MOORE STEPHENS

SUSTAINABILITY
GUIDE

Long Live Sensible

CONTENTS

SUSTAINABILITY GUIDE

IMPORTANT NOTE

This guide is intended as an easy reference, pocket-sized guide for the businessperson, entrepreneur, manager, director, officer, and any individual or corporate entity who has an interest in sustainability and sustainable living.

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.

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.

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.

'Only after the last tree has been cut down,
Only after the last river has been poisoned,
Only after the last fish has been caught,
Only then will you find that money cannot be eaten'

Cree Indian Prophecy

1. HISTORY OF SUSTAINABILITY

We do not inherit the earth from our ancestors,
we borrow it from our children.

Native American Proverb

The impact of humankind on the environment has been minimal for many centuries. It has only been since the 17th to 19th centuries that pressure on the environment has increased with the development of industry and technology. A relatively insignificant proportion of the population has made a living from industry and industrial communities, yet the impact has been devastating.

The earth and environment has been affected in a number of ways:

- Large scale use of fossil fuels has provided tremendous amounts of energy for human use. Coal was used to power ever more efficient engines and later to generate electricity;
- Increase in development and use of technology has led, for example, to the advent of plastics and fertilizer;
- Advances in engineering development has led to an increase in the mining of mineral resources, and the exploitation of both forest and fishing resources;

- Pollution caused by the release of waste material has accumulated in the environment;
- Advances in the field of medicine and modern sanitation systems have led to a decrease in the death rate, resulting in a population explosion, creating stress on the "carrying capacity" of the environment.

By the mid 20th century, environmental problems had become global in scale.

These issues are now so serious that the continued existence of humans on this planet is being threatened.

It seems as if the global community is at last (since about the 1960's) starting to take the environmental crisis seriously.

Awareness by individuals, governments, countries and the business community is gaining momentum. However substantial intervention still needs to happen.

The global community needs to work together closely and towards restoring ecosystems and protecting the environment, while at the same time uniting commerce in the process.

Since the 1980's a number of conferences and summits have taken place globally on environmental and sustainability issues. Some of the more impactful action groups and conferences worth expanding on are as follows:

World Wildlife Fund (WWF): 1961
- WWF was founded in 1961 with the aim of protecting flora and fauna and the organisation of relief projects.

The Brundtland Commission Report: 1983
- It is documented that this was the Commission that put the concept of 'sustainable development' on to the global map [1];
- This was the first time that sustainability and environmental issues were recognised as an international problem that needed to be addressed on a global scale;
- The Commission proposed long-term strategies for achieving sustainable development.

The Rio Earth Summit: 1992
- Brought together the heads of 179 governments, 2000 non-governmental organisations (NGO's) and 10 000 journalists;
- Four key areas of decision at the summit were reached, as follows:
  - **Rio Declaration on Environment and Development** – incorporated a number of principles to guide future sustainable development;
  - **Agenda 21** – a far reaching action plan for the implementation of sustainable development in the 21st century;
  - **Forest principles** – developed principles on the management and conservation of forests;
  - **Framework convention on climate change** – an international treaty aimed at reducing greenhouse gases emissions [2].
- The **United Nations Commission on Sustainable Development (CSD)** was formed to monitor and report on implementation on the resolutions taken at the Earth Summit.

UNESCO Earth Charter: 2000

- The United Nations Educational, Scientific and Cultural Organisation (UNESCO) Earth Charter was an international declaration of fundamental values and principles for building a just, sustainable and peaceful global society in the 21st century. It was created by a global process of consultation and endorsed by organisations representing millions of people [3].

The Millenium Declaration: 2000

- Eight Millennium Development Goals (MDG's) were developed, with a target date of 2015, as follows:
    - Eradicate extreme poverty and hunger;
    - Achieve universal primary education;
    - Promote gender equality and empower women;
    - Reduce child mortality;
    - Improve maternal health;
    - Combat HIV/AIDS, malaria and other diseases;
    - Ensure environmental sustainability;
    - Develop global partnership for development [4].

Johannesburg Summit: 2002

- The Johannesburg Plan of Implementation [5] was developed at the summit, which listed issues to be addressed such as:
    - sustainable development of small island developing states (SIDS),
    - developing an institutional framework for sustainable development,
    - the protection and management of the natural resource base, and
    - the changing of unsustainable patterns of consumption and production.

The Kyoto Protocol: 2005

- The Kyoto Protocol [6] is a protocol to the United Nations Framework Convention on Climate Change (UNFCCC), specifically aimed at fighting global warming;
- The UNFCCC is an international environmental treaty with the goal of achieving the "*stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system*";
- The Protocol was initially adopted on 11 December 1997 in Kyoto, Japan, and entered into force on 16 February 2005. As of September 2011, 191 states had signed and ratified the protocol, one of which was South Africa. (The only remaining signatory not to have ratified the protocol is the United States);
- Under the Protocol, thirty-seven countries ("Annex I countries") committed themselves to a reduction of four greenhouse gases (carbon dioxide, methane, nitrous oxide, and sulphur hexafluoride), and two groups of gases (hydro fluorocarbons and per fluorocarbons) produced by them. All member countries have given general commitments;

- Annex I countries agreed to reduce their collective greenhouse gas emissions by 5.2% from the 1990 level. In 2009, carbon dioxide emissions from Annex 1 countries fell back to 1990 levels.

- Emission limits do not include emissions by international aviation and shipping, but are in addition to the industrial gases, chlorofluorocarbons, or CFCs, which are dealt with under the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer [7].

The Copenhagen Climate Conference and Protocol 2009:

- In 2012 the Kyoto Protocol to prevent climate changes and global warming will expire;

- To keep the process on the line there was an urgent need for a new climate protocol;

- At the conference in Copenhagen in 2009 the parties of UNFCCC met for the last time on government level before the climate agreement needed to be renewed;

- The Climate Conference in Copenhagen ended up with a *Copenhagen Protocol* to prevent global warming and climate changes [8].

On-going Responsibility

The aims and aspirations of these organisations and action groups reflect the same overarching principle, that all levels of society including government and the business sector, and the individual, across the globe, need to take responsibility for the planet, to each other, to the greater community of life, and to future generations – a responsibility so eloquently enunciated by Oren Lyons, Chief of the Onondaga Nation many centuries ago, when he stated:

> *"We are looking ahead, as is one of the first mandates*
> *given to us as chiefs, to make sure and to make every*
> *decision that we make relates to the welfare and*
> *well-being of the seventh generation to come ..."*
> *What about the seventh generation?*
> *Where are we taking them?*
> *What will they have?" [9]*

The global community is on the right track towards addressing sustainability issues. Their impact may be long-term, however the solutions have to begin soon.

This guide purports to provide the reader with an overview of the current environmental crisis and sustainability issues facing our planet, 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), business organisations, businesses as well as individuals can take in ensuring that the current generation of humans live sustainably and work for the benefit of the seventh generation to come.

A history of Global focus on sustainable development since 1961

WWF-founded in 1961
UNESCO Conference in
Paris – 1968

Montreal Protocol
on substances that
deplete the Ozone layer

Rio +5
Re-affirmed commitment
to Agenda 21

Johannesburg Summit
Johannesburg Plan of
Implementation (JPoI)

**17th Conference on
Climate Change –
Durban**

| 1960's | 1983 | 1989 | 1992 | 1997 | 2000 | 2002 | 2005 | 2011 |

**Brundtland
Commission Report**

Rio Earth Summit
- Rio declaration
- Agenda 21
- Forest Principles
- Framework Convention on
  Climate Change
- United Nations Commission
  on Sustainable Development

Millenium Declaration
8 millenium
development goals
agreed on

2005 World Summit
Follow up to Millenium
Declaration

Kyoto Protocol
Global warming

2. ENVIRONMENTAL AND SUSTAINABILITY ISSUES FACING OUR PLANET

*There is a sufficiency in the world for man's need
but not for man's greed.*

Mohandas K. Gandhi

Some of the environmental, economic and social issues facing us today are dealt with in this Chapter.

Greenhouse gas emissions:
- The earth needs naturally occurring greenhouse gases 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;
- Some of the human activities contributing to greenhouse gas emissions are:

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;
- Current carbon dioxide levels are about 380 parts per million by volume (ppm). High income countries will need to reduce their emissions by 60-90% over 2006 levels by 2050 to about 450-650 ppm – the 'tipping point';
- 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 78% of greenhouse gas emissions in South Africa;
- South Africa is one of the most carbon emissons-intensive countries in the world, due to:
    - The high dependence of coal for primary energy,(coal dominates the South African energy system – in 2009 South Africa generated 94% of its electricity using coal [10]);
    - The energy intensive economy in South Africa.
- This means that South Africa's responsibility to mitigate is higher, and that major changes in energy systems will be needed over time.

The industrial sector:
- Industrial processes contribute to about 8% of greenhouse gases;
- Chlorofluorocarbons (CFC's) are used in refrigeration systems;
- The use of CFC's and halons in fire suppression systems and manufacturing processes create further greenhouse gases.

The agricultural sector:

- Agriculture contributes to about 9% of greenhouse gas emissions;
- High levels of greenhouse gases are emitted as a result in changes in land use, including deforestation and land degradation.

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:

- Waste contributes to about 4% of greenhouse gas emissions [11].

