



MOORE

MOORE SOUTH AFRICA

GREEN ECONOMY GUIDE

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DISCLAIMER

The information contained herein is a summary of some of the key concepts and challenges which business, government and the individual face in relation to environmental issues facing our planet, social responsibility, corporate governance, and the concept of sustainable business practices. It is issued as a general overview of the topic.

Consequently, we recommend that professional advice be sought before making any decisions based on this guide's contents or when dealing with any matters relating thereto.

While every care has been taken in the compilation of this guide, no responsibility of any nature whatsoever shall be accepted for any inaccuracies, errors or omissions.

1. INTRODUCTION

Since the 1980's there has been a global movement towards sustainability and sustainable development – as countries and governments have realised that economic development at the cost of destroying the planet's natural resources and social equity does not lead to long-lasting prosperity.

The sustainability movement has been increasing in momentum over the past number of years-both on a global scale and in South Africa. There has been a mass mobilisation of the younger generation around climate change, the most outspoken being Swedish climate activist, Greta Thunberg. She addressed the World Economic Forum Annual meeting in 2020 at Davos-Klosters, Switzerland, stating: "why is it so important to stay below 1.5 degrees celsius? Because even at 1 degree people are dying from climate change.....with today's emissions levels, the remaining budget is gone within less than eight years.." There have been some positive developments recently - the 2021 COP26 meeting being the most recent at the date of publication hereof, as well as the global adoption of the 17 Sustainable Development Goals (UN Agenda 2030), both of which South Africa is a party to. These international conferences and agreements have underpinned many of the policies and legislation that the South African government has implemented, including the Carbon Tax Act (no.15 of 2019), and the Climate Change Bill, 2018, which was approved by Cabinet in September 2021. However, in real terms there is still a very long way to go – particularly in relation to what business organisations are doing in regard to sustainable development.

This guide aims to provide the reader with an overview of the current environmental crisis and sustainability issues facing our plant, the concept of sustainable development, a green economy, and the role that stakeholders ranging from international bodies (such as the various UN organisations), national governments, non-governmental organisations (NGO's), businesses and organisations, as well as individuals can take in ensuring that the current generation of humans live sustainably and work for the benefit of the future generations to come.

We have made use of numerical notes throughout the text, indicating a reference to source material used during the writing of the guide. The comprehensive list appears on the last two pages of the guide.

2. ENVIRONMENTAL AND SUSTAINABILITY ISSUES FACING OUR PLANET

Greenhouse gas emissions

The earth needs naturally occurring greenhouse gases (GHG) to warm the climate, (such as water vapour) otherwise the earth's surface would be too cold to sustain life. Human activity has unnaturally increased the emissions of greenhouse gases into the atmosphere. Globally the primary sources of greenhouse gas emissions are:

- from the energy sector: electricity and heat.
- from the agricultural sector: changes in land use, farming, forestry.
- from the industrial sector: manufacturing and transportation.

The energy sector:

Fossil fuel combustion such as oil, gasoline, coal, natural gas, and cement production release carbon dioxide into the atmosphere, and it is well documented that carbon dioxide contributes by far the most to greenhouse gas emissions. Based on preliminary analysis, the global average atmospheric carbon dioxide in 2020 was 412.5 parts per million (ppm for short), setting a new record high amount - despite the economic slowdown due to the COVID-19 pandemic. [1]

- Carbon dioxide is not the only greenhouse gas produced in the energy sector. Other gases produced include emissions of methane, nitrous oxide and three groups of fluorinated gases (sulfur hexafluoride, organo fluorine, and per fluorocarbons).

South Africa and greenhouse gas emissions from the energy sector:

- South Africa is the world's 14th largest emitter of greenhouse gases. The energy sector, including energy production and use, contributes to about 84% of greenhouse gas emissions in South Africa. [2]
- South Africa is one of the most carbon emissions-intensive countries in the world, due to its high dependence of coal for primary energy - about 77% of South Africa's primary energy needs are provided by coal [3] - the responsibility to mitigate is higher, and major changes in energy systems are needed urgently.

The industrial sector:

- Industrial processes contribute to greenhouse gases in the atmosphere, mainly from transportation and manufacturing processes. Chlorofluorocarbons (CFC's) are used in refrigeration systems, and the use of CFC's and halons in fire suppression systems and manufacturing processes create further greenhouse gases.

The agricultural sector:

- Agriculture, changes in land use including deforestation and land degradation all contribute to the emission of greenhouse gases in the atmosphere.

Transport and domestic heating and cooling:

- Home heating and cooling, as well as transportation are major contributors towards the emission of methane, nitrous oxide and hydro fluorocarbons (HFC's).

Waste:

- Greenhouse gas emissions from landfills are mainly due to methane and carbon dioxide. Waste, and particularly food waste, contributes to about 8% of greenhouse gas emissions globally. [4]

Effect on weather patterns, global warming and climate change

- Greenhouse gases greatly affect the temperature on earth. Heat from the sun is trapped by the emissions, causing the earth's atmosphere to warm up, known as global warming, which we have already been observing over the past several decades on our planet.
- Despite a temporary drop in carbon emissions from the 2020 Covid-19 outbreak, countries have turned to cheap fossil fuels to revive their economies after the initial crisis. Carbon emissions soared and temperatures followed, setting the stage for 5 °C of warming by the end of the century.[5] During the course of 2021, the Arctic (north of 60°N) is likely to have warmed by more than twice as much as the global mean compared to the recent past.[6] The global average temperature is expected to warm at least twice as much in the

next 100 years as it has during the last 100 years, unless aggressive mitigation actions take place. [7]

- When the average temperature across the globe rises – and stays at the higher level – the effects on weather patterns are as changes in rainfall patterns and sea levels, changes in distribution of rain and snow across the globe, increased evaporation of surface water, leading to greater precipitation, cyclones and flooding. In some areas the balance between winter and summer precipitation may shift, having the opposite effect of decreasing rainfall, and creating drought conditions. Destructive heavy rains, intense tropical storms, flooding and drought are likely to continue to be on the increase – taking a heavy toll on human life, financial cost and human displacement.

South Africa is experiencing the effects of climate change – with drought and water scarcity currently being experienced over many parts of the country.

- According to the Western Cape Department of Environmental Affairs and Development Planning, climate change will continue to affect the Western Cape in the following ways [8]:
 - ◆ Higher average annual temperature, higher maximum temperatures, and higher minimum temperatures, more hot days and more heat waves, reduced average rainfall in the Western Cape. In 2017/2018 the Western Cape experienced its worst drought in decades, with the possibility of a “day zero” where the City of Cape Town faced running out of water. Rising sea levels, and increased fire risks.

Other environmental effects

Ozone depletion

Ozone depletion describes two distinct but related phenomena observed since the late 1970s:

- a) A steady decline of about 4% per decade in the total volume of ozone in Earth’s stratosphere (the ozone layer), and
- b) A much larger springtime decrease in stratospheric ozone over Earth’s polar regions. This phenomenon is referred to as the ozone hole [9].

Effects of Ozone Depletion:

- The stratosphere of the earth (which extends to about 50km above the earth's surface) protects the atmosphere from damaging ultraviolet (UV) light. Small amounts of UV radiation are healthy for the human being, especially in the production of Vitamin D, however over-exposure may result in detrimental health effects to the immune system, skin and eyes, and widespread cancer.
- Ozone depletion also results in damage to plants and reduction of plankton populations in the ocean's photic zone.
- Observed and projected decreases in ozone have generated worldwide concern leading to adoption of the Montreal Protocol [10] that bans the production of CFCs, halons, and other ozone-depleting chemicals such as carbon tetrachloride and trichloroethane.

Air pollution and Acid Rain

- Other human impacts on the atmosphere include air pollution in cities, the pollutants including toxic chemicals like nitrogen oxides, sulfur oxides that produce photochemical smog and acid rain.

Shrinking forests

- Deforestation is the permanent destruction of forests in order to make the land available for other uses. The World Bank estimates that about 10 million square km of forest have been lost since the beginning of the 20th century. In the past 25 years, forests shrank by 1.3 million square km – an area bigger than the size of South Africa. [11]

Effect of shrinking forests: Trees as 'carbon sinks':

- A 'carbon sink' is anything that absorbs more carbon than it releases as opposed to a 'carbon source' that is anything that releases more carbon than is absorbed. Forests, soils, oceans and the atmosphere all naturally store carbon. A continuous carbon cycle occurs by natural process when the carbon moves between them. This constant movement of carbon means that forests act as both a source or a sink at different times. Fossil fuel combustion (when humans burn coal, oil and natural gas) means that carbon turns from a carbon

store buried deep inside the earth to atmospheric carbon, causing (unnatural) greenhouse gas concentrations in the atmosphere.

- According to statistics, humankind is adding about 40 billion tonnes of carbon per annum to the atmospheric carbon cycle – which has the effect of significantly altering the delicate balance of carbon fluxes in the atmosphere, and consequently affecting the climate. [12] Deforestation means that the carbon sink effect of trees, (ability to take carbon out of the atmosphere) is significantly diminished, and some environmental groups are of the view that even afforestation projects (planting of trees and reducing deforestation) will not have a significant impact (as not all carbon is the same), and that it is not possible to accurately measure the “sink” effect of a forest (trees will take in different amounts of carbon depending on the weather, species of tree and very little is known about the movement of carbon in forest soils). They argue that instead, a move towards low-carbon economics is the only solution.

Water problems and Wetlands

- As the population increases and climate change causes more droughts, water scarcity is becoming more of an issue. Only 3% of the world's water is fresh water, and two-thirds of that is tucked away in frozen glaciers or otherwise unavailable for our use. As a result, some 1.1 billion people worldwide lack access to water, and a total of 2.7 billion find water scarce for at least one month of the year. [13]
- Wetlands are being destroyed – by being covered over and turned into housing estates, shopping centres, industrial areas, or sewerage farms. The usual wetland function of producing conserved and clean water is diminished (they act as natural filters trapping sediment, nutrients and bacteria).
- Wetlands are also home to a wide variety of bird and insect life, and their destruction means an interruption in the ecological life-cycle.

