

ECLECTIC South Africa



South Africa is enjoying the longest run of economic growth in its history, and there are no signs that this remarkable progress is coming to an end.

The economy has expanded in every financial quarter since September 1999, with growth averaging 5% annually for the past three years and projected to maintain that average over the next three.

The transformation is strikingly apparent in Soweto, a black satellite township southwest of Johannesburg that was once a squalid symbol of the evil inequalities of the apartheid era.

Tourists now visit Soweto to see Nelson Mandela's house and Walter Sisulu Square, where 52 years ago, at the height of the apartheid regime, the African National Congress adopted its Freedom Charter, spelling out its vision of a nonracist society.

While Gauteng province, which incorporates Johannesburg and Pretoria, is the economic powerhouse of the republic, Kwazulu-Natal, a province on the Indian Ocean coast, is challenging its dynamism. Kwazulu-Natal's biggest city, Durban, is recording the highest economic growth rate in the republic, estimated to be above 6%, and is responsible for 65% of South Africa's gross added value to export products.

Durban's port is the busiest on the African continent, handling over 30 million tons of cargo annually, and is vying with Melbourne to be the largest container port in the Southern Hemisphere.

In addition to accommodating the two biggest petrochemical refineries in Africa, the city is home to Toyota, which has just completed a \$346 million expansion to its Kwazulu-Natal manufacturing plant to enable production of 220,000 vehicles per year for local sales and export.

Toyota, together with General Motors and Volkswagen, has made vehicle production the second-biggest industry in South Africa's manufacturing sector, and its investment is a critical factor in the province's development strategy.

However, for all the economic progress it has made, Kwazulu-Natal, like the rest of South Africa, suffers from a shortage of housing, water and electricity, and extensive poverty.

"These social backlogs can only be addressed two ways in terms of getting money to fund them," says Russell Curtis, chief executive of the Durban Investment Promotion Agency. "The first is to get funding from other spheres of government. The second is to get substantially more private sector investment."

Forbes[®]

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City Skyline Beach, Durban, South Africa

To attract investment, Durban has credit ratings of AA+ and claims the best combination of business and pleasure infrastructure in the republic. Workers have just completed rolling out the last miles of fiber-optic cables, which will service 888 square miles of the municipality and 60 miles of Indian Ocean coastline. In the agricultural sector, the focus is on the development of biofuel.

Another project under discussion would equip Durban's street vendors with handheld devices that would enable them to order and pay for goods via Internet banking.

"This would facilitate a substantial escalation in economic and social development," says Curtis.

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Russell Curtis, chief executive, Durban Investment Promotion Agency

Yet, while the benefits of sustained, decade-long economic development are beginning to show in Gauteng, Kwazulu-Natal and the other South African provinces, unemployment nationwide still stands at 25% and, paradoxically, there is an acute shortage of skilled workers.

To solve the problem, job training has become as important as job creation for both the government and business leaders.

At present the number of jobs being created is increasing by a modest 5,000 a year. However, many of these jobs are of higher quality than in the past, and more workers are gaining formal employment.

Curtis says that Kwazulu-Natal, as the most populated province, has the broadest mix of skilled, semi-skilled and unskilled labor, and the most progressive training schemes. "We are linked to some of the fastest skills development programs, which are backed by the University of Kwazulu-Natal," he says.

Nationwide, as the authorities tackle the skills shortage, living standards are rising and a growing number of workers and businesses are paying more taxes.

With public finances strengthened by a decade of sound fiscal policies and an expanding tax base, the government is now substantially increasing its spending on infrastructure and the social services required by the millions still living in dire poverty.

In 2007, for the first time, South Africa recorded a budget surplus, and Finance Minister Trevor Manuel marked the moment by announcing that the country would spend \$6.3 billion on infrastructure projects over the next three years.

These investments will improve public transport and supply the basic services of

water, sanitation and electricity to those schools, clinics and poor households that still lack them.

Such is the country's economic progress that some now hope the government can achieve its primary aim of halving unemployment and poverty by 2014, ten years after it first set that target.

Prospects for achieving this goal are enhanced by the preparations, already under way, to stage the soccer World Cup, a sporting event second only to the Olympic Games in size and with the largest worldwide television audience.

The country is spending more than \$1.9 billion on upgrading its airports, improving its road and rail network, building or renovating ten World Cup stadiums, and enhancing its tourism facilities in readiness for an estimated 3 million visitors for the soccer tournament.