Effect on weather patterns, global warming and climate change:

- Should human activity continue unabated, and emissions continue to rise at the current rate, major (unnatural) changes in climate and weather patterns will result;
- A Report from the United Nations Office for the Co-ordination of Humanitarian Affairs (OCHA) states that climate disasters are on the rise – around 70% of disasters are now climate related – up from 50% from two decades ago;
- 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;
- Carbon dioxide on its own (just one of the many greenhouse gases) could cause a global rise in temperature of between 2.4 to 6.4 degrees celsius by 2100, [12], should levels in the atmosphere reach the tipping point of 650 ppm;
- When the average temperature across the globe rises – and stays at the higher level – the difference has enormous implications – for example on rainfall patterns and sea levels;
- The changes in distribution of rain and snow across the globe is already evident;
- Where the temperature of the air is raised, it increases evaporation of surface water;
- This can lead 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 be on the increase – taking a heavy toll on human life, financial cost and human displacement [13].

The Kyoto Protocol:

- All in all, carbon dioxide, methane, nitrous oxide and three groups of fluorinated gases (sulfur hexafluoride, organo fluorine, and per fluorocarbons) are considered to be major greenhouse gases and are the subject of the Kyoto Protocol which came into force in 2005.

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 [14].

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 [7] 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

- Mankind destroys 130,000 square kilometers of the world's forests every year, according to the United Nation's Food and Agriculture Organization (FAO);

- Conversion to agricultural land, timber production, and urbanisation are the main culprits [15];

- Forests once covered half of the Earth's landmass. Now they cover less than one tenth. The United Nations has declared 2011 the International Year of Forests [16].

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 6 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;
- 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 and very little is known about the movement of carbon in forest soils) [17]. They argue that instead, a move towards low-carbon economics is the only solution;
- Meanwhile more frequent fires [18] 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

- 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 [19].

Soil erosion, land degradation and desertification

- Land degredation is caused by soil erosion, land clearance and poor agricultural practices;
- It is estimated that croplands globally are shrinking by more than 10 million hectares per year due to soil erosion [20];
- 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. There is now on average about two million square kilometres less polar ice than there was 100 years ago [21];
- Melted sea ice results in increased salt water intrusion into coastal acquifers and it is anticipated that the sea levels will rise by one metre by 2100 [22];
- Ten per cent of the world's population live in low-lying areas vulnerable to sea level rise.

Endangered Species and Biodiversity Loss

- More than 11 000 species face a high risk of extinction in the near future mainly as result of habitat loss [23];
- 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

- It is estimated that one third of fish stock has been fished out and the remainder will be depleted by 2050 [24].

Poverty and inequality

- As of 2008 the World Bank has estimated that there were an estimated 1,345 million poor people in developing countries who live on $1.25 or R9.82 a day or less [25];
- 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;
- The United Nations Food and Agriculture Organisation (FAO), which measures 'undernutrition', puts the most recent estimate of undernourished people at 925 million [26]. These figures were released in October 2010 by FAO. With an estimated 925 million hungry people in the world, 13.1 percent, or almost 1 in 7 people are hungry.

Surging population

- According to the United States Census Bureau (USCB), the human population stands currently at more than 6.97 billion and is likely to grow to between 7.5 and 10.5 billion by 2050;

World population estimates milestones (USCB)									
Population (in billions)	1	2	3	4	5	6	7	8	9
Year	1804	1927	1960	1974	1987	1999	2012	2027	2046
Years elapsed	–	123	33	14	13	12	13	15	19

[Source: Wikipedia: http://en.wikipedia.org/wiki/World_population]

- 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 [27]. More people means more food, more water, more energy consumption.

Resource overuse

- Human activitiy uses up resources from the air, sea and land twenty per cent faster than they can be replenished.

Disease

- Run-off from flooding can cause an increase in water-borne disease such as cholera, diarrhoea, and typhoid;
- Warmer temperatures and global warming can enhance conditions for diseases to flourish such as malaria, and Lyme disease (insect and rodent borne diseases);
- 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 [28];
- An example would be Dichloro-diphenyl-trichloroethane (DDT), which was first used as a pesticide against Colorado potato beetles on crops beginning in 1936;
- As early as 1946, the harmful effects of DDT on bird, beneficial insects, fish, and marine invertebrates were seen in the environment;
- The most infamous example of these effects were seen in the eggshells of large predatory birds, which did not develop to be thick enough to support the adult bird sitting on them;
- More than sixty years ago when biologists began to study the effects of DDT on laboratory animals, it was discovered that DDT interfered with reproductive development;
- Recent studies suggest DDT may inhibit the proper development of female reproductive organs that adversely affects reproduction into maturity;
- Additional studies suggest that a marked decrease in fertility in adult males may be due to DDT exposure;
- Most recently, it has been suggested that exposure to DDT in utero can increase a child's risk of childhood obesity;
- DDT is still used as anti-malarial insecticide in Africa and parts of Southeast Asia in limited quantities.

The Warning

- On 18 November 1992, the Union of Concerned Scientists published a document called "Warning to Humanity" in Washington D.C.[29]
- The Warning stated that:

  "*Human beings and the natural world are on a natural collision course. Human activities inflict harsh and often irreversible damage on the environment and on critical resources. If not checked, many of our current practices put at serious risk the future that we wish for human society and the plant and animal kingdoms, and may so alter the living world, that it will be unable to sustain life in the manner that we know. Fundamental changes are urgent if we are to avoid the collision our present course will bring about.*"

- The Warning went on to state that "*... the Earth is finite. Its ability to absorb wastes and destructive effluent is finite. Its ability to provide food and energy is finite. Its ability to provide for growing numbers of people is finite. And we are fast approaching many of the Earth's limits. Current economic practices, which damage the environment, in both developed and underdeveloped nations cannot be continued without the risk that vital global systems will be damaged beyond repair ...*"

3. WHAT IS SUSTAINABLE DEVELOPMENT?

Far from being a burden, sustainable development is an exceptional opportunity – economically, to build markets and create jobs; socially, to bring people in from the margins; and politically, to give every man and woman a voice, and a choice, in deciding their own future.

UN Secretary-General Kofi Annan

As has been discussed in earlier Chapters, sustainability initiatives have begun in earnest, by international organisations, the United Nations (and its agencies);

South African government policies and initiatives on sustainability are in place, and are underpinned by the international agreements. The South African government has passed various pieces of legislation relating to sustainable practices. These are discussed in Chapters 6 and 8;

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;

Before one is able to do so, an understanding of the general concept of sustainability and sustainable development is essential. The purpose of this chapter is to investigate the concept of sustainability and what it means.

What does 'sustainable development' mean?

There are varying interpretations on what sustainable development means, and not all definitions are universally agreed upon.

Indeed for many environmentalists, the idea of 'sustainable development' is an oxymoron, as 'development' seems to entail environmental degradation [30];

The following three definitions have been suggested by various groups, and are useful as a starting point:

The Brundtland Report: "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: "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".

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) [31].

The Natural Step:

- 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; or
  - 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:

- UN Secretary-General Kofi Annan's description (see beginning of this Chapter) of sustainability is useful in that it incorporates social, economic and environmental dimensions to the concept of sustainability;

- In other words, 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 [32];

- This view of sustainability has become known as the 'Three Pillars of Sustainable Development', coined as such in the 2005 World Summit Outcome Document [33].

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.

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
Urban planning and transport;
Local and individual lifestyles;
Ethical consumerism;
Improved education;
Fundamental human rights including racism, gender equality and the political empowerment of women;
Ensuring the management of resources such as rivers that span political boundaries thus creating environmental security;
Health;
Community outreach;
Labour relations.

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

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

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

Individuals can reduce their personal impact on the environment through a series of small inexpensive steps – see Chapter 10.

### Environmental Dimension (Planet)

- **Environmental Goals** of achieving clean air, water and land emissions, zero waste, zero releases and spills, a comfortable climate without frequent extreme weather conditions;
- Maintaining essential ecological processes, preserving biological diversity, sustaining the use of species and ecosystems (some of which support important industries);
- Environmental Ethics;

- Developing diverse opportunities for non-material use of natural resources (spiritual, recreational, aesthetic);
- Sustainable use of materials has included the concept of 'dematerialisation' [34] – whereby the linear path of materials is converted to a circular material flow:

From:

Extraction → Use → Disposal in landfill

To:

Reduce

Reuse

Recycle
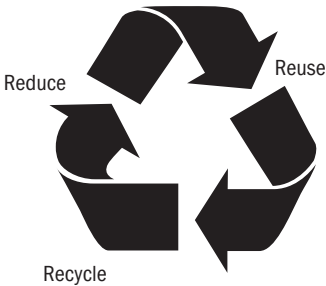
*Renewable energy commercialisation

- 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, biorefinery technologies, hot-dry-rock geothermal power and ocean energy. These technologies require further research and development [35].
- Renewable energy sources other than biomass, have not yet been exploited to the full in South Africa;
- Research projects are, inter alia, investigating 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;
- Research is presently conducted to evaluate the feasibility of building a solar thermal power plant in the Northern Cape, and a wind farm in the Western Cape.