Soil erosion, land degradation and desertification

- Land degradation is caused by soil erosion, land clearance and poor agricultural practices. Desertification is the degradation of formerly productive land, primarily due to human activity. Lower agricultural yields result, ultimately in poverty and starvation.

Polar Ice and rising sea levels

- Global warming can result in increased melt of polar ice, sea ice and glaciers. Melted sea ice results in increased salt water intrusion into coastal aquifers and it is anticipated that the sea levels will rise by between 50cm and 1.5 metres by 2100. [14]

Endangered Species and Biodiversity Loss

- The term 'biodiversity' is used to describe a concern for the natural environment and nature conservation.
- Man-made carbon dioxide emissions into the atmosphere coupled with the destruction of the natural off-setters (plants, trees, soil) means that the natural checks and balances that nature usually uses to correct the process and adapt to the change, are not able to take place.

Vanishing fisheries

- Statistics show that more fish are hauled out of the sea than can be naturally replenished. [15]

Societal issues

Poverty and inequality

- Climate change is increasingly viewed as a current and future cause of hunger and poverty.

Surging population

- The current world population is 7.9 billion (as of October 2021) according to the most recent United Nations estimates elaborated by Worldometer. [16] The population is projected to reach 10 billion by 2057, and according to a recent United Nations report, growth will be mainly in developing countries, with more than half in Africa. [17] The scientific consensus is that the current population expansion and accompanying increase in demand and usage of resources is linked to threats to our ecosystem. [18] More people means more food, more water, more energy consumption.

Disease

- Run-off from flooding can cause an increase in water-borne disease such as cholera, diarrhoea, and typhoid. Disease and poverty are closely related. Poorer people succumb to tuberculosis, HIV/AIDS caused by living conditions and lack of access to treatment.

Hormone/Endocrine Disruptors

- The hypothesis has been put forward that humans and wildlife species have suffered adverse health effects after exposure to endocrine-disrupting chemicals, released into the environment by industry. Reported adverse effects include declines in populations, increases in cancers, and reduced reproductive function. [19]

Only a range of international treaties, and pledges, government policies and legislation are likely to bring about a decrease in greenhouse gas emissions.

During October and November 2021, the 26th UN Climate Change Conference of the Parties (COP26) was held in Glasgow - its aim to bring international parties together to accelerate action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change, and to establish legally binding limits on greenhouse gas emissions for individual countries, as well as to define an enforcement mechanism.

3. WHAT IS SUSTAINABLE DEVELOPMENT?

The sustainability movement is based on the premise that the development of 3 aspects – the economy – the environment – and society – need to be balanced, in order for us to find lasting prosperity for future generations on our planet. Sustainability therefore incorporates the idea that we balance the meeting of our own needs without compromising the ability of future generations to meet their own needs.

Companies, organisations and the individual need to develop an understanding of sustainability and sustainable development, in order to align their strategies and intentions with global and national programmes and commitments, and in order to modify practices and industry in sustainable ways.

Definitions of sustainable development

- There are varying interpretations on what sustainable development means, and not all definitions are universally agreed upon. The National Environmental Management Act (no. 107 of 1998) defines sustainable development as "the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations." In addition, the following definitions have been suggested by various groups, and are useful in understanding the concept:
- **The Brundtland Commission Report (1983) [20]:** "sustainable development is development that meets the needs of the present without compromising the ability of the future generations to meet their own needs".
- **World Wide Fund for Nature (WWF):** "sustainable development means improving the quality of life while living within the carrying capacity of supporting ecosystems".
- **Agenda 21 [21]:** "a sustainable planet is contingent on world peace, respect for human rights, participatory democracy, self-determination of peoples, respect for indigenous peoples, their land, religion and culture, and the protection of all species".

Basically sustainable development means achieving the outcome whereby the current generation will live on earth under comfortable conditions, and future generations will continue to live under the same conditions, while human needs are supported at the same time.

The Natural Step

Another useful description of what it means to be sustainable was developed by a Swedish doctor, Dr Karl-Hendrik Robèrt, who developed a guideline for a sustainability definition in the 1980's which became known as 'The Natural Step' (TNS). [22] Robèrt recognised that our world is essentially a closed system, meaning that outside of the sun's energy streaming to earth, there are no new materials and resources to be found on this planet other than what was here to begin with.

- The Natural Step defines minimum environmental conditions necessary for maintaining life sustainably in a closed-system world such as planet earth, as listed below. In the sustainable society, nature is not subject to systematically increasing:
 - ◆ Concentrations of substances extracted from the Earth's crust (stored deposits such as coal and lead).
 - ◆ Concentrations of substances produced by society, degradation by physical means.
 - ◆ People must not be subjected to conditions that systematically undermine their capacity to meet their needs.

Economic, Social and Environmental dimensions

- Sustainable development does not just depend on environmental issues. It encompasses the long-term maintenance of our general well-being – which has environmental, economic and social dimensions, all of which need to be reconciled with each other. [23]
- This view of sustainability has become known as the 'Three Pillars of Sustainable Development', coined as such in the 2005 World Summit Outcome Document. [24]

Social Dimension (People)

- Implementing change has a social dimension that entails aspects such as:

Peace, Security and Social Justice

- Urban planning and transport, local and individual lifestyles, health
- Ethical consumerism, improved education
- Fundamental human rights including racism, gender equality and the political empowerment of women
- Ensuring the management of resources such as rivers that span political boundaries thus creating environmental security
- Community outreach, labour relations

Poverty

- Individuals living in poverty tend to rely heavily on their local ecosystem as a source for their basic needs. It is one source of environmental degradation (Brundtland Report)
- Alleviation of poverty is a major aspect of change required

Human Relationship to nature

- Nature has, since the industrial revolution, been treated as a commodity
- So-called “deep ecologists” believe that policies for basic economic, technological and ideological structures that will maintain and improve the **quality of life** rather than the **standard of living** need to be implemented and achieved
- Individualistic and materialistic societal values and ideologies need to be tackled head-on, strengthening the human relationship to the natural world

Human settlements

- A concept of the bioregional economy – self sufficiency and eco-villages
- Altering the built environment to create and preserve sustainable cities which support sustainable transport

Individuals can reduce their personal impact on the environment through a series of small inexpensive steps.

Environmental Dimension (Planet)

- **Environmental Goals** of achieving clean air, water and land emissions, zero waste, zero releases and spills, reduction of carbon emissions and greenhouse gases, a comfortable climate without frequent and extreme weather conditions.
- Maintaining essential ecological processes, preserving biological diversity, sustaining the use of species and ecosystems (some of which support important industries).
- Water efficiency to continually be improved on a local and global scale by increased demand management, improved infrastructures, improved water productivity of agriculture, minimising the water intensity of goods and services, planning for climate change and drought.
- Developing diverse opportunities for non-material use of natural resources (spiritual, recreational, aesthetic).
- Environment Ethics. Ecological integrity is maintained, all of earth's environmental systems are kept in balance while natural resources within them are consumed by humans at a rate where they are able to replenish themselves.
- Sustainable use of materials has included the concept of '**dematerialisation**' [25] - whereby the linear path of materials is converted to a circular material flow:

From:

Extraction

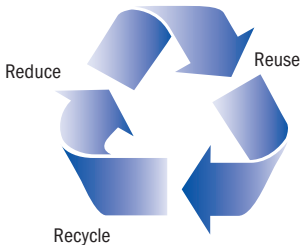


Use



Disposal in landfill

To:



Renewable energy commercialisation

- First generation renewable energy technologies include biomass, hydroelectricity, geothermal power and heat. These technologies are already economically competitive globally.
- Second generation renewable energy technologies include solar heating, photovoltaics, wind power, solar thermal power stations and modern forms of bio-energy. These technologies are currently being deployed globally.
- Third generation renewable energy technologies include advanced biomass gasification, bio-refinery technologies, hot-dry-rock geothermal power and ocean energy. These technologies require further research and development. [26]
- A new policy and direction for the energy sector in South Africa is set out in the **Integrated Resource Plan (IRP 2019)**. It aims to introduce a co-ordinated schedule for generation expansion and demand-side intervention programmes, taking into consideration multiple criteria to meet electricity demand, and incorporates a shift away from coal to an increased adoption of renewable energy sources such as wind and solar energy as well as gas based generation capacity by 2030.
- The Redstone Solar Thermal Power Plant, the first of its kind in Africa, is set to be constructed in Postmansburg and will see the revolutionary use of thermal power. The plant will be able to generate 100 MW of energy, enough to power 200 000 houses, and joins 26 other renewable energy projects in South Africa, which forms part of the South African Renewable Energy Independent Power Producer (REIPP) Procurement Program, and which will add 2 300 MW of electricity to the national grid. [27]

Economic Dimension (Profit)

- There is a proven scientific correlation between economic growth and environmental degradation. [28]
- **Economic goals for sustainability**-generally involve aspects such as international trade, corporate governance, innovation, capital efficiency, risk management, margin improvement, growth enhancement, and total shareholder return. The goal in the context of sustainability is where humans continue to have access to resources (financial and other) to meet their needs and economic systems remain intact (secure sources of livelihood) without impacting negatively on society or the environment.

