



**ANNUAL REPORT  
2008/09**

**CSIR**

*our future through science*

# Contents

## From the Executive

Overview by the Board Chairman .....	2
Introduction by the President and CEO.....	4

## Project highlights

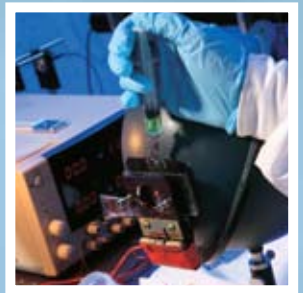
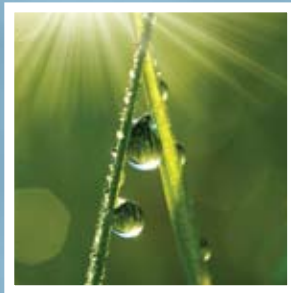
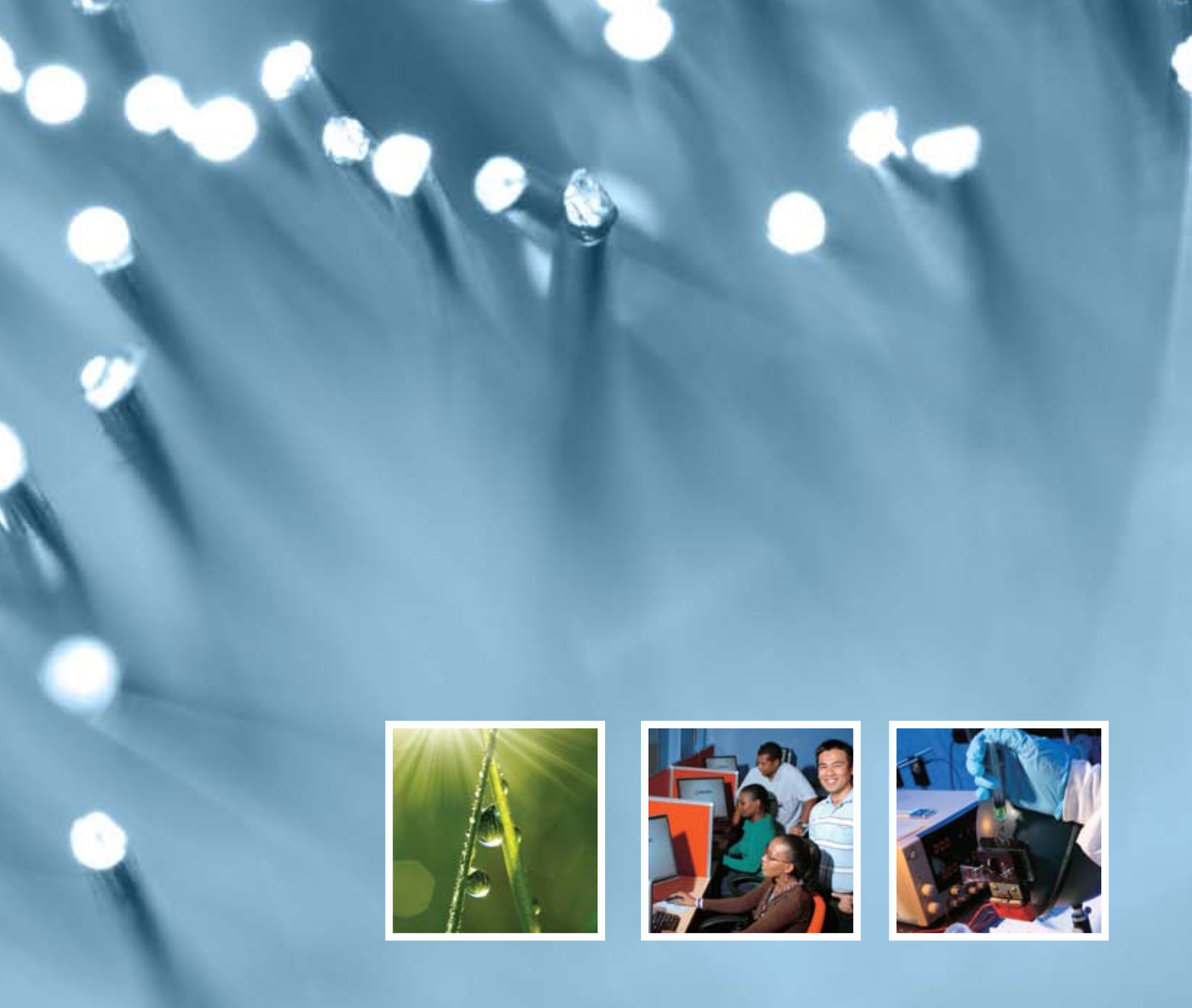
Introduction .....	7
Health .....	8
Natural environment.....	18
Energy.....	28
Built environment.....	36
Defence and security .....	46
Industry.....	56
Advances in scientific infrastructure.....	70

