



E. coli	<i>Escherichia coli</i>	GL	Local Government
Eds	Editors	GMO	Genetically Modified Organism
EEZ	Exclusive Economic Zone	GN	National Government
EF	Ecological Footprint	GNI	Gross National Income
EHS	Environment, Health and Safety	GNP	Gross National Product
EIA	Environmental Impact Assessment	GP	Provincial Government
EIP	Environmental Implementation Plan	GRI	Global Reporting Initiative
EMI	Environmental Management Inspector	GWh	Gigawatt hour
EMP	Environmental Management Plan	GWP	Global Warming Potential
EN	Endangered		
ENSO	El Niño Southern Oscillation		
EQ&P	Environmental Quality and Protection	H₂S	Hydrogen sulfide
ESI	Environmental Sustainability Index	ha	Hectares
EU	European Union	HC	Hydrocarbon
Euro I, II, III	European Emission Standards	HCFC-124	Tetrafluoroethane
EWT	Endangered Wildlife Trust	HDI	Human Development Index
		HDI	Historically Disadvantaged Individual (chapter 7)
FAII	Fish Assemblage Integrity Index	HFC	Hydrofluorocarbon
FAO	Food and Agriculture Organization of the United Nations	HGI	Human Gender-related Development Index
FIVIMS	Food Insecurity and Vulnerability Information and Mapping System	HIV	Human Immunodeficiency Virus
FTE	Full-time Equivalent	hPA	Hectopascal
FTSE	Financial Times Stock Exchange	HPI	Human Poverty Index
		HSRC	Human Sciences Research Council
GAW	Global Atmosphere Watch	ICLEI	International Council for Local Environmental Initiatives
GDI	Gross Domestic Income	ICOMOS	International Council on Monuments and Sites
GDP	Gross Domestic Product	ID	Identity document
GEF	Global Environment Facility	IDC	Industrial Development Corporation
GEM	Gender Empowerment Measure	IDP	Integrated Development Plan/Planning
GEO	Global Environment Outlook	IEG	International Environmental Governance
Gg	Gigagrams	IGFR	Intergovernmental Fiscal Reform
GHG	Greenhouse gas	IPCC	Intergovernmental Panel on Climate Change
gha	Global hectares	ISO	International Standards Organisation
Gini	Gini-coefficient	ISRDP	Integrated Sustainable Rural Development Programme
GIS	Geographic Information System		

ISCW	Institute for Soil, Climate and Water	MODIS	Moderate Resolution Imagery Spectro Radiometer
IUCN	World Conservation Union	MPA	Marine Protected Area
IWMP	Integrated Waste Management Plan	MTEF	Medium Term Expenditure Framework
		MVA	Manufacturing Value-Added
JPOI	Johannesburg Plan of Implementation	MW	Megawatt
JSE	Johannesburg Securities Exchange	MWe	Megawatt Electrical
		MWh	Megawatt Hours
Kj	Kilojoule	N₂O	Nitrous oxide
km²	Square kilometre	NAP	National Action Programme for Combating Land Degradation to Alleviate Poverty
KWh	Kilowatt hour	NASA	National Aeronautics and Space Administration
KZN	KwaZulu-Natal	NBI	National Business Initiative
LA21	Local Agenda 21	NBSAP	National Biodiversity Strategy and Action Plan
LMP	Linefish Management Protocol	NCCC	National Committee on Climate Change
LPG	Liquified petroleum gas	NDA	National Department of Agriculture
LRAD	Land Redistribution for Agricultural Development	NEAF	National Environmental Advisory Forum
LT	Least Threatened	NEDLAC	National Economic Development and Labour Council
m	Metre	NEMA	National Environmental Management Act
m³	Cubic metres	NEMAQA	National Environmental Management: Air Quality Act
MAR	Mean annual runoff	NEMBA	National Environmental Management: Biodiversity Act
MARPOL	International Convention for the Prevention of Pollution from Ships	NEMPA	National Environmental Management: Protected Areas Act
MCM	Marine and Coastal Management	NEPAD	New Partnership for Africa's Development
MDG	Millennium Development Goal	NGO	Non Governmental Organisation
MDR	Multi-drug resistance	NHP	National Heritage Programme
MEA	Multilateral Environmental Agreement	NLC	National Land Cover
mg/l	Milligrams per litre	NOx	Nitrogen oxide (generic term)
MINTEC	Ministerial Technical Committee	NO	Nitrogen oxide
MJ	Megajoules	NO₂	Nitrogen dioxide
MLRA	Marine Living Resources Act	NORAD	Norwegian Agency for Development Cooperation
mm	Millimetres	NPO	Non-profit organisation
MPP	Multi Point Plan	NRF	National Research Foundation

NSBA	National Spatial Biodiversity Assessment	Ramsar	Signing place of the Convention on Wetlands
NSI	National System of Innovation	RDP	Reconstruction and Development Programme
NSoER	National State of the Environment Report	RHA	Respiratory hospital admissions
NSSD	National Strategy for Sustainable Development	RHP	River Health Programme
NWA	National Water Act	RISA	Research and Innovation Support and Advancement
NWMS	National Waste Management Strategy	RSA	Republic of South Africa
NWRS	National Water Resource Strategy		
O₃	Ozone	SAAMBR	South African Association for Marine Biological Research
ODA	Overseas Development Assistance	SABS	South African Bureau of Standards
ODS	Ozone-depleting substances	SACN	South African Cities Network
OECD	Organisation for Economic Cooperation and Development	SADC	Southern African Development Community
ORV	Off-road vehicle	SADCO	Southern African Data Centre for Oceanography
OSMS	Open Space Management System	SAEO	South Africa Environment Outlook
PADELIA	Partnership for Development of Environment Law in Africa	SAHRA	South African Heritage Resources Agency
PAFT	Programme for Alternative Fluorocarbon Toxicity Testing	SALGA	South African Local Government Association
PAs	Protected Areas	SANBI	South African National Biodiversity Institute
Pb	Lead	SANParks	South African National Parks
PBMR	Pebble Bed Modular Reactor	SANS	South African National Standard
PCBs	Polychlorinated Biphenyls	SAPIA	South African Petroleum Industry Association
PFC	Perfluorocarbons	SAPIA	Southern African Plant Invaders Atlas (chapter 5)
pH	Measure of relative acidity and alkalinity	SAPREF	South African Petroleum Refineries
PIC	Prior Informed Consent	SASS	South African Scoring System
PJ	Petajoule	SASSI	Southern African Sustainable Seafood Initiative
PM	Particulate Matter	Scuba	Self contained underwater breathing apparatus
PM₁₀	Particulate matter of less than 10 micrometres in diameter	SD	Sustainable development
PM_{2.5}	Particulate matter of less than 2.5 micrometres in diameter	SDI	Spatial Development Initiative
POPs	Persistent Organic Pollutants	SDCEA	South Durban Community Environmental Alliance
Ppm	Parts per million	SEA	Strategic Environmental Assessment
PRTR	Pollutant Release and Transfer Register	SETI	Government Science, Engineering and Technology Institution
R&D	Research and development		

SF₆	Sulphur hexafluoride	UNESCO	United Nations Educational, Scientific and Cultural Organisation
SFU	Sustainable Futures Unit	UNFCCC	United Nations Framework Convention on Climate Change
SKEP	Succulent Karoo Ecosystem Programme	US\$ PPP	Power-Purchasing Parity in US dollars
SLAG	Settlement/Land Acquisition Grant	USA/US	United States of America
SMME	Small, Medium and Micro Enterprises	UV	Ultraviolet
SO₂	Sulphur dioxide	UV-B	Ultraviolet-B
SoE	State of the Environment		
SoER	State of the Environment Report		
SPI	Standardised Precipitation Index		
SRAP	Sub-regional Action Programme to combat desertification	VBD	Vector-borne disease
SRI	Socially Responsible Index	VCR	Videocassette recorder
SRK	Steffen Robertson Kirsten	VOC	Volatile organic compound
Stats SA	Statistics South Africa	VOS	Voluntary Observing Ships
STEP	Subtropical Thicket Ecosystem Planning Programme	VU	Vulnerable
		WBCSD	World Business Council on Sustainable Development
TAC	Total Allowable Catch	WC	Water Conservation
TAI	The Access Initiative	WCNCB	Western Cape Nature Conservation Board
TB	Tuberculosis	WDM	Water Demand Management
TFCA	Trans Frontier Conservation Area	WESSA	Wildlife and Environment Society of South Africa
TI	Transparency International	WfC	Working for the Coast Programme
TJ	Terajoule	WHO	World Health Organisation
TRAFFIC	The Wildlife Trade Monitoring Network	WIS	Waste Information System
		Wits	University of the Witwatersrand
UK	United Kingdom	WMA	Water Management Area
UN	United Nations	WMC	Waste Management Club
UNCCD	United Nations Convention to Combat Desertification in Countries Experiencing Drought and/or Desertification, Particularly in Africa	WMO	World Meteorological Organisation
UNCED	United Nations Conference on Environment and Development	WMS	DWAF's Water Management System Database
UNCHE	United Nations Conference on the Human Environment	WPC	World Parks Congress
UNDP	United Nations Development Programme	WRC	Water Research Commission
UNEP	United Nations Environment Programme	WRI	World Resources Institute
		WSSD	World Summit on Sustainable Development
		WWF-SA	World Wide Fund for Nature South Africa



GLOSSARY

A

Abstraction: see **Water abstraction**.

Acid rain: rainfall that is acidic due to contact with various air pollutants such as carbon dioxide, sulphate, and nitrogen oxides. Acid rain contaminates soil, plants, and water, damages buildings, and can affect human health.

Afforestation: the establishment of forest by natural succession or by the planting of trees on land where they did not formerly grow, e.g. establishment of monocultures of pines, eucalypts, or wattles in primary grasslands in South Africa.

Agenda 21: a global plan of action for sustainable development agreed to by most of United Nations member states at the United Nations Conference on Environment and Development (also called the Earth Summit or UNCED) held in Rio de Janeiro, Brazil, in 2002. The Agenda 21 document contains 40 separate sections of concern and outlines a total of 2 500 recommendations. It focuses on partnerships involving the public and all relevant stakeholders to resolve developmental problems and to plan strategically for the future.

Agrarianization: the movement towards the economic activity of agriculture.

Agriculture: the cultivation of soil and rearing of animals to feed the human population. As more people move from rural areas to cities, more intensive farming methods and more extensive areas are used for farming to increase food production.

Algae: simple plants containing chlorophyll or other photosynthetic pigments, found widely in freshwater and marine environments, and ranging from single cells to plants many metres in length.

