



**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

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# Compilation of the 3<sup>rd</sup> South Africa Environment Outlook Report

## Chapter\_Drivers of Change FIRST DRAFT

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GIBB REFERENCE NUMBER: J37105

DEA REFERENCE NUMBER: E1370

24 November 2017



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# Drivers of Change

## CONTENTS

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Chapter	Description	Page
	<b>Abbreviations</b>	<b>ii</b>
	<b>List of Figures</b>	<b>ii</b>
	<b>List of Tables</b>	<b>ii</b>
<b>1</b>	<b>Major drivers of change</b>	<b>1</b>
	1.1 Introduction	1
	1.2 Demography and environmental change	1
	1.2.1 Population growth	1
	1.2.2 Migration	2
	1.3 Economic development	3
	1.4 Implications on the environment	4
	1.5 The need for sustainable development and governance	5
	1.5.1 The Sustainable Development Goals	5
	1.5.2 Africa Environment Outlook	6
	1.5.3 Global Environment Outlook 6	8
	1.6 References	10

## ***Abbreviations***

AEO-3	Africa Environment Outlook
CBR	Crude Birth Rate
CDR	Crude Death Rate
GDP	Gross Domestic Product
GHG	Greenhouse Gase
NDP	National Development Plan
SDG	Sustainable Development Goal

## ***List of Figures***

Figure 1: Population estimate at mid-year 2017.....	1
Figure 2: Migrants from outside South Africa.....	3
Figure 3: Gross Domestic Product (GDP) and Demand.....	4
Figure 4: Sustainable Development Goals.....	6

## ***List of Tables***

Table 1: Estimated provincial migration streams (2016 - 2021).....	2
Table 2: Key messages from the AEO-3 and the South African perspective.....	7

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# 1 Major drivers of change

## 1.1 Introduction

The environment is made up of a complex set of components and interactions. The environment is one of the essential aspects of sustainable development, together with economy and social aspects. Environmental change occurs as a result of *drivers*. Drivers can be either natural forces, such as climate change, or human-induced forces, such as economic development or population growth.

The primary drivers discussed are demography and economic development. These two drivers, in particular put increased pressures on environmental resources, if the drivers are not positive towards or supportive of the protection of the ecosystem and the goods and services it provides.

## 1.2 Demography and environmental change

### 1.2.1 Population growth

The drivers for environmental change are complex. Population growth is one of the principle factors affecting the environment, economy through dominating societal needs. The population estimates (mid-year, 2017) for South Africa indicate a total of 56, 521, 900 (StatsSA, 2017). Figure 1 illustrates South Africa's population per province. Overall, the Crude Death Rate (CDR) dropped from 13,4 deaths per 1, 000 people in 2002 to 9 deaths per 1, 000 people in 2017 (StatsSA, 2017). Contrariwise, the Crude Birth Rate (CBR) increased between 2002 and 2008, however decreased between 2009 and 2017 (StatsSA, 2017). The decline is attributed to a decline in fertility where between 2007 and 2017, fertility declined from an average of 2,73 children per woman to 2,41 children.

