

Vote 35

Science and Innovation

Budget summary

R million	2020/21				2021/22	2022/23
	Total	Current payments	Transfers and subsidies	Payments for capital assets	Total	Total
MTEF allocation						
Administration	360.3	341.9	15.6	2.8	378.1	395.0
Technology Innovation	1 504.5	84.2	1 420.3	–	1 878.3	1 899.9
International Cooperation and Resources	156.4	81.8	74.6	–	163.3	169.3
Research, Development and Support	4 882.5	62.2	4 820.2	–	5 125.3	5 316.5
Socioeconomic Innovation Partnerships	1 893.7	62.3	1 831.4	–	1 832.9	1 900.8
Total expenditure estimates	8 797.4	632.5	8 162.2	2.8	9 377.8	9 681.5
Executive authority	Minister of Science and Innovation					
Accounting officer	Director-General of Science and Innovation					
Website	www.dst.gov.za					

The Estimates of National Expenditure e-publications for individual votes are available at www.treasury.gov.za. These publications provide more comprehensive coverage of vote-specific information, particularly about transfers and subsidies, personnel and other public institutions. Additional tables in Excel format can be found at www.treasury.gov.za and www.vulekamali.gov.za.

Vote purpose

Realise the full potential of science and technology in social and economic development by developing human resources, research and innovation.

Mandate

The Department of Science and Innovation derives its mandate from the 1996 White Paper on Science and Technology, which introduced the concept of the national system of innovation, a set of interacting organisations and policies through which South Africa creates, acquires, diffuses and puts into practice new knowledge to help achieve individual and collective goals. A coordinated and efficient national system of innovation will help the country achieve its national development priorities by promoting change through innovation, enabling all South Africans to enjoy the economic, sociopolitical and intellectual benefits of science, technology and innovation.

Selected performance indicators

Table 35.1 Performance indicators by programme and related priority

Indicator	Programme	MTSF priority	Past			Current	Projections		
			2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Number of instruments funded in support of knowledge utilisation per year	Technology Innovation		25	19	21	19	19	19	19
Number of commercial outputs in designated areas per year	Technology Innovation		8	5	7	8	8	8	8
Amount of funds invested by international partners in their own organisations and initiatives targeted at cooperation with South African partners in the areas of research, innovation, science, technology and innovation human capital development as part of cooperation initiatives implemented by the department per year	International Cooperation and Resources	Priority 1: Economic transformation and job creation	R1.3bn	R1.2bn	R3.3bn	R300m	R300m	R300m	R300m
Number of doctoral students awarded bursaries per year, as reflected in reports from the National Research Foundation and relevant entities	Research, Development and Support	Priority 2: Education, skills and health	3 454	3 621	3 380	3 100	3 100	2 000	2 300

Table 35.1 Performance indicators by programme and related priority

Indicator	Programme	MTSF priority	Past			Current	Projections		
			2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Number of pipeline postgraduate students (BTech, honours and masters students) awarded bursaries per year, as reflected in reports from the National Research Foundation and relevant entities	Research, Development and Support	Priority 2: Education, skills and health	10 996	10 601	9 774	10 800	9 300	6 200	5 100
Number of researchers awarded research grants per year through programmes managed by the National Research Foundation, as reflected in the foundation's project reports	Research, Development and Support		4 539	4 707	4 633	4 500	4 500	4 500	4 500
Number of knowledge and innovation products (patents, prototypes, technology demonstrators or technology transfer packages) added to the intellectual property portfolio through fully funded or co-funded research initiatives per year	Socioeconomic Innovation Partnerships	Priority 1: Economic transformation and job creation	36	38	42	50	50	50	50

Expenditure analysis

The National Development Plan identifies science, technology and innovation as primary drivers of economic growth, job creation and socioeconomic reform. Central to this identification is the emphasis of the 2019 White Paper on Science, Technology and Innovation on the themes of inclusivity, transformation and partnerships. The white paper is aimed at improving policy coherence, developing human capabilities, expanding knowledge, improving innovation performance and increasing investment. The work of the Department of Science and Innovation is pivotal in realising these goals, particularly the initiatives it champions for innovation in the challenging fields of energy, food security, poverty alleviation and health care.

The department plans to direct its allocation of R27.9 billion over the medium term towards investment in its key focus areas of developing human capital, generating and exploiting knowledge and innovation, and building and maintaining infrastructure for research and innovation. As the work of fostering, promoting and supporting innovation in scientific research and technology is conducted primarily by the department's entities, universities and non-profit organisations, transfers account for an estimated 92.6 per cent (R25.9 billion) of the department's total budget over the MTEF period. Overall expenditure is expected to increase at an average annual rate of 5.8 per cent, from R8.2 billion in 2019/20 to R9.7 billion in 2022/23. Compensation of employees is the second-largest spending item in the department, accounting for an estimated 4.8 per cent (R1.3 billion) of the total expenditure over the medium term, increasing at an average annual rate of 6.4 per cent mainly due to the expected filling of critical posts.

