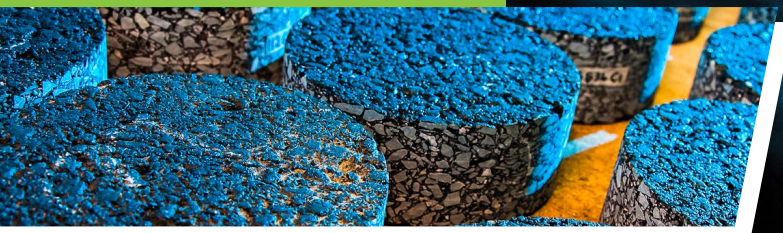


INTRODUCING THE CSIR

science, technology & innovation

Department:
Science, Technology and Innovation
REPUBLIC OF SOUTH AFRICA

CSIR
Touching lives through innovation

OUR MANDATE

"The objects of the CSIR are, through directed and particularly multi-disciplinary research and technological innovation, to foster, in the national interest and in fields which in its opinion should receive preference, industrial and scientific development, either by itself or in co-operation with principals from the private or public sectors, and thereby to contribute to the improvement of the quality of life of the people of the Republic, and to perform any other functions that may be assigned to the CSIR by or under this Act."

(Scientific Research Council Act, 1988 (Act 46 of 1988), amended by Act 27 of 2014)

ABOUT THE CSIR

The Council for Scientific and Industrial Research (CSIR) is a leading scientific and technology research organisation that researches and develops transformative technologies to accelerate socioeconomic prosperity in South Africa.

The organisation's work contributes to industrial development and supports a capable state. The CSIR is an entity of the Department of Science and Innovation.

The organisation plays a key role in supporting the public and private sectors through directed research that is aligned with the country's priorities, the organisation's mandate and its science, engineering and technology competences.

CSIR VISION, MISSION AND STRATEGIC OBJECTIVES

VISION

We are accelerators of socioeconomic prosperity in South Africa through leading innovation.

MISSION

Collaboratively innovating and localising technologies, while providing knowledge solutions for the inclusive and sustainable advancement of industry and society.

STRATEGIC OBJECTIVES

- Conduct research, development and innovation of transformative technologies and accelerate their diffusion;
- Improve the competitiveness of high-impact industries to support South Africa's reindustrialisation by collaboratively developing, localising and implementing technology;
- Drive socioeconomic transformation through research, development and innovation (RD&I) that supports the development of a capable state;
- Build and transform human capital and infrastructure; and
- Diversify income and maintain financial sustainability and good governance.

CSIR VALUES

VALUES

Our beliefs, principles and the impact we wish to make to improve the quality of life of South Africans are **EPIC**. Team CSIR pursues Excellence, celebrates People, personifies Integrity and welcomes Collaboration.

Excellence

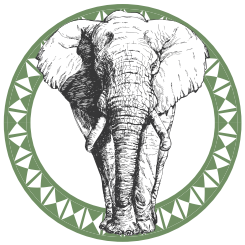
The Cheetah embodies speed and focus. It represents intelligence, precision and creativity, and the agility to act quickly when situations change suddenly. It fixes on a goal and completes the task to the best of its abilities.

Excellence value statement: We strive for excellence and quality in everything that we do. We always strive to deliver solutions that surpass the expectations of our stakeholders. We hold each other to the highest possible standard in research, development and innovation, as well as all other facets of CSIR business. We believe that excellence is a product of investing in the continuous development of our people, processes and ways of doing business.

Integrity

The elephant naturally signifies strength and is associated with solid leadership and wisdom. Synonymous with the elephant is honesty and integrity.

Integrity value statement: We act with integrity. We are honest and fair when dealing with one another and our business partners. We respect the trust that our colleagues and stakeholders place in us, and commit to ethical decision-making, delivery and governance.



People-centred

The Baobab is revered as a meeting place where a community can dialogue and make decisions that affect all of them - together. It also gives shelter, shade and sustenance.

People-centred value statement: Our business is about touching the lives of people – our employees and business partners. We care about people. We respect each other's diversity and conduct ourselves in a manner that upholds the dignity of every person. We believe in continuous personal development and encourage one another to seize opportunities for personal growth. We treat our stakeholders the way we like to be treated.

Collaboration

Where there is teamwork, there is strength. Extraordinary things can happen.

Collaboration value statement: We are keen to learn from one another and collaborate across the organisation and with external partners to ensure that our work has the best chance of innovating a better future for South Africans. We actively share our knowledge and expertise by design, formally and informally, so that we can realise large-scale impact.