Consultants have estimated that the World Cup events will pump around \$3.1 billion into the economy, generating \$1.8 billion in direct spending and creating 160,000 new jobs. With this prospect on the horizon, South Africa is tackling the efforts to overcome its skills shortage with renewed urgency. ♦

Michael Knipe

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Encouraging learning

With national unemployment estimated at more than 25% of the labor force, job creation is one of South Africa's funda-

Lappa Sultan, an immigrant who arrived from India in 1880, founded the latter during the apartheid era. After his successful business career, he was instrumental in the 1950s in establishing a technical education facility for Indian people.

Today the university has a multiracial student population of more than 20,000, an academic staff of 560 and four faculties (arts, commerce, engineering science and health science), spread across seven campus sites.

"Most of our engineering students begin working before they have even finished their three-year diplomas," says Professor Nqabombi Gawe, the university's deputy vice chancellor.

"We have forged effective partnerships with industry and

other employers to ensure the relevance of our programs, hence the employability of our students. Quality-wise, it is industry that keeps us on our toes."

Gawe says the DUT is still in the process of defining what a university of technology should be within the South African context and how it should handle its relations with the industrial sector.

"It is critical to distinguish between our role as the generator of knowledge and theirs as the users of knowledge," she says.

The university's staff has the capacity, she says, to produce graduates who not only will be employable but will have the ability to create further jobs and spread knowledge.

To improve access to its facilities, the DUT offers bridging courses for students who have the capacity to cope with undergraduate studies but lack the qualifications for some of the formal programs offered. ♦



Laboratory technicians monitoring water quality samples

mental problems, says Membathisi Mdladlana, South Africa's minister of labor. "But," he adds, "so is the skills shortage. Remember, 30% of our population has no education and cannot read or write."

The country's sustained economic growth over the past eight years has outpaced the supply of skilled workers entering the job market. The government's goal, therefore, is to increase the number of engineering graduates from the present average of 4,000 a year to 12,000 a year by 2010, and the number of qualified artisans from 5,000 a year to 50,000 a year over the same period.

One of the academic institutions engaged in helping to meet these targets is the Durban University of Technology (DUT).

The first university of its kind in South Africa, the DUT was created in 2002 by the merger of the hundred-year-old Technikon Natal with the ML Sultan Technikon. Malukmahomed

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A double-hulled tanker leaving Duncan Dock in Cape Town Harbor

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Trading on expertise

As the world's largest producer of gas-to-liquid (GTL) fuels, South Africa is seeking to trade its expertise in this field with the continent's major oil- and gas-producing countries for the benefit of all.

"We want to see how we might use the expertise and infrastructure available in South Africa to work with our African counterparts who are bigger producers of oil and gas," says Siphon Mkhize, the chief executive of PetroSA, the republic's national oil company.

"Such collaboration would act as a springboard in alleviating the petroleum shortage on the continent since past structures and inefficiencies have forced many African countries to import these products."

South Africa uses more than half a million barrels of oil a day and, with few energy resources of its own, must import more than 80% of this total. Fortunately, its GTL technology and infrastructure is the world's best.

Mkhize believes that by trading with each other, South Africa and the continent's oil- and gas-producing nations could minimize their respective energy costs.

South Africa has long been on the path to becoming the world's largest producer of GTL fuels.

Technology for making gasoline from coal was first developed in Germany in the 1920s and was further developed by Sasol, South Africa's synthetic fuels and chemical company, in the 1980s after the

republic was subjected to an international oil embargo because of its racist policies.

When Sasol was privatized, the technology passed to PetroSA.

The national oil company, established in 1965 for the purpose of oil and gas exploration, pioneered the adaptation of existing coal-to-gasoline technology into the chemical conversion of natural gas into liquid, now known as GTL. This process is not to be confused with LNG (liquefied natural gas), which uses a refrigeration process.

PetroSA developed distinctly home-grown technologies and operational methods and built the world's first commercial GTL plant west of the town of Mosselbay, on South Africa's scenic Garden Route. It continues to be the world's largest facility for gas-to-liquid processing.

"The uniqueness of the technology is that it is very clean in comparison to other technologies and assists in environmental control," says Mkhize.