Environmental Management					
Atmosphere	**Freshwater and Oceans**	**Management of Human Consumption**	**Energy**	**Land Use**	**Water**
Assessing all aspects of carbon cycle to identify opportunities to address climate change	Awareness of global importance of preserving water (more than half the earth's wetlands have been lost).	Manage consumption by making a full cycle of production, use and disposal; in other words cyclical resource management rather than linear	Stabilising the world's climate will require high income countries to reduce carbon emissions by 2050.	At the local human scale, sustainability benefits accrue from developing sustainable parks and gardens.	Water use through irrigation of land has increased, as well as in the power and industrial sectors.
Addressing air pollution, acid rain in cities	It is necessary to manage the water resource as there is a limted amount of this valuable resource;	Consumption can be analysed at all levels through the chain of consumption – from individual lifestyle choices to ↓ resource demands of specific goods and services to ↓	Reduction of greenhouse gas emissions – at an individual level (living a carbon neutral lifestyle) to the commercialisation of renewable energy. (Kyoto and Copenhagen Protocols)	Environmental problems associated with agribusiness and industrial agriculture are now being addressed with such movements as sustainable agriculture, organic farming and more sustainable business practices. (see Chapter 11)	Water efficiency is being improved on a global scale by increased demand management, improved infra-structure, improved water productivity of agriculture, minimising the water intensity of goods and services, and planning for climate change.
Monitoring the effect of greenhouse gases on global warming (Montreal Protocol)	Improved management of blue (harvestable) and green water (soil water available for plant use); Use of grey water systems in the home.	the impacts of economic sectors, ↓ through national economies to ↓ the global economy	Renewable Energy solutions (see previous page)*	At the local level there are various movements working towards local food production, domestic gardens including permaculture, sustainable gardening and organic gardening.	

Economic Dimension (Profit)

- There is a proven scientific correlation between economic growth and environmental degradation [36];
- **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;
- 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 [37];
- Some further aspects of sustainability in the economic context include:

Reducing resource intensity	A goal of 'sustainable scale' rather than 'continual growth';
	Finding ways to reduce resource intensity i.e the amount of the resource needed for production, consumption and disposal of a good or service – either by way of economic management, product design or new technology;
Environmental taxes and incentives	Using marketing strategies like eco-taxes and incentives, tradable permits for carbon (see Chapters 8 and 9);
	Encouraging the payment for ecosystem services;
Economic opportunity	Sustainable business practices integrate social economic and environmental concerns (see Chapter 11) 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 [38]; Job creation opportunities by the introduction of "green collar" workers.
Green Economics	A market-based attempt to address issues of equity and the environment.
	A range of government policies (see Chapters 6 and 7) and the global recession 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;
- South Africa is a signatory to the Kyoto Protocol as well as the Copenhagen Protocol, seeking to become a low-carbon economy as part of a national climate change mitigation strategy;

- In fact, South Africa's policy on climate change, detailing the plan to reduce carbon emissions has recently been approved by cabinet.
- 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;
  - Attribute a cost per unit output to greenhouse gases through such means as emissions trading or a carbon tax;
- Nuclear power or carbon capture and storage (CCS) have been proposed as the primary means to achieve LCE while continuing to exploit non-renewable resources;
- Some other means to achieve LCE would be for example in the tertiary sector – retail operations could use high efficiency lighting such as compact fluorescent, halogen and LED light sources, roof top solar panels [39].

Scheme of sustainable development: at the confluence of three constituent parts [40]
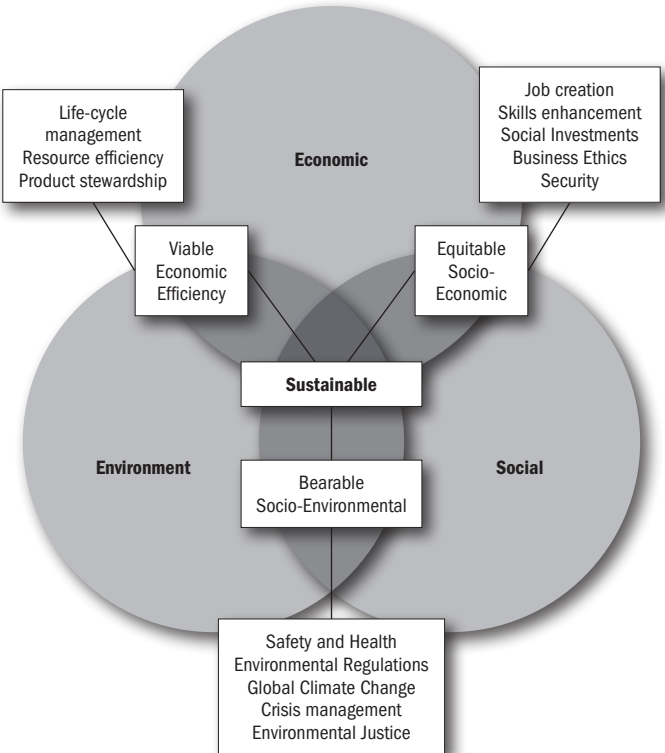
[Source: Wikipedia http://en.wikipedia.org/wiki/Sustainable_development]

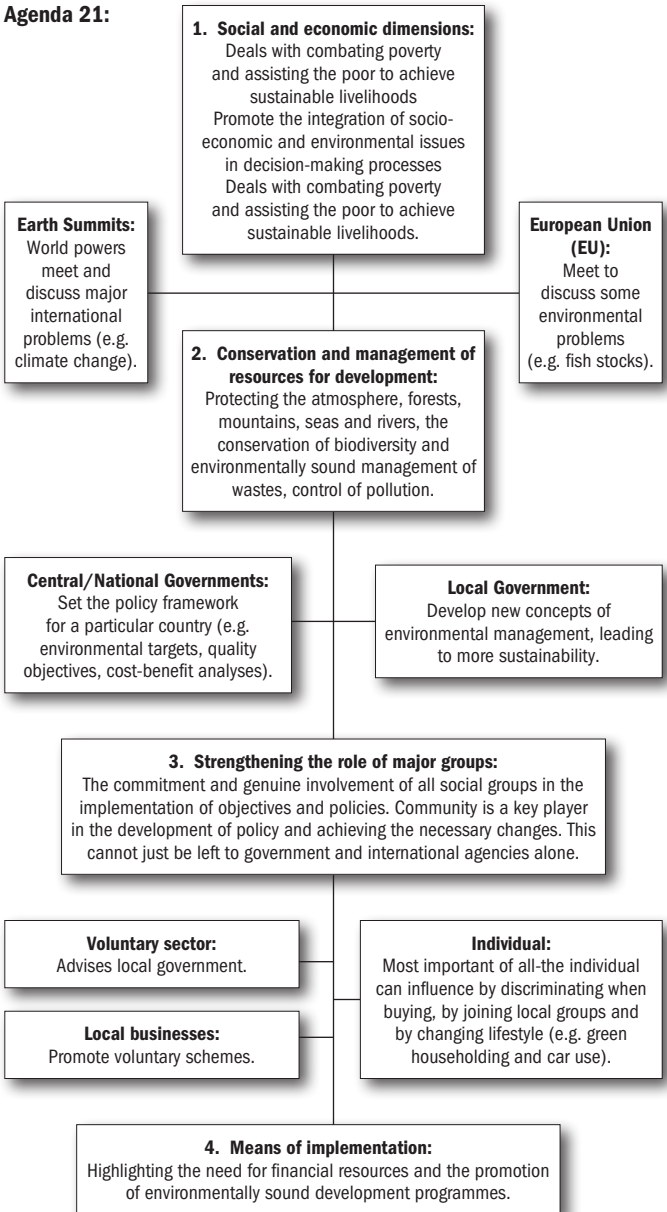**Integration of the "Three Pillars of Sustainability":**

- The social, economic and environmental objectives of sustainable development should be integrated into the policy documents and implementation strategies in international treaties, national government and local government policy documents as identified in Agenda 21;

- 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. Refer to Chapters 10 and 11 for further detail on the roles and responsibilities of these key players;

- Chapters 4 and 5 provide more detail on both Agenda 21 and the UN Commission on Sustainable Development due to the importance of their efforts to achieve sustainability on a global scale;

4. AGENDA 21

- The Preamble of Agenda 21 begins with the following paragraph:

  'Humanity stands at a defining moment in history. We are confronted with a perpetuation of disparities between and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which we depend for our well-being. However, integration of environment and development concerns and greater attention to them will lead to the fulfilment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future. No nation can achieve this on its own; but together we can – in a global partnership for sustainable development'[41]

- Agenda 21 is a comprehensive plan of action to be taken globally, nationally and locally by organisations of the United Nations System, Governments, and major groups in every area in which human impacts on the environment [42];

- Agenda 21, the Rio Declaration on Environment and Development, and the Statement of principles for the Sustainable Management of Forests were adopted by more than 178 Governments at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janerio, Brazil, 3 to 14 June 1992, of which South Africa is a signatory;

- One of the Commission on Sustainable Development (CSD)'s objectives is to ensure effective follow-up of UNCED, to monitor and report on implementation of the agreements at the local, national, regional and international levels;

- The full implementation of Agenda 21, the Programme for Further Implementation of Agenda 21 and the Commitments to the Rio principles, were strongly reaffirmed at the World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa from 26 August to 4 September 2002.

- The objectives of Agenda 21 are:
    - Alleviation of poverty, hunger, disease, and illiteracy worldwide;
    - Halt the deterioration of ecosystems that sustain life [43]

- There are four major sections to Agenda 21, and the diagram below summarises these as follows:

Agenda 21:

1. Social and economic dimensions:
Deals with combating poverty and assisting the poor to achieve sustainable livelihoods
Promote the integration of socio-economic and environmental issues in decision-making processes
Deals with combating poverty and assisting the poor to achieve sustainable livelihoods.