Cabinet has approved reductions to the department's baseline of R460.9 million over the medium term to be effected mainly on discretionary transfers and non-core goods and services. As such, these reductions are not expected to affect service delivery. An additional R1.2 billion over the medium term is allocated to set up the Sovereign Innovation Fund to ensure more effective technology commercialisation; R185 million to the Council for Scientific and Industrial Research to invest in infrastructure aimed at improving the efficiency and competitiveness of scientific research; and R100 million to the South African National Space Agency to invest in its space science programme. This allocation is expected to enable the agency to contribute to a range of national priorities, including job creation.

Developing high-end human capital

High-end, innovative human capital are key to the development of a globally competitive, expanded and transformed national system of innovation that is responsive to South Africa's developmental needs, in line with the imperatives articulated in the 2019 White Paper on Science, Technology and Innovation. Accordingly, R15.3 billion over the medium term is allocated to the *Research Development and Support* programme for the development of human capital through the provision of postgraduate bursaries and scholarships, internships, support for emerging and established researchers, and strategic instruments such as the South African Research Chairs Initiative. This expenditure is designed to attract and retain talent in research and innovation at South African public universities and centres of excellence, which act as hubs to tackle persistent and emerging

challenges in critical areas such as health, food security, human development, energy and biodiversity. To date, the department has established 239 research chairs and 14 centres of excellence. Included in the programme's allocation is a transfer of R6.3 billion over the medium term to the National Research Foundation. This transfer is aimed at awarding 20 600 bursaries to postgraduate (bachelor of technology, honours and masters) students and 7 400 bursaries to doctoral students, mainly in the fields of science, engineering and technology, as part of programmes to prepare them for work; and improving the foundation's infrastructure.

Generating and exploiting knowledge and innovation

In its efforts to generate and exploit knowledge and innovation that is in line with government's priorities for inclusive economic growth, the department plans to invest R5.8 billion over the medium term in the development of industry, particularly in high-potential fields such as aresospace, advanced manufacturing, chemicals, advanced metals, mining and ICT; the creation of instruments to increase the competitiveness of small, medium and micro enterprises (SMMEs); and youth, by fully funding and co-funding 1 454 masters and doctoral students, and 590 interns over the medium term. This expenditure is in the *Socioeconomic Innovation Partnerships* programme.

An estimated R3.4 billion of this amount, in the *Sector Innovation and Green Economy* subprogramme, is earmarked for advancing technology-based interventions intended to enhance South Africa's economic competitiveness and increase exports. The department will aim to do this by creating an environment in which government can effectively partner with industry to co-fund research, development and innovation. Of this R3.4 billion, R123.6 million is expected to be invested in a range of ICT initiatives such as artificial intelligence, nanotechnology, quantum computing and biotechnology. Activities related to advancing the development of a joint industry-government mining research and development hub will be funded through an allocation of R1.2 billion over the medium term in the *Innovation for Inclusive Development* subprogramme.

The department is set to receive an additional R1.2 billion over the medium term to set up the Sovereign Innovation Fund, which will seek to leverage co-investment by the public and private sectors to address gaps in technology commercialisation. The fund will be designed to complement and enhance existing funding instruments, and provide large-scale funding for the development and maturation of radical innovations and emerging industries. This expenditure is in the *Technology Innovation* programme.

Investing in infrastructure for research and innovation

The department's research infrastructure roadmap is intended to provide a strategic framework for planning, implementing, monitoring and evaluating the provision of research infrastructure necessary to create and maintain a competitive and sustainable national system of innovation. Accordingly, the department aims to improve the outcomes and quality of research by providing and increasing access to research equipment and facilities through an allocation of R3.4 billion over the medium term in the *Basic Science and Infrastructure* subprogramme. A significant portion of this investment is earmarked for the ongoing implementation of roadmap projects in the thematic areas of humans and society; health, biological and food security; earth and environment; materials and manufacturing; energy; and physical sciences and engineering.

The national integrated cyberinfrastructure system supports the successful and sustainable implementation of national projects such as the MeerKAT and the Square Kilometre Array, as well as large research infrastructure required for the processing and transmission of large amounts of data dependent on the presence of a robust cyberinfrastructure system. To complete the installation of receivers on the MeerKAT project; maintain the MeerKAT telescope and operations; expand the MeerKAT telescope; and continue with strategic interventions such as the Square Kilometre Array, the human capital development bursary programme, and science outreach and socioeconomic projects, the *Astronomy* subprogramme is allocated R2.6 billion over the MTEF period.

For scientific research in strategic research areas defined by South Africa's geographic advantage, such as palaeosciences, astronomy, climate change, indigenous knowledge, and marine and polar research, R782.5 million over the MTEF period is allocated to the *Science Missions* subprogramme.