CSIR TECHNOLOGY SECTOR CLUSTERS

OUR TECHNOLOGY SECTOR CLUSTERS

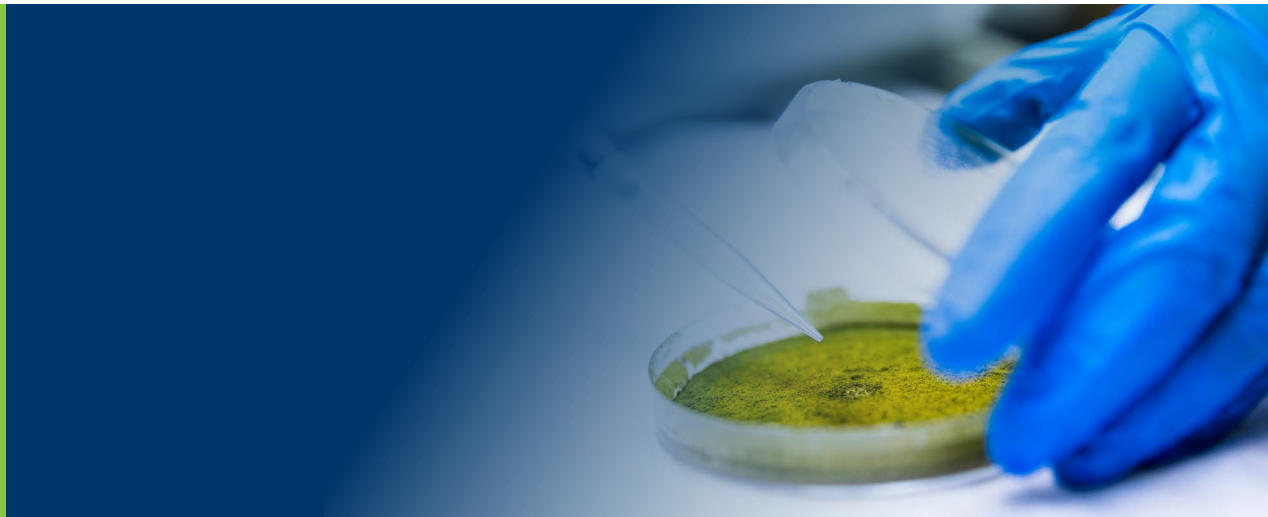
The organisation has nine synergistic clusters, that represent the CSIR's strategic focus, having been selected based on considerations of national priorities, potential for socioeconomic impact and the fourth industrial revolution (4IR).

CSIR ADVANCED CHEMISTRY AND LIFE SCIENCES

CSIR Advanced Agriculture and Food - The CSIR harnesses the opportunities afforded by transformative technologies to develop the agriculture and associated processing industries for inclusive growth and rural development, while improving the industry's competitiveness through RD&I and business innovation.

CSIR Future Production: Chemicals – The CSIR avails a unique set of offerings to its industry and public sector partners. The cluster's customised approach to scientific research and development contributes to a sustainable, vibrant and competitive (South) African chemical and pharmaceutical industry.

CSIR NextGen Health – The CSIR centres on a One Health approach to achieve optimal health outcomes, with a focus that spans the full health value chain – from prevention to diagnosis, treatment and monitoring – while equipping the health sector with capabilities to utilise 4IR technologies.



CSIR TECHNOLOGY SECTOR CLUSTERS

ADVANCED PRODUCTION AND SECURITY

CSIR Future Production: Manufacturing – The CSIR focuses its science, engineering and technology base on contributing towards South Africa's re-industrialisation by developing or facilitating the uptake of new technologies that will improve the competitiveness and productivity of strategic local economic sectors. This includes technologies and paradigms articulated through the 4IR. The CSIR's competences in manufacturing enables it to assist the state to better address socioeconomic development through technologically enhanced service delivery.

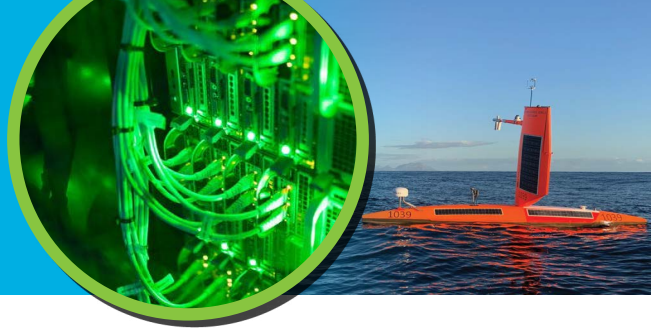
Furthermore, it builds world-class capabilities for the engineering and production industries in South Africa, which include localising and developing transformative and efficient ways of manufacturing existing and new products. The outcome includes more local original equipment manufacturers, expanding exports and capturing a larger share of global high-value manufacturing.