Earth Summits:
World powers meet and discuss major international problems (e.g. climate change).

European Union (EU):
Meet to discuss some environmental problems (e.g. fish stocks).

2. Conservation and management of resources for development:
Protecting the atmosphere, forests, mountains, seas and rivers, the conservation of biodiversity and environmentally sound management of wastes, control of pollution.

Central/National Governments:
Set the policy framework for a particular country (e.g. environmental targets, quality objectives, cost-benefit analyses).

Local Government:
Develop new concepts of environmental management, leading to more sustainability.

3. Strengthening the role of major groups:
The commitment and genuine involvement of all social groups in the implementation of objectives and policies. Community is a key player in the development of policy and achieving the necessary changes. This cannot just be left to government and international agencies alone.

Voluntary sector:
Advises local government.

Local businesses:
Promote voluntary schemes.

Individual:
Most important of all-the individual can influence by discriminating when buying, by joining local groups and by changing lifestyle (e.g. green householding and car use).

4. Means of implementation:
Highlighting the need for financial resources and the promotion of environmentally sound development programmes.

Key aspects of sustainability as described in Agenda 21.

5. THE UNITED NATIONS COMMISSION ON SUSTAINABLE DEVELOPMENT (CSD)

There are no passengers on Spaceship Earth.
We are all crew.

Marshall McLuhan, 1964

Establishment of the Commission for Sustainable Development (CSD)

- The United Nations Commission on Sustainable Development (CSD) was established by the UN General Assembly in December 1992 to ensure effective follow-up of United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit [44].

CSD Responsibilities

- As already mentioned, the CSD is responsible for reviewing progress in the implementation of Agenda 21, and for
- Promoting dialogue and building partnerships for sustainable development with governments, the international community and the major groups identified in Agenda 21;
- Reviewing the Rio Declaration on Environment and Development;
- Providing policy guidance to follow up the Johannesburg Plan of Implementation (JPOI) at the local, national, regional and international levels.

Goals

- Some of the identified goals of the CSD are:
    - Integration of the social, economic and environmental dimensions of sustainable development in policy-making at international, regional and national levels;
    - Wide-spread adoption of an integrated, cross-sectoral and broadly participatory approach to sustainable development;
    - Measurable progress in the implementation of the goals and targets of the Johannesburg Plan of Implementation [45].

Division for Sustainable Development (DSD)

- This is part of the UN Department of Economic and Social Affairs and provides secretariat support to the CSD, and manages the CSD process [46];
- The Division for Sustainable Development (DSD) provides leadership and is an authoritative source of expertise within the United Nations system on sustainable development;
- It therefore provides technical assistance designed to accelerate policy formulation and implementation for countries taking an increasing responsibility for project execution;
- The context for the Division's work is the implementation of Agenda 21, the Johannesburg Plan of Implementation and the Barbados Programme of Action for Sustainable Development of Small Island Developing States (SIDS).

### Priority Activities for the Division to Achieve These Goals:

- Activities of the DSD that have been prioritised are as follows:
  - ◆ Facilitate intergovernmental negotiations, consensus-building and decision-making through the provision of substantive support to the work of the CSD and other related bodies;
  - ◆ Provide technical assistance, expert advice and capacity building to support developing countries and countries with economies in transition in their efforts to achieve sustainable development;
  - ◆ Facilitate inter-agency and inter-organisational co-operation, exchange and sharing of information, and catalyse joint activities and partnerships within the United Nations system and with other international organisations, governments and civil society groups in support of sustainable development;
  - ◆ Promote and facilitate monitoring and evaluation of, and reporting on, the implementation of sustainable development at the national, regional and international levels;
  - ◆ Undertake in-depth strategic analyses to provide policy advice to the Under-Secretary General/Department of Economic and Social Affairs, United Nations and inter-governmental forums focusing on cross-cutting and emerging sustainable development issues [47].

6. SOUTH AFRICAN GOVERNMENT POLICY

*'Government commitment to sustainable development
will ultimately be judged by actions not words'*

Friends of the Earth

Policy making should take place on the following levels:

International Community

(partnerships)

Policy Making

National level

Regional level
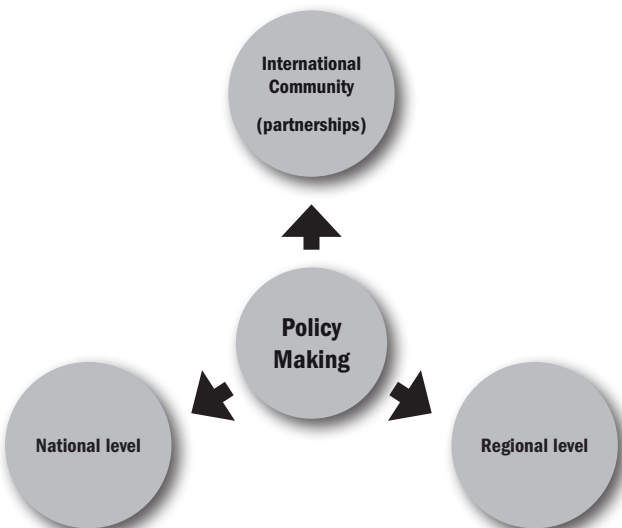
- The primary responsibility for co-ordination and implementation of sustainable development programmes rests with governments;
- Integrating sustainability into national development policies is one of goals of the United Nations Millennium Declaration [4], which South Africa has endorsed.

South African National Framework for Sustainable Development

- In July 2008, the South African Cabinet passed the National Framework for Sustainable Development (NFSD);
- The 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";
- And it is this last requirement which sees the government holding regular national summits to which all interested parties are invited to attend.

International Agreements and treaties on Sustainability:

In addition to its commitment to implement Agenda 21, South Africa is party to a number of legally enforceable international environmental agreements. These include:

- the Convention on Fishing and Conservation of the Living Resources of the High Seas (Geneva, 1958),
- the Convention on the Conservation of the Living Resources of the South-East Atlantic (Rome, 1969),
- the Convention of the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London, 1972),
- Protocol on Substances that Deplete the Ozone Layer (Montreal, 1987),
- the Convention on Biological Diversity (Rio de Janeiro, 1992),
- the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal (1994),
- the Convention to Combat Desertification, and
- the Convention on International Trade in Endangered Species (CITES).
- Kyoto Protocol, 2002
- Copenhagen Protocol, 2009

7. NATIONAL AND PROVINCIAL GOVERNMENT DEPARTMENTS AND MUNICIPALITIES

We cannot command Nature except by obeying her.

Francis Bacon

- 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 the various government departments in our country:

1. Department of Health (DOH):

- In an address to the National Conference on Environmental Health in 2002, the then National Minister of Health: Dr Zweli Mkhize, stated the following [48];
- More emphasis should be put on preventative approaches including the strengthening of health promotion and environmental health interventions and strategies;
- 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;
- As a government, we believe 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 our country's needs;
- Based on the principle of 'think globally, act locally' South Africa regularly proposes national positions at multinational conferences;

Refer to the table on page 44 for further information on the various government departments objectives in regard to sustainability.

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.

8. SA ENVIRONMENTAL LEGISLATION

Principle 11 of Agenda 21's overriding principles states that governments shall enact effective environmental legislation, and that environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply [49].

The South African Constitution:

Section 24 provides that everyone has the right to:

a) An environment that is not harmful to their health or well-being;
b) 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.

National Forests Act, 1998 (Act 84 of 1998)

The preamble of the Act states that Parliament recognises that –

- everyone has the constitutional right to have the environment protected for the benefit of present and future generations;
- natural forests and woodlands form an important part of that environment and need to be conserved and developed according to the principles of sustainable management;
- plantation forests play an important role in the economy;
- plantation forests have an impact on the environment and need to be managed appropriately;
- the State's role in forestry needs to change; and
- the economic, social and environmental benefits of forests have been distributed unfairly in the past.

National Water Act, 1998 (36 of 1998)

Preamble:

- Recognising that water is a scarce and unevenly distributed national resource which occurs in many different forms which are all part of a unitary, inter-dependent cycle;
- Recognising that while water is a natural resource that belongs to all people, the discriminatory laws and practices of the past have prevented equal access to water, and use of water resources;
- Acknowledging the National Government's overall responsibility for and authority over the nation's water resources and their use, including the equitable allocation of water for beneficial use, the redistribution of water, and international water matters;
- Recognising that the ultimate aim of water resource management is to achieve the sustainable use of water for the benefit of all users;
- Recognising that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users; and
- Recognising the need for the integrated management of all aspects of water resources and, where appropriate, the delegation of management functions to a regional or catchment level so as to enable everyone to participate;

Water Services Act, 1997 (108 of 1997)

The Preamble states that the Act is aimed at:

- recognising the rights of access to basic water supply and basic sanitation necessary to ensure sufficient water and an environment not harmful to health or well-being;
- acknowledging that there is a duty on all spheres of Government to ensure that water supply services and sanitation services are provided in a manner which is efficient, equitable and sustainable;
- acknowledging that all spheres of Government must strive to provide water supply services and sanitation services sufficient for subsistence and sustainable economic activity;
- recognising that in striving to provide water supply services and sanitation services, all spheres of Government must observe and adhere to the principles of co-operative government;
- acknowledging that although municipalities have authority to administer water supply services and sanitation services, all spheres of Government have a duty, within the limits of physical and financial feasibility, to work towards this object;
- recognising that the provision of water supply services and sanitation services, although an activity distinct from the overall management of water resources, must be undertaken in a manner consistent with the broader goals of water resource management;
- recognising that water supply services and sanitation services are often provided in monopolistic or near monopolistic circumstances and that the interests of consumers and the broader goals of public policy must be promoted; and
- confirming the National Government's role as custodian of the nation's water resources.