- In economic and environmental fields, the term ‘decoupling’ is becoming increasingly used in the context of economic production and environmental quality. An economy that is able to sustain Gross Domestic Product (GDP) growth without having a negative impact on the environment is said to be decoupled. [29]

Some further aspects of sustainability in the economic context include:

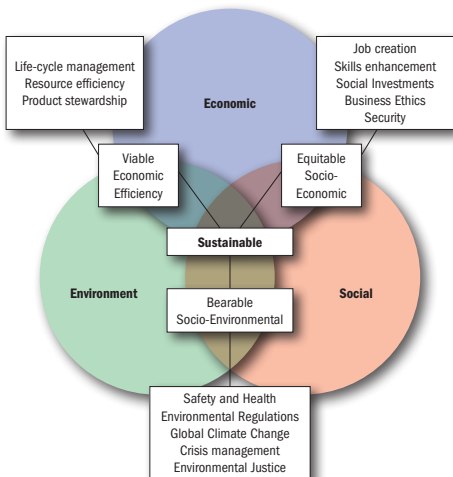
Reducing resource intensity	A goal of ‘sustainable scale’ rather than ‘continual growth’
	Finding ways to reduce resource intensity i.e the amount of the resource needed for production, consumption and disposal of a good or service – either by way of economic management, product design or new technology
Environmental taxes and incentives	Using marketing strategies like eco-taxes and incentives, tradable permits for carbon
	Encouraging the payment for ecosystem services
Economic opportunity	Sustainable business practices integrate social economic and environmental concerns - the “triple bottom line” concept
	The benefits of sustainable business practice and its competitive advantage and profitability - for example, waste reduction results in savings from disposal costs, fewer environmental penalties, and reduced liability insurance, improved public image. Every economic activity produces material that can be classified as waste. Business and industry are now buying into the ideas of eco-design and eco-labelling. Job creation opportunities by the introduction of “green collar” workers
Green Economics	A market-based attempt to address issues of equity and the environment
	A range of government policies, legislation and the implementation of green taxes are likely to bring about a decrease in carbon dioxide emissions

Low Carbon Economics:

- A low carbon economy (LCE) or low fossil fuel economy (LFFE) is an economy which has minimal output of greenhouse gas emissions, but specifically refers to the greenhouse gas of carbon dioxide.

- The aim of a LCE is to:
 - ◆ Implement technologies that produce energy and materials with little greenhouse gas emissions in the manufacturing, agricultural, transportation and power-generation sectors.
 - ◆ Dispose of or recycle waste.
- Some other means to achieve LCE would be for retail operations to use high efficiency lighting such as compact fluorescent, halogen and LED light sources, or roof top solar panels. [30]

Scheme of sustainable development: at the confluence of three constituent parts [31]



Source: Wikipedia http://en.wikipedia.org/wiki/Sustainable_development

Integration of the “Three Pillars of Sustainability”:

- Where the social, economic and environmental objectives of sustainable development are integrated into the policy documents and implementation strategies in international treaties, national government and local government policy documents.
- Where the business sector as well as individuals and voluntary groups align themselves with the policies, as all these key players have a major role to play in the transition towards sustainable development.

4. THE 17 SUSTAINABLE DEVELOPMENT GOALS (SDGS)

The 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development were adopted by 193 world leaders in September 2015 at the United Nations General Assembly: “Transforming our World: the 2030 Agenda for Sustainable Development” [known as Agenda 2030]. They officially came into force on the 1 January 2016. South Africa is one of the member states of the United Nations. The SDGs are significant, as they consist of a call for action for countries to play their part in combating the climate concerns of today and protecting the planet for future generations. These broad and interdependent goals chart a way towards a sustainable future.

The 2030 Agenda consists of four parts:

- Vision and principles
- Goals and Targets
- Means of implementation
- Follow up review mechanism

Vision and principles

Countries that have committed to the 17 SDGs have until 2030 to achieve 3 overarching goals which underpin the Agenda. They are:

- To end extreme poverty.

Source: Wikipedia http://en.wikipedia.org/wiki/Sustainable_development

- To fight inequality and injustice.
- To fix climate change.

The preamble of Agenda 2030 states that the 17 SDGs and 169 targets linked to the goals, seek to build on the 8 Millennium Development Goals (set down in 2000 at the Millennium Summit of the United Nations), and balance the three dimensions of sustainable development: the economic, social and environmental.

In its declaration, Agenda 2030 further states that all previous United Nations summits on the issue have laid the foundation for sustainable development and have “... helped to shape the new Agenda – which will be implemented for the full benefit of all for today’s and future generations...”

Goals and targets

- Linked to the 17 SDG’s are 169 targets, and over 200 indicators – all of which are integrated and indivisible, global in nature and universally applicable.
- The targets are defined as global with each country being required to set its own national targets but guided by the global goals, and taking into account the country’s own national circumstances.
- Apart from SDG Goal number 7, which advocates for access to affordable, reliable, sustainable and modern energy, SDG Goal number 13 is particularly significant, as it encourages all nations to take urgent action to combat climate change and its impacts.

The Global Goals for Sustainable Development

The 2030 Agenda sets out the 17 SDGs in more detail as follows:

Goal 1. End poverty in all its forms everywhere

There are 5 sub-goals set out – one of which is by 2030 to reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.

Source: United Nations, 2015: Sustainable Development Goals,
URL: <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture

There are 5 sub-goals set out – one of which is to end hunger by 2030 and ensure access by all people in particular the poor and vulnerable including infants – to safe and nutritious and sufficient food all year round.

Goal 3. Ensure healthy lives and promote well-being for all at all ages

There are 9 sub-goals set out – one of which is by 2030 to reduce the global maternal mortality ratio to less than 70 per 100,000 live births.

Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

There are 7 sub-goals set out – one of which is that by 2030 all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education.

Goal 5. Achieve gender equality and empower all women and girls

There are 6 sub-goals set out – one of which is to end all forms of discrimination against all women and girls everywhere.

Goal 6. Ensure availability and sustainable management of water and sanitation for all

There are 6 sub-goals set out – one of which is that by 2030 universal and equitable access to safe and affordable drinking water for all will be achieved.

Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all

There are 3 sub-goals set out – one of which is that by 2030 the share of renewable energy in the global energy mix will be increased.

Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

There are 10 sub-goals set out – one of which is to sustain economic growth in accordance with national circumstances and in particular at least 7% gross domestic product growth per annum in the least developed countries.

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

There are 5 sub-goals set out – one of which is to develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.

Goal 10. Reduce inequality within and among countries

There are 7 sub-goals set out – one of which is that by 2030 to progressively achieve and sustain income growth of the bottom 40% of the population at a higher than the national average.

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable

There are 7 sub-goals set out – one of which is that by 2030 to ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.

Goal 12. Ensure sustainable consumption and production patterns

There are 8 sub-goals set out – one of which is to encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information in their reporting cycle.

Goal 13. Take urgent action to combat climate change and its impacts

[acknowledging that the United Nations Framework Convention on Climate Change is the primary international, inter-governmental forum for negotiating the global response to climate change]

Source: United Nations, 2015: Sustainable Development Goals,

URL: <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

There are 3 sub-goals set out – one of which is to integrate climate change measures into national policies, strategies and planning.

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

There are 7 sub-goals set out – one of which is that by 2025 to prevent and significantly reduce marine pollution of all kinds in particular from land based activities, including marine debris and nutrient pollution.

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

There are 9 sub-goals set out – one of which is that by 2030, to ensure the conservation of mountain ecosystems, including their biodiversity, to enhance their capacity to provide benefits which are essential for sustainable development.

Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

There are 10 sub-goals set out – one of which is to ensure public access to information and protect fundamental freedoms in accordance with national legislation and international agreements – e.g. promote and enforce non-discriminatory laws and policies for sustainable development.

Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

There are 19 sub-goals set out- under the following headings: Finance, Technology, Capacity-building, Trade, and Systemic issues.

Means of Implementation

- Agenda 2030 recognises that each country has primary responsibility for its own economic and social development, and that the new Agenda deals with the means required for implementation of goals and targets.

Source: United Nations, 2015: Sustainable Development Goals,

URL: <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

- Each Government will decide on how the global targets set will be incorporated into national planning processes, policies and strategies.
- All countries are expected to work to implement the Agenda at both the regional and global levels, taking into account different national realities, capacities and levels of development and respecting national policies and priorities.
- Agenda 2030 states that a “Global partnership” effort is required in order to implement the goals and targets set therein- “...bringing together governments, the private sector, civil society, and the United Nations system”
- Government, business and civil society need to engage with these goals in a meaningful way in order to address the urgent social, economic and environmental issues facing us globally.

Follow up and review

Some of the principles set out for follow up and review in Agenda 2030 are:

- Each Government will have the primary responsibility for follow up and review at the national, regional and global levels in relation to the progress made in implementing the goals and targets until 2030.
- National ownership is key to achieving sustainable development, the outcome from national-level processes will be the foundation for reviews at the regional and global levels, given that the global review will be primarily based on national official data sources.
- The follow up and review process will maintain a longer-term orientation, identify achievements, challenges, gaps and critical success factors and support countries in making informed policy choices.
- The process will be people-centred, gender-sensitive, respect human rights and have a particular focus on the poorest, most vulnerable and those furthest behind.
- The processes will evolve over time, taking into account emerging issues and the development of new methodologies, and will minimize the reporting burden on national administrations, will be rigorous and based on evidence, informed by country-led evaluations and data which is high-quality, accessible, timely,

Source: United Nations, 2015: Sustainable Development Goals,

URL: <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

reliable and disaggregated by income, sex, age, race, ethnicity, migration status, disability and geographic location and other characteristics relevant in national contexts.

- The Goals and targets will be followed up and reviewed using a set of global indicators.
- Developing countries, particularly African countries, least developed countries, small island developing States and landlocked developing countries, will be supported – in strengthening the capacity of national statistical offices and data systems to ensure access to high-quality, timely, reliable and disaggregated data.

National level

The 2030 Agenda further states that at the National Level, Member States will be encouraged to develop, as soon as practicable, ambitious national responses to the overall implementation of the Agenda. These can support the transition to the SDGs and build on existing planning instruments, such as national development and sustainable development strategies, as appropriate. Member States are also encouraged to conduct regular and inclusive reviews of progress at the national and subnational levels which are country-led and country-driven. Such reviews should draw on contributions from indigenous peoples, civil society, the private sector and other stakeholders, in line with national circumstances, policies and priorities. National parliaments as well as other institutions can also support these processes.

Regional level

Follow-up and review at the regional and sub-regional levels can, as appropriate, provide useful opportunities for peer learning, including through voluntary reviews, sharing of best practices and discussion on shared targets.