Expenditure trends and estimates

Table 35.2 Vote expenditure trends and estimates by programme and economic classification

Programmes											
1. Administration											
2. Technology Innovation											
3. International Cooperation and Resources											
4. Research, Development and Support											
5. Socioeconomic Innovation Partnerships											
Programme	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expenditure/ Total (%)
	2016/17	2017/18	2018/19				2019/20	2020/21	2021/22		
R million	2016/17	2017/18	2018/19	2019/20	2016/17 - 2019/20	2019/20	2020/21	2021/22	2022/23	2019/20 - 2022/23	2019/20 - 2022/23
Programme 1	351.4	357.9	379.5	391.3	3.7%	4.8%	360.3	378.1	395.0	0.3%	4.2%
Programme 2	1 019.8	1 120.6	1 149.0	1 224.3	6.3%	14.5%	1 504.5	1 878.3	1 899.9	15.8%	18.1%
Programme 3	125.8	136.7	145.2	149.0	5.8%	1.8%	156.4	163.3	169.3	4.4%	1.8%
Programme 4	4 157.5	4 296.5	4 520.4	4 572.9	3.2%	56.5%	4 882.5	5 125.3	5 316.5	5.2%	55.2%
Programme 5	1 768.6	1 617.0	1 755.2	1 834.7	1.2%	22.4%	1 893.7	1 832.9	1 900.8	1.2%	20.7%
Total	7 423.2	7 528.6	7 949.3	8 172.3	3.3%	100.0%	8 797.4	9 377.8	9 681.5	5.8%	100.0%
Change to 2019 Budget estimate				(22.3)			151.2	450.6	422.4		
Economic classification											
Current payments	547.3	552.2	602.0	645.7	5.7%	7.6%	632.5	666.4	694.0	2.4%	7.3%
Compensation of employees	340.4	345.1	358.8	389.1	4.6%	4.6%	422.0	449.4	468.9	6.4%	4.8%
Goods and services ¹	206.9	207.1	243.2	256.6	7.4%	2.9%	210.5	217.1	225.1	-4.3%	2.5%
<i>of which:</i>											
Advertising	12.7	9.3	25.1	11.2	-4.1%	0.2%	13.3	13.8	14.3	8.3%	0.1%
Consultants: Business and advisory services	20.9	6.4	16.4	21.4	0.9%	0.2%	22.0	22.7	23.5	3.2%	0.2%
Agency and support/outsourced services	14.1	7.3	12.0	16.1	4.5%	0.2%	16.1	16.6	17.3	2.3%	0.2%
Property payments	10.5	12.9	11.8	61.2	80.2%	0.3%	14.2	14.7	15.2	-37.1%	0.3%
Travel and subsistence	77.2	67.2	65.9	59.4	-8.4%	0.9%	61.2	62.9	65.2	3.2%	0.7%
Venues and facilities	7.1	22.1	26.6	16.5	32.7%	0.2%	16.2	16.7	17.3	1.5%	0.2%
Transfers and subsidies¹	6 860.2	6 955.1	7 336.9	7 523.9	3.1%	92.3%	8 162.2	8 708.5	8 984.5	6.1%	92.6%
Departmental agencies and accounts	4 735.1	4 807.3	5 044.7	5 605.3	5.8%	65.0%	6 179.9	6 635.9	6 835.1	6.8%	70.1%
Higher education institutions	187.0	-	-	-	-100.0%	0.6%	-	-	-	0.0%	0.0%
Public corporations and private enterprises	1 778.9	1 683.5	1 809.3	1 541.9	-4.7%	21.9%	1 593.3	1 663.5	1 725.1	3.8%	18.1%
Non-profit institutions	157.7	462.5	481.4	376.1	33.6%	4.8%	389.0	409.1	424.3	4.1%	4.4%
Households	1.5	1.8	1.5	0.6	-27.4%	0.0%	-	-	-	-100.0%	0.0%
Payments for capital assets	15.5	21.1	10.3	2.8	-43.7%	0.2%	2.8	2.9	3.0	3.0%	0.0%
Machinery and equipment	15.5	21.1	10.3	2.8	-43.7%	0.2%	2.8	2.9	3.0	3.0%	0.0%
Payments for financial assets	0.1	0.2	0.1	-	-100.0%	0.0%	-	-	-	0.0%	0.0%
Total	7 423.2	7 528.6	7 949.3	8 172.3	3.3%	100.0%	8 797.4	9 377.8	9 681.5	5.8%	100.0%

Transfers and subsidies expenditure trends and estimates

Table 35.3 Vote transfers and subsidies trends and estimates

R thousand	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expenditure/ Total (%)
	2016/17	2017/18	2018/19				2019/20	2020/21	2021/22		
Departmental agencies and accounts											
Departmental agencies (non-business entities)											
Current	3 616 766	3 630 637	3 760 432	4 193 295	5.1%	53.0%	4 582 239	4 976 280	5 112 799	6.8%	56.5%
Various institutions: Institutional and programme support research	1 616	18	1 231	-	-100.0%	-	-	-	-	-	-
Various institutions: Technology transfer offices: Support of research units	687	41 439	2 073	-	-100.0%	0.2%	-	-	-	-	-
Various institutions: Implementation of bio-economy strategy	9 500	21 000	30 851	-	-100.0%	0.2%	-	-	-	-	-
Various institutions: Energy grand challenge research	22 316	16 000	-	40 946	22.4%	0.3%	42 913	45 105	46 775	4.5%	0.5%
Various institutions: Health innovation research	37 500	21 074	72 800	-	-100.0%	0.5%	-	-	-	-	-
Various institutions: Hydrogen strategy research	4 007	2 929	-	-	-100.0%	-	-	-	-	-	-