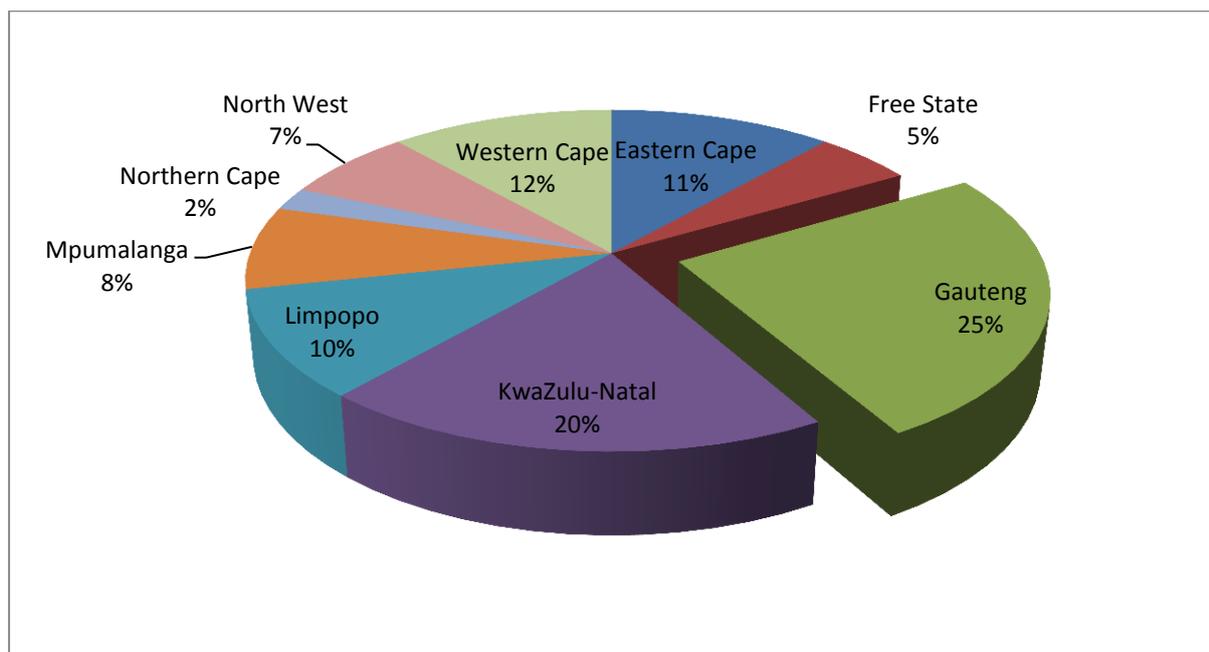


Figure 1: Population estimate at mid-year 2017 (StatsSA, 2017)

Despite the decline in fertility rates, the population is rising. An increase in the population puts pressure on space for housing and food production, creates a demand for more energy and resources such as potable water. Social development and higher living standards bring a need for increased infrastructure such as road traffic and increased domestic consumption. Economic growth in the industrial space creates pressure for increased water and energy consumption. Likewise, agricultural growth and practices pose significant risks on water and air pollution.

Industrial development requires land space, increases traffic congestion, generates waste which leads to air, water and land pollution. Broadly, the burning of fossil fuels adds to greenhouse gas emissions, contributing to air pollution and climate change concerns.

### 1.2.2 Migration

Migration is an important aspect to be considered in demographic process. The distribution of the provincial population, in particular, plays a significant role in relating environmental concerns at provincial levels. To this extent, Gauteng and Western Cape are estimated to experience the largest inflow of migrants, 1, 595, 206 and 485, 560, respectively (StatsSA, 2017).

**Table 1: Estimated provincial migration streams (2016 - 2021) (StatsSA, 2017)**

IN	OUT									Out-migrants	Net migration
	EC	FS	GP	KZN	LIM	MP	NC	NW	WC		
EC	0	18 240	149 693	100 139	13 830	16 501	7 928	36 915	172 401	515 647	-324 213
FS	7 952	0	82 409	8 018	6 688	10 359	9 033	23 214	12 434	160 107	-12 860
GP	49 690	43 374	0	75 313	85 180	82 199	12 552	98 714	97 853	544 875	1 050 230
KZN	23 077	12 012	236 363	0	8 235	32 772	2 788	11 007	34 576	360 830	-537 064
LIM	4 652	6 036	307 929	7 754	0	46 279	2 420	30 662	11 722	417 454	-138 606
MP	4 893	5 553	134 036	13 438	24 972	0	2 471	16 485	10 423	212 271	73 407
NC	4 501	9 100	18 519	5 834	2 722	4 460	0	13 082	18 614	76 832	5 670
NW	5 391	12 244	116 633	6 346	20 694	12 362	24 521	0	9 471	207 662	109 599
WC	52 871	8 353	64 890	14 229	5 842	7 596	13 310	8 742	0	175 833	309 729
International	38 407	32 335	484 634	76 054	110 684	73 150	7 478	78 441	118 066		
In-migrants	191 434	147 247	1 595 106	307 125	278 847	285 678	82 501	317 262	485 560		

The province attracting migrants from outside of South Africa is predominantly Gauteng, followed by Western Cape and Limpopo (see Figure 2). Planning for in-migrants necessitates significant infrastructure development for schools and housing, as well as increased requirements for energy and water resources.