National Energy Act, 2008 (Act No. 34 of 2008)

- To ensure that diverse energy resources are available, in sustainable quantities and at affordable prices, to the South African economy in support of economic growth and poverty alleviation, taking into account environmental management requirements and interactions amongst economic sectors;
- To provide for energy planning, increased generation and consumption of renewable energies, contingency energy supply, holding of strategic energy feedstocks and carriers, adequate investment in, appropriate upkeep and access to energy infrastructure.

National Environmental Management Act, 1998 (107 of 1998)

- To provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state;
- To provide for certain aspects of the administration and enforcement of other environmental management laws.

Air Quality Act, 2004 (39 of 2004)

- April 2010 heralded a significant milestone for air quality management in South Africa, when the new National Air Quality Act came into full effect;

- The ultimate outcome of the efficient and effective implementation of the Air Quality Act is ambient air that is not harmful to health and well being of all across the nation.

National Environmental Management: Biodiversity Act, 2004 (10 of 2004)

- Provides a regulatory framework to protect South Africa's valuable species, ecosystems and its biological wealth.

Draft Bill on Biofuels (2011)

- 21 September 2011: Draft regulations on the mandatory blending of biofuels with petrol or diesel has been published in the Government Gazette for public comment;
- Through the draft regulations the department of energy is striving to promote the blending of locally manufactured biofuels into the existing petrol or diesel pool to supplement local fuels;
- It also seeks to ensure that biofuels manufacturers receive a fair price for biofuels supplied to blending facilities while it also wants to send out a clear signal to investors regarding securing the off-take of biofuels by oil companies.

9. SOUTH AFRICAN GREEN TAXES

The activist is not the man who says the river is dirty.
The activist is the man who cleans up the river.

Ross Perot

The 2011/2012 Budget Speech proposals announced by Minister Gordhan on 23rd February 2011 included the following:

Carbon Tax

The government is clearly seeing carbon taxes as a new area of revenue.

Carbon dioxide vehicle emissions tax

New passenger cars will be taxed based on their certified CO_2 emissions at R75 per g/km for each g/km above 120 g/km. This emissions tax will be in addition to the current ad valorem luxury tax on new vehicles.

Proposed Greenhouse Gas emissions Tax

The national treasury released a discussion paper for public comment:

The development of a carbon tax policy to be informed by the following considerations:

- In the absence of an international climate change agreement and a global emissions pricing system, a partial, rather than full, internalisation of the externality should be targeted as an interim measure;
- While a carbon tax based on measured and verified emissions is preferred, a proxy tax can be considered and levied according to the carbon content of fossil fuels (i.e. a fuel input tax). A tax of R75 per ton of carbon dioxide and with an increase to around R200 per ton carbon dioxide (at 2005 prices) would be both feasible and appropriate to achieve the desired behavioural changes and emission reduction targets;

- The carbon tax should be introduced at a modest rate, which will increase over a set time period, giving taxpayers an opportunity to adjust to the new tax;
- The design features of the proposed carbon tax option and a schedule for its introduction will be announced in the 2012 budget;
- Government has favoured a carbon tax solution rather than a Cap-and Trade system of carbon emission reductions (carbon tax being an environmental tax on emissions of carbon dioxide and other greenhouse gases) as opposed to a Cap-and-Trade system whereby there is a limit or cap on the amount of a pollutant that can be emitted. Organisations are issued emission permits and are required to hold an equivalent number of allowances (or credits), which represent the right to emit a specific amount. Organisations that need to increase their emission allowance are required to buy credits from those who pollute less. The transfer of allowances is referred to as a trade. In effect, the buyer is paying a charge for polluting, while the seller is being rewarded for having reduced emissions by more than was needed.

Electricity Levy
- Government proposed to increase the levy applied to electricity generated from non-renewable and nuclear energy sources by 0.5c/kWh to 2.5c/kWh from 1 April 2011;
- Some of this revenue will be set aside to fund the rehabilitation of roads damaged as a result of the haulage of coal for electricity generation;

International air passenger departure tax
- From 1 October 2011, the air passenger departure tax on flights to Southern African Customs Union member states and other international destinations will increase from R80 and R150 per passenger respectively to R100 and R190 per passenger.

Fuel taxes
- Total fuel and road accident fund levies increased by 18c per litre of petrol from 6 April 2011. The RAF levy increased by 8c/l on the same date.

"Environmental" Deductions/allowances
- Section 12B   Deduction in respect of certain machinery, plant, implements, utensils and articles used in framing or production of renewable energy
- Section 37B   Deductions in respect of environmental expenditure
- Section 37C   Deductions in respect of environmental conservation and maintenance
- Section 11D   Deduction for research and development costs
- Section 12 K   Exemption for Certified Emission Reductions
- Section 12 L   Special Allowance for Energy Efficiency Savings

The following environmental taxes and charges will also be investigated:
- A waste water discharge levy in terms of the **Water Act**, no 36 of 1998
- Pollution charges in terms of the new **Air Quality Act**, no 39 of 2004
- Levies on the waste streams of various products
- A landfill tax at municipal level

- Traffic congestion charges.
- The South African Government has also hinted at the introduction of a new environmental tax in an effort to address future eruptions of acid mine drainage (AMD) – resulting from the mining industry.

10. RESPONSIBILITY OF INDIVIDUALS AND VOLUNTARY GROUPS

Take nothing but pictures.
Leave nothing but footprints.
Kill nothing but time.

Motto of the Baltimore Grotto, a caving society

- 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 voluntary groups to adopt energy saving methods to safeguard the health of the planet;
- With the emergence of the Y generation and its set of values, an ideological paradigm shift has emerged – that has not come a moment too soon, in terms of global survival;
- The individual can influence environmental impact by discriminating when buying, joining local groups and changing lifestyle.

A mindshift from the Economic Era to the Environmental Era

Shift in global mindset	
A Global community in transition	
Economic Era	Environmental Era
Second half of 20th century	Now 21st century
Forge ahead regardless of the consequences, take whatever is needed from whatever quarter and throw away what we don't want	Redefinition of personal growth
	Personal ethos of being and thinking and doing and giving
Yuppie lifestyle	New definition of lifestyle advancement
X generation	Y generation
Rampant consumerism Forced consumption	Health, safety, altruism, co-operation preservation of the environment and other living things
Me-ism	Us-ism
Value violating	Value-defending vocations
High status, high paid careers	Marry need to earn a living with values such as achieving a meaningful life, raising families personal involvement

The four 'R''s – Reduce, Reuse, Repair, Recycle

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

The Green Home

- 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.

Green Shopping

- Buy organic labels;
- Buy from a company that respects the environment;
- Buy second-hand.

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;
- A good example of a green workplace is the Aurecon office building in Century City, Cape Town. It has become South Africa's first five star green star SA-rated building;
- The building boasts a number of innovative and sustainable features, which have contributed to it being awarded five star status. Bike racks for staff and visitors along with easily accessible showers encourage use of emission-free transport;
- Staff with electric cars or who travel in car pools or on motorbikes are also rewarded with prime underground parking spots close to the building entrances;

- Very little municipal water is required for the property as rainwater is collected and stored under the building's access ramp and is used for flushing toilets and urinals;
- Treated waste water from the Century City canal is used in the air conditioning cooling system;
- Lights in the building are connected to a building management system and as natural light increases, the lights are automatically dimmed to reduce electricity usage. Motion sensors in the building also reduce lighting usage in the office when staff are not present.

Green Travel
- Greener travel – try and reduce the amount of car travel;
- Choosing a greener car – modern cars are generally more fuel efficient and produce fewer emissions – electric and hybrid cars are a green option;
- Driving cleaner – the harder the engine works, the more fuel it burns, and the more carbon dioxide emissions are produced, cut down on air conditioning use;
- Flying – air travel is the fastest contributor to global warming;
- Eco-tourism – go camping – if done responsibly it does the least amount of environmental damage. Protect wildlife, don't hire a car.

Green Garden
- Encourage wildlife and natural predators;
- No chemical pesticides and fertilisers, or commercial composts;
- Grow own vegetables and flowers for cutting;
- Rainwater/greywater for bath and shower water – reuse on the garden;
- Wormeries for composting.

11. ROLE OF BUSINESS AND SUSTAINABILITY

Economic advance is not the same thing as human progress.

John Clapham,
A Concise Economic History of Britain, 1957

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 no longer trusts business to do the right thing. The media is continually reporting on incidents of corporate corruption, fraud, poor governance, environmental and social mismanagement;

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 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 inseperable, hence the phase 'integrated reporting';

- 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.

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.