Table 35.3 Vote transfers and subsidies trends and estimates

R thousand	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expenditure/ Total (%)
	2016/17	2017/18	2018/19				2019/20	2020/21	2021/22		
Various institutions: Innovation projects research	10 000	15 044	-	19 453	24.8%	0.2%	241 376	544 876	546 547	204.0%	4.1%
National Research Foundation: Indigenous knowledge systems	-	1 574	-	-	-	-	-	-	-	-	-
Technology Innovation Agency	382 364	396 732	420 322	440 929	4.9%	5.7%	455 858	471 398	488 874	3.5%	5.6%
South African National Space Agency	154 630	131 226	138 036	143 464	-2.5%	2.0%	182 087	200 962	178 873	7.6%	2.1%
Various institutions: Emerging research areas	11 498	7 500	3 400	-	-100.0%	0.1%	-	-	-	-	-
National Research Foundation: Research and development in indigenous knowledge systems	-	-	9 650	5 144	-	0.1%	5 391	6 945	7 208	11.9%	0.1%
National Research Foundation: Bilateral cooperation for global science development	13 598	13 979	14 793	15 952	5.5%	0.2%	16 718	17 545	18 194	4.5%	0.2%
Various institutions: Global science: International multilateral agreements	28 088	27 857	9 532	-	-100.0%	0.2%	-	-	-	-	-
Various institutions: Global science: African multilateral agreements	2 900	3 300	5 200	-	-100.0%	-	-	-	-	-	-
Academy of Science of South Africa	-	25 261	25 668	26 983	-	0.3%	27 898	36 393	37 763	11.9%	0.4%
Various institutions: Astronomy research and development	14 069	29 348	30 639	32 789	32.6%	0.4%	34 364	42 298	43 896	10.2%	0.5%
Various institutions: Policy development on basic science development and support	10 283	26 012	25 619	28 896	41.1%	0.3%	30 284	38 470	39 928	11.4%	0.4%
National Research Foundation: Human resources development for science and engineering	832 662	744 590	851 898	950 582	4.5%	11.8%	993 972	1 034 442	1 072 693	4.1%	12.1%
National Research Foundation	882 805	925 965	904 752	943 385	2.2%	12.8%	966 097	1 013 066	1 050 694	3.7%	11.9%
Various institutions: Science awareness, research and initiatives to encourage youth participation in science	66 221	73 018	58 137	81 579	7.2%	1.0%	85 498	95 422	98 984	6.7%	1.1%
National Research Foundation: South African research chairs initiative to develop human resources in science	482 243	496 872	530 274	566 305	5.5%	7.2%	593 508	619 415	642 328	4.3%	7.3%
Various institutions: Strategic science platforms for research and development	181 819	180 626	188 883	220 176	6.6%	2.7%	230 753	244 870	253 948	4.9%	2.8%
Various institutions: Economic competitiveness and support package: Local manufacturing capacity research and technical support	-	-	-	80 000	-	0.3%	83 843	-	-	-100.0%	0.5%
Various institutions: Economic competitiveness and support package: Local systems of innovation for the cold chain technologies project	-	-	-	62 000	-	0.2%	64 978	-	-	-100.0%	0.4%
Various institutions: Advanced manufacturing technology strategy implementation	-	-	269	-	-	-	-	-	-	-	-
Various institutions: Innovative research and development	6 866	36 317	19 106	41 955	82.8%	0.4%	46 375	50 315	52 186	7.5%	0.6%
Human Sciences Research Council	290 149	304 656	303 733	324 155	3.8%	4.3%	324 585	337 262	349 772	2.6%	4.0%
Various institutions: Local manufacturing capacity research and technical support	70 739	21 172	57 544	28 689	-26.0%	0.6%	30 067	33 932	35 200	7.1%	0.4%
Various institutions: Local systems of innovation for the cold chain technologies project	64 000	11 560	-	11 793	-43.1%	0.3%	12 360	15 668	16 261	11.3%	0.2%
Various institutions: Resource-based industries research and development	1 000	-	-	-	-100.0%	-	-	-	-	-	-
National Research Foundation: Research information management system	7 201	3 781	4 000	8 448	5.5%	0.1%	8 854	11 614	12 055	12.6%	0.1%
Human Science Research Council: Develop and monitor science and technology indicators	-	3 172	9 984	12 404	-	0.1%	13 000	16 328	16 946	11.0%	0.2%
Various institutions: Environmental innovation	4 205	3 755	4 250	29 402	91.2%	0.1%	30 814	34 706	36 002	7.0%	0.4%
Various institutions: HIV and AIDS prevention and treatment technologies research	23 800	-	24 588	27 866	5.4%	0.3%	29 205	31 471	32 641	5.4%	0.4%
Various institutions: Space science research: Economic competitiveness and support package	-	44 860	13 200	50 000	-	0.4%	31 441	33 777	35 031	-11.2%	0.5%

