

# SUSTAINABILITY 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 is based on the premise that the development of these 3 aspects – the economy – the environment – and society – needs 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.

The sustainability movement has been increasing in momentum over the past number of years-both on a global scale and in South Africa. There have been many positive developments recently – such as the global adoption of the 17 Sustainable Development Goals (UN Agenda 2030), and the Paris Agreement on Climate Change (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 proposed legislation in the pipeline (the Climate Change Bill, 2018 and the Carbon Tax Bill, 2017). 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 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. In April 2018, the Mauna Loa Observatory in Hawaii recorded an average concentration of carbon dioxide in the atmosphere as 410 parts per million by volume (ppm) – the highest monthly average in recorded history [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:

- All in all, 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, (coal dominates the South African energy system – about 77% of South Africa's primary energy needs are provided by coal) [3].
- This means that South Africa's responsibility to mitigate is higher, and that major changes in energy systems are needed over time.

#### **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 contributes to about 3% of greenhouse gas emissions globally.

#### **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.

- Climate models predict that increases in average global temperatures are expected to be within the range of 0.5 degrees Fahrenheit to 8.6 degrees Fahrenheit by 2100 [4], and that 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 [5].
- When the average temperature across the globe rises – and stays at the higher level – the effects on weather patterns are as follows:
  - ◆ 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 and 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.

- The Western Cape Government has released information on climate change and its effects as follows [6]:
  - ◆ In 2015 South Africa recorded its lowest annual rainfall since 1904.
  - ◆ In 2015 Cape Town recorded its highest temperature in the last 100 years at 42 degrees Celsius.
  - ◆ In 2015, the lack of rain and high temperatures resulted in some of the worst fires the City of Cape Town has experienced.
  - ◆ 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 would run out of water.

- 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:
  - ◆ 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
  - ◆ Rising sea levels
  - ◆ Increased fire risks
  - ◆ Increase in the frequency and intensity of extreme weather events, including floods, droughts and storm surges.

## 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 [7].

### 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 [8] 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. An estimated 18 million acres (7.3 million hectares) of forest, which is roughly the size of the country of Panama, are lost each year, according to the United Nations' Food and Agriculture Organization (FAO) [9].
- Conversion to agricultural land, timber production, and urbanisation are the main culprits.
- About half of the world's tropical forests have been cleared, according to the FAO.

### **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 [10].
- Deforestation means that the carbon sink effect of trees, (ability to take carbon out of the atmosphere) is significantly diminished.
- Some environmental groups are of the view that even afforestation projects (planting of trees and reducing deforestation) will not have a significant impact on the greenhouse gas concentrations caused by mankind in the atmosphere. The argument is that 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.
- Meanwhile more frequent fires and outbreaks of pests and diseases, decay, logging, land use changes or even the decline of forest ecosystems as a result of climate change, are turning some forests from carbon sinks into sources of carbon emissions.

### **Water problems and Wetlands**

- As the population increases and climate change causes more droughts, water scarcity is becoming more of an issue. Only three percent of the world's water is fresh water and 1.1 billion people lack access to clean, safe drinking water.
- Increasing urbanisation pollutes clean water supplies, and much of the world still does not have access to safe drinking water.
- Wetlands are being destroyed – either by being covered over and turned into housing estates, shopping centres, industrial areas, or sewerage farms.
- The destruction of the wetlands means that the usual wetland function of producing conserved and clean water is diminished (they act as natural filters trapping sediment, nutrients and bacteria).

- Wetlands are home to a wide variety of bird and insect life, and their destruction means an interruption in the ecological life-cycle.
- About 68% of the world's fresh water is contained in glaciers and ice-caps. As the earth warms up, and the ice-caps melt, it is predicted that this will have a catastrophic impact on the world's water supply [11].

### **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 [12].

### **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 [13].

## Societal issues:

### Poverty and inequality

- Climate change is increasingly viewed as a current and future cause of hunger and poverty.
- Increasing drought, flooding, and changing climatic patterns requiring a shift in crops and farming practices that may not be easily accomplished are key contributing factors.

### Surging population

- The current world population of 7.7 billion is projected to increase by 1 billion over the next 12 years and reach 9.6 billion by 2050, according to a recent United Nations report, which points out that growth will be mainly in developing countries, with more than half in Africa [14].
- 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 [15]. 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 peoples 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 [16].

### 3. WHAT IS SUSTAINABLE DEVELOPMENT?

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.

