South Africa

1. Location and capability of nuclear facilities

In the 1960s, South Africa commenced a nuclear power program and began to experiment with development of a "limited deterrent capability". South Africa manufactured a smaller number of nuclear weapons in the 1970s, but the program was halted in 1989 with the fall of apartheid. Since then, South Africa has acceded to the NPT as a non-nuclear weapon state, and its nuclear disarmament was confirmed through International Atomic Energy Agency inspections.

Today, coal fuel is the largest source of energy for South Africa. Remaining energy is derived from hydro, gas and nuclear sources. South Africa's two nuclear reactors generate 6% of its energy.
http://www.nti.org/e_research/profiles/SAfrica/index.html; http://www.world-nuclear.org/info/inf88.html; http://www-pub.iaea.org/MTCD/publications/PDF/cnpp2003/CNPP_Webpage/countryprofiles/SouthAfrica/SouthAfrica2003.htm

Power Reactors
Operational: 2
Shut down: 0
Decommissioned: 0
Planned: 0
http://www.iaea.or.at/programmes/a2/

Research Reactors
Operational: 1
Shut down: 0
Decommissioned: 0
Planned: 0
http://www.iaea.or.at/worldatom/rrdb/

Uranium Mines
South Africa is the world's eleventh largest uranium producing country, though output has been steadily declining. Uranium mining in South Africa started in the late 1940s in the Witwatersrand Basin in the Transvaal, where uranium was a by-product of gold mining. The 1973-1974 oil crisis triggered intensified exploration for uranium, leading to the country's first primary uranium mine (Beisa) coming into production in 1982. However, uranium is still mainly a by-product of the extensive gold mining. In 2005, South Africa produced 674 tonnes of uranium.

Beaufort West - exploration halted
Bonanza South - idle
Denny Dalton - exploration halted
Dominion - under development
Hartebeestfontein - closed
Palabora - closed
Randfontein - mining halted
Rietkuil - idle
Ryst Kuil - feasibility study ongoing
Springbok Flats - exploration halted
Vaal River - operating
Western Area - closed
http://www.worldenergy.org/wec-geis/publications/reports/ser/uranium/uranium.asp; http://www.uic.com.au/nip41.htm; http://www.wise-uranium.org/uoafr.html#ZA

Reprocessing Plants
The Valindaba facilities in the North West region of South Africa, which undertook uranium conversion and enrichment, were permanently closed down in the mid-1990s.
http://www.wise-uranium.org/uoafr.html#ZA

2. Fissile Material Holdings

Unseparated Civil Plutonium end of 2003: 5.8 tons
http://www.isis-online.org/global_stocks/end2003/plutonium_watch2005.pdf

Highly Enriched Uranium end of 2003: 0.61-0.76 tons
Supplied by: South Africa, US
http://www.isis-online.org/global_stocks/end2003/civil_heu_watch2005.pdf

Radioactive waste disposal
Low- and intermediate-level waste: Low- and intermediate-level waste from each reactor is stored in various locations on site before being moved to the National Radioactive Waste Repository in Vaalputs. The IAEA reports that the waste is stored in metal steel drums and concrete containers. Spent fuel is stored on site in wet storage or dry casks with a reported storage capacity of 40 additional years.
http://www.necsa.co.za/content.asp?catId=9&Id=208&parentId=9&childId=185&levelId=0&node=3

High-level waste: Currently high-level radioactive waste from Koeberg is stored on site, while awaiting a decision on a final storage site. http://www.uic.com.au/nip88.htm

3. Nuclear Activities

Research Centers
AEC - Atomic Energy Corporation of South Africa
CSIR: Council for Scientific & Industrial Research
Geological Survey of South Africa
NAC: National Accelerator Centre
http://www.radwaste.org/research.htm

Nuclear Cooperation
US: 1957 agreement for construction of Safari-1 reactor and supply of highly enriched uranium fuel from US company, Allis Chalmers. US also supplied enriched uranium and heavy water for the Safari-2 reactor. http://www.nti.org/e_research/profiles/SAfrica/Nuclear/2149.html

IAEA: South Africa works closely with IAEA to help it uncover international smuggling of nuclear weapons-related materials. http://www.nti.org/e_research/profiles/SAfrica/index.html

France: Agreement signed on cooperation on molecular laser isotope enrichment in 1996.