In its efforts to maintain and increase the country's supply of fuels, PetroSA is actively engaged in worldwide exploration for oil and natural gas as well as pursuing its downstream refining operations. Its gas-to-liquid plant currently supplies about 7% of South Africa's liquid fuel needs, which reach the market through the supply channel of the international oil companies. In the future, however, Mkhize is planning to supply the home market directly. ❖

World cup impact on investment

Once a gold rush town, Polokwane is preparing to be a goal rush city. In 2010 it will be one of the nine South African cities to host matches of soccer's World Cup. A new stadium, hotels and an international convention center are already under construction.

It is expected that Polokwane will take all the preparations and the arrival of thousands of international soccer fans in stride.

Founded by the Dutch Voortrekkers in 1884, and originally called Pietersburg, it is now the capital of Limpopo Province and one of the fastest-growing cities in the Southern Hemisphere. And as a result of post-apartheid border changes, its population has swollen from 50,000 to 580,000.

Also, as the largest metropolitan complex in the north of the republic, it has become a major transit link to and from

the neighboring countries of Botswana, Zimbabwe, Mozambique and Swaziland.

The N1 route from Johannesburg, which runs the length of the province from north to south and passes through Polokwane, is the busiest overland route in Africa for cross-border trade in raw materials and goods.

Mayor Thabo Makunyane believes that in addition to bringing in revenue, the World Cup soccer matches staged in Polokwane will enhance the city's international image and promote further investment.



South African soccer fans

"Food processing would be a good investment here, as fruit and vegetable farming is a major activity," he says. "Limpopo supplies more than 50% of the country's tomatoes, but at the moment there are no places to process them."

There is also a need for the retail sector to respond to the increasing

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A leading University of Technology in Africa

The Durban University of Technology celebrates its vision, which identifies DUT as "a leading university of technology in Africa that nurtures holistic education and the advancement of knowledge".

DUT's mission is to serve the needs of developing societies within a dynamic global context and to enable quality teaching, learning, research and community engagement by:

Providing: Quality, career-focused education, and **Promoting:** A values-driven ethos, Sustainable partnerships with industry, community and society, Excellence in applied and relevant research and; **Empowering:** Staff and students to succeed and **Ensuring university sustainability.**

DUT is a vibrant multi campus tertiary institution at the cutting edge of higher education, technological training and research. We offer seventy-two academic programmes, both full-time and part-time, in four faculties, on state-of-the-art campuses in Durban and the Midlands. The qualifications range from Certificate courses, National Diplomas to Bachelor's, Master's and Doctorate's in Technology Degrees.

DUT does not see itself as a research-intensive organisation; however, research is a core function. The selection of DUT's applied research programmes is defined by "excellence with relevance". These are central to a number of regional and national imperatives, contribute to poverty eradication and attempt to address the Millennium Development Goals.

The National Research Foundation (NRF) of South Africa is a key funder of research at DUT. The following are NRF funded research niche areas: water and wastewater technology; appropriate design education for sustainable development; materials, design and manufacture; dynamical systems research and ICT and development.

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affluence of Polokwane's citizens. While property prices have boomed, says Mayor Makunyane, shops are still selling lesser-quality goods, and as a result residents are traveling out of the province to shop.

Sello Moloto, premier of Limpopo Province, says that the poverty of the province during the apartheid era was simply due to neglect of its natural resources.

"Since the inception of the new government we have not added much value to [natural resources]," he says. "All we have done is expose and profile the opportunities and put in place the legislative framework to allow investors to come in."

Now, he says, the province is seeking to add value to its natural resources before exporting them.

Currently, mining and quarrying account for 21% of Limpopo's economic activity, and tourism and trade for 11%.

With a population of 5 million, the province supplies more than half of South Africa's oranges, tomatoes, mangoes and avocados; has some of its largest planted forests of eucalyptus and pine; and is the source of half of the country's recoverable reserves of coal. All of these areas offer opportunities for investment.

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Thabo Makunyane, mayor of Polokwane

Limpopo, says Moloto, is now investing in the provision of skills, offering scholarships to good students who need assistance and focusing on training engineers and developing trade skills.

"We believe that investing in skills will pay back in the next five to ten years," he says. ❖

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World-class competitors

Although it is preparing for its centenary celebrations next year, the University of Pretoria's gaze is fixed firmly on the future.

"'Going beyond' is woven into our strategic intent," says Professor Calie Pistorius, the university's vice chancellor and principal.



Lab students at work, Hatfield Campus, University of Pretoria

As one of four South African universities rated among the world's top 500, the University of Pretoria plays a significant role in the life of the republic, not only by providing higher education and research facilities, but by helping to build the country's social structures and contributing to its intellectual debate.