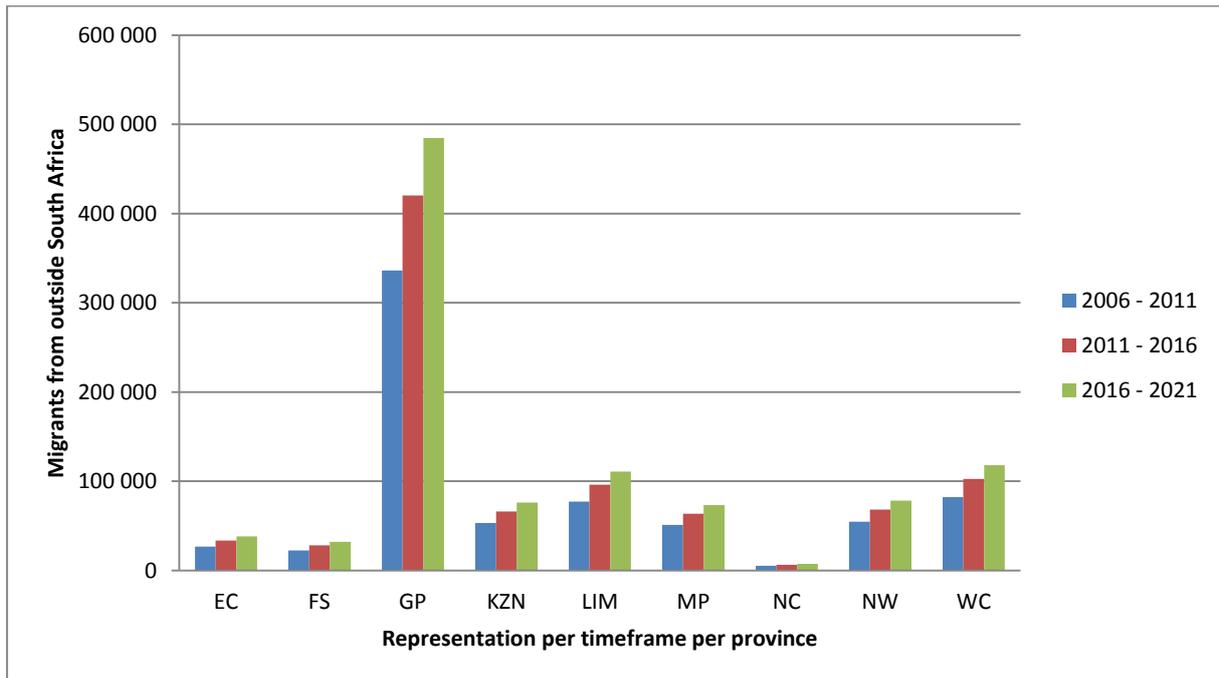


Figure 2: Migrants from outside South Africa (StatsSA, 2017)

Unemployment, poverty, and inequality (National Treasury) remain a challenge. Official unemployment is roughly 26 percent of the workforce (CIA, 2017). Even though the country's modern infrastructure supports a relatively efficient distribution of goods to major urban centers, unstable electricity supplies impede growth. Load shedding and resulting rolling blackouts gripped many parts of South Africa in late 2014 and early 2015 because of electricity supply constraints due to technical problems at some generation units, unavoidable planned maintenance, and an accident at a power station (CIA, 2017).

### 1.3 Economic development

South Africa is a middle-income emerging market with an abundant supply of natural resources; well-developed financial, legal, communications, energy, and transport sectors; and a stock exchange that is Africa's largest. Economic growth has however, decelerated in recent years, slowing to an estimated 0.3% in 2016 (AfDB, 2017). South Africa, being one of Africa's largest economies took a slump in mining and quarrying which resulted in the decelerated growth. As seen in Figure 3, Gross Domestic Product (GDP) and the demand thereof are declining. The implications of such a decline are far-reaching such that existing issues are further exacerbated. Drought, in many instances plays a role in reduced exports. Economic growth however, is projected to continue to be weak in 2017 before picking up moderately in 2018, as private consumption and exports rise (OECD, 2017). Unemployment and inequality will remain high, reflecting large skill gaps and low education quality. Inflation has been above target, due to the rand depreciation and rising food prices, but is easing (OECD, 2017).