Air pollution: air containing gases, dust, fumes, or odour in potentially harmful amounts (that is, in amounts that could be harmful to the health or comfort of humans and animals, or that could damage plants and materials).

Ambient air: all air outside buildings, stacks, and exterior ducts.

Anopheles mosquito: the species of mosquito that is a carrier for the malaria parasite.

Anthropocentric: the idea that human beings are the central feature of the world; the interpretation of environmental and resource issues solely in terms of human values and standards.

Anthropogenic: human-induced or human-caused changes to the environment.

Aquatic: growing, living, or found in water.

Aquifer: a body of permeable rock that can store significant amounts of water.

Atmosphere: the thin layer of gases surrounding Earth that sustains life on the planet and composed mainly of nitrogen and oxygen. It consists of two main layers: the troposphere, which extends from sea level to about 17 kilometres up, and the stratosphere, which extends from 17 kilometres above sea level to about 48 kilometres above the Earth.

B

Basic sanitation: the prescribed minimum standard of services necessary for the safe, hygienic, and adequate collection, removal, disposal, and purification of human excreta, domestic wastewater, and sewage from households, including informal households.

Benthic: the lowermost region of a freshwater or marine profile in which organisms reside.

Biodiversity/biological diversity: the variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part. The term also includes diversity within species, between species, and of ecosystems.

Biodiversity hotspot: an area that is identified as a conservation priority because it contains a high number of endemic species and faces extreme threats.

Biodiversity mainstreaming: the incorporation of biodiversity considerations into all human activities including programmes, plans, and policies.

Biodiversity target: A biodiversity objective expressed in a qualitative or quantitative manner, normally to be achieved by a specified date.

Biomass: the total mass of all living organisms present in an ecosystem, usually expressed as a dry weight.

Biome: one of the world's major environmental communities, classified according to the predominant vegetation and characterized by adaptations of organisms to that particular environment. Major biomes include: aquatic, desert, forest, grassland, and tundra.

Bioprospecting: research and development of indigenous biological resources for commercial exploitation.

Biosphere: the envelope around the Earth containing the planet's life-supporting systems (for example, the atmosphere, soil, inland water, and the sea).

Biosphere reserve: a locality that forms part of an international network of protected areas designated by the United Nations Educational, Scientific and Cultural Organization, located in areas of high biodiversity where research into and the monitoring of biodiversity is carried out with the participation of local people.



Biota: the combined flora and fauna of a particular region or period.

Birth rate: the number of childbirths per 1 000 persons per year.

Bush encroachment: the conversion of a grassland-dominated vegetation type to one that is dominated by woody species; an increasing woody plant density.

C

Carbon dioxide (CO₂): a gas that occurs naturally in the atmosphere. It is produced when animals breathe, when vegetation rots, and when material containing carbon is burnt or broken down.

Carbon sinks: carbon reservoirs and conditions that take in and store more carbon than they release (for example, forests and oceans).

Carbon tax: a tariff charged by governments on business, industry, and energy sources that emit greenhouse gases, particularly carbon dioxide, through the burning of fossil fuels (coal, oil, natural gas). The charge is typically levied per tonne of carbon dioxide.

Carcinogenic: a substance contributing to the development of cancer in animal tissues.

Carrying capacity: the maximum population of a given organism that a particular environment can sustain.

Catchment: the area of land drained by a particular stream or river.

Catchment management: a philosophy, process, and implementation strategy to achieve a balance between the utilization and the protection of environmental resources in a particular catchment area.

Child mortality: number of children dying before the age of 5 years, per 1 000 births per year.

Chlorofluorocarbons (CFCs): ozone-destroying chemicals released mainly by cooling systems such as air conditioners and refrigerators.

Clean development mechanism: a proposition according to which industrialized countries or their companies could earn emissions credits, while developing countries acquire technology and capital and earn emissions credits that can be banked or sold.

Cleaner production: improvements to an industrial production process in order to use less energy, water, or other inputs, or to reduce the generation of waste.

Climate change: the variation in the Earth's global climate or in regional climates over time. It includes changes in the variability or in the average state of the atmosphere – or average weather – over timescales ranging from decades to millions of years. Anthropogenic climate change refers to

climate change that is attributable directly or indirectly to human activities that alter the composition of the global atmosphere.

Coastal zone: the area of land and sea along a coast. It includes estuaries, onshore areas, and offshore areas, wherever they form an integral part of the coastal system.

Commodity market: market where raw/primary products are exchanged.

Communal areas: areas of land that are owned and managed communally, generally by traditional authorities.

Conservation: the maintenance of environmental quality and functioning.

Consumption: the purchase and/or use of goods and services.

Contractual parks: protected areas established as a result of contracts between government agencies and local communities, where the local communities retain their title to the land in the park.

Convention: an agreement drafted by an international, independent panel, which various governments then sign, to support specific action.

Cooperative governance: In South Africa, government is constituted as national, provincial and local spheres of government which are distinctive, interdependent and interrelated. All spheres of government must observe and adhere to the principles in Section 41 of the Constitution and must conduct their activities within the parameters that the Chapter provides.

D

Deforestation: the permanent clearing of an area of forest or woodland.

Degradation: the reduction or loss of the biological or ecological productivity of an area. (See **Desertification**.)

Demersal fish: fish that live on, or adjacent to, the bottom of the sea.

Demography: the study of the structure of populations.

Dependency ratio: a measure of the portion of a population that is composed of dependents (that is, people who are too young or too old to support themselves).

Desalination: the process of removing dissolved salts from salt water or brackish (slightly salt) water, making it fit for consumption by humans or for use for agricultural and other activities.

Desertification: the degradation of land in arid, semi-arid, and dry sub-humid areas, resulting from various factors including climatic variations and human activities.

Development: a process of change that represents planned

progress of some kind. For example, developing the economy of a region or country can take place through the expansion of economic activities, the improvement of people's skills, or job creation.

E

Eco-efficiency: the ecological efficiency of goods and services, assessed by measuring their economic price and checking it against its production or manufacturing success in reducing environmental impact, improving quality of life, and lessening the overall adverse environmental impact on nature. Being more eco-efficient means creating more goods and services while using fewer resources and creating less waste and pollution.

Ecological Footprint: a measure of the 'load' imposed by a given population on nature. It represents the land area of average quality needed to sustain current levels of resource consumption and waste discharge by that population. The bigger the footprint the greater is the impact that it represents.

Economic growth: the increase in a nation's capacity to produce goods and services, usually expressed as a rate of change in output from one year to the next.

Ecosystem: the dynamic complex of animal, plant, and microorganism communities and their non-living environment (soil, water, climate, and atmosphere) interacting as a functional unit.

Ecosystem services: the beneficial functions provided by ecosystems, such as water quality regulation, nutrient cycling, soil fertility maintenance, regulation of the concentration of atmospheric gases, and cultural and recreational opportunities.

Ecotourism: tourism in which the natural environment is the main tourist interest, and the exercise of which does not potentially harm the environment.

Effluent: water (usually wastewater) that flows out of a man-made system into a river or the sea.

El Niño: (meaning "the Christ Child" in Spanish) is the name of a warm ocean current appearing periodically along the coast of Ecuador and Peru. In contrast to the normal, cold, north-flowing current, El Niño (when it flows) causes warming in the Pacific region, which influences world weather patterns by affecting air and ocean temperatures. A serious El Niño event can cause changes in climate over southern Africa. (See **La Niña**.)

Emission: a noise or a liquid or gaseous effluent that is discharged into the environment.

Emissions inventory: a listing, by source, of the amounts of air pollutants discharged into the atmosphere. It is used to establish emission standards.

Emissions trading regime: a free market solution to

problems caused by the adverse impacts of pollution, in which a country is allocated a 'pollution quota' and the freedom to sell the portion of the quota that it does not use. (See **Kyoto Protocol**.)

Endangered species: a plant or animal species whose number of individuals or whose population has been reduced to a critical level or whose habitats have been reduced so drastically as to cause an imminent risk of extinction.

Endemic: a plant or animal species that occurs and is restricted to a particular geographical region is said to be 'endemic' to that region, owing to factors such as isolation or response to soil or climatic conditions.

Energy: the capacity of matter or radiation to do work.

Environment: the surroundings within which humans exist.

Environmental degradation: the reduction of the capacity of the environment to meet social and ecological objectives and needs.

Environmental governance: the processes of decision-making involved in the control and management of the environment and natural resources.

Environmental health: well-being based on the health of the environment, both natural and built.

Environmental Impact Assessment (EIA): the process of identifying, predicting, evaluating, and mitigating the biophysical, social, and other relevant effects of development proposals before major decisions are taken or commitments made. The EIA Regulations require that specific procedures be followed, and reports (scoping and/or EIA reports) prepared for those activities listed as potentially having a substantial detrimental effect on the environment.

Environmental Implementation Plan (EIP): a statutory instrument for promoting cooperative governance for environmental management among different spheres of government.

Environmental indicator: Physical, chemical, biological, or socio-economic measures that can be used to objectively assess the quality and quantity of natural resources and of the environment.

Environmental justice: a term used in the social sciences to describe injustices in the way in which natural resources are used. It is often also used in the context of attempts to right the wrongs of past practices that discriminated against the poor and the disadvantaged.

Environmental management: the deliberate and multidisciplinary process of managing environmental resources, which requires the careful preparation, planning, and administration of environmental policies and standards. It aims to ensure that environmental concerns are included in all stages of development, so that development is

sustainable and does not exceed the carrying capacity of the environment. (See **ISO 14000 series**.)

Environmental Management System (EMS): documented procedures drawn up in terms of a South African Bureau of Standards (SABS) code of practice to implement the requirements of ISO 14000. The code is an international standard and provides the basis for uniform EMS, which will conform to wider international standards and requirements.

Environmental Sustainability Index (ESI): an index constructed by Yale University that ranks countries according to their performance based on a range of aspects of environmental sustainability.

Estuary: the coastal body of water that has a free connection with the open sea and where fresh water, derived from land drainage, is mixed with sea water.

Eutrophication: a process of nutrient enrichment of aquatic ecosystems, mainly by nitrates and phosphates from agricultural pollution, which stimulates excessive plant growth (algal blooms). This growth in turn reduces dissolved oxygen in the water when dead plant material decomposes and can cause other organisms to die.

Evapotranspiration: a combined term for water lost as vapour from a soil or open water surface (evaporation) and water lost from the surface of a plant, mainly via the stomata (transpiration).

Exclusive Economic Zone (EEZ): a zone in the sea under a country's national control, up to 200 nautical miles wide. The coastal country has the right to explore and exploit and the responsibility to conserve and manage all living and non-living resources in its area.