Regulations, standards and guidelines for Sustainability Reporting:

- There has been a myriad of laws, standards and guidelines issued around the world on corporate social responsibility reporting;

- Laws and regulations have tended to be more focused on specific areas, for example the BBBEE Act. In South Africa, two pieces of legislation have been enacted making corporate social responsibility issues mandatory – namely the Employment Equity Act (no. 55 of 1998) and the National Black Economic Empowerment Act (no. 53 of 2003). The former seeks to eliminate unfair discrimination in the workplace and implement affirmative action for designated groups including black people, women and people with disabilities. Entities are required to report on an annual basis.

- Some international voluntary frameworks are:
  - The Global Reporting Initiative (GRI);
  - United Nations Global Compact (UNGC);
  - The AA 1000 Series developed by AccountAbility;
  - The Carbon disclosure Project;
  - Accounting for Sustainability Project;

- ◆ The Organisation for Economic Co-operation and Development (OECD) – Guidelines for Multinational Enterprises;
- ◆ King Report on Corporate Governance;
- ◆ Country or industry specific standards, codes and guidelines

Corporate Governance and King 111

The King 111 Report and Code on Corporate Governance is a voluntary code. However the Listings Requirements of the Johannesburg Stock Exchange (JSE) require that all companies listed on the Exchange must comply with its provisions;

King 111 recommends in Chapter 2 that:

- The Board should ensure that its long-term planning will result in sustainable outcomes. Strategy involves an assessment of risks and opportunities, and the strategy should establish a framework for action by the board and management. The strategy-development process should take account of the dynamics of the changing external environment and be responsive to changing market conditions;

- The primary reason for the existence of business enterprise is to create value. Traditionally, the notion of value was viewed narrowly as financial value for shareholders. This has evolved into the notion of value in terms of the triple bottom line: social, economic and environmental performance. Today, commentators talk of the triple context in which companies operate or simply the 'context', which embraces all three aspects – people, profit and planet.

- The board should consider sustainability as a business opportunity, where long-term sustainability is linked to creating business opportunities. In making these decisions, the board should be aware of the impact the company has on the economic life of the community in which it operates – both positive and negative. Efforts should be made to enhance these positive impacts and eradicate or ameliorate the negative ones. The opportunities that the company is presented with, through the management of risk, should be examined, understood and exploited as a guiding factor in formulating strategy;

- The role of the board is to set the tone at the top so that the company can achieve its integrated performance.

King 111's Practice Notes on Environmental Sustainability Practices and Performance in the Company:

- The introduction of the practice notes states that South Africa has contributed, not insignificantly, to the environmental crisis that faces our planet today;

- This has critical implications for the country considering the resource intensive nature of many of its industries, as well as the richness of its resource base and biodiversity;

- This, balanced with the fact that South Africa is a country emerging from a period of non-sustainable and inequitable development, which has had significant economic and social impacts, means that organisations face a major challenge, and calls are being made for leadership and a new paradigm to face the impending disaster;

- Consequently whether an organisation operates locally or globally, there are very clear business and legal reasons for taking measures to reduce both direct and indirect environmental impacts.

The Practice notes suggest an 'Implementation Guide' as follows:

The following elements are critical for consideration in development of an environmental policy:

- The policy should refer to all key issues – climate change, resource efficiency, waste and pollution management;

- The policy should be appropriate to level(s) of impact the organisation has on the environment in respect of the key issues mentioned above and the risks and opportunities afforded by these;

- Best practice policies employ globally and locally applicable corporate standards, and commit to making strategic moves towards sustainability;

- The policy should be publicly available and commit to:

  ◆ Maintaining a baseline review of all significant environmental impacts of activities;

  ◆ Use of targets and objectives;

  ◆ Monitoring and audit;

  ◆ Public reporting; and

  ◆ Addressing indirect impacts.

- The company should conduct a baseline assessment of its direct and indirect environmental impacts, to aid in the identification of the risks and opportunities inherent in these impacts. The impact assessment should be followed by a risk assessment appropriate to the impact level of the relevant company;

- Environmental risks cannot be considered in isolation, but should be integrated with financial and social risks. The board should consider its environmental risks and opportunities at a macro and micro level in a manner which goes beyond compliance, and from both an ethical and a business opportunity perspective;

- In so doing, boards are encouraged to acknowledge that environmental degradation is occurring at a rate which exceeds the capacity of the natural environment to restore itself and of governments to react by way of setting environmental standards;

- As such the sustainability of the company and of society depends in part, on the board actively striving to find ways to play its part in reducing its contribution towards climate change and pollution generally, and to limiting and making more efficient use of finite natural resources;

- A symbiosis between the carrying capacity of the natural environment and the sustainability of the organisation should be sought. Boards are therefore encouraged to consider issues such as:

  ◆ Energy reduction and efficiency, and alternative clean energy;

  ◆ Reduction in reliance on fossil fuels;

  ◆ Waste reduction or zero waste;

  ◆ Internalising the costs of emissions;

  ◆ Reduction in non renewable dependency, or using resources in a sustainable manner;

  ◆ Doing business with like-minded companies who actively seek to reduce their negative environmental footprints;

  ◆ Seeking ways to achieve the functional integration of the environment into achieving sustainable development;

- ◆ Developing or contributing towards technologies that reduce adverse environmental impacts;
- ◆ Understanding the cumulative effect of its businesses with others locally and globally;
- ◆ Encouraging public policy makers to provide financial incentives for improving environmental performance;
- ◆ A company should continually seek to improve its environmental performance by:
  - ■ Working to reduce and control its direct negative environmental impacts;
  - ■ Promoting awareness of its significant direct and indirect impacts;
  - ■ Working to use natural resources in a sustainable manner; and
  - ■ Committing to risk reduction, reporting and auditing.
- ◆ An impact assessment –
  - ■ considers all activities and their potential impact on the environment;
  - ■ determines whether the organisation falls into high or low impact sectors;
  - ■ should also consider impacts arising indirectly through upstream (supply chain) or downstream (product life cycle, project finance,etc.) (predominantly in qualitative terms).
- ◆ The board is responsible for ensuring that the organisation has an appropriate environmental management system which is implemented effectively, and which as a minimum includes the following four aspects:
  - ■ A proper identification of the company's adverse and positive environmental impacts, with particular emphasis on the organisation's direct and indirect impacts on waste and pollution; resource efficiency; and climate change. The board must also ensure that the company recognises the business costs and opportunities of its identified environmental risks;
  - ■ An environmental policy which is relevant and achievable in both the short and long term, and which inculcates its environmental values;
  - ■ Functional integration of the management of the company's environmental issues into all aspects of its operations, including financial and business strategies and planning. In so doing the board should ensure that its environmental management systems are not only relevant, functional and effective, but that they are integrated into all other aspects of the business and sustainable development criteria of the organization;
  - ■ Appropriate and relevant reporting to the board and to other internal structures, and responsible disclosure to internal and external environmental stakeholders. Even in the absence of regulatory requirements, sound risk management requires that companies integrate greenhouse gas and energy use measurement systems and protocols into their management frameworks.

- To ensure that there are management systems for sound environmental stewardship, companies should establish:
  - An environmental management system ("EMS") with direct account-abilities, and which should include specific interventions relating to climate change, resource efficiency and waste and pollution;
  - Standards and audit protocols to maintain compliance and improve performance;
  - Engagement programs with internal and external stakeholders.
- At a basic level, the following specific content should be included in environmental reporting:
  - Description of main environmental impacts;
  - Publishing the text of the environmental policy;
  - Reporting on performance measured against targets;
  - Providing data on non-compliance, prosecution, fines and accidents/incidents;
  - Stakeholder dialogue.
- Over time, reporting should include the following:
  - Outlining the EMS;
  - Financial dimensions;
  - Independent assurance / verification;
- Reporting must be geared not just towards external stakeholders, but also towards the company itself and its shareholders. As such whilst making disclosure the company has an obligation to protect confidential information;
- The company may choose to refer to some of the guidelines in existence that could prove useful in relation to developing an effective framework for managing environmental issues throughout the company;
- The Global Reporting Initiative's G3 Guidelines encapsulate the minimum indicators which the organisation should strive to report on as appropriate to the level of impact.

'Green' accounting systems

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 [50]

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, and there is movement towards exploring how accounting and reporting can contribute to a more sustainable future [51].

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.

Chapter 9 of King 111 sets out guidelines for sustainability reporting and disclosure as follows:

Transparency and Accountability:

- the Board should ensure the integrity of the company's integrated report;
- Those who prepare integrated reports should give readers the forward-looking information they want. It should also report on how the board believes that in the coming year it can improve the positive aspects and eradicate or ameliorate the negative aspects;
- By issuing integrated reports, a company increases the trust and confidence of its stakeholders and the legitimacy of its operations. The integrated report should have sufficient information to record how the company has both positively and negatively impacted on the economic life of the community in which it operated during the year under review – environmental, social, governance issues (ESG);
- By issuing an integrated report internally, a company evaluates its ethics, fundamental values, and governance and externally improves the trust and confidence which stakeholders have in it.

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.

Implement a structure of review and sustainability assurance:

- Sustainability reporting and disclosure should be independently assured. Today's stakeholders want assurance on the quality of the information contained in the report, including forward-looking information;
- King 111 recommends that review and consideration of the financial statements should be conducted by the audit committee, and that companies should implement a process to ensure the independence and competence of the company's external auditor(s);
- Assurance refers to the integrity of certain processes and systems – globally two complementary standards have emerged in sustainability assurance – AccountAbility's AA 1000 Assurance Standard (AA1000AS) and the International Accounting and Auditing Standard Board's International Standard on Assurance Engagements (ISAE 3000);

- The audit committee should assist the Board in reviewing an integrated report to ensure that the information is reliable and that it does not contradict the financial aspects of the report;
- Assurance reports include environmental and social audits:
  - Environmental audits comprise:
    - Environmental management audits;
    - Environmental compliance audits;
    - Environmental assessment audits;
    - Waste audits;
    - Environmental due diligence audits;
    - Supplier audits;

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.

