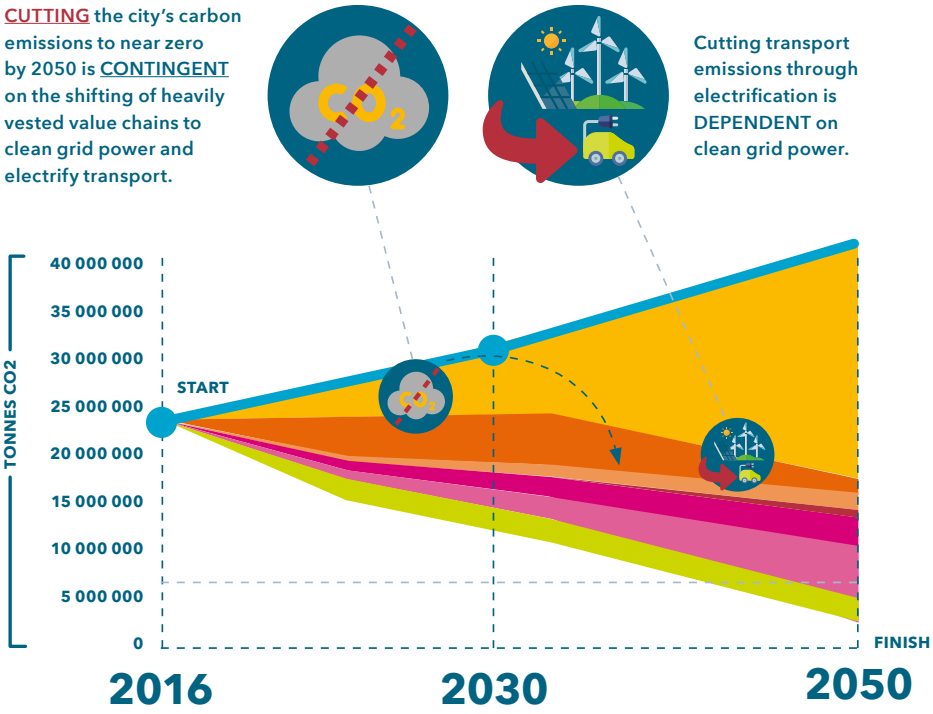


Figure 2: The coal-intensive grid and inefficient urban form of South African cities make cutting emissions contingent on a transition to renewable electricity supply.

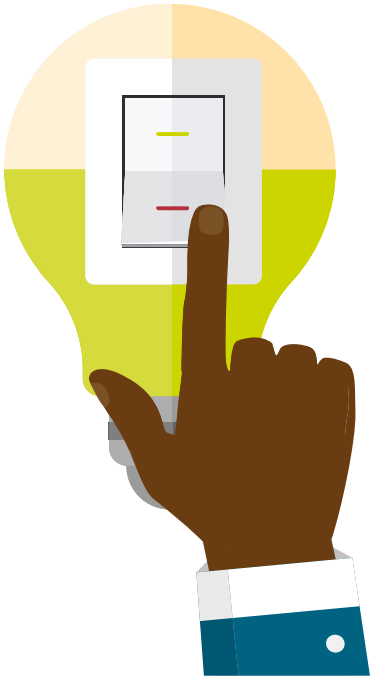
THE CONCEPT OF RESIDUAL EMISSIONS: WHAT IF WE DON'T MEET THE TARGET?

With modern-day technology, the major building blocks of carbon neutrality by 2050 are technically and economically feasible. However, the commitment also includes ensuring that we help drive the major transitions in the energy and transport sectors' value chains. A great many scenarios can play out in how these sectors transition in the years up to 2050. Unforeseen technological breakthroughs may mean that the target is achieved with little effort. Economic stagnation and the influence of vested interests on national policy may, however, make the target more challenging to reach. Furthermore, the "last mile" emissions may well incur unaffordable costs.