Externality: economic activities that cause uncompensated environmental loss or damage to others.

Extractive Industry Transparency Initiative (EITI): an international initiative that aims to ensure that the revenues from extractive industries contribute to sustainable development and poverty reduction.

F

Fauna: all the animal life of a habitat or a region at a given time.

Fertility rate: the number of children born alive to a woman during her lifetime.

Floodplain: an area beside a river that is seasonally flooded when water levels rise because of high rainfall.

Flora: all the plant species that make up the vegetation of a given habitat or area at a given time.

Forestry: the practice of growing and managing forest trees for commercial timber production. It includes the management of specifically planted forests and of native or

exotic tree species, as well as the commercial use of existing indigenous forests.

Food security: the assured availability and access (physical and economic) to adequate food (in terms of quality and quantity) by all people at all times, as required for a healthy, active, and productive life.

Fossil fuels: mined energy sources, such as coal, gas, and petroleum, that are derived from the remains of prehistoric animals and plants.

FTSE4Good: an international Index Series designed to measure the performance of companies that meet globally recognized corporate responsibility standards and to facilitate investment in those companies.

Full cost accounting: a method of accounting that aims to identify, quantify, and allocate all costs associated with a product or process, including environmental and social costs.

Fynbos: Afrikaans word for fine-leaved bush, a biome in South Africa's southern Cape area, comprising shrubs and shrubby woodland with patches of hardwood.

G

Genetically modified organism (GMO): a type of genetically engineered organism through which a gene from one organism is isolated and transferred to cells of another organism, where it is incorporated into the recipient's chromosomes and expressed. During the 1990s, there was dramatic growth in the commercial applications of this new technology, including the development of generically modified (GM) crops.

Gini-coefficient: a measure of inequality. It is normally used to measure income inequality, but can be used to measure any form of uneven distribution. The Gini-coefficient is a number between 0 and 1, where 0 corresponds with perfect equality (where everyone has the same income, for example) and 1 corresponds with perfect inequality (where one person has all the income, and everyone else has zero income).

Global Environmental Facility (GEF): established in 1991 by World Bank resolution, GEF helps developing countries to fund projects and programmes that protect the global environment.

Global Stewardship Corruption Perception Index: an annual measure compiled by a German group (called Transparency International), designed to measure the performance of governments against set criteria of bribery and corruption.

Global warming: a gradual warming of the air temperature in the Earth's lower atmosphere as a result of the build-up of greenhouse gases (for example, carbon dioxide, nitrous oxides, methane, and ozone). (See **Greenhouse effect**.)

Globalization: the process by which the world's nations and communities are becoming more closely connected by modern telecommunications and more strongly interdependent economically, socially, and politically. The process carries with it the pressure to conform to global standards and economic approaches.

Governance: the systems of values, policies, and institutions by which society manages its economic, political, and social affairs through interactions within and among the state, civil society, and the private sector.

Grassland: a habitat/ecosystem/biome that has vegetation dominated by grasses.

Green Scorpions: the popular name of a South African enforcement unit empowered by the National Environmental Management Act to ensure statutory compliance with environmental legislation.

Greenfields site: a site on which no development has yet taken place.

Greenhouse effect: a warming effect of the Earth's lower atmosphere resulting when greenhouse gases trap heat from the sun and prevent that heat from escaping back into space. (See **Global warming**.)

Greenhouse gas: any gas that absorbs infrared radiation in the atmosphere, thus allowing heat to enter the Earth's atmosphere but not to leave it.

Gross domestic product (GDP): the value of all goods and services produced by all factors of production in an economy by both residents and non-residents over a period of a year.

Groundwater: water that is stored within the air spaces of soil and in rock formations.

Groundwater recharge: replacement of water, normally through rainwater percolating into the ground to replenish water lost from the groundwater store by abstraction, evaporation, or transpiration.

H

Habitat: the place where an organism or community occurs. It is characterized by its physical properties and by the other life forms found there.

Habitat fragmentation: the break-up of natural habitat into small non-contiguous parts. This can cause problems because when the portions are too small they cannot function effectively on their own.

Habitat loss: a process of land use change in which one habitat-type is removed and replaced by some other habitat-type. In the process of land-use change, plants and animals that previously used the site are displaced or destroyed. This generally results in alteration or reduction in biodiversity. (See **Deforestation** and **Habitat fragmentation**.)

Hazardous waste: waste that poses substantial or potential threats to public health or the environment.

Heritage: the sum total of sites of geological, zoological, botanical, archaeological, and historical importance. Heritage is that which we inherit: wildlife and scenic parks; sites of scientific or historic importance; national monuments; historic buildings; works of art; literature and music; oral traditions; and museum collections, together with their documentation.

Holism: the term comes from the Greek holos, meaning 'complete, integrated'. This is a philosophy based on the idea that the whole is greater than the sum of its parts, that is, that a system may have properties over and above those of the parts and the way in which they are organized.

Homelands: areas designated for black people according to their ethnic group, under the former apartheid government.

Human Development Index (HDI): a summary composite index that measures a country's average achievements in three aspects of human development: longevity, knowledge, and standard of living. It was created by the United Nations Development Programme and first presented in its Human Development Report in 1990.

Hydrocarbons: any chemical compound that consists only of the elements carbon (C) and hydrogen (H). All hydrocarbons contain a carbon backbone, called a carbon skeleton, and have hydrogen atoms attached to that backbone. Examples of hydrocarbons include petroleum, coal and gas, and the fossilised remains of plants.

Hydrological cycle: the flow of water through the terrestrial and atmospheric environments.

Hydropower: electricity generated by means of flowing water.

I

Immunosuppression: a state in which the ability of the body's immune system to respond to disease is decreased.

Indicator: a measure that helps to assess the extent of the success with which goals are being achieved. Based on complex information or data, indicators are often used in State of the Environment Reports to measure how resources are being managed.

Indicator species: a species whose presence, or relative well-being in a given environment is indicative of the health of its ecosystem as a whole.

Indigenous species: plants, animals, or microbes that are native to a particular area. (See **Fynbos**.)

Industrialization: a process of social and economic change, associated with technological innovation, through which a

human society is transformed from pre-industrial to an industrial state.

Inflation rate: the percentage increase in the price of goods and services, normally measured year on year.

Infrastructure: the framework of key facilities that supports communities and their industrial and commercial activities and services.

Integrated Environmental Management (IEM): a code of practice to ensure that environmental considerations are fully integrated into the management of all activities, so as to achieve a desirable balance between conservation and development.

Integrated Pollution and Waste Management: an integrated approach adopted by the South African government to deal with the current problems relating to waste management and pollution.

Integrated resource management: (see **Integrated Environmental Management (IEM)**.)

Inter-basin transfer: the transfer of water from one river system to another, in places where water would not naturally be transferred between the two systems.

Intergovernmental: this term refers to the relations among spheres of government and to relations among government agencies in the same sphere of government.

Intertidal zone: the area of the beach between the high and low tide watermarks.

Invasive alien species: species that are intentionally or unintentionally introduced to an area where they would not naturally occur, which then reproduce and invade areas beyond those into which they were originally introduced.

Invertebrate: a species of animal without a backbone, such as, for example, a butterfly or a lobster.

ISO 14000 series: an international standard for environmental management systems developed by the International Standards Organisation (ISO), which ensures that actions and processes are carried out in a uniform manner. ISO 14000 sets out guidelines on how to manage environmental matters in different companies in different countries, and is often used to certify organizations as environmentally sound. (See **Environmental Management System (EMS)**.)

J

Johannesburg Plan of Implementation: a key outcome of the 2002 World Summit on Sustainable Development, which constitutes a plan of action for more sustainable global development.

K

Karoo: shrubby, semi-desert landscape covering two-thirds of the area of South Africa.

Kyoto Protocol: the international protocol named for the city in Japan where it was adopted on 11 December 1997 at the Conference of Parties of the United Nations Framework Convention on Climate Change. It sets individual emissions limitations and reduction targets on six greenhouse gases through three flexible mechanisms: Joint Implementation, Emissions Trading, and Cleaner Development Mechanism (CDM).

L

La Niña: (from the Spanish for 'female child') unusually cold sea surface temperatures found in the eastern tropical Pacific ocean. La Niña occurs approximately half as often as El Niño.

Land administration: the act or process of authoritative control over land.

Land degradation: reduction or loss, in arid, semi-arid and dry sub-humid areas, of the biological or economic productivity and complexity of rainfed cropland, irrigated cropland, or range, pasture, forest and woodlands, as a result of land uses or from a process or combination of processes, including processes arising from human activities and habitation patterns such as:

- (i) soil erosion caused by wind and/or water
- (ii) deterioration of the physical, chemical and biological or economic properties of soil
- (iii) long-term loss of natural vegetation. (See **Soil degradation**.)

Land reform: redistribution of land to recognise the rights of all citizens.

Land rehabilitation: the process of returning land in a given area to some degree of its former self, after a process (such as may be conducted by business, industry, or a natural disaster) has damaged it.

Landfill: places, such as quarries, used for disposing household and industrial waste. Normally, land is excavated and sealed to prevent the contamination of adjacent land or underground water.

Landscape: the patterns and structure of a specific geographic area or place, including its natural, physical, built, and socio-economic environments.

Land tenure: a type of land ownership.

Land transformation: the conversion of land, normally from natural habitat to human uses such as agriculture or settlements.

Land-use change: changes in the purpose for which land is used, as, for example, where land that was previously used for pasture becomes a human settlement.

Legislation: is statutory law that is enacted (or 'promulgated') by a legislature or other governing body. The term may refer to a single law or to the collective body of



enacted law. Before legislation becomes law it may be known as a bill. In South Africa, legislation must be confirmed by the executive branch of government before it enters into force as law. Under the Westminster system, an item of legislation is known as an Act of Parliament.

M

Macroeconomics: a study of national economic aggregates.

Mariculture: the rearing of fish, shell-fish, and certain aquatic plants under controlled and managed conditions either in their natural environment in the sea or on land-based sea farms. Also called aquaculture or fish farming.

Marine: an umbrella term for things relating to the ocean, as in the terms 'marine biology' and 'marine geology'. In scientific contexts, the term almost always refers exclusively to saltwater environments.

Marine Protected Area (MPA): an area of marine or estuarine habitat where some types of fish or plants are protected or where an entire ecosystem is set aside as a park or reserve.

Medium Term Expenditure Framework (MTEF): a detailed three-year rolling expenditure and revenue plan for national and provincial departments in South Africa.

Millennium Development Goals: the set of development goals contained in the Millennium Declaration of 2000, which are intended to guide actions for development globally.