Table 35.3 Vote transfers and subsidies trends and estimates

R thousand	Audited outcome			Adjusted appropriation 2019/20	Average growth rate (%) 2016/17 - 2019/20	Average: Expenditure/ Total (%) 2019/20	Medium-term expenditure estimate			Average growth rate (%) 2019/20 - 2022/23	Average: Expenditure/ Total (%) 2019/20 - 2022/23
	2016/17	2017/18	2018/19				2020/21	2021/22	2022/23		
Capital	1 079 949	1 137 597	1 243 198	1 389 989	8.8%	16.9%	1 574 599	1 640 275	1 702 173	7.0%	18.9%
Various institutions: Infrastructure projects for research and development	413 312	443 666	533 991	703 015	19.4%	7.3%	793 821	829 237	861 609	7.0%	9.5%
National Research Foundation: Square Kilometre Array: Capital contribution to research	666 637	693 931	709 207	686 974	1.0%	9.6%	780 778	811 038	840 564	7.0%	9.3%
Households											
Social benefits											
Current	693	1 133	851	555	-7.1%	-	-	-	-	-100.0%	-
Households	693	1 133	851	555	-7.1%	-	-	-	-	-100.0%	-
Households											
Other transfers to households											
Current	728	680	650	-	-100.0%	-	-	-	-	-	-
Households	528	280	650	-	-100.0%	-	-	-	-	-	-
Various institutions: Policy development on human and social development dynamics	200	-	-	-	-100.0%	-	-	-	-	-	-
National Research Foundation: Human resources development for science and engineering	-	400	-	-	-	-	-	-	-	-	-
Public corporations and private enterprises											
Other transfers to public corporations											
Current	517 831	373 836	432 372	346 399	-12.5%	5.8%	358 454	377 354	391 413	4.2%	4.4%
Households	-	-	-	-	-	-	-	-	-	-	-
Various institutions: Technology transfer offices: Support of research units	28 993	892	7 652	-	-100.0%	0.1%	-	-	-	-	-
Various institutions: Implementation of bio-economy strategy	76 620	9 399	6 000	-	-100.0%	0.3%	-	-	-	-	-
Various institutions: Energy grand challenge research	15 923	-	10 153	-	-100.0%	0.1%	-	-	-	-	-
Various institutions: Hydrogen strategy research	-	-	4 860	-	-	-	-	-	-	-	-
Various institutions: Innovation projects research	7 450	9 808	4 916	-	-100.0%	0.1%	-	-	-	-	-
National Research Foundation: Indigenous knowledge systems	6 150	2 664	1 500	-	-100.0%	-	-	-	-	-	-
Various institutions: Emerging research areas	-	77 860	67 800	112 672	-	0.9%	116 492	121 501	126 010	3.8%	1.4%
Various institutions: Global science: International multilateral agreements	2 115	1 680	4 400	-	-100.0%	-	-	-	-	-	-
Various institutions: Global science: African multilateral agreements	2 200	3 110	4 002	-	-100.0%	-	-	-	-	-	-
National Research Foundation: Human resources development for science and engineering: Economic competitiveness and support package	38 388	39 056	41 040	22 000	-16.9%	0.5%	23 057	19 374	20 103	-3.0%	0.3%
Various institutions: Science awareness	-	-	2 356	-	-	-	-	-	-	-	-
Various institutions: Strategic science platforms for research and development	4 610	5 215	6 355	-	-100.0%	0.1%	-	-	-	-	-
Various institutions: Advanced manufacturing technology strategy implementation	43 145	48 239	41 245	59 542	11.3%	0.7%	61 561	65 955	68 413	4.7%	0.8%
Various institutions: Innovative research and development	19 237	5 283	-	-	-100.0%	0.1%	-	-	-	-	-
Various institutions: Local manufacturing capacity research and technical support	141 925	65 172	48 320	-	-100.0%	0.9%	-	-	-	-	-
Council for Scientific and Industrial Research: Mining research and development	-	-	-	60 000	-	0.2%	62 034	66 874	69 366	5.0%	0.8%
Various institutions: Local systems of innovation for the cold chain technologies project	54 471	4 274	31 600	-	-100.0%	0.3%	-	-	-	-	-
Various institutions: Resource-based industries research and development	41 100	62 571	107 391	53 652	9.3%	0.9%	55 471	60 104	62 348	5.1%	0.7%
Various institutions: Environmental innovation	13 675	11 730	16 545	-	-100.0%	0.1%	-	-	-	-	-
Various institutions: Information and communications technology	21 829	26 883	26 237	38 533	20.9%	0.4%	39 839	43 546	45 173	5.4%	0.5%