## CSIR outputs

Contributing to the global knowledge pool.....	81
Books and book chapters.....	82
Journal articles .....	83
Conference papers.....	89

## Corporate governance

Corporate governance.....	102
Governance structure.....	105
CSIR Executive.....	107
CSIR Board members	
1 April – 31 Dec 2008.....	108
1 Jan – 31 March 2009 ...	109
CSIR Board committees.....	110
Report of the Audit and Risk Committee .....	112



## Audit report

Report of the Auditor-General ..... 113

## Executive report

Executive report .....	116
Priority areas:	
Building and transforming human capital .....	119
Strengthening the SET base and performing relevant R&D .....	121
Transferring technology and skilled human capital.....	123
Financial sustainability and good corporate governance.....	124

## Annual Financial Statements & notes

Income statements .....	128
Balance sheets.....	129
Statements of changes in equity .....	130
Cash flow statements.....	131
Notes to the Annual Financial Statements.....	132
Addendum A: Interest in subsidiaries.....	172

## Abbreviations

Abbreviations .....	174
---------------------	-----



Professor Francis Petersen

The CSIR has a strong culture of discipline and ethics, and a commitment to working on challenges that will benefit South Africa's future development.

2009 brought yet another milestone in the history of South Africa with the instatement of the country's fourth democratically-elected government and changes in structures of state. However, the challenges facing this country have not changed – or diminished. Issues of unemployment, crime, social and economic infrastructure, healthcare and sustainable development are some of the factors negatively impacting on our young democracy in its quest to create a better life for all its citizens.

# Chairman's overview

## Chairman's overview

Much has been done by our shareholder, the Department of Science and Technology (DST), in the past year to place science, technology and innovation at the centre of development. In turn, the CSIR has embraced the concept of innovation for development with the intention to deliver on the needs, expectations and objectives of the nation and its people.

Over the years, the CSIR has made a considerable contribution to the fulfilment of many of the government's objectives, particularly those aimed at alleviating the plight of the country's previously marginalised communities. The organisation has partnered with both government and private sector institutions to conduct research in various socio-economic fields including housing, water provision, transport, infrastructure development and industrial competitiveness.

As we move into the new year, the CSIR will develop new linkages and enhance existing partnerships with all spheres of government and across industries in the private sector. I would also like to welcome the new members of the Board and I am looking forward to working with them over the next three years on such objectives and on ensuring that the CSIR remains an internationally-competitive science organisation.

The development of skills in science, engineering and technology (SET) is a priority issue that the CSIR shares with government. The CSIR's Human Capital Development strategy has passed through its second year of implementation and results are evident and recorded in this report. The standing of the CSIR's own intellectual base is impressive in terms of qualification levels. Aside from schemes and assistance to support young SET professionals, the CSIR has put effort into its relationships with tertiary education institutions and a variety of other research organisations to stimulate cooperative projects and skills sharpening or exchanges.

In the new year, the CSIR will focus more strongly on promoting science and technology as enablers for improvement in our society, economy, competitiveness and the quality of life of South Africans. This means greater visibility of the impact and value derived from scientific intervention and intensifying communication and stakeholder engagements to enhance awareness and understanding of the CSIR's work in the public domain at international, national and local level. By narrowing the information and knowledge gaps in society, we will be affording fellow citizens access to useful information.