Methane: an odourless and colourless hydrocarbon gas produced either by natural or artificial decomposition of organic material. (See **Greenhouse gas** and **Hydrocarbon**.)

Microbial contamination: contamination with bacteria, fungi, or other microbes that can cause disease.

Migration: movement of all or part of a population to and from a geographical area.

Mitigation: measures taken to reduce adverse effects on the environment and humans.

Morbidity: the frequency of a sickness in a population.

Mortality: the frequency of death in a population or community.

Multilateral Environmental Agreements (MEA): international environmental treaties that contain measures to prevent the degradation of environmental resources, such as the Convention on Biological Diversity (CBD).

N

Natural environment: the physical environment comprising all living and non-living things that occur naturally on Earth.

Natural heritage: natural features consisting of physical and biological formations, or groups of such formations, which are of outstanding universal value from an aesthetic or scientific point of view.

Natural resources: the basic minerals and resources that are produced through the Earth's own inherent natural processes and systems.

National park: land set aside for the protection of plants, animals, and scenery, and for human enjoyment.

Non-governmental organization (NGO): an organization that is not part of a government and was not founded by a state. NGOs are typically independent of governments. Although the definition can technically include for-profit corporations, the term is normally restricted to social, cultural, legal, and environmental advocacy groups having goals that are primarily non-commercial.

Non-renewable resources: resources that do not renew themselves in a human time-scale and cannot be replenished once exhausted, such as fossil fuels and copper.

Nutrient loading: the release of excessive nutrients into a water body from the catchment area, often through the use of fertilizers or other pollutants. (See **Eutrophication**.)

Nuclear power: energy created by the process of fission from atomic nuclei, as generated by nuclear power stations. (See **Radioactive waste**.)

O

Overgrazing: grazing by livestock or wildlife to the point where grass cover is depleted, leaving bare, unprotected patches of soil, with a corresponding increase in erosion by water and wind.

Over-utilization: overuse of resources, thereby affecting their future use and the condition of the environment.

Ozone: a gas molecule composed of three oxygen molecules, which occurs naturally in the stratosphere where it protects Earth's surface from harmful ultraviolet radiation. In the troposphere it acts as a greenhouse gas.

Ozone depletion: the destruction or thinning of the stratospheric ozone layer that shields the Earth from harmful ultraviolet radiation.

P

Particulates: a term used to describe either particles of solid matter (for example, dust, soil, soot, and ash) or droplets of liquid (for example, sulphuric acid, salts, dioxins, and pesticides) that are small or light enough to remain suspended in the atmosphere for short periods of time. (See **PM₁₀**.)

Pelagic: relating to communities of marine organisms that



belong to the open sea, living free from direct dependence on the sea bottom or shore.

Persistent Organic Pollutants (POPs): chemical substances that are toxic, persist in the environment for long periods of time, and bioaccumulate as they move up through the food chain.

Perennial: (in reference to a water body) flowing or occurring throughout the year.

Pesticides: can be categorized as a diverse group of chemicals that kills insects or weeds, which can harm humans and the natural environment. Pesticides can migrate by wind or water to areas that they were not intended to reach, thus causing unintended damage to insect ecological systems that are essential for pollination.

Petrochemical industry: broadly defined as that industrial activity which uses petroleum or natural gas as a source of raw materials, and whose products are neither fuels nor fertilizer.

PM₁₀: any particulate matter with a diameter less than or equal to 10 micrometers.

Policy: a framework or basis of action to overcome identified problems or to achieve stated goals and objectives, which sets out guidelines for decision-making and action.

Pollution: the concentration of substances that are beyond the environment's capacity to handle. It refers to any substance released to air, water, or soil by any process, which is capable of causing harm to humans or other living organisms supported by the environment. Pollution comes in many forms, including liquid effluent, solid waste, air emissions, noise, and smells. (See **Air Pollution**, **Solid waste**, and **Wastewater**.)

Population density: the number of organisms, species, or humans found in a prescribed area.

Population dynamics: the study of the changes in the size, age, and gender composition of a population due to major biotic and abiotic factors.

Population growth: an increase in the number of organisms or species. In human demography, the population growth rate refers to the annual growth rate of the population calculated from mid-year.

Poverty: a certain level of material deprivation below which a person suffers physically, emotionally, and socially.

Poverty gap: the total income shortfall (expressed in proportion to the poverty line) of families with income below the poverty threshold, divided by the number of families.

Poverty line: a poverty threshold that takes into account household size and age composition and that is intended to indicate an income level below which subsistence needs are not met.

Precautionary principle: the principle included in policy

and laws requiring that where the environmental consequences of a particular project, proposal, or course of action are uncertain, then the project, proposal, or course of action should not be taken.

Precipitation: all the forms in which water falls to the ground such as rain, sleet, snow, hail, and drizzle. It also refers to the deposition of dust or other substances.

Productivity: the rate at which plants, animals, and humans produce or have the capacity to produce.

Promulgation: the act of formally proclaiming new legislation to the public. This occurs when the law receives final formal approval. It is generally performed by the head of state who acts according to constitutional rules or convention.

Q

Quaternary catchment: a catchment on the fourth level of sub-division of catchments into sub-catchments; often used as a management unit.

R

Radioactive waste: substances from nuclear processes that are contaminated and not reusable. Radioactive waste covers a spectrum from low-level waste (clothing and materials that have been used by people when handling radioactive sources) to high level waste (spent fuel elements) arising from the fission process in nuclear power stations. (See **Nuclear power**.)

Rainfall variability: the term used to describe a pattern of rainfall in which the amount of rain differs over a period of time, such as from year to year.

Ratification: formal approval of an international agreement by a state's highest authority. In ratifying a Convention, a country agrees to be bound by the terms of the agreement and indicates to the international community a commitment to meet implementation goals.

Recycling: the process of collecting, cleaning and re-using waste materials that would otherwise be thrown away.

Recharge: water added to underground water – for instance, rainfall that seeps into the ground.

Red Data list/book: a catalogue of species in danger of extinction and those already extinct, published by the International Union for the Conservation of Nature (IUCN).

Red Data species: species that appear on a Red Data list.

Red tide: a proliferation of marine plankton that is toxic and often fatal to fish and other organisms, including humans.

Regulation: a set of rules of conduct, standards, or procedures, which must be followed in order to comply

with legislation, or a governmental or ministerial order that has the force of law.

Rehabilitation: see **Land rehabilitation**.

Renewable energy: energy obtained from sources that are essentially inexhaustible (for example, wind energy, solar energy, hydropower). (See **Renewable resource**.)

Renewable resource: a resource produced as part of the functioning of natural systems at rates comparable with its rate of consumption. Under normal conditions these resources are continuously renewing themselves.

Resilience: the capacity to recover from a disturbance, for example, the capacity of a degraded natural area to return to its original state.

Resource: a general term for whatever can be used to provide the means to satisfy human needs and wants.

Resource management: the control of resources in a planned and responsible way.

Resource base: all the resources on which human societies depend, including natural resources such as land, water, and minerals, for example.

Riparian vegetation: vegetation on or immediately adjacent to a river bank.

River catchment: all the land from mountain-top to seashore that is drained by a single river and its tributaries. Catchment areas vary in size. A big river may have a catchment area of several thousand square kilometres, whereas a smaller tributary could have a catchment area of only a few hectares.

Runoff: the flow of water over the ground surface.

S

Salinity: the measure of the total quantity of dissolved solids in water, in parts per thousand by weight.

Scenario: a story, told in words and numbers, about the manner in which future events could unfold, and offering lessons on how to direct the flow of events towards sustainable paths and away from unsustainable ones.

Sea level: the position of the air–sea-level interface to which all terrestrial elevations and sea depths are referred.

Sediment: finely divided solid matter suspended in or falling to the bottom of a liquid or gas. Materials such as rocks and sands deposited by glaciers, wind, or water.

Semi-arid: an area in which annual rainfall ranges from about 250–600 mm, rainfall is seasonal and variable, and evaporation is high.

Siltation: the deposition of soil or fine rock particles on the bottom of river beds or other water bodies, often as a result of soil erosion in the surrounding area.

Social capital: the collaboration and cooperation within a community or society (through such mechanisms as networks, shared trust, norms, and values) to achieve mutual benefits.

Socio-economic: linked to human activities, for example social, economic, cultural, and political activities. Themes that form part of the socio-economic environment are the economy, health, education, safety, and security as well as environmental governance.

Soil erosion: the loss or movement of soil by agents such as running water, wind, and gravity.

Soil conservation: an intervention to stop soil degradation and even reverse it, through physical structures such as contours and terraces, or through biological means such as intercropping and grass strips.

Soil degradation: the declining productivity of soils through physical, chemical, or biological deterioration resulting from a combination of physical factors such as drought, management factors such as cultivation of marginal land or overstocking, and historical and socio-economic factors such as inequitable distribution of land. (See **Land degradation**.)

Solid waste: any solid, semi-solid, liquid, or contained gaseous materials discarded from industrial, commercial, mining, or agricultural operations, and from community activities. Solid waste includes garbage, construction debris, commercial refuse, sludge from water supply or waste treatment plants or air pollution control facilities, and from other discarded materials.

Species: a population of plants or animals that is able to interbreed to produce fertile offspring.

Species diversity: the range of different species in an area or habitat, expressed as a combination of the number of species and the abundance of each species.

Species richness: the number of species in an area or habitat.

Stakeholders: people and/or organizations involved or interested in an area or an issue, for example, residents, councillors, business people, trade unions, government institutions.

Strategic Environmental Assessment (SEA): an environmental assessment that is carried out in connection with one or more strategic actions, policies, plans, or programmes. It is an important tool for helping planners and decision-makers to understand what will happen to an area if it were to accommodate different land uses.

Stratospheric ozone: the ozone in the layer of the Earth's atmosphere, which extends from 15 to 35 kilometres above the surface and protects life on the planet from harmful ultraviolet rays.

Subsistence: a situation in which people provide for all their

own needs from their immediate environment, rather than earning wages to pay for goods and services. Subsistence fishing, for example, refers to the level of fishing where the catch is enough to feed only the person fishing and his or her family.

Sulphur dioxide (SO₂): a colourless, acrid gas formed by the combustion of sulphur. It is an oxidizing and reducing agent and is used as a refrigerant, disinfectant, preservative, and bleach. It reacts with water to make sulphuric acid.

Surface water: water found on the surface of the land, for example in rivers and dams.

Sustainable agriculture: agriculture that does not degrade the soil or other resources on which it depends.

Sustainable development: development that meets the needs of the current generation without compromising the ability of future generations to meet their needs, in turn.