Table 35.3 Vote transfers and subsidies trends and estimates

R thousand	Audited outcome			Adjusted appropriation 2019/20	Average growth rate (%) 2016/17 - 2019/20	Average: Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%) 2019/20 - 2022/23	Average: Expenditure/ Total (%)
	2016/17	2017/18	2018/19				2020/21	2021/22	2022/23		
Capital	424 380	413 273	440 991	251 686	-16.0%	5.3%	260 218	275 204	285 437	4.3%	3.2%
Council for Scientific and Industrial Research: Cyberinfrastructure research and development	214 546	413 273	236 339	251 686	5.5%	3.9%	260 218	275 204	285 437	4.3%	3.2%
Various institutions: Infrastructure projects for research and development	209 834	–	180 653	–	-100.0%	1.4%	–	–	–	–	–
Various institutions: Hydrogen strategy (capital)	–	–	23 999	–	–	0.1%	–	–	–	–	–
Higher education institutions											
Current	159 936	–	–	–	-100.0%	0.6%	–	–	–	–	–
Various institutions: Institutional and programme support research	6 000	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Biofuels	2 000	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Implementation of bio-economy strategy	995	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Energy grand challenge research	5 250	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Health innovation research	463	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Hydrogen strategy research	81 438	–	–	–	-100.0%	0.3%	–	–	–	–	–
Various institutions: Innovation projects research	2 004	–	–	–	-100.0%	–	–	–	–	–	–
International Centre for Genetic Engineering and Biotechnology	10 000	–	–	–	-100.0%	–	–	–	–	–	–
National Research Foundation: Indigenous knowledge systems	3 662	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Emerging research areas	14 500	–	–	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Global science: International multilateral agreements	8 332	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Global science: African multilateral agreements	200	–	–	–	-100.0%	–	–	–	–	–	–
National Research Foundation: Human resources development for science and engineering	3 024	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Science awareness	200	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Strategic science platforms for research and development	7 244	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Advanced manufacturing technology strategy implementation	330	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Innovative research and development	8 001	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Local manufacturing capacity research and technical support	1 974	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Local systems of innovation for the cold chain technologies project	4 319	–	–	–	-100.0%	–	–	–	–	–	–
Capital	27 079	–	–	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Infrastructure projects for research and development	27 079	–	–	–	-100.0%	0.1%	–	–	–	–	–
Non-profit institutions											
Current	146 426	310 830	327 324	301 188	27.2%	3.8%	311 726	327 871	340 169	4.1%	3.8%
Various institutions: Institutional and programme support research	9 170	16 642	11 567	15 086	18.1%	0.2%	15 594	15 894	16 484	3.0%	0.2%
Various institutions: Biofuels research	1 799	5 100	7 245	7 651	62.0%	0.1%	7 889	9 507	9 855	8.8%	0.1%
Various institutions: Implementation of the bio-economy strategy	11 556	21 138	891	41 651	53.3%	0.3%	42 944	45 222	46 839	4.0%	0.5%
Various institutions: Energy grand challenge research	700	16 677	26 895	–	-100.0%	0.2%	–	–	–	–	–
Various institutions: Health innovation research	300	20 599	2 597	82 840	551.2%	0.4%	52 749	55 860	57 861	-11.3%	0.7%
Various institutions: Hydrogen strategy research	–	30 581	35 347	42 458	–	0.4%	43 776	44 336	45 911	2.6%	0.5%
Various institutions: Innovation projects research	1 000	4 379	4 501	–	-100.0%	–	–	–	–	–	–

Table 35.3 Vote transfers and subsidies trends and estimates

R thousand	Audited outcome			Adjusted appropriation 2019/20	Average growth rate (%) 2016/17 - 2019/20	Average: Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%) 2019/20 - 2022/23	Average: Expenditure/ Total (%)
	2016/17	2017/18	2018/19				2020/21	2021/22	2022/23		
International Centre for Genetic Engineering and Biotechnology	22 186	17 000	31 249	14 295	-13.6%	0.3%	14 981	16 800	17 428	6.8%	0.2%
Various institutions: Space science research	-	3 595	5 299	-	-	-	-	-	-	-	-
Various institutions: Technology transfer offices: Support for research units	1 833	35 466	37 434	41 184	182.2%	0.4%	42 463	44 773	46 377	4.0%	0.5%
National Research Foundation: Indigenous knowledge systems	-	5 366	16 921	-	-	0.1%	-	-	-	-	-
South African Association of Science and Technology Centres: Technology top 100 awards	-	1 754	-	-	-	-	-	-	-	-	-
Various institutions: Emerging research areas	6 000	6 700	25 202	-	-100.0%	0.1%	-	-	-	-	-
Various institutions: Global science: International multilateral agreements	424	13 629	28 784	46 009	377.0%	0.3%	47 557	49 293	51 121	3.6%	0.6%
Various institutions: Global science: African multilateral agreements	2 950	649	186	10 014	50.3%	-	10 351	10 926	11 332	4.2%	0.1%
Academy of Science of South Africa	25 106	12 480	-	-	-100.0%	0.1%	-	-	-	-	-
Various institutions: Policy development on basic science development and support	-	-	1 780	-	-	-	-	-	-	-	-
National Research Foundation: Human resources development for science and engineering	6 042	49 611	4 568	-	-100.0%	0.2%	-	-	-	-	-
Various institutions: Science awareness	3 060	-	16 760	-	-100.0%	0.1%	-	-	-	-	-
National Research Foundation: Square Kilometre Array: Research and development	-	-	205	-	-	-	-	-	-	-	-
Various institutions: Strategic science platforms for research and development	3 311	-	11 051	-	-100.0%	0.1%	-	-	-	-	-
Various institutions: Advanced manufacturing technology strategy implementation	100	3 462	400	-	-100.0%	-	-	-	-	-	-
Various institutions: Innovative research and development	8 920	1 540	6 734	-	-100.0%	0.1%	-	-	-	-	-
Various institutions: Local manufacturing capacity research and technical support	-	5 241	-	-	-	-	-	-	-	-	-
Various institutions: Local systems of innovation for the cold chain technologies project	30 292	6 704	39 991	-	-100.0%	0.3%	-	-	-	-	-
Various institutions: Resource-based industries research and development	1 697	2 397	800	-	-100.0%	-	-	-	-	-	-
Various institutions: Environmental innovation	5 480	6 409	10 917	-	-100.0%	0.1%	-	-	-	-	-
Various institutions: Hydrogen strategy (capital)	-	23 711	-	-	-	0.1%	33 422	35 260	36 961	-	0.3%
Various institutions: Information and communications technology	4 500	-	-	-	-100.0%	-	-	-	-	-	-
Capital	11 301	151 714	154 043	74 945	87.9%	1.4%	77 272	81 199	84 103	3.9%	1.0%
Various institutions: Infrastructure projects for research and development	11 301	84 634	107 071	-	-100.0%	0.7%	-	-	-	-	-
Various institutions: Hydrogen strategy (capital)	-	67 080	46 972	74 945	-	0.7%	77 272	81 199	84 103	3.9%	1.0%
Public corporations and private enterprises											
Other transfers to private enterprises											
Current	3 044	19 765	13 847	-	-100.0%	0.1%	-	-	-	-	-
Various institutions: Institutional and programme support research	191	-	1 415	-	-100.0%	-	-	-	-	-	-
Various institutions: Technology transfer offices: Support of research units	-	-	605	-	-	-	-	-	-	-	-
Various institutions: Health innovation research	2 853	2 467	300	-	-100.0%	-	-	-	-	-	-
Various institutions: Global science: International multilateral agreements	-	-	378	-	-	-	-	-	-	-	-