The carbon neutral commitment defines the concept of "residual emissions" so as to recognise that, for both the final target and interim targets along the way, there will be some emissions that cannot be cut. Some cities in the global North have committed to offset or physically capture these, but the current terms of the C40 Deadline 2020 commitment do not compel cities in the global South to pledge absolute carbon neutrality. However, the commitment is predicated on "ambition", and commitment to the Paris Agreement. As a practical guideline, residual emissions of 20% of base-year emissions may be considered an upper limit for a climate action plan.

RESIDUAL EMISSIONS are the net CO_2 emissions emitted on a per-annum basis at the end of the accounting period (which is 2050 for the final year of the commitment and 2030 for the interim target). The carbon neutral commitment entails aiming to make these as low as possible by 2050. Therefore, it is **CRITICAL TO START TRANSFORMING THE ELECTRICITY AND TRANSPORT VALUE CHAINS AS EARLY AS POSSIBLE, IN LINE WITH THE GLOBAL ENERGY TRANSITION**.

This means that the City, as custodian and enabler of reaching the target, has a major role to play in continuously assessing progress, defining and redefining the actions necessary for stakeholders to move along the optimal trajectory, and engaging robustly based on reliable evidence.



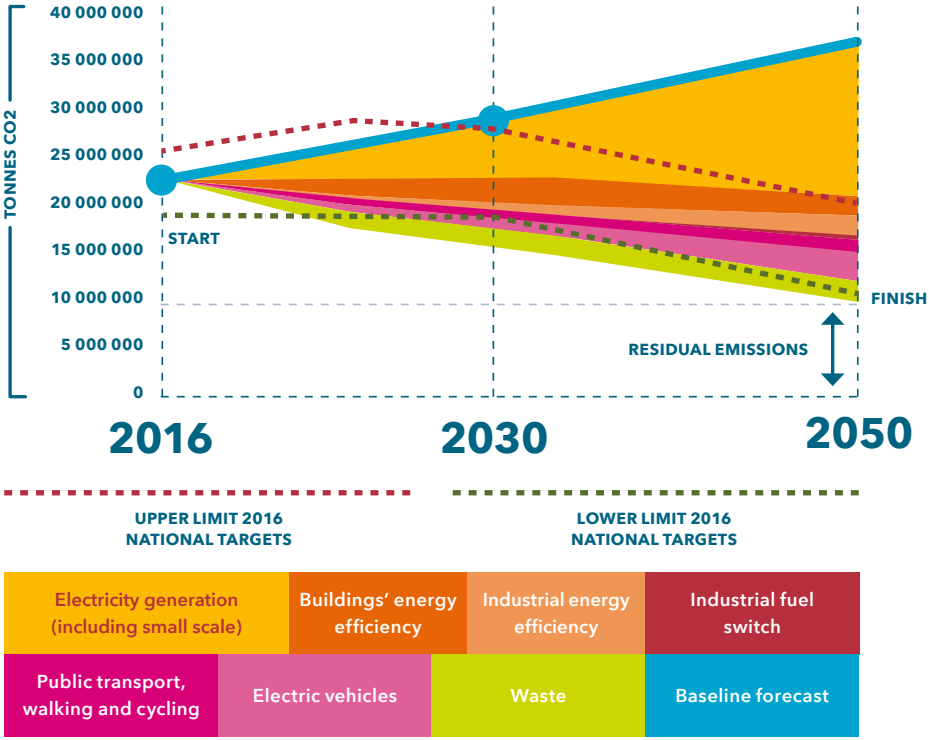


Figure 3: Given the local contingencies on deep decarbonisation, the planning team developed a second scenario "Ambition under Limited Mandate and Opportunity" which has higher residual emissions, but is more ambitious than current national targets.

Note: The Upper and Lower National Targets are those published in South Africa's NDC scaled proportional to the emissions within the city boundary relative to those of the country in 2016. This entails Cape Town decarbonising proportionally to the rest of the country and per capita emissions would remain lower than the rest of the country.