Russia: 2003 agreement on peaceful uses of nuclear energy, research cooperation, and training of South African scientists in Russia. http://www.nti.org/e_research/profiles/SAfrica/Nuclear/2149_4624.html

Slovenia: Agreement on the cooperation on the exchange of technical expertise, information, and cooperation in the regulation of nuclear safety. http://www.sigov.si/ursjv/en/med_pog/bilaterala.php

Iran: In 2004, a meeting between South African President Thabo Mbeki and Iran's secretary of national security resulted in South Africa offering to help Iran resolve questions about its nuclear program that have caused concern within the IAEA.
http://www.nti.org/e_research/profiles/SAfrica/Nuclear/2149_4624.html

China: 2001, 2003, and 2006 agreements on uranium mining, development of nuclear reactors, peaceful uses of nuclear energy, and exchange of personnel.
http://www.mg.co.za/articlepage.aspx?area=/breaking_news/breaking_news__national/&articleid=275063
http://www.nti.org/e_research/profiles/SAfrica/Nuclear/2149_4624.html

Brazil and India: The leaders of Brazil, India, and South Africa issued a joint statement in September 2006, highlighting their intentions to explore approaches cooperation in the peaceful uses of nuclear energy under IAEA safeguards.
http://news.softpedia.com/news/IBSA-First-Summit-Centered-on-Nuclear-Cooperation-35559.shtml

4. International Non-proliferation Efforts

Treaties Signed and Ratified, date of deposit
Antarctic Treaty, 21 June 1960

APM Convention, 26 June 1998
Biological Weapons Convention, 3 November 1975
Certain Conventional Weapons Convention, 26 June 1998
Chemical Weapons Convention, 13 September 1995
Comprehensive Nuclear Test-Ban Treaty, 30 March 1999
Convention on the Physical Protection of Nuclear Material, not ratified
Nuclear Non-Proliferation Treaty, 10 July 1991
Outer Space Treaty , 8 October 1968
Seabed Treaty, 26 November 1973
Treaty of Pelindaba, 27 March 1998

South Africa ratified the IAEA Additional Protocol on 13 September 2002.

Multilateral Groups
Conference on Disarmament
Hague Code of Conduct against Ballistic Missile Proliferation
Missile Technology Control Regime
New Agenda Coalition
Nuclear Suppliers Group
Zangger Committee

5. Positions Taken in International Fora on Various Issues of Nuclear Disarmament

Multilateralism: "The vast majority of States still lend their primary support to cooperative approaches based on treaty-making combined with practical action within relevant international organizations. They see themselves as stakeholders in jointly managed systems of treaties and organizations for disarmament, arms control, verification and the building of security. Their principled reunciation of weapons of mass destruction should be reciprocated by an equal commitment to the disarmament of these weapons. Without honouring this most fundamental "bargain" that underpins all of our efforts, significant progress with respect to both disarmament and non-proliferation will continue to elude us." **- Statement by Ambassador Dumisani S. Kumalo to the Security Council Open Debate on Resolution 1540, 23 February 2007.** http://www.reachingcriticalwill.org/political/SC/southafrica23feb.pdf

Fissile Material Cut-off Treaty: "South Africa believes that a Fissile Material Treaty must be negotiated without any further delay. In a nutshell, such a treaty should be the product of multilateral negotiations, be non-discriminatory and verifiable, and fulfill both nuclear disarmament and nuclear non-proliferation objectives. Although cognizant of the difficulties associated with the past production of fissile material, we believe that stocks should be included in the Treaty." **- Statement by H.E. Ambassador Mrs. Glaudine Mtshali to the Conference on Disarmament, 17 May 2006.**
http://www.reachingcriticalwill.org/political/cd/speeches06/17MaySouthAfrica.pdf

Nuclear Weapons: "South Africa believes that nuclear weapons do not guarantee security, rather, they distract from it. The longer nuclear weapons exist, the longer the world will have to wait to be free from the use or threat of use of such weapons. Many also fear that such weapons could fall into the wrong hands. However, our belief is that nuclear weapons are illegitimate, irrespective in whose hands these weapons are. Those who rely on nuclear weapons to demonstrate and and excercise power should recognize that such dependence on weapons of mass destruction only serve to increase insecurity rather than promote security, peace, and development." **- Statement by Mr. Abdul Minty to the Seventh Review Conference of the NPT, 3 May 2005.** http://www.un.org/events/npt2005/statements/npt03southafrica.pdf