Table 35.3 Vote transfers and subsidies trends and estimates

R thousand	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expenditure/ Total (%)
	2016/17	2017/18	2018/19				2019/20	2020/21	2021/22		
Various institutions: Advanced manufacturing technology strategy implementation	–	1 462	10 748	–	–	–	–	–	–	–	–
Various institutions: Local manufacturing capacity research and technical support	–	7 808	–	–	–	–	–	–	–	–	–
Various institutions: Local systems of innovation for the cold chain technologies project	–	–	401	–	–	–	–	–	–	–	–
Various institutions: Resource-based industries research and development	–	8 028	–	–	–	–	–	–	–	–	–
Public corporations and private enterprises											
Subsidies on products and production (pc)											
Current	872 043	915 645	963 164	965 823	3.5%	13.0%	997 650	1 030 343	1 068 393	3.4%	12.2%
Council for Scientific and Industrial Research	872 043	915 645	963 164	965 823	3.5%	13.0%	997 650	1 030 343	1 068 393	3.4%	12.2%
Total	6 860 176	6 955 110	7 336 872	7 523 880	3.1%	100.0%	8 162 158	8 708 526	8 984 487	6.1%	100.0%

Personnel information

Table 35.4 Vote personnel numbers and cost by salary level and programme¹

Number of posts estimated for 31 March 2020		Number and cost ² of personnel posts filled/planned for on funded establishment										Number							
Number of funded posts	Number of posts additional to the establishment	Actual		Revised estimate		Medium-term expenditure estimate						Average growth rate (%)	Average: Salary level/Total (%)						
		2018/19	2019/20	2020/21		2021/22		2022/23		2019/20 - 2022/23									
		Number	Cost	Unit cost	Number	Cost	Unit cost	Number	Cost	Unit cost	Number	Cost	Unit cost						
Science and Innovation																			
Salary level	509	2	508	360.9	0.7	526	388.9	0.7	539	421.8	0.8	538	449.1	0.8	527	468.8	0.9	0.1%	100.0%
1 – 6	65	1	61	16.2	0.3	64	18.0	0.3	70	21.0	0.3	70	22.2	0.3	66	22.5	0.3	1.0%	12.7%
7 – 10	141	1	149	64.9	0.4	163	75.2	0.5	167	82.4	0.5	165	87.2	0.5	160	88.8	0.6	-0.6%	30.8%
11 – 12	175	–	173	137.7	0.8	171	144.4	0.8	172	154.5	0.9	173	165.4	1.0	172	174.6	1.0	0.2%	32.3%
13 – 16	128	–	123	136.8	1.1	126	145.2	1.2	128	157.4	1.2	128	167.4	1.3	127	175.7	1.4	0.3%	23.9%
Other	–	–	2	5.3	2.6	2	6.1	3.0	2	6.4	3.2	2	6.8	3.4	2	7.3	3.6	–	0.4%
Programme	509	2	508	360.9	0.7	526	388.9	0.7	539	421.8	0.8	538	449.1	0.8	527	468.8	0.9	0.1%	100.0%
Programme 1	240	2	216	179.7	0.8	207	182.6	0.9	216	200.1	0.9	217	213.4	1.0	210	224.1	1.1	0.5%	39.9%
Programme 2	61	–	53	45.4	0.9	65	56.7	0.9	66	60.9	0.9	65	65.1	1.0	63	67.6	1.1	-1.0%	12.2%
Programme 3	91	–	69	53.4	0.8	79	58.5	0.7	79	62.7	0.8	77	65.9	0.9	75	68.3	0.9	-1.7%	14.6%
Programme 4	55	–	49	37.9	0.8	52	42.4	0.8	54	45.8	0.8	55	49.1	0.9	54	50.7	0.9	1.3%	10.1%
Programme 5	62	–	52	44.5	0.9	54	48.6	0.9	55	52.3	1.0	55	55.6	1.0	56	58.0	1.0	1.2%	10.3%
Other	–	–	69	–	–	69	–	–	69	–	–	69	–	–	69	–	–	–	13.0%