Given the political, economic and technological uncertainties involved, we do not know how close we can come to complete carbon neutrality. We also do not know whether offsets will be an economically realistic option for the City at the time of the interim and final targets. Ultimately, many of the outcomes are beyond local government's direct control.

THE CARBON NEUTRAL COMMITMENT DOES NOT BIND THE CITY OF CAPE TOWN TO FIXED OUTCOMES UNDER THE THREAT OF PENALTIES IN THE MANNER OF A LOAN OR TREATY.

Instead, the commitment is about making ambitious low-carbon choices where these are economically and socially beneficial in our own context, and thinking big in terms of being a part of the emerging global green economy. Furthermore, much can be achieved by the sum of many individual citizen actions, which can and should generate additional local environmental, social and economic benefits.

WHAT ARE THE SOCIAL AND ECONOMIC IMPLICATIONS?

The City's top priorities remain the social well-being of its citizens, as well as service delivery. The carbon neutral commitment in no way implies that our aspirations for economic growth and increased competitiveness have diminished. What it does mean, however, is that parts of the economy will be profoundly different from what they are now. That is why the City is working with the Province to maximise participation in the green economy.

The core economic thinking behind the strategy to achieve the carbon neutral commitment is the deployment of new technologies at scale, as and when they become the best economic choice. The City will take an active role in this by enabling policy and regulation, and helping to build green value chains through partnerships and procurement. Doing this through direct subsidies or subsidised price signals will, however, only be considered if these are economically sustainable and support local employment. Economic incentives such as parking waivers or free access to congestion zones for electric vehicles would be more appropriate measures. The needs and well-being of stakeholders in the existing value chains also require careful consideration. The timeframes for diversifying and adapting their businesses need to be integrated with policy wherever possible.

THE CITY WILL TAKE AN ACTIVE ROLE IN THIS BY ENABLING POLICY AND REGULATION, AND HELPING TO BUILD GREEN VALUE CHAINS THROUGH **PARTNERSHIPS** AND **PROCUREMENT**.

THE STEPS TO CARBON NEUTRALITY: WHAT CAN I DO? WHAT CAN OTHER INSTITUTIONS DO?

The carbon neutral commitment cannot succeed without individuals' buy-in and participation. There are many simple actions, some big and some small, that each of us can take to contribute (figure 4).

Achieving our vision of a re-imagined, carbon neutral Cape Town means that all new buildings, including much-needed housing, schools and clinics, need to be as energy-efficient as possible, reducing ongoing costs to their users. Buildings will also need to be well located to reduce the time and money spent travelling to and from places of work. Travel will have to be by safe, reliable and affordable public transport, complemented by appealing active-mobility options, such as walking and cycling. In addition, we need to ensure that the electricity we supply is linked to clean, renewable energy instead of dirty coal, and that we limit our waste production and recycle everything recyclable.

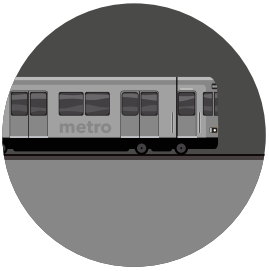
While the City recognises its role in leading and driving the kinds of initiatives that will get us to carbon neutrality, we cannot do this alone. We are inviting all our citizens, businesses, visitors, the provincial and national governments, academia and civil-society organisations to partner with us on this journey. The journey towards carbon neutrality depicted on the next page is not only transformative across sectors, but also promises better ways of working and living in a less polluted environment.

HOW CAN CITIZENS HELP TO REACH CARBON NEUTRALITY?

Figure 4: There is a lot each citizen can do. More than that, though, a commitment of this nature has to be powered by citizen demand and individual choices for affordable green services.

OUR TRAIN SYSTEM IS IN CRISIS

EVEN IF YOU'VE NEVER TAKEN THE TRAIN IN YOUR LIFE, THE TRAIN SYSTEM IS KEY TO YOUR FUTURE.



The train lines in Cape Town run through the city like arteries through the zones of dense activity. The rail service moves large numbers of people very efficiently, and is unaffected by congestion. Consequently all the City Transport Plans use the rail system as a backbone. Our backbone is being broken and must be saved.