#### Definition of sustainable development

- There are varying interpretations on what sustainable development means, and not all definitions are universally agreed upon.
- The following three definitions have been suggested by various groups, and are useful as a starting point:
- **The Brundtland Commission Report (1983) [17]:** “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 [18]:** “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) [19].

- 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 four minimum environmental conditions necessary for maintaining life sustainably in a closed-system world such as planet earth, as follows:

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 to Sustainability:

- 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 [20].
- This view of sustainability has become known as the 'Three Pillars of Sustainable Development', coined as such in the 2005 World Summit Outcome Document [21].

Each of the “Three Pillars of Sustainability” are expanded upon in more detail as follows:

### Social Dimension (People)

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

Peace, Security and Social Justice
<ul style="list-style-type: none"><li>■ Urban planning and transport</li><li>■ Local and individual lifestyles</li><li>■ Ethical consumerism</li><li>■ Improved education</li><li>■ Fundamental human rights including racism, gender equality and the political empowerment of women</li><li>■ Ensuring the management of resources such as rivers that span political boundaries thus creating environmental security</li><li>■ Health</li><li>■ Community outreach</li><li>■ Labour relations</li></ul>
Poverty
<ul style="list-style-type: none"><li>■ Individuals living in poverty tend to rely heavily on their local ecosystem as a source for their basic needs</li><li>■ Poverty is one source of environmental degradation (Brundtland Report)</li><li>■ Alleviation of poverty is a major aspect of change required</li></ul>
Human Relationship to nature
<ul style="list-style-type: none"><li>■ Nature has, since the industrial revolution, been treated as a commodity</li><li>■ So-called “deep ecologists” believe that policies for basic economic, technological and ideological structures that will maintain and improve the <b>quality of life</b> rather than the <b>standard of living</b> need to be implemented and achieved</li><li>■ Individualistic and materialistic societal values and ideologies need to be tackled head-on</li><li>■ Strengthen the human relationship to the natural world</li></ul>

Human settlements
<ul style="list-style-type: none"> <li>■ A concept of the bioregional economy – self sufficiency and eco-villages</li> <li>■ Altering the built environment to create and preserve sustainable cities which support sustainable transport</li> </ul>
<p><b>Individuals can reduce their personal impact on the environment through a series of small inexpensive steps.</b></p>

## Environmental Dimension (Planet)

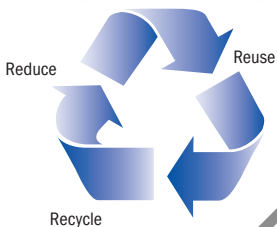
- **Environmental Goals** of achieving clean air, water and land emissions, zero waste, zero releases and spills, reduction of carbon emissions and greenhouse gases, a comfortable climate without frequent and extreme weather conditions.
- Maintaining essential ecological processes, preserving biological 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.
- Environmental Ethics.
- Developing diverse opportunities for non-material use of natural resources (spiritual, recreational, aesthetic).
- 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**' [22] – whereby the linear path of materials is converted to a circular material flow:



**From:**



**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 [23].
- Research projects are, inter alia, continuing to investigate solar, wind and hydro energy.
- Current and envisaged main uses of solar energy include the use of solar power for water-pumping and for heating.
- A new policy and direction for the energy sector in South Africa is set out in the Integrated Resource Plan (IRP 2018) which was published in August 2018. It 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 will add 2 300 MW of electricity to the national grid [24].

### **Economic Dimension (Profit)**

- There is a proven scientific correlation between economic growth and environmental degradation [25].
- **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 [26].

Some further aspects of sustainability in the economic context include:

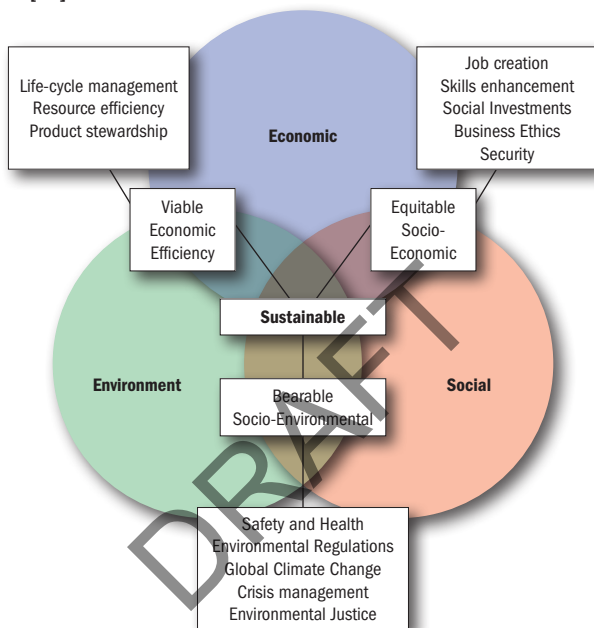
<b>Reducing resource intensity</b>	A goal of ‘sustainable scale’ rather than ‘continual growth’
	Finding ways to reduce resource intensity i.e the amount of the resource needed for production, consumption and disposal of a good or service – either by way of economic management, product design or new technology
<b>Environmental taxes and incentives</b>	Using marketing strategies like eco-taxes and incentives, tradable permits for carbon
	Encouraging the payment for ecosystem services