Global level

The Agenda 2030 states that the high-level political forum will, inter alia, have a central role in overseeing a network of follow-up and review processes at the global level, working coherently with the General Assembly, the Economic

Source: United Nations, 2015: Sustainable Development Goals,

URL: <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

and Social Council and other relevant organs and forums, in accordance with existing mandates. It will facilitate sharing of experiences, including successes, challenges and lessons learned, and provide political leadership, guidance and recommendations for follow-up.

17 SDGs: Business, NGO's and organisations in South Africa

The preamble to Agenda 2030 states that all countries and all stakeholders, acting in collaborative partnership should implement the plan. It is a collective effort, with the business environment being required to make a contribution to the global effort to make material progress towards meeting the SDGs by 2030.

The 17 SDG's provide a practical framework or "blueprint" for the development of sustainable development strategies within the business environment in South Africa. In order to incorporate an integrated approach to sustainable development-business, NGO's and other organisations would need to implement the following key steps:

- Plan how the organisation will engage with the SDGs
- Identify which SDGs are important in the sector in which the organisation operates
- Identify targets relating to the SDGs which are relevant in the operation
- Identify the tools needed to assess the organisation's impact against the SDGs (develop relevant indicators of success)
- Identify risks relating to the SDGs specific to their operation
- Implement new processes which would impact on operating procedures and products
- Link the applicable SDG to the value chain of the organisation (where applicable)
- Identify where collaboration with sectors, NGO's or government may be required
- Identify reporting requirements.

Source: United Nations, 2015: Sustainable Development Goals,

URL: <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

5. A GREEN ECONOMY IN SOUTH AFRICA

The South African Department of Forestry, Fisheries and the Environment has defined the green economy in South Africa as “a system of economic activities related to the production, distribution and consumption of goods and services that result in improved human well-being over the long term, while not exposing future generations to significant environmental risks or ecological scarcities. It implies the decoupling of resource use and environmental impacts from economic growth. It is characterized by substantially increased investment in green sectors, supported by enabling policy reforms. The Green Economy refers to two inter-linked developmental outcomes for the South African economy:

- Growing economic activity (which leads to investment, jobs and competitiveness) in the green industry sector.
- A shift in the economy as a whole towards cleaner industries and sectors.” [32]

Green Economy Principles [33]

The most common green economy principles (identified from a review of eight published sets of principles or characteristics) are:

1. The green economy is a means for achieving sustainable development.
2. The green economy should create decent work and green jobs.
3. The green economy is resource and energy efficient.
4. The green economy respects planetary boundaries or ecological limits or scarcity.
5. The green economy uses integrated decision making.
6. The green economy measures progress beyond GDP using appropriate indicators/metrics. The green economy is equitable, fair and just – between and within countries and between generations. The green economy protects biodiversity and ecosystems. The green economy delivers poverty reduction, well-being, livelihoods, social protection and access to essential services. The green economy improves governance and the rule of law. It is inclusive, democratic, participatory, accountable, transparent, and stable. The green economy internalises externalities.

Implementation

The implementation of a green economy in South Africa includes private sector, civil society and all levels of government. The nine key focus areas are identified in the green economy programmes that include:

- **Green buildings and the built environment:** promote and enable green building design and green building materials and standards
- **Sustainable transport and infrastructure:** promoting non-motorised transport/ low carbon transportation
- **Clean energy and energy efficiency:** expanding off-grid options in rural and urban areas
- **Resource conservation and management:** national payments for ecosystem services, wildlife management
- **Sustainable waste management practices:** measures to improve supply chain efficiency and prevent the production of waste, reduce waste going to land-fill by increasing reuse and recycling
- **Agriculture, food production and forestry:** integrated sustainable agricultural production
- **Water management:** water harvesting, alternative technology for effluent management, reduce water losses in agriculture, municipalities and mining
- **Sustainable consumption and production:** industry specific production methods, industrial production technology changes
- **Environmental sustainability:** research, awareness and skills development and knowledge management.

The South African Green Economy Accord identifies viable changes in the structure and character of the production economy that can generate a more inclusive and greener economy, and set targets based on the opportunities for jobs in the green economy. There are also a range of other policies (Acts, strategies, plans and white papers) that address specific sectors and will serve to enable the transition to a green economy in South Africa. These are outlined in more detail in the next Chapter.

In addition to national and international policy making, the private sector can contribute to steering the country towards a green economy, for example, by

investment in green innovation – such as the introduction of a new or significantly improved product, process or method that results in a reduction of environmental impact, and/or optimises the use of resources throughout the lifecycle.

6. SOUTH AFRICAN GOVERNMENT POLICY

South Africa has a range of supporting and enabling policy that can help steer the way to a green economy. Policy making takes place on the following levels:



- The primary responsibility for co-ordination and implementation of sustainable development programmes rests with governments.
- Integrating sustainability into national development policies is one of goals of the United Nations Millennium Declaration which South Africa has endorsed.

South African National Framework for Sustainable Development

- The National Framework for Sustainable Development (NFSD) is designed to “initiate a broad framework for sustainable development in South Africa that can serve as a basis from which to develop and consolidate a national strategy and action plan...”.
- The NFSD proposes a national vision, principles, trends, strategic priority areas, and a set of implementation measures that are intended to enable and guide the development of the national strategy and action plan.
- The NFSD discusses the various environmental and social risk areas facing South Africa and maps out five strategic priority areas:
 1. Enhancing systems for integrated planning and implementation.
 2. Sustaining our ecosystems and using resources sustainably.
 3. Investing in sustainable economic development and infrastructure.
 4. Creating sustainable human settlements.
 5. Responding appropriately to emerging human development, economic and environmental challenges.
- The NFSD states that in order to embark on the journey (‘to a sustainable, economically prosperous and self-reliant nation’) it needs various things – a robust institutional framework, an action plan or roadmap to make sense of the five strategic priority areas, and “to ensure that everyone is on board and stays on board ... for this we need ongoing consultation and communication.”

South Africa’s Energy Policy: The Integrated Resource Plan (2019)

- The plan incorporates a shift away from coal, increased adoption of renewables and gas, and an end to the expansion of nuclear power.
- The plan proposes an increased adoption of renewable energy sources such as wind and solar energy, as well as gas based generation capacity by 2030.

National Development Plan 2030

The National Development Plan (NDP) aims to eliminate poverty and reduce inequality by 2030. It offers a long-term perspective, and identifies the role different sectors of society need to play in reaching that goal.

National Climate Change Response Policy of 2011 (NCCRP)

The policy paper sets out South Africa's vision for an effective climate change response, and a transition, in the longer term, to a climate resilient and lower carbon economy and society. The Department of Environmental Affairs will focus on implementing the policy.

2009 framework response to the international economic crisis

The South African government urged for the development of incentives for investment in programmes geared at creating large number of 'green jobs', i.e. employment in industries and facilities that are designed to mitigate impacts to the environment and natural systems and the protection thereof.

Industrial policy action plan

The plan focusses on the manufacturing aspects of the green economy namely Green Industries and Industrial Energy Efficiency. To support broad-based industrialisation including more advanced manufacturing, encouraging cleaner, lower-energy technologies and green jobs.

Ten Year Innovation Plan

Indicating that South Africa is well positioned to lead research on the continent in terms of understanding and projecting changes to the physical system, the impact of these changes, and mitigation to limit their long-term effects.

International Agreements and treaties on Sustainability

South Africa is a member state of the United Nations General Assembly, and is party to a number of UN conventions on sustainable development, some of which are:

- Transforming our world: the 2030 Agenda for Sustainable Development (the 17 SDGs)

- Future we want: UN Conference on Sustainable Development, Rio+20
- Paris Agreement: 2015
- The 26th Session of the Parties (COP26)
- The Millennium Declaration and Summit
- World Summit on Sustainable Development (Johannesburg)
- Earth Summit+5 (implementation of Agenda 21)
- The Rio Declaration on Environment and Development
- Agenda 21-Global Programme of Action on Sustainable Development

National and provincial government departments and municipalities

- Each Government Department in South Africa has stated a vision, strategic objective and policy on sustainability issues which pertain to it, and all government departments need to work together to form an integrated approach to sustainability.
- The following are some of the aims, objectives and activities in regard to sustainable development as stated by some of the government departments in our country:

1. Department of Health (DOH):

- There is an international recognition that efforts aimed at environmental improvements and protection could have a positive effect on disease prevention.
- The objectives of environmental health services form the foundation for sustainable development as defined by the United Nations, hence environmental health is seen as a fundamental component of sustainable development.
- The Department of Health has stated that environmental health services are critical in ensuring the right of every person to live in a healthy environment as entrenched in our Constitution.
- Our government's national priorities include, amongst others, the creation of employment opportunities, alleviation of poverty and the provision of safe water, proper sanitation and housing.

2. Department of Trade and Industry (DTI):

- The DTI aims to contribute to a tailor-made portfolio of environmental, social and economic policies to meet the country's needs.
- Based on the principle of 'think globally, act locally' South Africa regularly proposes national positions at multinational conferences.

Provincial Governments and Municipalities

- Have an equally important role in implementing sustainable strategies.
- Local on the ground implementation – housing, waste, environment, health.
- These departments need to integrate sustainable development strategies in their strategy documentation – including aspects relating to poverty reduction and climate change.

Role of government policy going forward

- Government seems to have an understanding of the issues relating to climate change and seems to be playing its part in mitigating emissions, however it is clear that South Africa will be dependent on coal for electricity for some time to come, which will make it difficult to reduce emissions of greenhouse gases significantly.
- Although the National Framework for Sustainable Development (NFSD) is in place, actual implementation of the various strategies across government departments needs to be monitored carefully.
- The Department of Transport has a vital role to play in reducing carbon dioxide emissions arising from transport.
- The responsibility of government departments not just at a national level but at a provincial and municipal level to continue to develop sustainability development strategies, monitor implementation and also to conserve our resources, to account to Parliament and the public as a whole.

