SOUTH AFRICAN NATIONAL SURVEY OF RESEARCH AND EXPERIMENTAL DEVELOPMENT

GREEN R&D AND CLEANER ENERGY

Green R&D focuses on new or significantly improved products and services resulting in reduced environmental impact and the optimisation of resources, contributing to sustainable development. Burning fossil fuels is the greatest source of electricity generation worldwide, releasing large amounts of carbon dioxide and toxic emissions that cause multiple health issues and environmental degradation. Augmenting energy supplies from sources other than fossil fuels - like green energy (renewables) and nuclear energy - can significantly alleviate the burden on traditional power systems and improve efficiency and energy security, while reducing costs and damage to the environment. State-owned enterprises (SOEs) are the largest contributors to R&D in green and nuclear energy in South Africa. Yet, SOE spending on green and nuclear energy R&D has been on a downward trajectory since 2018/19, while other enterprises in the business sector increased R&D spending on green energy from 2019/20.

FACT SHEET NO. 60

Science, Technology and Innovation Statistics South Africa

HSRC Human Sciences Research Council

R&D SURVEY
Investment • Insight • Impact

THE BIG PICTURE

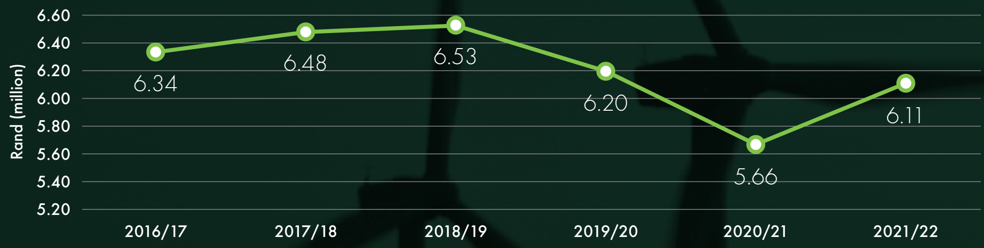
In **2021/22** **gross domestic expenditure on R&D (GERD)** was **0.62%** – in real terms, **R 27.756 BILLION**

Of the **total R27.756 billion** spent on R&D in 2021/22, **only R6.1 million was spent on green R&D.***

* This includes R&D in areas focused on sustainability of natural resources, environmental impact, animal and plant science, energy research, economic impact, sustainable development, mobility and engineering sciences.

Green R&D expenditure increased between 2016/17 and 2018/19, but decreased between 2019/20 and 2020/21, recovering somewhat in 2021/22.

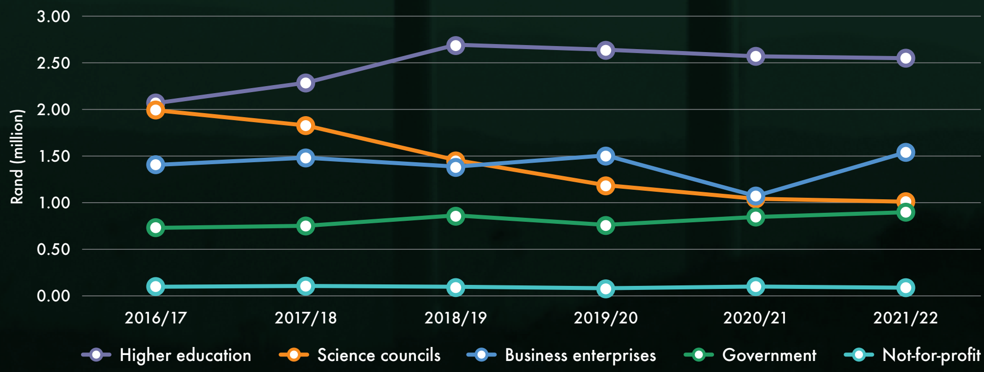
Green R&D expenditure (real terms), 2016/17 to 2021/22



GREEN R&D BY INSTITUTIONAL SECTOR

In the last six years, spending on green R&D remained static in the not-for-profit (NPO) sector, declined significantly in the science councils, grew marginally in the government and business sectors, and increased slightly in the higher education sector - from R2.1 million in 2016/17 to R2.6 million in 2021/22 (in real terms).