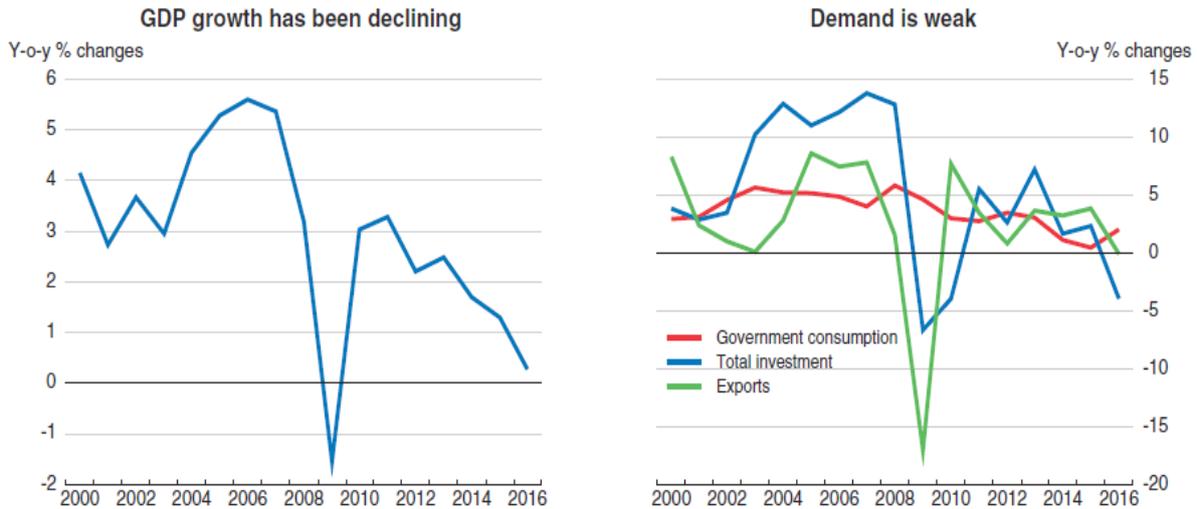


Figure 3: Gross Domestic Product (GDP) and Demand (Source: OECD, 2017)

South Africa's economic policy has focused on controlling inflation; however, the country faces structural constraints that also limit economic growth, such as skills shortages, declining global competitiveness, and frequent work stoppages due to strike action (OECD, 2017). The government faces growing pressure from urban and rural constituencies to improve the delivery of basic services to low-income areas, to increase job growth, and to provide university level-education at affordable prices. Political infighting and the volatility of the Rand risks economic growth (AfDB, 2017). International investors are concerned about the country's long-term economic stability; as of December 2016, most major international credit ratings agencies placed South Africa only one level above junk bond status (CIA, 2017, OECD, 2017). The impact of which further exacerbates crises such as power deficits and the ongoing drought induced by El Niño (AfDB, 2017).

#### 1.4 Implications on the environment

Economic growth as well as changing patterns of production, consumption and service delivery put pressure on the environment. Indeed, more resources will be required to sustain both a growing population and to achieve the great strides in economic growth. Concurrently, more funds will have to be allocated to meet the demands of the South African population in terms of health services, education, energy, food, sanitation and transport. While this will contribute to a dynamic economy, undue additional pressures on the environment will also arise.

Human population growth as well as social and economic development in South Africa is all leading to an increase in the demand for land. Rising human populations implies increases in food requirements as well as in production/manufacturing.

Economic development entails tourism, industrial and agricultural expansion and infrastructural improvement, which are all heavy consumers of water and energy as well as generators of waste. The increasing demand in energy results in the use of more fossil fuels for energy production, thereby releasing noxious gases into the atmosphere. Rapid technological improvement is leading to

an increasing amount of electronic waste. Industrial development gives rise to environmental pressures through the release of harmful gases including Greenhouse Gases (GHG) and wastewater. Wastewater treatment facilities experience challenges in terms of achieving adequate water quality.