Green Hydrogen

Hydrogen, the most abundant chemical substance in the universe, has been touted as one of the resources that could play a major role in our future economies – particularly green hydrogen. Countries, including South Africa, have either

recently developed or are now developing green hydrogen roadmaps to support the decarbonisation of their economies by 2030. Others include Germany, France, Japan, the US, Portugal and China.

In February 2021, the Council for Scientific and Industrial Research (CSIR) published a report on power fuels and green hydrogen which affirmed that due to South Africa's vast wind and solar resources, the country has a comparative advantage in producing and exporting green hydrogen. Green hydrogen production needs to be powered by solar energy, and South Africa has some of the best solar and wind energy potential in the world.

South Africa is also well-positioned for large-scale production of green hydrogen technology due to its large reserves of platinum group metals (PGMs) such as platinum and palladium. It is the world's largest producer of PGMs, which are the main raw materials in the synthesis of catalysts, vital for the electrolysis process when producing green hydrogen.

The development of a green hydrogen economy is expected to be a significant enabler towards global net-zero greenhouse gas emissions by 2050, not only in South Africa, but across the African continent. [34]

In addition, the Green Hydrogen Catapult Initiative, which is a global coalition, is driving the movement towards accelerating the scale and production of green hydrogen by 50x over the next six years.

The benefit of this new energy source is not just export earnings potential for South Africa, but the creation of jobs (the feasibility study conducted by the CSIR estimates between 14 000 to 30 000 jobs per year will be created).

7. SOUTH AFRICA AND CLIMATE CHANGE: PLEDGES AND TARGETS

The Paris Agreement

- The “Paris Agreement” was adopted on 12 December 2015 at the 21st session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP21), which was held in Paris from 30 November to 13 December 2015.
- At the conference, parties to the UNFCCC reached a landmark agreement to combat climate change and to accelerate and intensify the actions and investments needed for a sustainable low carbon future.
- South Africa became a party to the agreement when the Minister of Environmental Affairs, Mrs Edna Molwa signed it during April 2016 on behalf of the South African Government.
- Its main aims can be summarised as follows:
 - ◆ To guide international efforts to limit greenhouse gas emissions and thereby to strengthen the global response to the threat of climate change.
 - ◆ To keep a global temperature rise this century to well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.
 - ◆ To signal a change in pace towards a low carbon development from 2020-through commitments of the participating countries in their national plans called Nationally Determined Contributions (NCDs).
 - ◆ Achieving carbon neutrality from 2050 onwards.
 - ◆ Requiring these participating countries to strengthen these efforts in the years ahead, including reporting regularly on their emissions and implementation efforts.
- There will be a global report back every 5 years to assess the collective progress towards achieving the purpose of the agreement.

South Africa's Intended Nationally Determined Contribution (INDC)

According to the Paris Agreement, each Party shall prepare, communicate and maintain successive nationally determined contributions (NDCs) that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.

South Africa deposited its first NDC with the UNFCCC in October 2015, committing to keeping national greenhouse gas emissions within a range from 389 Mt CO₂-eq for 2025 and 2050. The adaptation goals included, inter alia, taking into account climate considerations in national development, sub-national and sector policy frameworks through to 2030. Some of the mitigation goals include time frames for the implementation of policy instruments under development that include a carbon tax. The updated draft NDC, the cornerstone of South Africa's climate change response, was approved by Cabinet on 24 March 2021 to be released for public comment. It is South Africa's commitment in terms of United Nations Framework Convention on Climate Change (UNFCCC) and its Paris Agreement (PA) to contribute to the global climate change effort. All parties to the UNFCCC are updating their NDC's in the run-up to the 26th international climate change conference to be held in Glasgow, Scotland, in November 2021.

South Africa: pledges and targets

Paris Agreement: by 2030: emissions of between 398 to 614 MtCO₂e over 2025 to 2030.

Copenhagen Agreement [35]: an emission reduction of 42% by 2025 against a business as usual curve.

Due to its reliance on coal, South Africa ranks 14th on the global emission list. The achievement of these targets will require collaboration between government (national and local) and business.

South Africa's commitment to achieving these targets are all indicators of a shift in South Africa towards a Low Carbon Economy.

8. CONFERENCE OF THE PARTIES (COP26)

The UK hosted the 26th UN Climate Change Conference of the Parties (COP26) in Glasgow from 31 October – 12 November 2021. South Africa is a party to COP26. The main aim of the conference was to try to finalise the rules needed to implement the Paris Agreement of 2015, to reach agreement on common time-frames for the frequency of revision and monitoring of each party's climate commitments. So, while the Paris Agreement set the goals and pledges, in order to limit global warming to well below two degrees, (ideally 1.5), Glasgow, is seen as the last chance to implement and make the achievements of these targets a reality.

The main aims of COP26 can be summarised as follows:

1. To secure global net zero by mid-century and keep 1.5 degrees within reach

- To accelerate the phase out of coal, curb deforestation and switch to greener economies.
- To pledge to cut emissions of methane - the most potent greenhouse gas - by at least 30% this decade.

2. Adapt more to protect communities and natural habitats

- To protect and restore ecosystems, build defences, warning systems and resilient infrastructure.
- More than 100 nations agreed to end deforestation by 2030.

3. Mobilise finance

- At COP15, rich nations promised to channel \$100 billion per year to less-wealthy nations by 2020 to help them adapt to climate change and mitigate further rises in temperature.
- At COP26, South Africa was offered a R131 billion pledge to manage its transition from coal to renewable energy sources, and a low carbon economy. The USA, UK, France and Germany offered to provide the capital over the next three to five years through grants and concessional finance. Although not

finalised yet, Minister of Public Enterprises, Pravin Gordhan has stated that the funding will not go towards addressing Eskom's debt but part of it will be used to Eskom's just energy transition. Other projects requiring funding in South Africa is the green hydrogen project and the production of electric vehicles in South Africa.

4. Work together to deliver

- Establishing collaborations between governments, businesses and civil society and finalising the "Paris Rulebook" to make the Paris Agreement fully operational.

9. SOUTH AFRICAN ENVIRONMENTAL LEGISLATION

The South African Government has enacted environmental legislation which is underpinned by international agreements, objectives and standards, as well as government policy.

The South African Constitution

The overarching legislative foundation for environmental management in South Africa is the Constitution of the Republic of South Africa Act (no.108 of 1996). Section 24 of this Act provides that everyone has the right to:

- An environment that is not harmful to their health or well-being, and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that (i) prevent pollution and ecological degradation (ii) promote conservation (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

The National Environmental Management Act (no.107 of 1998) (NEMA) is the primary environmental framework Act in South Africa which provides for co-operative environmental governance, and is based on the principle that everyone has the right to an environment that is not harmful to his or her health or well-being. In addition, it enables the administration and enforcement of other environmental

management laws. Companies must obtain environmental authorisations for listed activities under Section 24 of NEMA.

Some Other Relevant Environmental Legislation includes:

- National Water Act (no.36 of 1998), the National Energy Act (no.34 of 2008),the National Forests Act (no.84 of 1998), the Marine Living Resources Act (no.18 of 1998), the National Environmental Management: Biodiversity Act (no.10 of 2004), the National Environmental Management: Air Quality Act (no.39 of 2004), the National Environmental Management: Waste Act (no.59 of 2008), the National Environmental Management: Protected Areas Act (no.57 of 2003), (as amended), and the National Environmental Management: Integrated Coastal Management Act (no.24 of 2008).

10. CLIMATE CHANGE BILL, 2018

Background

- In context of the White Paper on National Climate Change Response, and South Africa's Nationally Determined Contribution under the Paris Agreement, the Bill is a step towards South Africa meeting its domestic and international commitments. The Bill provides a legislative framework for the implementation of the country's national climate change response policy, and must be read and interpreted and applied in conjunction with the National Environmental Management Act (no. 107 of 1998).

Implementation

- The Climate Change Bill, 2018 was published by the Minister of Environmental Affairs in June 2018, for public comment until the end of August 2018. Cabinet approved the draft Bill in September 2021, for tabling in Parliament. Its aim is to *"build South Africa's effective climate change response and the long term, just transition to a climate resilient and lower carbon economy and society in the context of an environmentally sustainable development framework..."*.

- The Bill acknowledges that anthropogenic climate change represents an urgent threat to human societies and the environment, and requires an effective, progressive and well-coordinated response.
- It further highlights that, amongst others, anticipated domestic climate change impacts have the potential to undermine the country's development goals, and that responses to climate change raise unique challenges, thus requiring a legislative framework for the implementation of the country's national climate change response.

Objects

The objects of the Bill are, inter alia, to:

- provide for the coordinated and integrated response to climate change and its impacts by all spheres of government in accordance with the principles of cooperative governance.
- make a fair contribution to the global effort to stabilise greenhouse gas concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe and in a manner that enables economic, employment, social and environmental development to proceed in a sustainable manner.

Creation of frameworks and plans

- The Bill provides an outline for procedures to be developed through the creation of frameworks and plans.
- National framework: the Minister of Environmental Affairs and the Ministers responsible for the functions listed in Section 2, must within two years of the commencement of the Bill develop and publish a National Adaption Strategy and Plan by notice in the Government Gazette. The purpose of this plan is set out in Section 18.
- The framework may provide for the phasing in of its provisions and may be reviewed and amended by the Minister at intervals of not more than 5 years.

Alignment of laws and policies

- Every organ of state that exercises a power or performs a function that is affected by climate change, or is entrusted with powers and duties aimed at the achievement, promotion, and protection of a sustainable environment, must review and co-ordinate their policies, plans, programmes and decisions, in order to ensure that the risks and vulnerabilities of climate change are taken into consideration and to give effect to the principles and objectives set out in the Bill.

Presidential Climate Commission

- The President may establish a Presidential Climate Commission and appoint members comprising of representatives of government, organised labour, civil society and business to advise on South Africa's climate change response, the mitigation of climate change impacts and adaption to the effects of climate change towards the attainment of the just transition to a climate resilient and low carbon economy and society.
- The Functional Areas listed in the Schedule are: Agriculture, Forestry and Fisheries, Cooperative Governance and Traditional Affairs, Economic Development, Energy, Environment, Health, Human Settlements, International Relations, Mineral Resources, National Treasury, Public Enterprises, Public Works, Rural Development and Land Reform, Science and Technology, Trade and Industry, Transport, Water Affairs and Sanitation.