The CSIR has a strong culture of discipline and ethics, and a commitment to working on challenges that will benefit South Africa's future development. This culture underpins its rigorous scientific undertakings, fit-for-purpose innovations and the exploitation or public dissemination of research and knowledge in the national interest. I would like to encourage the management and staff of the CSIR to remain true this ideal.

By adhering to the highest standards of governance and business principles, the organisation has once again attained an unqualified audit and remained financially sound. In fact, excellent financial results were recorded for the 2008/09 year. This can be attributed to the diligence of management and staff of the CSIR, who have consistently produced quality work, delivered value to their clients and stakeholders, and ensured quality science is balanced by quality business dealings.

Lastly, I would like to thank the CSIR Executive management team for its unwavering commitment and all members of staff who have used their talent and expertise to contribute to the CSIR's success in the past year. I look forward to an even better *'future through science'*.





Dr Sibusiso Sibisi

# CEO's introduction

The CSIR's mandate gives sanction to the critical role innovation needs to play in the development of South Africa.

We are required to foster industrial and scientific development and, through that, contribute to the improvement of the quality of life of the people of South Africa by performing directed, multidisciplinary research and technological innovation.

The opportunity for influence is substantial – from employment, infrastructure, education and health to challenges facing our industries and our environment. In our case, scientific exploration is not about science for science's sake. It has to provide answers, bring about improvement and make a real difference.

For the past few years, the CSIR's strategic objectives have remained consistent:

- To build and transform human capital
- To strengthen our core base of science, engineering and technology (SET) skills
- To transfer technology and skills to industry or society.

## ■ CEO's introduction

The CSIR's Annual Report for 2008/09 is a record of excellent achievement. Achieving such positive outcomes across all domains is a reflection of a healthy balance that exists between good science and good business at the CSIR. This was an objective we pursued intently since an organisational reconfiguration in 2005. One component of that process was ensuring a core focus on quality R&D, but not ignoring that similar discipline and quality was expected of its operational and financial workings – underpinned by good governance. In fact, since 2005, a steady increase in contract research income is indicative of the interplay between quality, relevant R&D work and sound business practices.

Particular achievements can be highlighted to testify to the past year's performance:

- Over the years, our demographic profile has improved consistently, with our SET base reaching 53% black and 33% female
  - The number of permanent staff studying towards Master's or PhD degrees increased from 90 in 2007/08 to 201 in 2008/09 and the number of staff in the SET base with PhDs increased to 273, exceeding the target of 240
  - The value of capital investment in scientific equipment and facilities exceeded the target by more than R40 million and totalled R188,3 million
  - Publication equivalents increased significantly – 451 were achieved during the past financial year and exceeded the performance target for 2008/09 by more than a hundred
  - Exceeding the target by 20, the CSIR was granted 35 new international patents
  - Royalty income increased by some R12 million from the previous year (R9,1 million in 2007/08, R21 million in 2008/09)
- The value of contract R&D income supporting national strategies also showed a significant improvement from R373,5 million in 2007/08 to R450 million in 2008/09
  - The value of contract R&D increased from R707 million in 2007/08 to R847 million in 2008/09 (excluding ring-fenced grant allocations from the Department of Science and Technology) and we maintained a healthy net profit.

The next pages showcase a few examples of the novel developments and projects undertaken in critical areas such as health, defence and security, energy, industry and both the natural and built environments.

We need to acknowledge the constructive engagement and support from the Department of Science and Technology. We also value the encouragement of and guidance by the CSIR Board.

Above all, we need to record that our success is based on the talents and commitment of the people who work at the CSIR. The organisation sets exacting standards, requires discipline and ethics in all its undertakings and, in turn, supports and acknowledges the individuals who live up to the rigours of a science organisation with the mandate to make a real difference.

Although we are pleased about the strong performance of the past year, it is without any sense of complacency. Our top priority remains the pursuit of innovation to support the country's development.