<b>Economic opportunity</b>	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 include 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
<b>Green Economics</b>	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 example where retail operations could use high efficiency lighting such as compact fluorescent, halogen and LED light sources, or roof top solar panels [27].

## Scheme of sustainable development: at the confluence of three constituent parts [28]



Source: Wikipedia [http://en.wikipedia.org/wiki/Sustainable\\_development](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 need to 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 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.
- 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.

## 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.

### **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.

**Source:** United Nations, 2015: Sustainable Development Goals,

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

#### **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.

**Source:** United Nations, 2015: Sustainable Development Goals,

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

### **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]

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 2020, to ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.

**Source:** United Nations, 2015: Sustainable Development Goals,

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



## **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.
- 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.

**Source:** United Nations, 2015: Sustainable Development Goals,

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

## 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, 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 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.

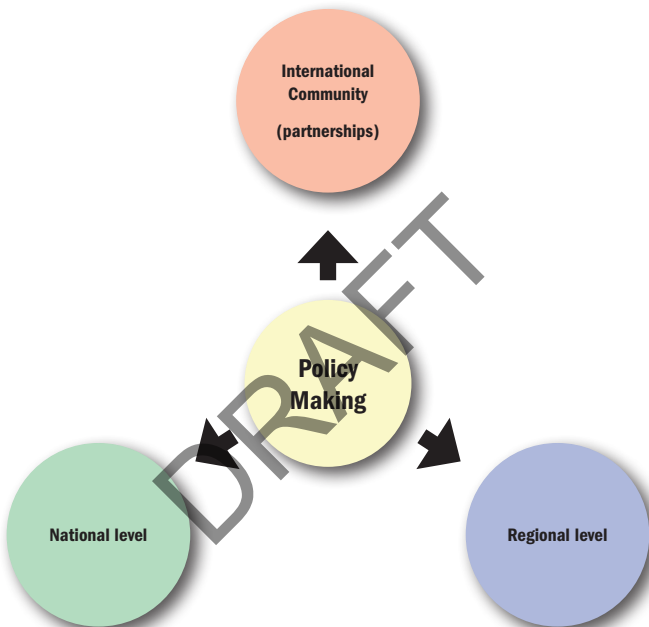
The 17 SDG's provide a practical framework or “blueprint” for the development of sustainable development strategies within the business environment in South Africa.

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

## 5. SOUTH AFRICAN GOVERNMENT POLICY

Policy making should take 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 Draft Integrated Resource Plan (IRP 2018)**

- The draft plan was released in August 2018, and sets out a new direction for energy sector planning. The plan is open for comment until November 2018.
- 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)**

In October 2011, Cabinet approved the National Climate Change Response Policy. 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.

## **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: The 21st Session of the Parties (COP21)
- 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, and 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.

## 6. 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 submitted their INDCs on the 25 September 2015, which contained both adaption goals and mitigation goals. The adaption 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.

### South Africa: pledges and targets

**Paris Agreement:** by 2030: emissions of between 398 to 614 MtCO<sub>2</sub>e over 2025 to 2030.

**Copenhagen Agreement [29]:** an emission reduction of 34% by 2020 and 42% by 2025 against a business as usual curve.

Due to its reliance on coal, South Africa ranks 16th on the global emission list [30]. 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.

## 7. 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.

Environmental legislation serves to both guide and enforce the policies created by government.

### The South African Constitution

The overarching legislative foundation for environmental management in South Africa is the Constitution of the Republic of South Africa Act, 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.
- 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, 107 of 1998** is the primary environmental framework Act in South Africa which provides for co-operative environmental governance.

This Act 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, and enabling the administration and enforcement of other environmental management laws.