Establishment of Provincial and Municipal Forums

- The Bill establishes that every Premier's intergovernmental forum, and every district's intergovernmental form [both of which are established in terms of the Intergovernmental Relations Framework Act (no.13 of 2005)], also serve as a Provincial Forum on Climate Change for each province and each municipality respectively. Each forum must co-ordinate climate change response actions in the relevant province or municipality towards a transition to a climate resilient and lower carbon economy in accordance with the White Paper on National Climate Change Response and South Africa's Nationally Determined Contribution. Each Provincial Forum must recommend any climate change

matter and provide progress reports in the relevant province to the Presidential Coordinating Council. Each Municipal Forum must provide a report on climate change response actions taken which are within its operational control of the relevant municipality - to the relevant Provincial Forum.

Climate Change needs and response assessments and implementation plan: Provinces and Municipalities

- The Bill proposes that within one year of the publication of the National Adaption Strategy and Plan (contemplated in Section 18), an MEC and a mayor of a metropolitan or district municipality (as the case may be), must conduct a climate change needs and response assessment for the province, or the metropolitan, or district municipality, and such assessment must be reviewed at least once every 5 years. And within two years of undertaking the climate change needs and response assessment, must develop and implement a climate change response implementation plan based on the aforementioned assessment – which must also be reviewed every 5 years.
- The implementation plan would include take account of the risks and vulnerabilities associated with climate change, address all priority sectors, be aligned with national sectoral emission targets, and provide an analysis of the nature and characteristics of the province or municipality, its unique climate change needs and risks that arise as a result, and identify the ecosystems, communities and households that may be vulnerable or subject to risk relating to the impact of climate change.

Sectoral Emission Targets (SETS)

- The Minister of Environmental Affairs must, within one year of the coming into operation of the Bill, by notice in the Government Gazette, list the greenhouse gas emitting sectors and sub-sectors that are subject to sectoral emission targets (“SETS”) and determine a greenhouse gas emissions threshold for carbon budgets to be allocated at company level for not less than three successive five-year periods, subject to at least five yearly review.

Other provisions

Other provisions included in the Bill include:

- setting out and achieving national adaptation objectives.
- determining a national greenhouse gas emissions trajectory.
- determining a greenhouse gas emissions threshold to inform the allocation of carbon budgets.
- listing greenhouse gases and activities

Regulations

- The Minister may make regulations in relation to any matter necessary to give effect to South Africa's international climate change commitments and obligations, in relation to the management of climate change response in general, as well as regulations that will promote the effective monitoring, evaluation and assessment of national progress in relation to climate change matters.
- A regulation made in terms of the Bill may provide that any person who contravenes or fails to comply with a provision thereof will be liable to the penalties contemplated in Section 49B(2) of the National Environmental Management Act.

Offences and penalties

- Any person who contravenes or fails to comply with a provision of the Bill is guilty of an offence and liable in the case of a first conviction of a fine not exceeding R5 million or to imprisonment for a period not exceeding 5 years and in the case of a second or subsequent conviction, a fine not exceeding R10 million or imprisonment for a period not exceeding 10 years and in both instances to both such a fine and such imprisonment.
- A failure by persons with a carbon budget to prepare, submit and implement an approved greenhouse gas mitigation plan to the Minister in terms of Section 24(5) is liable to penalties also contemplated in Section 49B(2) of the National Environmental Management Laws Amendment Act (no.30 of 2013). Should the greenhouse gas emissions exceed the budget during the applicable period, it

is treated as an offence, and will be subjected to a higher carbon tax rate on emissions above the carbon budget as provided for in the Carbon Tax Act.

- Section 49B(2) of the National Environmental Management Laws Amendment Act sets out the penalties to be incurred for a range of transgressions (which transgressions are set out in Section 49A), as follows:
 1. A fine or imprisonment of not more than R10 million or imprisonment of not more than 10 years, or both (for example where a person has unlawfully and intentionally or negligently commits any act or omission which causes significant pollution or degradation of the environment or is likely to cause significant pollution or degradation of the environment.
 2. A fine or imprisonment of not more than R5 million or imprisonment of not more than 5 years, or both (for example where a person fails to comply with or contravenes a compliance notice.
 3. A fine or imprisonment of not more than 1 year, or both (for example where a person fails to comply with a request of an environmental management inspector.

11. GREEN TAXES AND ENVIRONMENTAL ALLOWANCES

Green taxes are one way to reinforce environmental policies, drive sustainable corporate behaviour and achieve green policy goals in South Africa. Some of the “green taxes” in South Africa are as follows:

Carbon tax

Carbon tax was introduced on 1 June 2019 to meet nationally determined contributions under the 2015 Paris Agreement of the United Nations Framework Convention on Climate Change. The Carbon Tax Act (no. 15 of 2019) introduces a carbon levy on fuel and an emissions tax on businesses, and is set out in detail elsewhere in this guide.

Carbon dioxide vehicle emissions tax

This environmental levy is payable on new motor vehicles by manufacturers of these vehicles in South Africa.

Electricity generation levy

Electricity Generation by using non-renewable (fossil) fuels and environmentally hazardous (nuclear) sources are subjected to the payment of an Environmental Levy, and is payable by producers of this form of electricity in South Africa. The current rate of the electricity levy is 3.5c/kWh.

The plastic bag levy

Certain types of plastic carrier and flat bags, the disposal of which is littering the environment, are subjected to the payment of an Environmental Levy, earmarked to establish re-cycling facilities, if used in the RSA. At the date of publication, plastic bags are currently taxed at 25 cents per bag.

The incandescent light bulb levy

Electric Filament Lamps (i.e. non energy-saving light bulbs) are subject to the payment of an Environmental Levy if manufactured in the RSA.

The tyre levy

New, used or re-treaded pneumatic tyres, the disposal of which is littering the environment, are subject to the payment of an Environmental Levy, earmarked for re-cycling, if used in the RSA.

The Environmental Levies as listed above are all payable by the manufacturers thereof in the RSA.

“Environmental” deductions/allowances

- Section 12B Deduction in respect of certain machinery, plant, implements, utensils and articles used in farming or production of renewable energy
- Section 37B Deductions in respect of environmental expenditure
- Section 37C Deductions in respect of environmental conservation

- Section 11D Deduction for research and development costs
- Section 12K Exemption for Certified Emission Reductions
- Section 12L Special Allowance for Energy Efficiency Savings
- Section 12U Allowance for renewable energy supporting structures

Regulations for New Buildings and Energy Usage

The Energy Efficiency Regulations for energy usage in buildings provide that all new buildings and building extensions in South Africa must conform to the regulations on energy conservation, including homes, industrial buildings, hotels and schools. The regulations are enforceable in terms of the National Building Regulations and Building Standards Act.

Building plans will not be approved without compliance with the regulations. Buildings Control Officers (inspectors) will be required to ensure that buildings are built in accordance with National Building Regulations and specifically with energy usage requirements. No compliance – no occupancy certificate.

Section 12L: Tax Allowance for Energy-Efficiency Savings

Regulations on the tax allowance for Energy-efficiency savings stipulate that any company holding a certificate that can prove their energy savings are genuine, can submit the certificate to claim an allowance from SARS. The allowance is as contemplated in Section 12L (2) of the Income Tax Act, 1962. Section 12L provides that tax incentives are available for savings in all energy forms, and not only electricity. The energy-efficiency savings tax incentive is calculated at a rate of 95c/kWh and also applies to cogeneration projects.

12. CARBON TAX

The Carbon Tax Act (no. 15 of 2019) aims provide for the imposition of a tax on the carbon dioxide (CO₂) equivalent of greenhouse gas emissions.

Background

- Carbon tax will play a role in achieving the objectives set out in the National Climate Change Response Policy of 2011 (NCCRP), and will contribute towards meeting South Africa's commitments to reducing greenhouse gas (GHG) emissions.
- The Media Statement released by the Department of National Treasury in 2015, when the Carbon Tax Bill was first published, referred to South Africa's commitment to reduce GHG emissions below business as usual by 42% by 2025, as outlined in South Africa's Nationally Determined Contributions (NDC's).
- In light of the "Paris Agreement", policies, frameworks, financial institutions and indeed legislation is needed to support these commitments for any hope to achieve the anticipated reductions.

Implementation

The Carbon Tax Act came into effect on the 1st June 2019.

Objects of the Act

The preamble states, inter alia, that it has been scientifically confirmed that there is a causal link between the increase in anthropogenic greenhouse gas emissions in the atmosphere and global climate change, and that is has become necessary to:

- manage this impact through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity.
- make a contribution to the global effort to stabilise greenhouse gas concentrations in the atmosphere.

- impose the “polluter pays principle” – whereby those responsible for harming the environment must be held responsible for the costs of remedying pollution, environmental degradation and the adverse health effects that may result.
- impose a tax on greenhouse gas emissions, and provide tax incentives for rewarding the efficient use of energy – which will have the effect of providing the appropriate price signals to help nudge the economy towards a more sustainable growth path.
- change the behaviour of firms, incentivising them to shift towards cleaner technology when replacing/renewing machinery, technology or processes.
- ensure that South Africa transitions to a low carbon, climate resilient economy in a cost efficient and economically efficient manner.

“Phasing in” period

- The tax will be phased in over a period of time to allow for smooth transition in adopting cleaner and more efficient technologies and behaviours. The first phase will run from implementation up to 2022.
- The “phasing in” approach takes cognisance of the developmental challenges facing South Africa and international climate change policy developments.

Administration

- The carbon tax will be administered by the South African Revenue Service.
- It will be administered as if it is an “environmental levy”.
- The South African Revenue Service (SARS) will be granted access to the Department of Environmental Affairs’ emissions database, such as the South African National Atmospheric Emissions Inventory System (NAEIS).