HOW CAN CITIZENS HELP TO SUPPORT THE RAIL SYSTEM?

- ☑ Share your property lighting with railway precincts if you live nearby
- ☑ Lobby your union, councillor and parliament for better service
- ☑ Campaign for rail sector reform
- ☑ Demand transparency from transport state entities
- ☑ Do community cleanups of railway precincts (station areas only, STAY AWAY FROM THE LINES)
- ☑ Report cable theft and don't buy copper and cable informally

WHAT WILL THE CITY BE DOING?

The following are the areas where the City itself can drive the vision of a carbon neutral Cape Town:

STRENGTHENING PLANNING AND BUILDING OUR EVIDENCE BASE

Based on a shared vision for the future, we will decide which existing initiatives we need to strengthen and which new ones we need to include to ensure that we are on track. Importantly, we will track our progress, learn, and adapt our plans as we go.

POLICIES, BY-LAWS AND INCENTIVES

We will continue to ensure that new and existing regulatory instruments enable and support businesses and citizens to take part in the transition to carbon neutrality.

LEADING BY EXAMPLE

We will ensure that all our procurement is green, and will continue incentivising green industries through the infrastructure and services we invest in. We are also encouraging our staff to minimise their own carbon footprint. Municipal operations represent the single biggest contribution of any entity to Cape Town's emissions (around 4%), so leading by example means that all municipal operations need to have a net zero carbon footprint.

We will do this by ensuring that we own and operate carbon neutral buildings and facilities, green our vehicle fleet, enhance the efficiency of our operations, and generate and/or buy renewable energy wherever possible.

FINANCING AND TECHNOLOGY

We will embrace appropriate technologies, attract funding and investment for resource-efficient infrastructure, and carry out thorough cost-benefit, financial and economic analyses in the prioritisation of projects.

COLLABORATION, PARTNERSHIPS AND COMMUNICATION

We will identify our key partners, strengthen our relationships and invite others to contribute ideas and join the transition. Our partners will include our communities, development agencies, grassroots organisations, non-governmental organisations (NGOs), businesses, academic institutions and, of course, provincial and national government. Since enormous value chains need to be shifted through technological revolutions, collaboration with business and industrial partners is key. We will also continue to actively participate in our global networks to ensure that we learn from best practices in other cities around the globe and share our experience with others in peer-to-peer learning exchanges.

IMPLEMENTING OUR PLANS

We will select a list of key action areas by carefully analysing the synergies and trade-offs, understanding co-benefits and examining the cost and feasibility of actions. This analysis will lead to a comprehensive cross-sectoral action plan that needs to be in place by 2020. The plan will then be updated every five years to ensure that we meet the interim target by 2030, and reach carbon neutrality by 2050. As a major global city, we are responsible for setting an example for other cities to follow so that, collectively, we meet the required targets.

The City needs to enable the following solutions across the sectors listed below:

SOURCE	SOLUTIONS
	**Buildings** • Optimal energy efficiency • Meeting remaining energy requirements from clean sources • Carbon neutral new-build programme by 2030 • Use and reuse of local low-carbon building materials
	**Energy** • Affordable, sufficient and secure • Support the uptake of renewable sources
	**Spatial planning** • Transit-oriented, densified and diversified urban development and growth • Well-located and affordable housing
	**Transport** • Reduced frequency and distance of trips due to improved spatial planning • Efficient and integrated public transport system • Increase in active-mobility and non-motorised transport • All vehicles powered with clean fuels
	**Waste generation and management** • Circular systems that generate local jobs, and an economy that keeps materials at their highest value for as long as possible
	**Agriculture and land use** • Sustained decrease in environmental footprint of the vital local food and beverages sector, and support for regional agriculture to increase its competitiveness • Support for natural systems, urban greening and regenerative (or "restorative") agriculture

Other key drivers:

- ☑ Motivating citizens to make localised, responsible consumption choices that are better for their well-being and the environment, and also minimise embedded carbon in the production and transport of goods and services.
- ☑ Low-carbon development and service delivery models that are informed by interdependencies between the city, region, country and planet.