### Some Other Relevant Environmental Legislation Includes:

- National Water Act, 36 of 1998.
- National Energy Act, 34 of 2008.
- National Forests Act, 84 of 1998.
- Marine Living Resources Act, 18 of 1998.

- National Environmental Management: Biodiversity Act, 10 of 2004.
- National Environmental Management: Air Quality Act, 39 of 2004.
- National Environmental Management: Waste Act, 59 of 2008.
- National Environmental Management: Protected Areas Act, 57 of 2003 (as amended).
- National Environmental Management: Integrated Coastal Management Act, 2008.

**Bills in the pipeline:**

- Climate Change Bill, 2018
- Carbon Tax Bill, 2017

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## 8. CLIMATE CHANGE BILL, 2018

### Background

- In context of the White Paper on National Climate Change Response, and South Africa's Nationally Determined Contribution (which commitment has a deadline of 2020), the proposed 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.

### 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 (now closed). It is anticipated to be implemented during 2019, and 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 must within two years of the commencement of the Bill establish a national environmentally sustainable development framework for achieving the objects of the Bill, and may assign responsibilities for the implementation of the Bill amongst different spheres of government and different organs of state.
- The framework may provide for the phasing in of its provisions and must be reviewed by the Minister at intervals of not more than 5 years.

## **Alignment of laws and policies**

- Every organ of state must co-ordinate the policies, plans, programmes and decisions of the national, provincial and local spheres of government that exercise functions that affect climate change in order to ensure that the risks and vulnerabilities of climate change are taken into consideration and to give effect to the national adaption and mitigation objectives set out in the Bill.

## **Appointment of a Ministerial Committee on climate change:**

- The Bill provides for the appointment of a ministerial committee on climate change, to be tasked with overseeing the necessary activities across “all sector departments and spheres of government” in liaison with Provincial Committees.
- The Ministerial Committee will comprise the Minister responsible for planning, monitoring and evaluation in the Presidency and the Minister, the Ministers responsible for the Functional Areas listed in Schedule and all MECs responsible for the environment.

- The Functional Areas listed in the Schedule are: Agriculture, Forestry and Fisheries, Cooperative Governance and Traditional Affairs, Economic Development, Energy, Health, Human Settlements, Mineral Resources, National Treasury, Public Enterprises, Public Works, Rural Development and Land Reform, Science and Technology, Trade and Industry, Transport and Water and Sanitation.

## **Establishment of Provincial Committees**

- The Bill establishes a Provincial Committee on Climate Change for each province. Each such committee must co-ordinate climate change response actions in the relevant province 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. It must also recommend any climate change matter to the Ministerial Committee and provide progress reports in the relevant province to the Ministerial Committee.

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

- The Bill proposes that within one year of its proposed implementation date, each Provincial Committee should have conducted a climate change needs and response assessment for the province, and such assessment must be reviewed at least once every 5 years. Within two years of the commencement, the Provincial Committee is required to 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 will also be required, in consultation with the Ministerial Committee, to determine sectoral emission targets (“SETS”) for greenhouse gas emitting sectors and sub-sectors, 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.

## **Regulations**

- The Minister may make regulations that will promote the effective implementation of the national framework, including:
- A provision that 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.

## **Offences and penalties**

- A failure by persons with a carbon budget to prepare, submit and implement an approved greenhouse gas mitigation plan and where the greenhouse gas emissions exceed the budget during the applicable period is an offence, and may be liable as per the above.

## 9. GREEN TAX

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**

Government proposes to implement the tax from 1 June 2019 to meet its nationally determined contributions under the 2015 Paris Agreement of the United Nations Framework Convention on Climate Change. The proposed Carbon Tax Bill, 2017 is set out in detail in the next Chapter.

### **Carbon dioxide vehicle emissions tax**

New passenger cars are taxed based on their certified CO<sub>2</sub> emissions at R110.00 per g/km CO<sub>2</sub> emissions exceeding 120g/km. This emissions tax will be in addition to the current ad valorem luxury tax on new vehicles.

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

### **Ad valorem luxury tax on new motor vehicles**

As from 1 April 2018, this tax was Motor vehicles was increased from 25% to 30%.

### **Fuel taxes**

Fuel taxes were increased with effect from 4 April 2018 as follows:

- A 22c/ℓ increase in the general fuel levy
- A 30c/ℓ increase in the Road Accident Fund

## Plastic bag levy

The plastic bag levy was increased by 50% to 12c per bag with effect from 1 April 2018.