CSIR Future Production: Mining – The CSIR has a long history of cutting-edge mining RD&I that supports mineral extraction. CSIR Future Production: Mining partners with industry in supporting the revitalization of the growth of the industry. By leveraging its multidisciplinary expertise and networks, the organisation plays a key role in contributing to the longevity of South African mining operations and assisting in the development and manufacture of South African mining equipment for local use and, ultimately, export to other African countries.

CSIR Defence and Security – The CSIR is trusted as a strategic and independent contributor to South Africa's sovereignty and the security of state and citizens, as well as to undertake research and development to serve the competitiveness of the local industry.

It develops strategic technologies and capabilities for air, land, sea and cyber defence and security, and delivers integrated solutions for private, public and civil sectors.

CSIR TECHNOLOGY SECTOR CLUSTERS



CSIR SMART SOCIETY

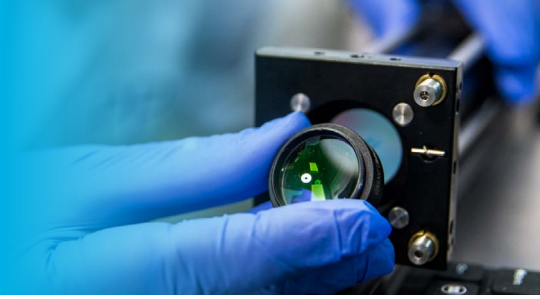
CSIR NextGen Enterprises and Institutions – The CSIR creates information exchange platforms in the public and private sectors by incorporating digitally enabled technologies, which contribute to improving operational efficiencies within organisations.

The organisation develops and applies capabilities in disruptive technologies, such as artificial intelligence, the Internet of Things, digitalisation, modelling and simulation, and distributed ledger technologies for enhanced effectiveness, competitiveness, productivity and sustainability.

CSIR Smart Mobility – The CSIR addresses challenges and opportunities associated with transport systems and operations, infrastructure, transport operations and logistics management in support of industrial and sustainable development.

CSIR Smart Places – The CSIR, with its rich multidisciplinary science, engineering and technology base – in climate change, environmental sciences, energy, water, building science, spatial planning and cleaner production – is ideally positioned to contribute to smarter places, including smart buildings, cities and regions, manufacturing, water use and energy use.

OUR PEOPLE



The CSIR is proud of its diverse workforce comprising scientists, engineers and technologists who are involved in RD&I and supported by staff with skills in, among others, financial management, human resource management, commercialisation, administration, quality control, communication and the law.

Our employees are among the brightest in their fields and they continue to raise the CSIR flag high on local and international platforms through the various accolades that they receive for excellence in their work.

OUR STAKEHOLDERS AND PARTNERS

The CSIR identifies, develops and manages its stakeholder relationships and strategic partnerships as an integral part of its business model.

The organisation derives business value in having healthy strategic partnerships and stakeholder relations, locally and internationally, that enable and complement its capabilities to enhance and realise its vision of accelerating socioeconomic prosperity in South Africa through leading innovation. The quality of the collaborative work is greatly enhanced by complementary infrastructure, capabilities and a focus on research at different stages of the innovation value chain.

SOME EXAMPLES OF THESE PARTNERSHIPS INCLUDE:

Accountability and Compliance Stakeholders

These are stakeholders to whom the CSIR accounts in various ways by virtue of compliance with legislation such as the Scientific Research Council Act and the Public Finance Management Act, as well as industry bodies such as International Organization for Standardization, etc. Examples include:

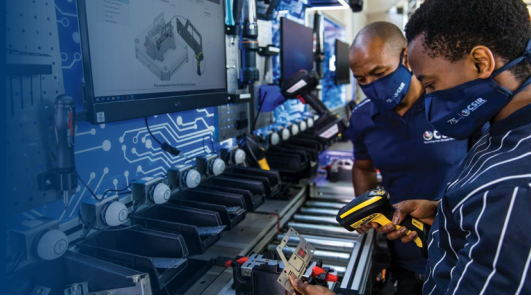
- The Minister of Science, Technology and Innovation (Shareholder);
- Parliament;
- The Auditor-General of South Africa;
- National Treasury; and
- The CSIR Board.