Sustainable harvesting: the harvesting of natural resources (for example, fish) in such a manner that there is no long-term decline in the population or its ability to reproduce.

Sustainability: the ability to meet the needs of present and future generations through the responsible use of resources.

T

Taxa: plural of taxon. (See **Taxon**.)

Taxon/taxonomic group: a group of living organisms with similar characteristics of any taxonomic rank (family, genus, or species), such as, for example, mammals, insects, and flowering plants.

Taxonomy: the science of discovering, identifying, naming, and documenting the life-forms making up the Earth's biological diversity.

Terrestrial: of or associated with land.

Thermal efficiencies: the efficiency with which a power source transforms the potential heat of its fuel into work or output, expressed as a ratio of the useful work done by the power source in a given time interval to the total heat energy contained in the fuel burned during the same time interval, both work and heat being expressed in the same units.

Threatened species: plants or animals that are likely to become endangered within the foreseeable future.

Total Allowable Catch (TAC): is a catch limit set for a particular fishery, generally for a year or a fishing season.

Tradable emissions: emissions that fall under a tradable emissions permit, which allows the holder to release a certain quantity of a specific emission. Should the permit-holder reduce his or her emissions, he or she can sell the quantity that remains on the permit.

Trade liberalization: the reduction of tariffs and other measures that restrict trade.

Tragedy of the commons: the idea that if there is no clear ownership of the rights to use a natural resource, this resource tends to be over-exploited.

Transboundary Protected Areas/Parks: areas that straddle international boundaries, but within which all human barriers are removed. Their primary purpose is wildlife conservation and they are managed as a unit under a single management plan.

Transfrontier Conservation Area (TFCA): area that straddles international boundaries and are composed of two or more conservation areas, which may have differing conservation status. These areas may also be separated by human barriers, which can prevent the free movement of animals.

Transparency International: an organization dedicated to fighting corruption.

Trickle Down Effect: an economic theory that an increase in wealth in society will eventually increase the standard of living of all the people in that society.

Triple bottom line: one of the theories of sustainable development conceptualized by John Elkington, which suggests that true sustainable development in business must consider not just the financial 'bottom line' of prosperity and profit, but also the bottom lines of environmental quality and social equity.

U

Ultraviolet (UV) radiation: the light between visible light and X-rays on the light spectrum, further divided by wavelength into A, B, and C bands. Most UV radiation is absorbed by the ozone layer before it reaches the lower reaches of the atmosphere. Excessive exposure to UV radiation results in skin cancer.

Unemployed: people who are unable to find a job but will accept work if given the opportunity.

Untransformed: when used in an environmental context, a term describing land or habitat in its natural state.

Urbanization: the main process driving the creation and ongoing remaking of towns and cities. An area is deemed urban if it has a population of more than 20 000 people. The term is often used with reference to the movement of people from rural to urban areas.

V

Vector-borne diseases: diseases that are commonly transmitted through vectors. 'Vector' is a term used broadly to refer to any animal that transmits human disease or plays an essential role in a parasite's life cycle (for

example, anopheles mosquitoes transmitting malaria, snail hosts of schistosomiasis, or rodent reservoirs of leishmaniasis).

Vegetation: the plant-life of an area or region.

Veld: South African term for natural vegetation, usually grassland or savanna, typically containing scattered shrubs or trees.

Volatile Organic Compounds (VOCs): primarily the lighter 'fractions' of oil or hydrocarbons, that is, the parts that evaporate easily because they have a low boiling point.

W

Waste: something which nobody wants at a particular time and which needs to be disposed of. (See **Solid waste**.)

Waste management: a control system to limit, collect, and dispose of waste, through policies and environmental standards.

Waste treatment: the treatment of industrial or municipal waste with chemicals or natural organisms to reduce the amount of nutrients and other contaminants in the water before it is released to the environment.

Wastewater: water left over after it has been used, for example in homes, gardens, and factories.

Water abstraction: the removal of water from a body of water.

Water balance: the balance between incoming water and the loss or use of water in a given area or system.

Water-borne diseases: diseases such as cholera, typhoid fever, dysentery, gastroenteritis, hepatitis, and schistosomiasis, which are commonly transmitted through contaminated water.

Water erosion: a process of soil erosion beginning when raindrops bombard bare soil, loosening and washing away soil particles and culminating eventually in gully formation.

Water table: a more or less horizontal layer in the soil below which all spaces between soil particles are saturated with water.

Wetland: land that is transitional between terrestrial and aquatic systems, where the water table is usually at or near the surface, or where the land is periodically covered with shallow water; in normal circumstances, such land supports or would support vegetation typically adapted to life in saturated soil.

Wind erosion: a process of soil erosion, most severe in dry flat areas where vegetative cover is poor and winds blow strongly.

World Heritage Site: architectural works, works of monumental sculpture and painting, elements or structures of natural or archaeological elements, structures or

landscapes, and combinations of features, which are of outstanding universal value from the point of view of history, art, or science. The protection of world heritage sites is the duty of the international community as a whole, and is governed by the United Nations World Heritage Convention.



SUBJECT INDEX

- 2010 Biodiversity Target 135
- abalone fisheries 180–1
- Accelerated and Shared Growth Initiative of South Africa (AsgISA) 29–30
- access
 - finance for environmental governance 61
 - health services 246
 - information 67–70
 - land and land rights 94–6
 - see also household access
- The Access Initiative (TAI) 56
- accountability
 - corporate governance 79–82
 - environmental governance 55, 70–7
- ACEP see African Coelacanth Ecosystem Programme
- acid deposition, air quality 213, 215
- acidification, water quality 159
- Action Plan of the Environment Initiative 11
- adaptive capacity, vulnerability interventions 289
- adjusted net savings 40–1
- afforestation trends 90
 - see also forestry
- Africa Environment Outlook 13, 299–300
- African Coelacanth Ecosystem Programme (ACEP) 187
- African Stockpile Project (ASP) 212–13
- age profiles, population 22
- Agenda 21 4, 10, 11, 43
- agriculture 36, 161
 - atmospheric emissions 208
 - drainage 161
 - irrigation 94, 147
 - production systems 89–94
 - productivity 88–94
- AIDS 19–21, 23, 27
 - options for action 325
 - population impact 244
 - urban poverty 280
- air quality 202–16, 229–30
 - improvement efforts 214–16, 329
 - limits revision 215
 - pollution 216
 - South Durban 287–8
 - transboundary transportation 213, 214
- Air Quality Act (2004) 41, 58–9
- Air Quality Bill 264
- Alexandra, Gauteng 284–6
- algal blooms 176–7
- alien species
 - Antarctica and the Islands 194
 - biodiversity loss 112–14
 - control of 153
 - degradation 98
 - marine and coastal impacts 175–6
- alternative energy supplies 39
- ambient air quality
 - health risks 203–7, 229–30
 - pollutant concentrations 204–5
- ambient temperature deviation averages 221
- amenities, settlements 245–51
- Antarctica and the Islands 190–9
 - biodiversity 191–2
 - climate 191
 - environmental trends 192–5
- antelope species 124
- apartheid 31
- aquatic ecosystems
 - improving 327–8
 - integrity 162–6
 - loss, fragmentation and degradation 111
 - management 165–6
 - water resource potential 164–5
- arable production 89–91, 99
- asbestos 203
- AsgISA see Accelerated and Shared Growth Initiative of South Africa
- ASP see African Stockpile Project
- atmosphere 200–33
 - air quality 202–16, 229–30
 - climate change 216–26, 230–1
 - 'current future' scenario 307–8
 - emissions sources 207–11
 - options for action 329
 - stratospheric ozone depletion 226–9
- authority, natural resources 55
- authorizations, water-use 157
- backyard shacks, definition 250
- Basa Njengo Magogo project 216
- basic services, household access 32
- beach driving 175
- beach management 187, 188
- bilharzia 224
- biodiversity
 - Antarctica and the Islands 191–2
 - climate change effects 225
 - 'current future' scenario 308
 - definition 108
 - loss 106–41
 - causes 109–16
 - impacts 127
 - responses 127–35
 - scenario implications 312
 - sustaining 327
- Biodiversity Act 58, 264
- biomass energy 258
- biomes 108
 - climate change effects 116
 - species richness per taxonomic group 111
- bioregional plans and programmes 132–3
- Blue Flag beaches 187, 188
- budget reform 72–3, 77
- Buffalo River 164
- buffering capacity, ecosystems 215
- 'business-as-usual' outlook see 'current future' scenario
- Cabinet committees 78–9
- capacity-building
 - cross-cutting options 322–3
 - intervention possibilities 288–9
 - local government 77
- Cape Point
 - atmospheric CFC concentrations 229, 230
 - greenhouse gas monitoring 221
- Cape Town
 - ecological footprint analysis 238–9
 - food security 281
 - low income housing project 226
 - population pressures 245
 - ultraviolet-B levels 228
 - waste collection and disposal 251
 - water quality 162
- carbon dioxide
 - atmospheric concentrations 217
 - emissions 40, 221–2, 223
 - energy use 257
- case studies, vulnerability 280–8
- CASP see Comprehensive Agricultural Support Programme
- CDMs see Clean Development Mechanisms
- CEC see Committee for Environmental Coordination
- central government administration 33
- CFCs see chlorofluorocarbons
- "Champions of the Earth" award 42
- change
 - drivers of 298, 301–5
 - types 275–7
 - vulnerability to 270–93
 - see also climate change
- childhood mortality 21–2
- chlorofluorocarbons (CFCs) 227, 229–30
- cholera 23
- cities see settlements
- citizen participation 65–6
- Clean Development Mechanisms (CDMs) 226
- 'cleaner production' 45–6
- climate change
 - atmosphere 216–26, 230–1
 - biodiversity loss 115–16
 - cross-cutting issues 324–5
 - 'current future' scenario 306, 307–8
 - effects 222–5
 - enabling and limiting role 305
 - land degradation 102
 - marine and coastal impacts 177–8
 - responses 225–6
 - variability in communal areas 280–2
 - vulnerability indicators 276
 - water availability and requirements 155–6
 - Western Cape 286–7
 - see also environmental change
- Climate Change Response Strategy 59
- clusters, government spheres 78–9
- coal, energy production 257
- coastal resources 168–89
 - 'current future' scenario 306–7
 - exploitation and use 178–83
 - loss, fragmentation and degradation 111–12
 - modification, degradation and loss 172–8
 - options for action 328–9
 - protection and management 183–8
 - scenario implications 312
 - sustainability 59
- code of corporate governance 80
- coelacanths 187
- commercial atmospheric emissions 207
- Committee for Environmental Coordination (CEC) 77
- communal areas
 - climate variability and food security 280–2
 - conservancies 133
- community facilities, settlements 247–8, 255
- community resource management 132, 133
 - see also local communities
- comparative overview, scenarios 299–301
- composition and resource efficiency of the economy 33–5
- Comprehensive Agricultural Support Programme (CASP) 101–2
- conceptual representation of sustainable development 5
- conservancies, private and communal land 133