Persons subject to tax

- A person is a taxpayer for purposes of this Act and is liable to pay an amount of carbon tax calculated as contemplated in Section 6 in respect of a tax period as specified in Section 16 - if that person conducts an activity in South Africa resulting in greenhouse gas emissions above the threshold determined by matching the activity listed in the column "Activity/Sector" in Schedule 2 with the number in the corresponding line of the column "Threshold" of that table.

- Schedule 2 includes the following activities:
 1. the Energy Sector (such as fuel combustion activities, petroleum refining, civil aviation, pipelines etc.).
 2. the Industrial Processes and Product Use Sector (such as cement production, lime production, Nitric acid production, ceramics, Refrigeration and Air Conditioning).
 3. the Agriculture, Forestry and other Land Use Sector (such as cattle, forest land, harvested food products).
 4. the Waste Sector (such as managed waste disposal sites, wastewater treatment and discharge).

Greenhouse gases covered

- The carbon tax covers greenhouse gas emissions including carbon dioxide, methane, nitrous oxide, perfluorocarbons, hydrofluorocarbons and sulphur hexafluoride.

Tax base

- The tax base comprises the sum of the greenhouse gas emissions of a taxpayer in respect of a tax period – expressed as the carbon dioxide equivalent (CO₂-eq) of those greenhouse gas emissions resulting from fossil fuel combustion, emissions from industrial process and product use and fugitive emissions – all of which are determined in accordance with the emissions factors determined in accordance with a reporting methodology approved by the Department of Environmental Affairs.
- Section 4 of the Act sets out various formula's for determining the emission factors where a reporting methodology does not exist.

Section 6 sets out a comprehensive formula for purposes of calculating the carbon tax base, which differs dependant on the specific fuel types used in the different industries.

Tax period

- A taxpayer must pay the carbon tax for every tax period and a tax period in relation to a taxpayer is (a) commencing on 1 June 2019 and ending on 31 December 2019, and (b) subsequent to the period contemplated in (a), the period commencing on 1 January each year and ending on 31 December of that year.

Rate of Tax

- The rate of the carbon tax on greenhouse gas emissions must be an amount of R120 per ton carbon dioxide equivalent (CO₂-eq) of the greenhouse gas emissions of a taxpayer.
- This rate must be increased by the Consumer Price Inflation index plus 2% for the preceding tax period as determined by Statistics South Africa per year until 31 December 2022.
- After the 31 December 2022, the tax must be increased by the amount of the Consumer Price Inflation for the preceding tax year as determined by Statistics South Africa (i.e. adjustments in line with inflation).

Calculation of amount of tax payable

- A taxpayer's carbon tax liability is calculated by reducing the tax base by the tax-free allowances noted below (Sections 7 to 13 of the Act) and then multiplying that amount by the rate of carbon tax. The formula for the calculation is set out in Section 6.

Tax-free Allowances

Sections 7 to 13 of the Act allows for the following tax-free allowances, which can be summarised as follows:

- A tax free allowance for fossil fuel combustion emissions - for example: 0% allowance for an activity that involves cement production to a 100% allowance for a residential activity, and a 60% allowance for brick manufacturing.
- An allowance for industrial process emissions - for example: 0% allowance for mining and quarrying to a 70% allowance for glass production, to a 100% allowance for poultry farming.

- An allowance for fugitive emissions - for example a 0% allowance for road transport industry, and a 10% allowance for the oil industry.
- Additional and variable tax-free allowance for trade exposed sectors of up to 10%.
- Recognition for early actions and /or efforts to reduce emissions that beat the industry average or performance allowance - in the form of a tax-free allowance of up to 5%.
- A carbon offsets tax-free allowance of 5 to 10%, depending on the sector.
- The combined effect of all of the above tax-free thresholds will be capped at 95%.

Payment of Tax

A taxpayer must submit yearly environmental levy accounts and payments for every tax period as per the Customs and Excise Act (no.91 of 1964).

13. ROLE OF BUSINESS AND SUSTAINABLE DEVELOPMENT

The very nature of the business sector is that companies compete with each other for the use of land, natural resources, labour and capital.

Society and the public want to understand what companies are doing, how they are improving or damaging lives or the environment, and what they are doing to ensure resources and the businesses themselves are set up for the long-term.

The proliferation of initiatives, tools and guidelines on sustainability is evidence of the growing awareness of sustainability issues.

Sustainable Business and Corporate Citizenship

Because the company is so integral to society, it is considered as much a citizen of a country as is a natural person who has citizenship.

Business is therefore increasingly being called on

- By laws and precedents

- By customers and stakeholders
- By international and local trends
 - ◆ to change the way executives and employees think about their businesses and the way they do business.
 - ◆ to incorporate a ‘triple context’ in which the company operates – including social, environmental and economic issues.
 - ◆ to move towards committing to a corporate citizenship or ‘sustainable business’ agenda and to make this part of their own business agenda.

Sustainable business practice therefore means those companies that identify their operational, social and environmental risks and put strategies and plans in place to deal with them in a sustainable way.

In other words, companies need to balance their short term need for corporate competitiveness and financial return with the need to continue as a going concern in the long term – as a business as well as to the societies and environment on which it relies to generate economic prosperity.

Good corporate citizenship and responsibility

A company should incorporate comprehensive policies and practices into its operations that bring about its good corporate citizenship, such as:

- Taking a long-term perspective. Sustainable business practices require that the needs of the present are met without compromising the ability of the future generations to meet their needs. This approach recognises that a business cannot operate in an economically viable manner over a prolonged period without due regard for long-term sustainability issues.
- Showing consideration for society, communities and the environment.
- Managing how efficiently and ethically the company governs and controls its operations.
- Workplace practices – how it manages employees, workplace conditions and employment practices.
- Third party interactions – how it engages with third party stakeholders in the supply chain, marketplace, government and community. The legitimate interests

and expectations of stakeholders must be taken into account when making decisions and formulating strategy.

- Environmental issues – how it controls its impact on the environment. The board is responsible for ensuring that an organisation develops an overarching environmental policy and strategy that articulates the standards it will strive to achieve in relation to its environmental impacts.
- The environmental policy should be institutionalised by integrating its standards strategically and operationally by means of an effective environmental management programme/system (EMS).
- Environmental issues should form part of business performance and risk management strategies.
- The board is responsible for ensuring that the organisation's internal stakeholders (shareholders) are aware of the organisation's environmental impacts and responsibilities, that its operations have acceptable environmental impacts, and that its external environmental stakeholders are acknowledged and treated with respect.
- The organisation's environmental performance should be assessed, reported and disclosed both internally and externally.
- Transformation – how it meets its obligations to help citizens become meaningful economic participants. This creates greater opportunities, efficiencies and benefits for both the company and society.
- Innovation, fairness and collaboration – finding new ways of doing things (including profitable responses to sustainability), fairness is vital because social injustice is unsustainable, and collaboration is a pre-requisite for large scale change.
- Leadership – the leadership of a company needs to make sustainability issues mainstream. Strategy, risk, performance and sustainability have become inseparable, hence the phrases 'integrated reporting' and 'integrated thinking'.
- Incorporating a social responsibility policy into policy documents and presentations, reflecting the fact that the company intends operating as a sustainable business for the future and will take account of social considerations when conducting its operations.

- Making corporate citizenship a core part of the overall business and a direct responsibility of the Board of Directors.
- Following principles of integrated thinking and reporting, corporate social responsibility should be built into the business strategy of the organisation.

The terms “Corporate Responsibility” or “Corporate Social Responsibility” (CSR) are inter-changeable with Good Corporate Citizenship in that they all refer to the businesses response to these economic, social and environmental considerations.

Corporate Social Investment

One aspect of good corporate citizenship is Corporate Social Investment (CSI) – a company’s contributions to society and community that are outside its regular business operations – whether the investment is in monetary terms or in the form of other corporate resources or time.

Sustainability as competitive advantage

Some organisations aim to transform potential threats into better business opportunities – on the theory that “good” behavior towards society, community and the environment is sustainable and contributes to long-term profitability.

Some of the advantages for the company to incorporating sustainability policies, strategies and reporting can be listed as follows:

- Reputation management: improved brand image and competitive advantage
- Investor relations and access to capital
- Employee recruitment, motivation and reputation
- Competitiveness and market positioning
- Learning and innovation
- Licence to operate
- Operational efficiency: increase productivity and reduce costs, reduce waste
- Risk profile and risk management
- Financial advantages

Role of Business going forward

- Introduction of a sustainability action plan into the company –
 - ◆ Identify management stakeholders
 - ◆ Establish a “green team”
 - ◆ Identify those goals applicable to the organisation and incorporate these into developing its sustainable development strategies, corporate social responsibility goals and targets which can be measured – in both the short and the long-term.
 - ◆ Agree on scope, timeline and mutual responsibilities
 - ◆ Align project to core business function
 - ◆ Conduct baseline assessments – carbon, energy, water, waste, adaption
 - Carbon footprint offsets
 - ◆ Generate baseline reports – strategic business decisions
- Business needs to understand the strategies and policies of government and to work together with government in order to play its role in ensuring the correct strategies are put into place and implemented and to play its role in achieving same. Business is viewed as an “essential” partner with government in achieving the Sustainable Development Goals (SDGs).
- Business – triple bottom line, good corporate governance – meaningful accounting and reporting is required, in order for business to survive in a rapidly threatened environment.
- Integrated reporting.
- Sustainability assurance reporting – compulsory for listed companies.
- Producers, manufacturers responsibility – disposal of products and packaging.
- Water resources – the use of scarce water resources to be handled responsibly.
- Creation of a strong link in the supply chain – organic raw materials, farming for the future initiative, building intangible assets.
- Review strategies and policies against standards for good corporate governance and the 17 SDG’s as identified in Agenda 2030 and earmarked as relevant to the business operations, and the King IV™ Report on Corporate Governance for South Africa, 2016.

- Compliance with legislation in South Africa, particularly environmental and employment legislation.
- Identify new opportunities for creating value.