HOW WILL CARBON NEUTRALITY BENEFIT CAPE TOWN?

The City's vision for carbon neutrality is strongly framed within the context of co-benefits, meaning that reduced GHG emissions will not be the only benefit derived from the programme. In fact, many actions will not even be presented primarily as responses to climate change, but will emphasise the following benefits instead:

- ☑ **Enhanced energy security**
- ☑ **Reduced local air pollution, particularly the brown haze in winter**
- ☑ **Cleaner and safer urban environment**
- ☑ **Greater equity and inclusivity**
- ☑ **'Smarter' and more resource-efficient**
- ☑ **Global and regional competitiveness**
- ☑ **Less dependence on imported fossil fuels**
- ☑ **Localisation of jobs and goods**

Cape Town's carbon neutral goal offers a story of hope as we find solutions to current and future challenges and create a city that is cleaner, healthier, safer and more equitable, with decent employment opportunities and sustainable economic development.

This vision for the journey to a carbon neutral Cape Town, developed during the City's first internal stakeholder engagement, emphasises the many facets that drive the commitment:

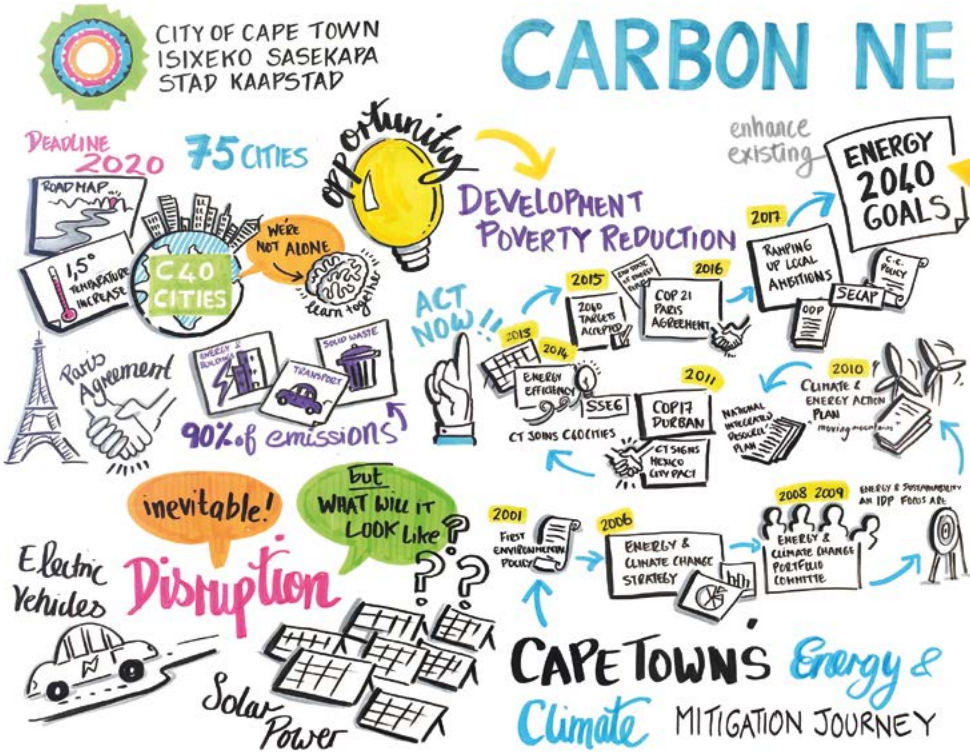


Figure 5: Vision for a carbon neutral Cape Town by 2050.

- Our city as a global trade partner and citizen
- The need to seek opportunities in technology disruption
- Social and economic improvement and poverty reduction must be at the forefront of actions
- Modernising key economic sectors in an integrated way
- The enabling role of government to support business and citizens

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More information available from:
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