The major development sectors in South Africa, their expected social gains and possible environmental implications are illustrated below:

ECONOMIC DEVELOPMENT	SOCIAL GAINS	ENVIRONMENTAL PRESSURES
<ul style="list-style-type: none"> <li>• Declining economic growth</li> <li>• Increased requirements for infrastructural development</li> </ul>	<ul style="list-style-type: none"> <li>• Job creation</li> </ul>	<ul style="list-style-type: none"> <li>• Increased risk of pollution from industrial, municipal wastewater treatment and agricultural activities</li> </ul>

Focus should now be placed on sustainable development, which integrates environmental, economic and social concerns across different sectors.

**1.5 The need for sustainable development and governance**

Economic development, social prosperity and human wellbeing all depend on a healthy environment. For economic development to take place, the country depends on natural resources. Land is required for construction of industries and housing. Water is used for industrial processes, electricity production and agriculture. Healthy and aesthetically pleasing coastal ecosystems are the basis for tourism expansion and abundant biodiversity is essential for fisheries development. Rocks are needed for infrastructural development and the construction industry.

Social prosperity is closely linked to human wellbeing and good health, which in turn depend on the availability of basic needs like fresh air, clean water, nutritious food, clothing, shelter, energy, transport, communication and education. For national development to be meaningful and beneficial there is a need to reconcile economic needs with environmental sustainability and human wellbeing. Government has shown strong commitment to develop policies and adopt programmes aimed towards sustainable development.

**1.5.1 The Sustainable Development Goals**

In 1987, the World Commission on Environment and Development defined sustainable development as *“development that meets the needs of the present without compromising the ability of future generations to meet their needs”*. In this regard, economic growth and development were linked to

environmental protection (UNCTAD, 1993). As such, the United Nations Sustainable Development Summit was instrumental in developing the “2030 Agenda for Sustainable Development” which includes a set of 17 Sustainable Development Goals (SDGs) (**Error! Reference source not found.**) to end poverty, fight inequality and injustice and tackle climate change by 2030 (UN General Assembly, 2015).



Figure 4: Sustainable Development Goals (Image: <http://www.undp.org/content/undp/en/home/sdgoverview/post-2015-development-agenda.html>)

The importance of the SDG’s translates into various departments efforts to tracking and monitoring indicators to achieving targets by 2030. South Africa is noted to be taking steps to translate the SDG’s and integrate the SGG’s into its own national vision and plans. By working with UN country teams, the United Nations Development Programme has provided support to raise awareness about the SDG’s amongst government members.

The first step however, is alignment to the National Development Plan (NDP). South Africa’s NDP is broadly aligned to the SDG’s however there are areas that require capacity-building (WITS, 2017). These include food security and sustainable agriculture, gender, green industrialisation, labour rights and working conditions, and other issues related to social, political, economic inclusion and equality of access to opportunities (WITS, 2017).

**1.5.2 Africa Environment Outlook**

The Africa Environment Outlook 3 (AEO-3) (UNEP, 2013) has provided a coherent framework for monitoring environmental management in Africa. Drivers of change contained within the AEO-3 speak to the linkages between the environment and health, since diseases is persistent issue (UNEP, 2013). Key messages are summarised below:

Table 2: Key messages from the AEO-3 and the South African perspective

Key messages from the AEO-3	South African perspective
Environmental and health issues deserve priority consideration in national development	Water related health issues are emergent due to water stress and climate change (Gray and Vawda, 2016).
Although indoor air pollution is a profound health problem in Africa, it has been inadequately addressed.	Air pollution is monitored and tracked in terms of greenhouse gas emissions.
Biodiversity provides goods and services such as food and medicinal plants that promote human health in Africa.	Traditional healing is still practised in South Africa, comprising both indigenous and religious sectors (Gray and Vawdda, 2016). At least 88% of traditional health practitioners develop their own medicine, mostly made from plant material (Gray and Vawdda, 2016).
Chemical use has both beneficial and negative effects on human health.	
Climate change and variability severely impact human health owing to individuals' and communities' limited coping capacities.	In South Africa, it is anticipated that climate change concerns will increase waterborne diseases (Gray and Vawdda, 2016). Climate change induced floods and droughts also have the potential to increase contaminants in water sources as well as the concentration of microbial pathogens (Gray and Vawdda, 2016).
Coastal and marine resources are integral to the health of coastal populations and need to be conserved and used sustainably.	Hydrological networks play a major role in the transmission of pathogens from one coastal region to the next. This was evident in the case where cholera rapidly spread from the northern KwaZulu-Natal to beyond the Eastern Cape (Gray and Vawdda, 2016).
Access to safe water and adequate sanitation is vital to human health and needs to be scaled up by eliminating impediments such as inadequate infrastructure; pollution of water sources; poor hygiene; retrogressive cultural taboos and gender disparities.	Although progressive, South Africa has improved access to piped drinking water. Some areas, such as remote rural areas and informal settlements are still considered deprived communities (Gray and Vawda, 2016). Despite there being no recurrence of cholera, child under-five diarrhoea case fertility rates indicate persistent health issues (Gray and Vawda, 2016).
Sustainable land management is central to human health because land provides the resource base for the provision of ecosystem services such as food, fibre and medicines.	With the impacts of climate change exacerbating existing issues, food security becomes a goal that needs to be achieved within South Africa to provide for the nation as well as to continue to grow the economy.
The magnitude of domestic and global uncertainties that decision makers have to grapple with imply that espousing the business as usual model when dealing with environmental problems does not only result in failure to meet	Achieving sustainable development is still progressive in South Africa. The introduction of the Water-Energy-Food nexus is also a topic that needs to be addressed to accommodate for the growing human population.

Key messages from the AEO-3	South African perspective
internationally set goals and targets, it also undermines human health.	
Although a number of good policies for addressing environmental challenges that affect human health exist, their implementation has been weak. Making policies more effective requires elimination of barriers to implementation.	There are a number of policies and programmes implemented that seek to address the environment and health issues. The challenge however lies in the fact there is a lack of skilled workers in the public health care sector (Gray and Vawda, 2016).

As seen in Table 2, a major focus of the AEO-3 was the linkages between the environment and health-related issues. Since this is a major concern linked to the environment in Africa, South Africa on the other hand has made significant strides in closing the gap between the environment and health-related concerns. Other challenges that can be considered as drivers however are societal decisions leading to non-waterborne diseases such as cancer and tuberculosis.

### 1.5.3 Global Environment Outlook 6

Drivers of environmental change globally remain constant with trends reported on in the previous Global Environment Outlook (GEO) 5. Drivers such as population growth, industrialisation, urbanisation, unsustainable use of resources and land use changes are experienced globally (UNEP, 2016). Global population growth remains the key driver in environment changes, resulting in many pressures. It is estimated that in Africa, approximately 450 million people will migrate from rural areas to urban areas by 2050 (UNEP, 2016). While in coastal areas such as coastal areas in Asia and the Pacific will experience migration of approximately 325 million people to coastal areas by 2025. In Latin America and the Caribbean, population growth is estimated to increase to 567 million by 2025 resulting in extensive land transformation and pressure on the receiving environment (UNEP, 2016). Population growth results in pressures such as demand for water, energy, land, transport and food in an effort to meet the growing population. Land degradation, is a major challenge that is experienced in many continents resulting in loss of natural ecosystems, ecosystem degradation and displacement of individuals.

Climate change places major pressure on society and environment globally. Increased climate variability results in increased extreme events such as floods and droughts and other natural hazards. These extreme weather events are experienced across many continents and have adverse effects on infrastructure, human health, livelihoods and ecosystems. Climatic changes have placed strain on resources such as water and land. Continents that are already water scarce countries such as Africa are placed under increased strain. It is estimated that in Africa, 40% of the population does not have access to potable water while approximately 70% of the population lack adequate sanitation facilities (UNEP, 2016). These challenges have negative environmental and social consequences.

Another key challenge faced by many countries globally is that of ambient air pollution. As the demand for energy and production increases, more industrialisation processes occur releasing

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pollutants into the atmosphere. These emissions have negative impacts on both society and the environment. Furthermore, the increase of motor vehicles on the road has resulted in increased emissions from transport, negatively affecting human health such as respiratory diseases. If humanity continues the current trends of unsustainable consumption patterns and land use, several critical thresholds may be exceeded, beyond which abrupt and generally irreversible changes to the life-support functions of the planet could occur.

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**TITLE OF DOCUMENT** : Development of the SAEO Synthesis Report

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