14. KING IV™ AND SUSTAINABLE DEVELOPMENT

- The King IV Report on Corporate Governance™ for South Africa 2016 (King IV™) is the fourth and latest version of the King Codes. It is voluntary (unless prescribed by law or by a Stock Exchange listings requirement). Some of the principles have been legislated, and if a conflict occurs, the law prevails.
- The King IV™ Code provides for 17 principles, as well as a large number of recommended practices, to help governing bodies and organisations achieve ‘good corporate citizen’ status and governance outcomes.
- King IV™ takes the form of a report which includes the Code, and separate sector supplements for SME’s, NPO’s, State-Owned Entities, Municipalities and Retirement Funds, and recommends that all organisations and governing bodies should follow the principles and practices laid down in this document.

Sustainable Development as one of the Key Concepts of King IV™

- Organisations do not function in isolation, but operate within the wider context of the economy, society and the environment. As an integral part of society, organisations should not just be concerned with their economic bottom line, but they also need to be aware of the wider impact of their operations on the environment and on broader society.
- Because of the interdependence of organisations and wider society, board decisions should not be made in isolation. Integrated thinking, where the board of directors considers all issues affecting the organisation when making decisions, is fundamental to the long-term sustainability of the organisation through the sustained creation of value for stakeholders. Integrated thinking

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reinforces the way the company operates as an integral part of society, underpins sustainable development, integrated reporting and the stakeholder inclusive approach.

Sustainable Development – an approach to development which balances the different, and often competing needs of the company against an awareness of the environmental, social and economic limitations of society. The board should develop a strategy which includes accounting for sustainability issues and reporting these to stakeholders.

Corporate Citizenship – the company should be a responsible “citizen”, involved with social, environmental and economic issues, respect for human rights, effective management of stakeholder relationships, resource management with an eye on future needs, and ensuring a positive impact on the community within which it operates.

Stakeholder-Inclusive Approach – the board should consider and balance the legitimate needs, interests and expectations of all stakeholders in making decisions in the best interests of the company. Active stakeholders play a crucial role in the governance process because they are entitled to hold the board and the company accountable for their actions and disclosures.

King IV™ 17 Principles of Good Governance

- The board of directors should:
- Lead ethically and effectively
- Govern ethics and establish an ethical culture
- Ensure responsible corporate citizenship
- Appreciate that the company’s core purpose, its risks and opportunities, strategy, business model, performance **and sustainable development** are all inseparable components of the value creation process
- Ensure that reports allow stakeholders to make informed assessments about the organisation’s performance and its short, medium and long-term prospects
- Serve as the focal point and custodian of corporate governance

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- Have the appropriate balance of knowledge, skills, experience, diversity and independence
- Delegate within the board to promote independent judgement, and assist with the balance of power and effective discharge of duties
- Evaluate board's performance and support continued improvement and effectiveness
- Appoint and delegate to management in a way that contributes to role clarity and the effective exercise of authority and responsibilities
- Govern risk in line with strategic objectives
- Govern information and technology in line with strategic objectives
- Comply with applicable laws and adopted, non-binding rules, codes and standards
- Remunerate fairly, responsibly and transparently
- Use assurance services and functions to enable an effective control environment which supports the integrity of information
- Adopt a stakeholder-inclusive approach
- Practise responsible investment which promotes good governance and the creation of value (applies to institutional investor organisations)

Unlike the previous reports which were rules-based and followed a 'checkbox' approach, King IV™ is principles- and outcomes-based. King IV™ encourages organisations to have a more 'hands-on' approach to principles, so that practices can be clearly linked to outcomes in an "apply and explain" approach. This gives governing bodies more flexibility when implementing the recommended practices, but requires them to be transparent when disclosing how they achieved their goals.

Corporate Governance and the 17 Sustainable Development Goals (UN Agenda 2030)

In order to ensure that the King IV™ recommendations and guidelines (relating particularly to corporate governance and sustainable development) are met, directors and business persons should incorporate the 17 SDG's most applicable

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to the organisation in terms of location, operations, supply chains – and develop their sustainability strategies for the future within this context.

15. GREEN ACCOUNTING FOR BUSINESS

Environmental accounting (EA) includes the following:

- Accounting for stocks and flows of natural resources in both physical and monetary terms.
- Consideration of environmental related physical and monetary information in the broader context of sustainability accounting.
- Estimation of external environmental impact and cost.
- Measurement and use of environment-related physical and monetary information in the context of Environmental Management Accounting (EMA).
- Measurement and disclosure of environment-related financial information in the context of financial accounting and reporting. [36]
- Companies need to analyse their business and identify key requirements and issues, and ensure that it is accounting appropriately.

Sustainable accounting is becoming more and more relevant – particularly because the traditional financial accounting and reporting systems do not cover sustainability issues.

Integrated sustainability reporting and disclosure

As already mentioned, listed companies are required to include sustainability reporting and disclosure in their annual financial reports – reflecting a holistic and integrated representation of the company's performance in terms of both its finances and its sustainability.

Integrated or Triple bottom line reporting:

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- “Triple Bottom Line” reporting was first coined as a business concept by John Elkington of SustainAbility.
- Sustainability reporting should be integrated with the company’s financial reporting.
- It should be focused on substance over form and should disclose information that is complete, timely, relevant, accurate, honest and accessible and comparable with past performance of the company.
- The integrated report should include information on all areas of performance reflecting the choices made and strategic decisions adopted by the board, and should include reporting in triple context of economic, social and environmental issues. The annual financial statements should be included in the integrated report.

South African companies and corporate governance and sustainability reporting

South African companies are leaders in regard to corporate governance and social aspects of reporting, however there is still a long way to go in regard to environmental reporting.

King IV™ and Integrated Reporting

- The King IV™ Report on Corporate Governance for South Africa (King IV™) places emphasis on integrated reporting and integrated thinking.
- The Report references the International <IR>Framework (<IR>Framework) released by the International Integrated Reporting Council (IIRC) in 2013.
- In April 2014 the Integrated Reporting Committee (IRC) of South Africa endorsed the International <IR> Framework as good practice on how to prepare an integrated report, and has published a guide to provide organisations with practical suggestions on preparing an integrated report-aligned with the King IV™ Report. [37]
- King IV™ emphasises thinking beyond the immediate financial performance of the organisation and taking full consideration of the 6 forms of capital

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identified in the <IR> framework. These are human capital, intellectual capital, manufactured capital, social capital, relationship capital and environmental capital.

- King IV™ recommends that those entities included in its five sector supplements (small and medium sized enterprises, non-profit organisations, retirement funds, state-owned enterprises and municipalities) also prepare integrated reports (currently only listed companies and larger state-owned enterprises prepare integrated reports).

16. RESPONSIBILITY OF INDIVIDUALS AND COMMUNITIES

- The energy consumption of millions of homes is having just as much environmental impact as heavy industry.

The four “R”s – Reduce, Reuse, Repair, Recycle

Reduce: reduce energy consumption – use energy efficient appliances, low energy light bulbs. **Reuse:** re-use goods which we would otherwise throw away. **Repair:** adopt a fix-it approach, rather than replace. **Recycle:** glass, paper, cans and plastic.

The Green Home and Garden

- The home creates a great deal of carbon dioxide emissions. Reducing these will make a collective difference, such as reducing domestic energy output, cutting out bleaching agents, using green cleaning agents, natural paints and encouraging wildlife and natural predators in residential areas.

Green Workplace

- Equipment and supplies – reuse ink cartridges, laptops are more energy efficient than desktop computers, use multi-purpose equipment such as a combined printer, copier and fax machine, move towards a paperless office, avoid travel by holding conference/video calls.

17. IMPORTANT DEFINITIONS

Carbon Tax Act, 2019:	
“carbon budget”	means an amount of greenhouse gas emissions permitted, against which direct emissions arising from the operations of a person during a defined time period will be accounted for
“carbon tax”	a tax on the carbon dioxide (CO ₂) equivalent of greenhouse gas emissions imposed in terms of Section 2 of the Act
“carbon dioxide (CO₂) equivalent”	the concentration of carbon dioxide that would cause the same amount of radiative forcing (the difference of sunlight absorbed by the Earth and energy radiated back to space) as a given mixture of carbon dioxide and other greenhouse gases
“emissions”	the release of greenhouse gases or their precursors; or the release of greenhouse gases and their precursors into the atmosphere, over a specified area and period of time
“emission factor”	the average emission rate of a given greenhouse gas for a given source, relative to the activity data of a source stream assuming complete oxidation for combustion and complete conversion for all other chemical reactions
“fugitive emissions”	emissions that are released into the atmosphere by any other means than through an intentional release through stack or vent, including extraction, processing, delivery and burning for energy production of fossil fuels, including leaks from industrial plant and pipelines
“greenhouse gas”	gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infra-red radiation and includes carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF ₆)
“industrial process”	a manufacturing process that chemically or physically transforms materials
“Person”	includes a partnership, a trust, a municipal entity and a public entity

Climate Change Bill, 2018:

"carbon sink"	means any process, activity or mechanism which removes a greenhouse gas, an aerosol, or a precursor of a greenhouse gas from the atmosphere
"just transition"	means a shift towards a low carbon, climate resilient economy and society and ecologically sustainable economies and societies which contribute toward the creation of decent work for all, social inclusion and the eradication of poverty
"mitigation"	means a human intervention to reduce the sources or enhance the carbon sinks and greenhouse gases
"sector"	means a collective term for a group of activities with similar characteristics which either emit greenhouse gases or are vulnerable to climate change
"vulnerability"	means the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes.

General:

"anthropogenic"	chiefly of environmental pollution and pollutants originating in human activity
"carbon emission"	Carbon dioxide (CO₂) is a colourless, odourless and non-poisonous gas formed by combustion of carbon and in the respiration of living organisms and is considered a greenhouse gas. Emissions means the release of greenhouse gases and/or their precursors into the atmosphere over a specified area and period of time
"carbon footprint"	the amount of carbon dioxide released into the atmosphere as a result of the activities of a particular individual, organisation, or community

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