With 40,000 residential and 10,000 distance-learning students, U. of Pretoria is one of the largest institutions of higher learning in Africa. As befits a leading academic establishment located in a racially diverse population, more than half of its students are black, and around one-quarter of its 2,000 foreign students are from other African countries.

The university's contribution to the national goal of increasing black empowerment is further reflected by the fact that of the more than 9,000 degrees it awards each year, it confers a third of them on black students.

Just as important as the diversity of its student body is the emphasis the university places on academic innovation. In addition to serving as the vice chancellor, Professor Pistorius is the chairman of the National Advisory Council on Innovation in South Africa and has made the pur-

suit of innovation one of the university's primary aims. For many years it has been the republic's leading research university, particularly in the fields of science and engineering.

The university has nine faculties, specializing in economic and management sciences; education; engineering, built environment (architecture, town planning) and information technology; health sciences; humanities; law; natural and agricultural sciences; theology; and veterinary sciences.

Not surprisingly, the university attracts its share of outstanding undergraduate students, and more than 30% of the current enrollment finished high school with six or more distinctions. Many of those pursuing degrees on its campuses today will become South Africa's future leaders.

Postgraduate students are of a similar high quality, and the university leads the national field in doctoral enrollments.

"We need to prepare these students to be the leaders of the future who can compete in a globalized world," says Professor Pistorius. "This country was politically isolated for a long time, and luckily this is no longer the case.

"However, we remain geographically isolated. We are now part of the global community, and we have to work hard to improve our international competitiveness."

When South Africa emerged from its isolation following the demise of the apartheid era in 1994, the path was open for radical changes in educational policies. Seven years later, its higher education institutions underwent a comprehensive restructuring exercise. Many of them merged, a number of well-known establishments closed and new ones came into being.

U. of Pretoria retained its identity, but, like other institutions in the republic, it took the opportunity to redefine its vision and mission, which it did by reinforcing its commitment to academic excellence and emphasizing its determination to be a premier research center.

It also focused on enhancing its

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Professor Calie Pistorius, vice chancellor, University of Pretoria

reputation internationally by collaborating with universities around the world. It has strengthened its established links with North American and European institutions, particularly with the United States. Professor Pistorius obtained master's and Ph.D. degrees in electrical engineering from Ohio State University; a master's degree in management of technology from the Massachusetts Institute of Technology (MIT); and he completed an advanced management program at the Harvard Business School.

The university is also developing alliances with Asia, South America, Australia and New Zealand, and staff and students felt great pride and satisfaction when President Hu Jintao of China chose the University of Pretoria as

the venue for a major policy speech on Africa during his recent state visit to the continent.

In line with this international outlook, the university supports and promotes multilingualism. It conducts courses in English and Afrikaans — two of South Africa's 11 official languages — and promotes a third language, Sepedi, spoken by many of the students and staff.

The U. of Pretoria also encourages the learning of non-South African languages. It has introduced Spanish courses, for example, with the assistance of the Spanish Embassy, and plans to offer courses in other languages.

Another important strand of the university's activities is its cooperation with the private sector, science councils and

government agencies. A wide spectrum of national and international companies and agencies have contacted the university's major research centers, such as the Forestry and Biotechnology Institute, the UP Water Institute and the Center for Human Rights.

U. of Pretoria has also established a range of campus companies whose activities include the provision of continuing education, sports, market research and venture capitalism. Start-up companies, a number of which are joint ventures with outside organizations, are commercializing several of the university's research projects.

It is the university's job, Professor Pistorius believes, to deliver a new generation of South Africans who have a global view and understand the nature of international competitiveness. It must also ensure that a fair share of the world's best students come to South Africa.

“We must not only educate world-class engineers, doctors, teachers and leaders in other fields, we must also deliver world-class people who can compete with the world's best anywhere, anytime,” he says. ❖



PetroSA: Pioneering Energy Solutions

The Petroleum Oil and Gas Corporation of South Africa, or PetroSA, owns, operates and manages South Africa's commercial petroleum assets. We are world-renowned as pioneers in the production of gas-to-liquid (GTL) fuels.

PetroSA's Mossel Bay site is the largest of only three plants worldwide that operate GTL technology commercially. Our quality produce, approximating 36 000 barrels per day, is widely sought after internationally.

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