The Global Reporting Initiative (GRI)

- In 1996, the Global Reporting Initiative (GRI) convened to create a common international framework for triple-bottom-line reporting;
- It provides generic and sector-specific guidelines as tools to help organisations disclose their economic, environmental and social performance;
- The GRI G3 guidelines emphasises the principle of materiality which links sustainability issues more closely to strategy;
- The formalisation of sustainability reporting is also evident in the current development of an ISO standard (26000) on social responsibility;
- Many listed companies use the JSE Socially Responsible Investment (SRI) index criteria as a guiding framework. (The Johannesburg Stock Exchange launched the SRI index in 2004 as a tool for investors to identify companies incorporating sustainability practices into their business activities);
- The GRI guidelines have become the accepted international standard for sustainability reporting.

Sustainablitiy 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;
- Investor relations and access to capital;
- Employee recruitment, motivation and reputation;
- Competitiveness and market positioning;
- Learning and innovation;
- Licence to operate;
- Operational efficiency;
- Risk profile and risk management;
- Financial advantages – a good example is British Telecom, which in its 2003 sustainability report points out that "Our environmental programme, which includes energy efficiency and fuel savings, has saved the company more than £600 million over ten years"[52]

12. THE WAY FORWARD

Our task now is not to fix the blame for the past,
but to fix the course for the future

John F. Kennedy

- Environmentally South Africa still has much work to do;
- South Africa is still one of the worst offenders in regard to the emission of greenhouse gases into the atmosphere;
- Sasol is currently building two more coal fired stations;
- Serious cutbacks will have to occur in the next ten years or so, in order for South Africa to become a low carbon economy;
- This will impact on all aspects of our lives – individually, socially, environmentally and in the business world;
- Co-operation from all levels of society will be required – from the political sector, social sector, business sector and ordinary people;
- All stakeholders have a responsibility but the primary responsibility rests with government particularly in regard to the implementation and co-ordination of sustainability projects and development.

Role of Government going forward:

- Government has already implemented some tools:
  - putting in place initiatives to reduce consumption of electricity;
  - The introduction of carbon taxes;
  - Further proposed environmental taxes are in the pipeline;
- The 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 at least another two decades, which will make it difficult to reduce emissions of greenhouse gases significantly;

- Although the National Framework for Sustainable Development (NFSD) is in place, there still seems to be disparity between the various government departments and actual implementation of the various strategies 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.

Climate Change:

Long-term mitigation scenarios: strategic options for South Africa

- This important research document sets out the various long-term scenarios for South Africa relating to climate change and carbon emissions;
- The report is often used as a basis for relevant policy decisions on climate change in South Africa;
- In South Africa's Long-Term Mitigation Scenarios (LTMS), carbon emissions would quadruple between 2003 and 2050 in the absence of radical energy choice changes, dominated by energy-related emissions, notably from the electricity, industrial and transport sectors. One of the major climate change mitigation issues facing South Africa is a reduction of its greenhouse-gas emissions from the power sector, primarily by reducing reliance on coal. South Africa is already taking steps to expand the use of both renewable and nuclear energy, to explore the use of carbon capture and storage (CCS) technologies, and to reduce energy demand through a nationwide energy efficiency programme. South Africa's public utility Eskom also has a target to reduce dependence on conventional coal to 70% by 2025 and reduce greenhouse-gas emissions in absolute terms by 2050 (including increasing capacity from renewables). South Africa's current target is to have 1 000 MW of renewable capacity by 2013 and 3 800 MW by 2016;
- South Africa aims to reduce greenhouse-gas emissions 34% below its business-as-usual (BAU) growth trajectory by 2020, increasing to 42% below the BAU trajectory by 2025;
- Trends in carbon dioxide emissions from fuel combustion illustrate the need for all countries to shape a more sustainable energy future [53].

Role of Business going forward:

- Introduction of a sustainability action plan into the company –
  - Identify management stakeholders
  - Establish a "green team"
  - Set goals and objectives
  - 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 – 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.
- A good example of a company pursuing sustainability strategy for a sustainable society is the Japanese copier manufacturer, Ricoh. Its explanation of each stage in the development of sustainability within its business operations is displayed on page 46 in the Table entitled "Ricoh's Three Stages of Sustainability" [54]

Role of the private sector and communities going forward:

- Conserving energy – use of fluorescent lights
- Green building
- Green cars – hybrid car rentals

Agenda 21 emphasises the importance of social partnerships if sustainable development is to become a reality;

Government departments and international agencies alone cannot achieve sustainable development;

Community, through representative and industry organisations should be a key player in the development and implementation of the required changes – individuals and business all play a role.

Advances in technology:

- A recent media report indicates that scientists (at Oxford, Cambridge, Bristol and Edinburgh universities) intend using a project called Stratospheric Particle Injection for Climate Engineering (SPICE) to help cool down the Earth fast;
- The theory is that a large helium balloon will be tethered to a ship by reinforced pipe and a pumping unit attached to the balloon will release tons of chemical particles into the strathosphere. If successful, this should reflect the sun's energy back into space and stop it warming up the earth. It is predicted that with ten such balloons aloft it there should be a 2 degree celsius drop in global temperatures in as little as two years;
- Although it sounds promising, some environmental groups have expressed concern about the effect SPICE will have on weather patterns globally because no one knows what to expect in the long term. Some argue it is a quick fix solution better solved by cutting carbon emissions.

Summary:

Passive $\longrightarrow$ to Proactive $\longrightarrow$ to Responsive

Sustainability and sustainable development is a moral and ethical imperative and a commercial opportunity;

Sustainability is a journey ... how far have you travelled on the journey?

Table of Role of SA Government Departments and Sustainability Policy				
Department	**Vision**	**Strategic Objectives**	**Activities relating to Sustainable Development**	**Policy on Sustainability and Environmental Issues**
Department of Environmental Affairs & Tourism (DEAT)	A prosperous and equitable society living in harmony with our natural resources	Sustainable tourism, growth and development Economic growth & poverty eradication Promote sustainable development agenda	very active in global sustainability debates especially around climate change	Long-term mitigation scenario (LTMS) develop a national policy that fits in with international policy around climate change
Department of National Treasury (DNT)	Promote economic development good governance, social progress rising living standards	Advance economic growth and income redistribution Prepare a sound and sustainable national budget	Investment in infrastructure income support and empowerment	Investment in the IDC – 2012 budget to embark on green products Minister Pravin Gordhan allocated an amount of R10 billion for the Industrial Development Corporation to embark on green products in the 2012 budget
Department of Water Affairs and Forestry (DWAF)	Being a country that uses water and forests productively and in a sustainable manner for social and economic activities, in a manner that promotes growth, development and prosperity of all people to achieve social justice and equity	Eradicate poverty and build the capacity of the state to create a better life for all	Building new infrastructures target: to ensure access to a basic water supply and sanitation services Protection of resources we do have	The Forest Charter is a road map for the implementation of accelerated and shared growth Work closely with municipalities which are responsible for much of the implementation

| Department	Vision	Strategy		
Department of Minerals and Energy (DME)	World-class minerals and energy sectors trhough sustainable development	Implement the Energy Efficiency Accords that it has signed with other energy stakeholders	Aim: universal access of electricity to all by 2012 continue to contribute towards sustainable development by managing & administering the committee of Mineral & Mining Development Board	Use alternative energy sources such as biofuels Nuclear power Urgent co-operation required between government, labour and business Responsible for sustainable development
Department of Public Works (DPW)	Economic development, good governance, efficiency, transformation, managing the accomodation and infrastructure needs of national departments	Efficient and effective asset management, job creation		
Department of Transport (DOT)	Transport, the heartbeat of South Africa's economic growth and social development	Growth and development health, safety, and BEE		
Department of Agriculture (DOA)	To strive for a united and prosperous agricultural sector	Holistic approach to sustainability		

Ricoh's Three Stages of Sustainability			
	Passive stage	**Proactive stage**	**Responsible stage**
Purpose	Coping with social pressures Laws and regulations Competitors Customers	Carrying out its mission as a global citizen Self-imposed responsibility Voluntary planning Voluntary activities	Simultaneously achieving environmental conservation and profits
Activities	Passive measures to meet laws and regulations, Competing with other companies, and satisfying the needs of customers	High-aiming, aggressive activities to reduce environmental impact Energy conservation Resource conservation and recycling Pollution prevention Improved awareness of all employees	Environmental conservation activities (activities to improve quality, control costs, manage delivery times) Reduced number of process steps Improved yield and operation rate
Tools		1. ISO 14001 2. LCA 3. Volunteer Leader Development Programme	1. Strategic Goal management system 2. Environmental accounting 3. Sustainable environmental management information system

[Source: Ricoh, "Sustainable Environmental Management and Corporate Value Enhancement," www.ricoh.com/environment/management/value.html]

Notes and references

1   Brundtland Commission's Report: United Nations General Assembly
    96th Plenary meeting December 1987 – 42/187 Report of the World
    Commission on Environment and Development