- conservation
 - assessments 131
 - tillage 102
- Constitutional objectives, local government 75
- Consumer Price Index (CPIX) 30
- control programmes, biodiversity loss 131–2
- cooking, energy source by household 259
- cooperation, environmental governance 77–9
- corporate governance 79–82
- costs
 - degradation and desertification 99–100
 - human health, fuel-burning pollution 207
- court system 78, 187
- CPI *see* Consumer Price Index
- critically endangered ecosystems 117–18, 119
- cross-border governance 63
- cross-cutting issues 324–6
- cross-cutting options 319–24
- cross-cutting programmes and projects 133–5
- cultivation trends 90
- 'current future' scenario 298, 301, 305–8

- dams, trophic status 162
- data availability, water management 157
- DDT spraying 26
- De Aar, ultraviolet-B levels 228
- DEAT *see* Department of Environmental Affairs and Tourism
- decision-making, environmental information 323–4
- deforestation 98
 - see also* forestry
- degradation
 - land 96–102
 - levels of 97
 - marine and coastal resources 172–8
 - natural resources 110–12, 318
- Delmas area typhoid epidemic 250
- demand for water 151–5
 - see also* water requirements
- demersal fisheries 178–80
- demography 18–28, 301–3
- Department of Environmental Affairs and Tourism (DEAT) 10, 15, 41–2, 45–6, 70–2
- Department of Health 27
- Department of Water Affairs and Forestry (DWAf) 41, 144, 155
- departments of government 57, 70–2, 130–1
- dependence, ecosystem services 5–7
- desalination, seawater 147
- desertification 96–102
- development and environment milestones 11
- Directly Observed Treatment Short Course (DOTS) 23
- Disaster Management Act 289–90
- diseases 23
 - climate change effects 223–4
 - water-borne 159, 253
- district municipalities 240
- domestic waste 261
 - see also* waste...
- domestic workers' rooms 251
- donor assistance, environmental governance 72, 73
- DOTS *see* Directly Observed Treatment Short Course
- Dow Jones Sustainability Index 81
- drainage, agricultural 161
- drivers of change 298, 301–5
- Dronning Maud Land, Antarctica 190–1, 192–3
- drought 94
- Durban 110, 287–8
- Durban and Barberton Commercial Medicinal Plant Initiative 109
- DWAf *see* Department of Water Affairs and Forestry
- dwellings 249
 - see also* housing

- early warning, vulnerability interventions 289–90
- Eastern Cape, river health 164
- Ecological Footprint (EF) 7–9, 238–9
- economic development 30–1
 - driving change 303
 - genetically modified organisms 134
 - marine and coastal resources 170–2
 - scenario implications 311
- economy 30–1
 - composition and resource efficiency 33–5
 - development and environment 28–35
- ecosystems
 - buffering capacity 215
 - dependence 5–7
 - health decline 106–41
 - services, human well-being 109
 - status 116–22
 - sustaining 327
 - see also* aquatic ecosystems
- education 24, 246–7
 - marine and coastal resources 188
 - people older than 20 years 27
 - rural poverty 279
 - skills 27–8
- EEZ *see* Exclusive Economic Zone
- EF *see* Ecological Footprint
- EIAs *see* Environmental Impact Assessments
- EIPs *see* environmental implementation plans
- electricity
 - atmospheric emissions 207, 209–10
 - effects on environment 39
 - generation capacity 259
 - household access 252, 256–60
- electronic waste 262
- elephant management 130
- emerging issues, options for action 324–6
- employees *see* staff numbers
- employment
 - change in proportions 34
 - environmental governance 71, 72, 74, 76
 - incomes 28
 - marine and coastal resources 171
 - non-profit organizations 65
 - occupational categories 27
 - sectors 34
 - settlements 248–9
 - see also* unemployment
- EMPs *see* environmental management plans
- endangered ecosystems 117, 119
- energy
 - consumption 34
 - use of 256–60
- Energy Efficiency Strategy 60
- energy sector
 - carbon dioxide emissions 222
 - structure 259
 - see also* electricity
- enforcement 319–20
 - see also* law enforcement
- environment 12–13, 17–49
 - Antarctica and the Islands 192–5
 - electricity production 39
 - interaction with settlements 237–9
 - manufacturing 38
 - milestones 11
 - mining 37–8
 - quality improvements 101
 - regional regimes 43
 - reports and reviews 3, 10–13
 - transport 40
- environmental change
 - drivers 301–5
 - enabling and limiting role 305
 - information for decision-making 323–4
 - types 275–7
 - vulnerability to 270–93
 - see also* climate change
- Environmental Courts 78, 187
- environmental governance 53–85
 - corporate accountability and transparency 79–82
 - definition 54
 - driving change 304
 - elements of 54–6
 - institutions and laws 55, 56–63
 - integration and cooperation 77–9
 - participation 55, 63–70
 - responsibility and accountability 70–7
 - settlements 263–5
- Environmental Impact Assessments (EIAs) 59, 74, 76
- environmental implementation plans (EIPs) 77–8, 79
- environmental justice 288
- environmental management plans (EMPs) 77–8, 79
- environmental scenarios *see* scenarios
- environmental sustainability 5–10
 - see also* sustainability
- Environmental Sustainability Index *see* Yale Environmental Sustainability Index
- erosion, soil 99
- ESI *see* Yale Environmental Sustainability Index
- estuaries
 - ecosystems status 121–2, 125
 - health 122
 - pressures on 174–5
- European emission standards 218
- eutrophication 159
- Exclusive Economic Zone (EEZ), Marine Protected Areas 184–5
- expenditure, environmental management 70, 73–4, 75–7
- exploitation *see* over-exploitation
- Extractive Industry Transparency Initiative 81

- FALL *see* Fish Assemblage Integrity Index
- fertility 21
- fertilizers 91
- financial resources
 - administration services 33
 - environmental governance 55, 61, 70–7
- fires 92, 208
- fish
 - invasive alien species 113
 - protection and management 183, 187

- species status 123, 125–7
see also seafood
- Fish Assemblage Integrity Index (FAII) 163
- fishing industry
 - Antarctica and the Islands 194, 195
 - effect on environment 36, 178–83
 - transformation 171–2
- fitness for use, water quality 157–62
- floods
 - classification of impacts 285
 - degradation effects 99
 - destruction by 275
 - Gauteng and Western Cape 284–6
 - KwaZulu-Natal 280
- flow monitoring, water management 157
- fluorocarbons 231
- food 93–4, 280–2
- forestry
 - climate change effects 224–5
 - effect on environment 36
 - see also* afforestation trends; deforestation
- fragmentation, natural habitat 110–12
- freshwater species 123, 125
- FTSE4Good Index 81
- fuel-burning activities
 - ambient air pollutants 204
 - atmospheric emissions 208, 209–10, 211
 - health risks and costs 207
- funding research and development 44
- future environment 150–1, 294–313

- G8 countries 43
- Gariiep Basin, Millennium Ecosystem Assessment 299–300
- Gauteng 261, 284–6
- GDI *see* Gender-related Development Index
- GDP *see* Gross Domestic Product
- GEF *see* Global Environmental Facility
- GEM *see* Gender Empowerment Measure
- gender
 - proportions of people 284
 - see also* women
- Gender Empowerment Measure (GEM) 25
- Gender-related Development Index (GDI) 23, 25
- genetically modified organisms (GMOs) 134
- genuine savings *see* adjusted net savings
- GEO *see* Global Environmental Outlook
 - GEO-3 13
- geography, settlements 239–40
- geology, Antarctica and the Islands 190–1
- Geomorphological Index 163
- geomorphology, Antarctica and the Islands 190–1
- gha *see* global hectares
- Gini-coefficient 31, 47
- Global Environmental Facility (GEF) 42, 47
- Global Environmental Outlook (GEO) 11, 13
- global governance 60–1
- global hectares (gha) 7, 15
- global progress 11
- Global Reporting Initiative (GRI) 81
- global reporting and review 13
- global warming *see* climate change
- GMOs *see* genetically modified organisms
- GNI *see* Gross National Income
- 'Going Nowhere Slowly' scenario 309, 310, 311–12
- Gough Island 190–1, 194–5

- governance 42–3, 54, 303–4
see also environmental governance
- government spheres
 - biodiversity conservation 130–1
 - clusters 78–9
 - environmental institutions and laws 56–60
 - marine and coastal resources 187–8
 - responsibilities 319
 - see also* environmental governance
- grazing capacity 93, 99
- 'Green GDP' measurements 40–1
- 'Green Scorpions' 78
- 'green taxes' 41
- greenhouse gases 217–19, 221–2, 223
- GRI *see* Global Reporting Initiative
- Gross Domestic Product (GDP) 24, 30–1, 47
 - coastal resources contribution 170–1
 - energy consumption 34
 - 'Green GDP' 40–1
 - sectoral shares 34, 39–40
- Gross National Income (GNI) 40, 47
- groundwater 146–7
 - managing resources 153
 - monitoring 157
 - sectoral use 150
 - water requirements 147–8
- growth
 - economic 303
 - population trends 19, 302

- Habitat II Conference 11
- hake fisheries 180
- harbour development 173
- hazardous waste 261–3
- HCFC-124 231
- HDI *see* Human Development Index
- health
 - concerns 134
 - issues 23–7, 282–4
 - risks
 - ambient air quality 203–7, 229–30
 - climate change 223–4
 - environmental governance 55
 - services 245–6
 - see also* human well-being
- heritage conservation 256
- Hermanus 111, 182
- Highmoor wetland 120
- Highveld region, air pollutants 214
- HIV 23, 27
 - options for action 325
 - population 19–21, 244
 - prevalence 26, 280
- hostels 250–1
- hotspots, biodiversity 108
- household access
 - electricity 252, 256–60
 - services 32, 251–6
 - water services 282, 283
- household fuel burning
 - ambient air pollutants 204
 - atmospheric emissions 210
- housing 226, 249–51
- HPI *see* Human Poverty Index
- human development 22–8
 - scenario implications 311
 - water quality effects 159–61
- Human Development Index (HDI) 22–6
- Human Development Report 23, 32