## Tyre levy

A tyre levy was implemented with effect 1 February 2017 at a rate of R2.30/kg, through the Customs and Excise Act and collected by SARS. This replaces the existing environmental fee arrangements per the Department of Environmental Affairs regulations.

## 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.

## Environmental Levy on Electrical Filament lamps

Current rate is 800c per lamp.

## “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.

## 10. CARBON TAX BILL, 2017

The Bill's aim is to provide for the imposition of a tax on the carbon dioxide (CO<sub>2</sub>) equivalent of greenhouse gas emissions.

### Background

- The Explanatory Memorandum for the Bill, which was released in December 2017, states that the 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 Bill was first published, referred to South Africa's commitment to reduce GHG emissions below business as usual by 34% by 2020 and 42% by 2025, as outlined in South Africa's Nationally Determined Contributions (NDC's).
- In light of the "Paris Agreement" which will come into effect in 2020, policies, frameworks, financial institutions and indeed legislation need to support these commitments for any hope to achieve the anticipated reductions.

### Implementation

At the time of publication hereof, the Bill has not yet been passed into law, however the proposed implementation date is set for 1 June 2019, or shortly thereafter. The provisions set out herein may be subject to change before the Bill is promulgated.

### Objects of the Bill

The preamble of the Bill 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.
- The Explanatory Memorandum states that the carbon tax will be revenue-neutral during the first phase and revenues will be recycled by way of reducing the current electricity generation levy, credit rebate for the renewable energy premium, and the tax incentive for energy efficient savings.

## 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

- Liability for the tax arises for every entity that conducts an activity and emits GHG emissions above the threshold, which is listed in Schedule 2 of the Bill.
- 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 Stationery 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).
- The sectors listed in 3 and 4 above will be exempt during the first implementation phase (up to 2022), due to measurement difficulties.

## 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 (CO<sub>2</sub>-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 Bill 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- which period is proposed to be determined by the Minister – as ending on the 31st December of the year in which that date is determined and thereafter the period commencing 1 January of every 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 (CO<sub>2</sub>-eq) of the greenhouse gas emissions of a taxpayer, above the tax free thresholds.
- The effective carbon tax rate will vary between R6 and R48 per ton CO<sub>2</sub>-eq (taking into account the tax-free thresholds).
- This rate must be increased by the Consumer Price Inflation index plus 2% for the preceding tax year 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 Bill) and then multiplying that amount by the rate of carbon tax.

## Tax-free Allowances

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

- A basic 60% tax-free threshold during the first phase of the carbon tax, from implementation date up to 2020
- An additional 10% tax-free allowance for process emissions
- An additional 10% tax-free allowance for fugitive emissions
- 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
- To recognize the role of carbon budgets, an additional 5% tax free allowance for companies participating in phase 1 (up to 2020) of the carbon budgeting system
- The combined effect of all of the above tax-free thresholds will be capped at 95%
- This implies that the carbon tax will be imposed on only 5 to 40% of actual emissions during this period.

## Payment of Tax

The tax is proposed to be paid every 6 months, and the taxpayer is required to submit six-monthly environmental levy accounts – for every tax period commencing on 1 January and ending 30 June and the period commencing on 1 July and ending 31 December of that year.

## 11. 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

The World Business Council for Sustainable development has stated that:

*“We believe that the leading global companies of 2020 will be those that provide goods and services and reach new customers in ways that address the world’s major challenges – including poverty, climate change, resource depletion, globalization, and demographic shifts”*

Some even 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.

## 12. 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, and became effective in respect of financial years commencing on or after 1 April 2017. 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 reinforces the way the company operates as an integral part of society, underpins sustainable development, integrated reporting and the stakeholder inclusive approach.

**Source:** The King IV Report on Corporate Governance™ for South Africa 2016, (King IV™), Institute of Directors S.A NPC all rights reserved. For more information, see <http://www.iodsa.co.za/>

**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
- Have the appropriate balance of knowledge, skills, experience, diversity and independence

**Source:** The King IV Report on Corporate Governance™ for South Africa 2016, (King IV™), Institute of Directors S.A NPC all rights reserved. For more information, see <http://www.iodsa.co.za/>



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

**Source:** The King IV Report on Corporate Governance™ for South Africa 2016, (King IV™), Institute of Directors S.A NPC all rights reserved. For more information, see <http://www.iodsa.co.za/>

### 13. 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 [31].

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:**

- “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 [32].
- King IV™ emphasises thinking beyond the immediate financial performance of the organisation and taking full consideration of the 6 forms of capital identified in the <IR> framework. These are:
  1. human capital
  2. intellectual capital
  3. manufactured capital

4. social capital
  5. relationship capital
  6. 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).