2   United Nations Conference on Environment and Development (UNCED),
    Rio de Janeiro, June 1992

3   United Nations Educational, Scientific and Cultural Organisation – Earth
    Charter 2000

4   United Nations Development Goals 2001

5   World Summit on Sustainable Development, Johannesburg 2002

6   http://en.wikipedia.org/wiki/Kyoto_Protocol

7   Montreal Protocol, 1989

8   http://www.erantis.com/events/denmark/copenhagen/climate-
    conference-2009/index.htm

9   An Iroquois Perspective.PP173/4 in American Indian Environments:
    Ecological Issues in Native American History. Vecsey C, Venables RW
    (editors). Syracuse University Press, New York

10 Cleaner Energy Cooler Climate, Harald Winkler, pp61 (HSRC Press, 2009)

11 Cleaner Energy Cooler Climate, Harald Winkler, pp61 (HSRC Press, 2009)

12. Intergovernmental Panel on Climate Change (IPCC) in the fourth
    Assessment Report (2007)

13 http://www.telegraph.co.uk/science/science-news/3302874/Global-
    warming-forecast-predicts-rise-in-2014.html

14 http://en.wikipedia.org/wiki/Ozone_depletion

15 http://knowledge.allianz.com/search.cfm?665/deforestation-causes

16 http://knowledge.allianz.com/?915/agenda-2011-the-year-of-forests

17 http://www.fern.org/campaign/carbon-trading/what-are-carbon-sinks

18 http://knowledge.allianz.com/search.cfm?434/australia-bushfires-
    changing-climate-fans-the-flames

19 Where is the earth's water located? Http://ga.water.usgs.gov/edu/
    earthwherewater.html

20 Laker, MC retired professor of Soil Science, University of Pretoria, South
    Africa's Soil Resources and Sustainable Development (2005)

21 Saving Planet Earth, Tony Juniper, pp 140 (Collins, 2007)

22 Sustainability & The Environment, Dick Palfrey and Angela Gray, pp 35

23. Environmental management: An ecological Guide to Sustainable living in
    Southern Africa, Professor M. Leon Hugo, Ecoplan CC, 2004, pp 4

24 http://www.telegraph.co.uk/news/uknews/1533125/All-seafood-will-
    run-out-in-2050-say-scientists.html

25 http://www.worldhunger.org/articles/Learn/world%20hunger%20
    facts%202002.htm#Footnotes

26 ttp://www.fao.org/publications/sofi/en/

27 http://en.wikipedia.org/wiki/World_population#cite_note-52

28 http://en.wikipedia.org/wiki/Endocrine_disruptor

29   Lester R.Brown and Others, State of the World 1994: A Worldwatch Institute Report on progress toward a sustainable society (London:Earthscan Publications Ltd, 1994) pp 19

30   Kates, R., Parris, T. & Leiserowitz, A. (2005). "What is Sustainable Development".

31   Adapted from The Natural Step for Business, by Brian Nattrass and Mary Altomare, 2001

32   Forestry Commission of Great Britain: Sustainability

33   2005 World Summit Outcome Document

34   http://en.wikipedia.org/wiki/Dematerialization

35   http://en.wikipedia.org/wiki/Renewable_energy_commercialisation

36   Adams & Jeanrenaud (2008) p. 15, http://en.wikipedia.org/wiki/sustainability#cite_note 115

37   Cleveland, C.J. "Biophysical economics", Encyclopedia of Earth, Last updated: 14 September 2006, http://en.wikipedia.org/wiki/Sustainability#cite_note-121

38   http://europa.eu/legislation_summaries/other/l32037_en.htm

39   http://en.wikipedia.org/Low-carbon_economy

40   Adams, W.M. (2006). "The Future of Sustainability: Re-thinking Environment and Development in the Twenty-first Century." Report of the IUCN Renowned Thinkers Meeting, 29-31 January 2006.

41   http://www.un.org/esa/dsd/agenda21/res_agenda21_01.shtml

42   http://www.un.org/esa/dsd/agenda21/

43   http://www.environment.gov.au/commitments/uncsd/publications/agenda21/pubs/factsheet-a21.pdf

44   http://www.un.org/esa/sustdev/csd/aboutCsd.htm

45   UN Department of Economic and Social Affairs, Division for Sustainable Development, http://www.un.org/esa/sustdev/about_us/aboutus.htm

46   http://www.un.org/esa/dsd/dsd/dsd_index.shtml

47   UN Department of Economic and Social Affairs, Division for Sustainable Development, http://www.un.org/esa/sustdev/about_us/aboutus.htm

48   http://www.doh.gov.za/show.php?id=702

49.   http://www.waitakere.govt.nz/AbtCit/ec/agnd21princ2.asp

50.   International Federation of Accountants, International Guidance document, Environmental Management Accounting (2005)

51.   http://www.cipfa.org.uk/pt/sustainability/download/discussion_paper.pdf, pp 5

52.   International Federation of Accountants in Business Committee, Why Sustainability Counts for Professional Accountants in Business (August 2006), pp 3 http://www.ifac.org/Store/Details.tmpl?SID=11565145692751995

53.   International Energy Agency Statistics: 2011 Edition: Carbon dioxide emissions from fuel combustion

54.   One Report : Integrated Reporting for a Sustainable Strategy, Robert G. Eccles and Michael P. Krzus, John Wiley and Sons, 2010, pp 118-119
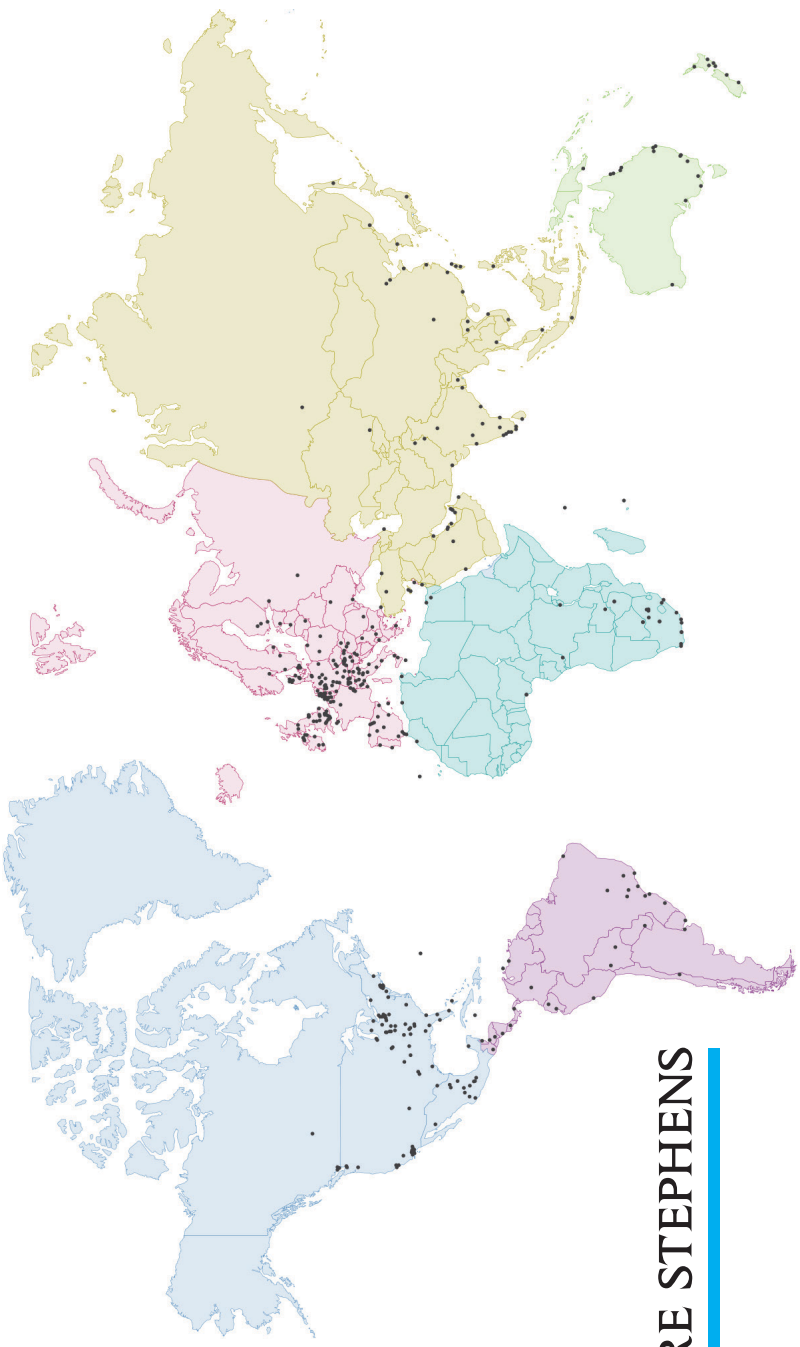
MOORE STEPHENS

Long live sensible

MOORE STEPHENS

Audit and Assurance • B-BBEE Verification and Consulting • Business and Corporate Advisory • Business Rescue & Recovery • Corporate Finance • Company Secretarial • Estate Planning and Administration • Forensic Service Governance, Internal Audit and Risk Service • Independent Trust Service IT Consulting • Legal Service • Listings • Management Service • Payroll Retirement Fund Financial Service • Tax • Valuation • Wealth Management