- Human Poverty Index (HPI) 23
- human resources to support research and development 44–5
- human settlements 235–6
see also settlements
- human vulnerability *see* vulnerability
- human well-being 18–28
 - driving change 301–3
 - ecosystem services 109
 - see also* health
- Hurricane Katrina 275
- hydrocarbons, water quality 159
- hydrological cycle 145
- hydropower 258

- IDPs *see* Integrated Development Plans
- IEG *see* international environmental governance
- immigration 20
- implementation challenges
 - cross-cutting options 319–20
 - environmental governance 77–8, 304
- incomes and employment 28
- Index of Habitat Integrity 163
- indicators, vulnerability 276
- individual action, inland waters protection 166
- indoor air quality 202–3, 216
- industrial activities
 - air pollution, KwaZulu-Natal 287
 - ambient air pollutants 206
 - atmospheric emissions 207, 209–10
 - waste outputs 260, 261–3
 - water management initiatives 159, 161, 162
- inequality and poverty 31–3
- inflation 30
- informal sector 33–4
- informal settlements 250
- information
 - access to 67–70
 - availability, water management 157
 - biodiversity loss 135
 - decision-making 323–4
- inland waters 142–67
 - 'current future' scenario 306
 - options for action 328
 - services provided by 146
- institutions
 - biodiversity conservation 129–31
 - environmental governance 55, 56–63
- Integrated Development Plans (IDPs) 263–5
- Integrated Sustainable Rural Development Programme (ISRDP) 101–2
- integration, environmental governance 55, 77–9
- integrity, aquatic ecosystems 162–6
- intellectual assets 260
- inter-basin transfers 145
- inter-catchment transfers, water management 153–4
- international agreements and obligations 129
- international environmental governance (IEG) 42–3, 56
- international governance 60–3, 81, 304
- international migration 243–4
- internet 70
- intervention possibilities, vulnerability 288–90
- invasive alien species
 - biodiversity loss 112–14

- control of 153
- degradation 98
- marine and coastal impacts 175–6
- irrigation 94, 147
- ISO 14001 81
- ISRDP *see* Integrated Sustainable Rural Development Programme
- Johannesburg, floods 284–6
- Johannesburg Plan of Implementation (JPOI) 10, 11, 67
- Jukskei River 285, 286
- justice *see* environmental justice
- Katrina (Hurricane) 275
- King Report 80
- kingklip fisheries 179
- Knysna seahorse 125
- Kruger National Park 124, 130
- Kuyasa low income housing project 226
- KwaZulu-Natal 280, 282–4, 287–8
- Kyoto Protocol 225–6
- LA21 *see* Local Agenda 21
- 'Laduma!' scenario 309, 310, 311–12
- land 86–105
 - access to 94–6
 - conservancies 133
 - 'current future' scenario 306
 - degradation 96–102
 - productivity decrease 99
 - reform process 102
 - rights 94–6
 - scenario implications 311
- land use
 - agricultural productivity 88–94
 - coastal areas 173–4
 - settlements 260
 - sustainability 326
 - transformation 88–9
 - water 155, 161
- Landcare Programme 101–2
- land-cover 88, 89
- landfill sites 251, 254–5
- landscape quality, degradation effects 99
- law enforcement 55
 - cross-cutting options 319–20
 - marine and coastal resources 185–6
- least threatened ecosystems 117, 119
- leatherback turtle 126
- legislation 55, 56–63
 - air quality 214–16, 230
 - biodiversity conservation 129–31
 - marine and coastal resources 171–2, 184–5
 - settlements, environmental governance 264
 - vulnerability interventions 289–90
- life expectancy 21, 24
- lighting, household access 252, 257, 259
- line-fisheries 180
- literacy 27–8
- litter 159
- livability, settlements 245–56
- livelihoods, opportunities for improvement 101
- livestock production 91, 93
- lobster fisheries 180, 181
- Local Agenda 21 (LA21) 43
- local communities 319
- local government 75–7, 215, 240
- local-level case studies 280–8
- long-line fishing 179
- loss
 - biodiversity 106–41
 - marine and coastal resources 172–8
 - natural habitat 110–12
 - see also* degradation
- macroeconomic objectives 29–30
- macrotrends 303, 304
- mainstreaming environment 320–2
- maize production, climate change effects 224
- Makuleke Community 132
- malaria 23, 26, 224
- management
 - marine and coastal resources 183–8
 - sustainable land use 326
 - see also* water resources management
- manufacturing effects 38
- marginalization, rural poverty 279
- mariculture permits 183
- marine ecosystems 122, 123
- Marine Living Resources Act (MLRA) 171–2, 184
- Marine Protected Areas (MPAs) 184–5
- marine resources 168–89
 - 'current future' scenario 306–7
 - exploitation and use 178–83
 - modification, degradation and loss 172–8
 - options for action 328–9
 - protection and management 183–8
 - scenario implications 312
- marine species, status 126–7
- Marion Island 190–2, 195
- markets, environmental governance 55
- MDGs *see* Millennium Declaration and Millennium Development Goals
- MEAs *see* multilateral environmental agreements;
- medicinal plants 21, 109, 114
- meteorology, Antarctica and the Islands 190, 193
- methane 217, 222
- metropolitan municipalities 240
- migration 19–20, 243–4
- milestones, environment and development 11
- Millennium Declaration and Millennium Development Goals (MDGs) 10, 11, 31
 - options for action 318
 - settlements 251
- Millennium Ecosystem Assessments (2003) 299–300
- Millennium Summit 23
- mining
 - atmospheric emissions 207
 - effects on environment 37–8, 159, 173–4
 - waste outputs 260–2
- Ministerial Technical Committee (MINTEC) 78
- MLRA *see* Marine Living Resources Act
- modification, marine and coastal resources 172–8
- monitoring 157, 186–7
- Montagu, Western Cape, floods 284–6
- Montreal Protocol 229, 230
- mortality patterns 21
- MPAs *see* Marine Protected Areas
- MPP *see* Multi Point Plan
- Mpumalanga Highveld region 214
- Multi Point Plan (MPP) 287–8
- multilateral environmental agreements (MEAs) 18, 42, 61, 62
- multi-sectoral governance, marine and coastal resources 187–8
- municipal structures 240
 - environmental governance 263–5
 - waste collection and disposal 253–4, 258
- Musokwane Environment Resource Centre for Southern Africa 10
- Mussel-Watch Programme 186
- National Action Programme (NAP) 100–1
- National Air Quality Programme 46
- national budget expenditure 33
- National Business Initiative (NBI) 81
- National Cleaner Production Centre 45
- National Department of Agriculture, Landcare Programme 102
- National Environmental Advisory Forum (NEAF) 66–7
- National Environmental Management 41
- National Environmental Management: Air Quality Act (NEMAQA) 58–9, 214–16, 230
- National Environmental Management: Biodiversity Act (NEMBA) 58
- National Environmental Management: Protected Areas Act 58
- national governance 56–60, 70–3
- national macrotrends 304
- National Parks *see* Kruger National Park; South African National Parks
- national policy, biodiversity conservation 129–31
- National Research Foundation (NRF) 44
- national scale map, water management 157
- National State of the Environment Report 10
- National Strategy for Sustainable Development (NSSD) 10, 15, 318–19
- National System of Innovation (NSI) 44
- National Treasury 41
- National Water Resource Strategy (NWRS) 59–60, 144–5, 156–7
- natural habitat loss 110–12
- natural resources
 - degradation 318
 - environmental governance 55
 - using 256–60
- NBI *see* National Business Initiative
- NEAF *see* National Environmental Advisory Forum
- NEMAQA *see* National Environmental Management: Air Quality Act
- NEMBA *see* National Environmental Management: Biodiversity Act
- New Partnership for Africa's Development (NEPAD) 8–11, 43, 144
- NFR *see* National Research Foundation
- NGOs *see* non-governmental organizations
- nitrates, water quality trends 161
- nitrogen oxides 208, 217, 222
- non-consumptive marine resource use 182, 183
- non-governmental organizations (NGOs) 133
- non-profit organizations (NPOs) 65, 66
- NSI *see* National System of Innovation
- NSSD *see* National Strategy for Sustainable