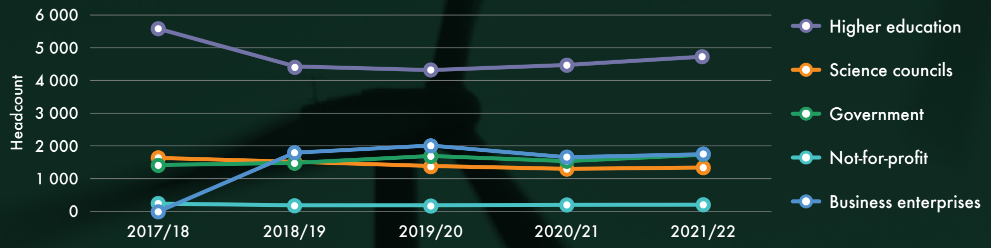
Green R&D expenditure by sector (real terms), 2016/17 to 2021/22



PERSONNEL IN GREEN R&D

In the last five years science councils, government and businesses consistently each had between 1 000 and 2 000 R&D personnel working on green R&D. Unsurprisingly, the higher education sector had the highest number of personnel (over 4 000) pursuing green R&D activities.

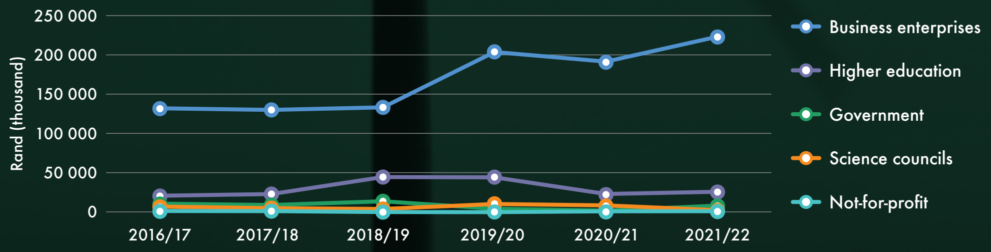
Personnel in green R&D by sector, 2017/18 to 2021/22



RENEWABLE AND NUCLEAR ENERGY R&D BY INSTITUTIONAL SECTOR

Spending on renewable and nuclear energy R&D is a small fraction of the total spend on green R&D, representing just over 4% of green R&D expenditure in 2021/22 (R263 581). The government, higher education, NPO and science council sectors collectively contributed just over R291 500 in real terms to renewable and nuclear energy R&D since 2016/17. Business enterprises spent almost 3.5 times more than these sectors combined between 2016/17 and 2021/22 (R1 012 813).

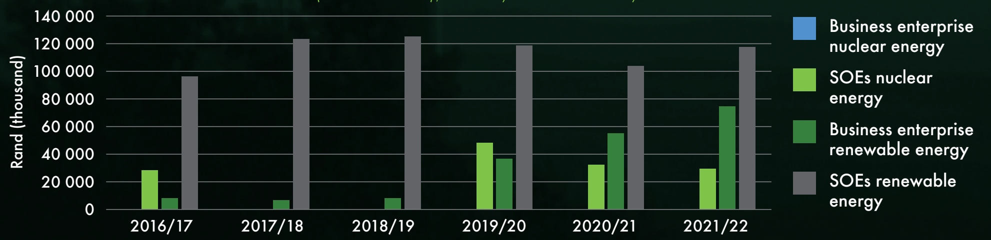
Renewable and nuclear energy R&D expenditure by sector (real terms), 2016/17 to 2021/22



RENEWABLE ENERGY R&D AND SOES

In the business enterprises sector, SOEs were the largest contributors to renewable energy research since 2016/17. Other businesses expenditure on renewable energy R&D was far less, but increased in 2019/20 to reach 63% of SOE's spend in 2021/22.

Disaggregation of business enterprise expenditure on renewable and nuclear energy R&D (real values), 2016/17 to 2021/22



BEHIND THE NUMBERS

The annual South African National Survey of Research and Experimental Development (R&D Survey) is conducted by the Centre for Science, Technology and Innovation Indicators (CeSTII) at the Human Sciences Research Council (HSRC), on behalf of the Department of Science and Innovation (DSI). R&D statistics are collected in terms of the Statistics Act No. 6 of 1999, and are quality-assured by Statistics South Africa. Data collected through the Survey, and its historic data series, helps to inform decision-makers on investment planning, policymaking, advocacy, and research in South Africa. Data also contributes to benchmarking and performance comparisons with international counterparts.

Access previous survey reports:
https://hsrc.ac.za/divisions/centre-for-science-technology-and-innovation-indicators/

Data analysis and publication prepared by
Darryn Whisgary and Jacqueline Borel-Saladin.

This fact sheet was produced by CeSTII in December 2024.
Copy editing: Katharine McKenzie
Design and layout: Tracey Watson

CONTACT US

Dr Glenda Kruss
(Executive Head)
021 466 8086
gkruss@hsrc.ac.za

Dr Nazeem Mustapha
(R&D Survey and Analysis Lead)
021 466 7887
nmustapha@hsrc.ac.za

Mr Darryn Whisgary
(Research Manager)
021 466 7818
dwhisgary@hsrc.ac.za

Dr Jacqueline Borel-Saladin
(Senior Research Specialist)
021 466 7832
jmborel-saladin@hsrc.ac.za

CONNECT WITH US