DRAFT

## 14. RESPONSIBILITY OF INDIVIDUALS AND COMMUNITIES

- The energy consumption of millions of homes is having just as much environmental impact as heavy industry.
- It is the responsibility of the individual and communities to adopt energy saving methods to safeguard the health of the planet. The individual can influence environmental impact by discriminating when buying, joining local groups and changing lifestyle.

### 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.

- As from 1 July 2018, the City of Johannesburg has made it compulsory that households in certain areas be required to separate certain recyclable materials from other waste before the waste is picked up for collection. Residents in these areas are now legally required to separate recyclable refuse from their household waste. These items include: glass, paper, plastic, metal, and clothes.

### The Green Home and Garden

- The home creates a great deal of carbon dioxide emissions. Reducing these will make a collective difference.
- Energy efficiency – domestic energy consumption contributes to global warming, by reducing energy output, cut back on energy costs and reduce carbon footprint.
- Insulation – is the key factor in reducing energy costs and carbon footprint.

- Water use and laundry – carbon dioxide emissions are produced for example, just by doing laundry. Conserve water, cut out bleaching agents and corrosive substances by using non-toxic biodegradable detergents.
- Green cleaning – use natural cleaning agents – lemon removes stains, vinegar to disinfect and remove grease, add salt to an equal amount of plain flour, and vinegar to make a paste – an effective surface cleaner.
- Healthy home – avoid potential health hazards and reduce the levels of toxins in the home by decorating with natural paints, fabrics and fibres.
- Encourage wildlife and natural predators, no chemical pesticides and fertilisers, or commercial composts, grow own vegetables and flowers for cutting, and reuse rainwater/greywater on the garden, create wormeries for composting.

## **Green Workplace**

- Equipment and supplies – power down computers and equipment when they are not in use, reuse ink cartridges, laptops are more energy efficient than desktop computers, use multi-purpose equipment such as a combined printer, copier and fax machine.
- Paperless office – print on both sides of the paper or not at all – reduces the use of natural resources and destruction of natural habitats, so reducing global warming. Use a paperless fax, digital storage, bank online, produce electronic bills and invoicing.
- Business travel – avoid travel by holding a conference call or video conference. If business travel cannot be avoided, alleviate the effects of the travel by investing in a carbon offsetting scheme.

## 15. IMPORTANT DEFINITIONS

<b>Carbon Tax Bill, 2017:</b>	
<b>“carbon budget”</b>	a limit on total greenhouse gas emissions from a specific company, within a specific period of time
<b>“carbon tax”</b>	a tax on the carbon dioxide (CO <sub>2</sub> ) equivalent of greenhouse gas emissions imposed in terms of Section 2 of the Bill
<b>“carbon dioxide (CO<sub>2</sub>) equivalent”</b>	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
<b>“emissions”</b>	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
<b>“emission factor”</b>	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
<b>“fugitive emissions”</b>	emissions that occur from the release of greenhouse gases during the extraction, processing and delivery of fossil fuels including leaks from industrial plant and pipelines
<b>“greenhouse gas”</b>	gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infra-red radiation and includes carbon dioxide (CO <sub>2</sub> ), methane (CH <sub>4</sub> ), nitrous oxide (N <sub>2</sub> O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF <sub>6</sub> )
<b>“industrial process”</b>	a manufacturing process that chemically or physically transforms materials

<b>“process emissions”</b>	Greenhouse gas emissions other than combustion emissions occurring as a result of intentional or unintentional reactions between substances or their transformation, including the chemical or electrolytic reduction of metal ores, the thermal decomposition of substances, and the formation of substances for use as product or feedstock
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<b>General:</b>	
<b>“anthropogenic”</b>	chiefly of environmental pollution and pollutants originating in human activity
<b>“carbon emission”</b>	<b>Carbon dioxide (CO<sub>2</sub>)</b> is a colourless, odourless and non-poisonous gas formed by combustion of <b>carbon</b> and in the respiration of living organisms and is considered a greenhouse gas. <b>Emissions means</b> the release of greenhouse gases and/or their precursors into the atmosphere over a specified area and period of time
<b>“carbon footprint”</b>	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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