- Development
- nunataks 190–1
- nutrient loss through degradation 99
- NWRS *see* National Water Resource Strategy
- occupational categories 27
- ODS *see* ozone-depleting substances
- off-road vehicles (ORVs) 175
- oil 176, 178, 305
- open spaces 110, 247–8
- options for action 314–31
- Orange River 119
- ORVs *see* off-road vehicles
- Outlook 2005–2025 294–313
- over-consumption 19
- over-exploitation 114–15, 178–83
- oxygen levels, water quality 159
- ozone depletion 226–9
- ozone-depleting substances (ODS) 227
- participation, environmental governance 55, 63–70, 81
- Patagonian toothfish 181–2
- pelagic fisheries 178, 179
- Persistent Organic Pollutants (POPs) 211–13
- personnel *see* staff numbers
- pesticides, African Stockpile Project 212–13
- physico-chemical restrictions, water quality 160
- planning
 - scenarios 299–301
 - four possible futures 308–12
 - see also* future...
- plants *see* vegetation
- policy
 - biodiversity conservation 129–31
 - trends 41–2
 - water availability and requirements 155
- pollution *see* air quality; water quality
- Polokwane Declaration 256
- poor quality water 99, 161–2
- POPs *see* Persistent Organic Pollutants
- population 18–22
 - density 172, 173, 186, 242
 - growth trends 302
 - HIV/AIDS impact 244
 - nine largest cities 241
 - pressures 242–3
- Port Alfred 96
- port development 173
- poverty
 - distribution 278
 - economic disparity 303
 - inequality 31–3
 - pesticide effects 212
 - Umkhanyakude District Council 283
 - vulnerability 277–80
- precipitation changes 219
 - see also* rainfall projections
- pressures, settlements 242–5
- Pretoria 228, 229
- primary sector 35–8
- Prince Edward Islands 190–5
- prioritizing environmental issues 13
- private land conservancies 133
- private sector 133, 319
- progress timeline 11
- property rights 55
- protected areas 64, 164
- Protected Areas Act 58, 264
- protected species 183–8
- protection levels 117, 123
- provincial governance 73–4, 76
- public administration 29
- public awareness, marine and coastal resources 188
- public electricity 32
- qualitative/quantitative scenarios 298
- R&D *see* research and development
- rainfall projections 219–21
- Ramsar wetland sites 120, 121
- rangelands, climate change effects 224
- re-use of water 153
- reconciliation
 - water requirements and availability 151
 - interventions 153–5
 - year 2025
 - base scenario 152
 - high scenario 154
- redistribution of land 95
- refugees 26
- regional governance 43, 63
- registers, information access 70
- registration, water-use 157
- regulations 59, 155
- rehabilitation programmes 131–2
- renewable energy 258
 - White Paper 60
- reports and reviews 3, 10–15
- representation, environmental governance 55, 65–6
- research and development (R&D) 43–5
- research initiatives, water management 162
- residential atmospheric emissions 207, 210
 - see also* household fuel burning
- resilience-building 288–9
- resource efficiency 35, 157
- responsibilities
 - environmental governance 70–7, 81
 - options for action 319
- Responsible Care initiative 81
- restitution claims, land 95
- reviews and reports 3, 10–15
- RHP *see* River Health Programme
- rights
 - environmental governance 55
 - land 94–6
- Rio Declaration, Principle 10 65
- Riparian Vegetation Index 163
- risks *see* health
- River Health Programme (RHP) 135, 163–4
- rivers
 - ecosystems status 118–20
 - floods 285, 286
 - health 135, 163–4
 - services and functions 6
 - water quality 158
 - water resources 144–5
- road traffic-related monitoring sites 205
- rock lobster 180, 181
- runoff 99
- rural productivity 99
- rural settlements 242, 248, 278–9
- Rustenburg, landfill site 255
- SA *Agulhas* 193, 195
- SADC *see* Southern African Development Community
- SADC Environment Outlook (2005) 299–300
- salinity, water quality 159, 161
- SANAP *see* South African National Antarctic Programme
- SANBI *see* South African National Biodiversity Institute
- sanitation services, household access 32, 252–3
- SANParks *see* South African National Parks
- Sarah Baartman* 195
- SASS *see* South African Scoring System
- SASSI *see* Southern African Sustainable Seafood Initiative
- scenarios 298–301
 - 'current future' 298, 301, 305–8
 - definition 298
 - framework and development 301
 - generation process 302
 - options for action 318
 - planning 299–301
 - four possible futures 308–12
- schistosomiasis 224
- science
 - driving change 304–5
 - environmental governance 55
 - and technology 43–6
- scoping, scenarios 301
- seafood 188
 - see also* fish
- seawater 147, 178
- secondary sector 38–9
- sectoral groundwater use 150
- sectoral growth implications 35–40
- sectoral shares of Gross Domestic Product 34
- sector-specific air quality controls 215–16
- Sekhukhune, food insecurity 281–2
- service provision, settlements 251–6
- settlements 234–69
 - dynamics 239–42
 - environmental governance 263–5
 - environmental interaction 237–9
 - livability 245–56
 - patterns of 240–1
 - poverty 278–9
 - pressures 242–5
 - state of 245–56
 - sustainability 329–30
 - as systems 237, 239
 - types and distribution 239–40
 - waste outputs 260–3
 - see also* urbanization
- shelter *see* housing
- ship-based tourism 193
- shock events, Sekhukhune households 282
- Silverglen medicinal nursery 109
- size classes, settlements 239
- skills training 27–8, 71–2, 74
- skin cancer 223, 226, 227
- 'Skorokoro' scenario 309–10, 311–12
- slums 250–1
- small, medium and micro enterprises (SMMEs) 248–9
- social capital, environmental change 288
- Social Responsibility Projects 71
- social services 33, 245–7
- social value, marine and coastal resources 170–2

- Socially Responsible Investment Index (SRI Index) 79–80
- socio-economic concerns, genetically modified organisms 134
- Sodwana Bay 175
- soil 97, 99
- solar energy 258
- source-directed controls, water management 157
- South Africa 2014 (2004) 299–300
- South African Environments into the 21st Century (1989) 299–300
- South African National Antarctic Programme (SANAP) 190–5
- South African National Biodiversity Institute (SANBI) 131
- South African National Parks (SANParks) 131
- South African Reserve Bank 30
- South African Scoring System (SASS) 163
- South Durban, KwaZulu-Natal, air pollution 287–8
- Southern Africa, Millennium Ecosystem Assessment 299–300
- Southern African Development Community (SADC) 144
- Southern African Sustainable Seafood Initiative (SASSI) 188
- Soweto, waste collection and disposal 254, 255
- species richness, biomes 111
- species status, biodiversity loss 122–7
- specific actions 326–9
- SPI *see* Standardized Precipitation Index
- Springbok, atmospheric ozone changes 229
- SRAP *see* Sub-regional Action Programme
- SRI Index *see* Socially Responsible Investment Index
- staff numbers, environmental governance 71, 72, 74, 76
- stakeholders, scenarios 301
- Standardized Precipitation Index (SPI) 220
- state of the environment reports 68–70
- State of Rivers Project 10
- Statistics South Africa (StatsSA) 322
- StatsSA *see* Statistics South Africa
- Stockholm Convention, Persistent Organic Pollutants 211–13
- stratospheric ozone depletion 226–9
- stunting prevalence in Sekhukhune 281
- Sub-regional Action Programme (SRAP) 101
- subsidized houses 251
- sulphur dioxide emissions 208
- supply of water 151–5
see also water resources
- surface water 145, 153, 157, 161
- surveillance, marine and coastal resources 186–7
- suspended solids, water quality 159
- sustainability 3–15
biodiversity and ecosystems 327
coastal resources 59
development 5, 29
international indices 81
land use and management 326
settlements 329–30
- Sustainable Coastal Livelihood Initiatives 184–5
- systems model, settlements 237, 239
- TAI (The Access Initiative) 56
- 'Tata ma Chance' scenario 308–9, 311–12
- technology 43–6, 304–5
- telecommunications 32
- temperature projections, climate change 219–21
- tenure 55, 95
- terrestrial ecosystems 110–11, 116–18, 122–3
- tertiary sector 34–5, 39–40
- TFCAs *see* Transfrontier Conservation Areas
- threatened species 123
- total particulate emissions, fuel-burning 208
- tourism industry
Antarctica and the Islands 193
biodiversity conservation 136
climate change effects 216
government expenditure 70
- traditional medicines 109
- training, environmental governance 71–2, 74, 76
- transboundary transportation, air pollutants 213, 214
- transformation, land use 88–9
- Transfrontier Conservation Areas (TFCAs) 127
- Transfrontier Parks 127
- transparency
corporate governance 79–82
environmental governance 55
- transport
atmospheric emissions 207, 210–11
effects on environment 40
modes of 245
pressures 244–5
see also road...
- transport pathways, air pollutants 213, 214
- trends, driving change 302–4
- trophic status, dams 162
- Tuberculosis 23
- typhoid epidemic 250
- tyre waste 262
- ultraviolet-B radiation 228
- Umkhanyakude District Council, KwaZulu-Natal 282–4
- UNCCD *see* United Nations Convention to Combat Desertification
- UNCED *see* United Nations Conference on Environment and Development
- uncertainties, definition 298
- UNCHE *see* United Nations Conference on the Human Environment
- UNDP *see* United Nations Development Programme
- unemployment 30, 248–9, 279
- UNEP *see* United Nations Environment Programme
- UNFCCC *see* United Nations Framework Convention on Climate Change
- United Nations, Rio Earth Summit 11
- United Nations Conference on Environment and Development (UNCED) 4
- United Nations Conference on the Human Environment (UNCHE) 4
- United Nations Conference on Human Settlement, The (Habitat II) 11
- United Nations Convention to Combat Desertification (UNCCD) 100–1
- United Nations Development Programme (UNDP) 24
- United Nations Environment Programme (UNEP) 42
- United Nations Framework Convention on Climate Change (UNFCCC) 225, 226
- United Nations Global Compact 81
- universities 44–5
- 'urban funnel' model 238
- urbanization
coastal areas 173
form and structure 241–2
growth 18
land effects 94
population proportions 243
poverty 279–80
water quality effects 159, 161
see also settlements
- vacancy rates, environmental governance 74, 76
- variability, climate 280–2
- vegetation
Antarctica and the Islands 192
biodiversity loss 112–14
control, water management 153
critically endangered types 118
degradation 97, 98
Riparian Vegetation Index 163
vehicles 210–11, 216, 218
see also road...; transport
- Vredefort Dome 128
- vulnerability
assessments 289–90
conceptual model 274
definition 274–5
to environmental change 270–93
indicators 276
options for action 325–6
poverty 277–80
scenario implications 312
schematic outline 274
- vulnerable ecosystems 117, 119
- waste collection and disposal 207, 251, 252, 253–6, 258
- waste management 74, 76, 255, 264
- Waste Minimization Clubs (WMCs) 81
- waste outputs 260–3
- wastewater discharges, marine and coastal impacts 176, 177
- wastewater management 159, 161
- water-borne diseases 159, 253
- water management *see* water resources management
- Water Management Areas (WMAs) 145
available yield, year 2000 148
fitness for use 160
requirements 149, 151–2
sectoral groundwater use 150
- water quality
consequences of poor quality 161–2
degradation effects 99
fitness for use 157–62
improving 327–8
marine and coastal impacts 176
reconciliation interventions 154
surface water 157
trends 158–9
- water requirements 147–51
factors affecting 155–6



- future 150–1
- reconciliation with availability 151, 152, 153–5
- supply/demand balancing strategies 151–5
- year 2000 149
- water resources 145–7
 - classification delays 161
 - climate change effects 224
 - 'current future' scenario 306
 - improving availability 327–8
 - inland water 142–67
 - national strategy 59–60
 - opportunities for development 147
 - potential, impacts on aquatic ecosystems 164–5
 - scenario implications 311–12
 - settlement use 260
- water resources management 153
 - aquatic ecosystems 165–6
 - current situation 156–7
 - industrial and research initiatives 162
 - opportunities for improvement 165
- Water Resources of South Africa 2005 Project 157
- water runoff 99
- water services, household access 32, 252–3, 282, 283
- water-use registration and authorizations 157
- WBCSD *see* World Business Council for Sustainable Development
- well-being *see* human well-being
- Western Cape 261, 284–7
- wetlands 120–1, 125, 132, 163–4
- whales 111, 182, 183
- White Papers 59, 60
- wildfires 92, 208
- wind energy 45, 258
- WMAs *see* Water Management Areas
- WMCs *see* Waste Minimization Clubs
- women 279
 - see also* gender
- wood fuel 99
- Working for Water programme 131–2
- World Business Council for Sustainable Development (WBCSD) 81
- World Conservation Strategy 4
- World Heritage Sites 128, 256, 257
- World Summit on Sustainable Development (WSSD) 10, 11, 61, 63, 64
- WSSD *see* World Summit on Sustainable Development
- WWF Ecological Footprint 14
- Yale Environmental Sustainability Index (ESI) 3, 7–9, 14, 56
- youth version, state of the environment report 69



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