Business and Development Stakeholders

The CSIR conducts contract RD&I business for and/or with various stakeholders to meet their needs in pursuit of its mandate through the provision of specialised skills, expertise, competencies, infrastructure and other capabilities. The CSIR Strategy focuses on amplifying the 'I' in 'CSIR' and does so by leveraging strong partnerships. These stakeholders include:

- Government departments;
- State-owned entities;
- Industry associations/players;
- Funding partners;
- Multilateral institutions;
- International public/private organisations;
- Small, medium and micro enterprises; and
- Private organisations/customers.

OUR STAKEHOLDERS AND PARTNERS



RD&I Stakeholders

These are stakeholders with whom the CSIR collaborates in conducting RD&I by bringing together complementary skills, expertise, competencies, infrastructure and capabilities to achieve shared objectives. These may be national or international partners, including:

- Research and technology organisations;
- Higher education institutions (HEIs), including universities, and Technical Vocational Education and Training colleges;
- RD&I associations/players;
- International public/private organisations;
- Private organisations/Customers; and
- Industry.

Human Capital Development Stakeholders

The CSIR partners with Human Capital Development stakeholders to build and transform human capital by engaging in skills development activities in RD&I. The organisation collaborates with government departments, HEIs, sector education and training authorities and science councils to enable a highly skilled multidisciplinary and capable workforce through pipeline development programmes such as bursary, graduate-in-training and scholarship programmes, internships, work integrated learning, learnerships and artisanships.

General Public Stakeholders

These are stakeholders in the public domain who are affected by and are beneficiaries of the CSIR's work, including:

- Public groupings, including women, youth (students and learners), the unemployed, people with disabilities, communities, non-profit organisations and non-governmental organisations; and
- Media and social media citizens, considering social media consumption trends.

As the CSIR, we are keen to learn from one another and collaborate across the organisation and with external stakeholders to ensure that our work has the best chance of innovating a better future for South Africans. We actively share our knowledge and expertise by design, formally and informally, so that we can realise large-scale impact.

TURNING IDEAS INTO INNOVATIONS

CSIR INTERVENTIONS AND INNOVATIONS FOR COVID-19 PANDEMIC

The CSIR, like many organisations, was confronted with having to respond to the Covid-19 pandemic in a rapid manner to support government's efforts in minimising the impact of the spread.

- The CSIR upgraded its Biosafety Level 3 laboratories to be able to conduct Covid-19 tests, in partnership with the National Health Laboratory Service.
- The CSIR established a data and information centre using our C-MORE platform for situational awareness to track and trace Covid-19 cases, as well as provide decision support to the Department of Health.
- The CSIR developed diagnostic point-of-care testing kits.
- The CSIR further started with development of a one-step enzyme-based polymerase chain reaction test kit that rapidly detects SARS-CoV-2 viral RNA and amplifies it. The focus is on producing the reagents, enabling import replacement manufacturing for diagnostic enzymes and antibodies.

- The CSIR designed and developed a 100% local continuous positive airway pressure ventilator under contract to the Solidarity Fund, following approval by the South African Health Products Regulatory Authority.
- The CSIR modelled the spread of Covid-19 for forecasts of cases and deaths, as well as decision-making regarding intensive care unit beds, ventilators and lockdown measures for the National Institute of Communicable Diseases, working with the South African Medical Research Council, University of Pretoria and University of Witwatersrand.

TURNING IDEAS INTO INNOVATIONS

High-impact innovations

Meerkat Wide Area Surveillance System: The CSIR developed the Meerkat Wide Area Surveillance System (WASS) to support South African National Parks (SANParks) in its fight against rhino poaching. The system is successfully utilised to detect and classify people and animals over a wide area and has had well-documented successes in curbing rhino poaching incidents through wide-area surveillance. The WASS is funded by SANParks and the Peace Parks Foundation, in partnership with the United Kingdom Post Code Lottery.

Secure Identity Framework: The CSIR collaborated with the Department of Home Affairs to design and develop a secure identity framework that enabled the department to issue South Africans with a new Smart ID card embedded with security features aimed at significantly reducing potential forgery.

Precision Agriculture information system:
The CSIR is leveraging on the power of data observation to provide the South African agricultural community with digital solutions to mitigate against climate change, crop disease, and pests. The system utilises earth observation, climate change modelling, big data, and data analytics to support decision making in land-use planning, to predict yields and inform markets, and to monitor pests and diseases. The system will provide actionable information on soil and crop condition to farmers at farm-scale in near real-time.

CONTACT US

General enquiries: +27 12 841 2911
Technical enquiries: +27 12 841 2000
Email: Enquiries@csir.co.za
Physical address: Meiring Naudé Road, Brummeria, Pretoria South Africa
Postal address: PO Box 395, Pretoria South Africa