1. Data has been provided by the department and may not necessarily reconcile with official government personnel data.

2. Rand million.

Departmental receipts

Table 35.5 Departmental receipts by economic classification

R thousand	Audited outcome			Adjusted estimate	Revised estimate	Average growth rate (%)	Average: Receipt item/ Total (%)	Medium-term receipts estimate			Average growth rate (%)	Average: Receipt item/ Total (%)
	2016/17	2017/18	2018/19					2019/20	2020/21	2021/22		
Departmental receipts	8 199	10 298	32 749	20 081	20 081	34.8%	100.0%	545	560	565	-69.6%	100.0%
Sales of goods and services produced by department	57	60	64	66	66	5.0%	0.3%	35	40	45	-12.0%	0.9%
Other sales	57	60	64	66	66	5.0%	0.3%	35	40	45	-12.0%	0.9%
of which:												
Services rendered:	57	60	64	66	66	5.0%	0.3%	35	40	45	-12.0%	0.9%
Commission on insurance.												
Interest, dividends and rent on land	9	34	27	15	15	18.6%	0.1%	10	20	20	10.1%	0.3%
Interest	9	34	27	15	15	18.6%	0.1%	10	20	20	10.1%	0.3%
Sales of capital assets	45	430	217	–	–	-100.0%	1.0%	–	–	–	–	–
Transactions in financial assets and liabilities	8 088	9 774	32 441	20 000	20 000	35.2%	98.6%	500	500	500	-70.8%	98.8%
Total	8 199	10 298	32 749	20 081	20 081	34.8%	100.0%	545	560	565	-69.6%	100.0%

Programme 1: Administration

Programme purpose

Provide strategic leadership, management and support services to the department.

Expenditure trends and estimates

Table 35.6 Administration expenditure trends and estimates by subprogramme and economic classification

Subprogramme	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average Expenditure/ Total (%)
	2016/17	2017/18	2018/19				2019/20	2020/21	2021/22		
R million											
Ministry	8.4	8.3	8.9	8.1	-1.2%	2.3%	5.9	6.1	6.3	-8.1%	1.7%
Institutional Planning and Support	186.4	196.5	201.4	185.1	-0.2%	52.0%	185.9	198.1	208.3	4.0%	51.0%
Corporate Services	152.1	145.6	167.0	145.1	-1.6%	41.2%	162.9	168.2	174.4	6.3%	42.7%
Office Accommodation	4.4	7.5	2.2	53.0	129.6%	4.5%	5.6	5.8	6.0	-51.6%	4.6%
Total	351.4	357.9	379.5	391.3	3.7%	100.0%	360.3	378.1	395.0	0.3%	100.0%
Change to 2019 Budget estimate				11.0			17.4	18.2	21.6		
Economic classification											
Current payments	318.2	319.2	354.6	372.9	5.4%	92.2%	341.9	359.4	375.5	0.2%	95.1%
Compensation of employees	166.4	167.5	179.7	182.6	3.2%	47.0%	200.4	213.5	224.3	7.1%	53.8%
Goods and services ¹	151.8	151.7	174.8	190.3	7.8%	45.2%	141.6	145.8	151.2	-7.4%	41.2%
<i>of which:</i>											
Advertising	12.0	8.2	23.6	10.1	-5.7%	3.6%	12.1	12.5	13.0	8.8%	3.1%
Consultants: Business and advisory services	15.0	2.6	7.3	15.4	0.8%	2.7%	15.7	16.2	16.8	2.9%	4.2%
Agency and support/outsourced services	7.3	4.7	7.7	7.6	1.6%	1.8%	7.2	7.4	7.7	0.1%	2.0%
Property payments	10.5	12.7	11.6	60.3	79.3%	6.4%	13.3	13.7	14.2	-38.2%	6.7%
Travel and subsistence	48.0	33.0	33.8	34.8	-10.1%	10.1%	36.3	37.2	38.6	3.5%	9.6%
Operating payments	8.8	8.9	6.2	6.5	-9.3%	2.1%	6.8	7.0	7.3	3.5%	1.8%
Transfers and subsidies¹	17.6	17.5	14.6	15.6	-3.9%	4.4%	15.6	15.9	16.5	1.8%	4.2%
Departmental agencies and accounts	1.6	0.0	1.2	-	-100.0%	0.2%	-	-	-	-	-
Higher education institutions	6.0	-	-	-	-100.0%	0.4%	-	-	-	-	-
Public corporations and private enterprises	0.2	-	1.4	-	-100.0%	0.1%	-	-	-	-	-
Non-profit institutions	9.2	16.6	11.6	15.1	18.1%	3.5%	15.6	15.9	16.5	3.0%	4.1%
Households	0.6	0.9	0.4	0.6	-3.9%	0.2%	-	-	-	-100.0%	-
Economic classification											
Payments for capital assets	15.5	21.1	10.2	2.8	-43.7%	3.3%	2.8	2.9	3.0	3.0%	0.7%
Machinery and equipment	15.5	21.1	10.2	2.8	-43.7%	3.3%	2.8	2.9	3.0	3.0%	0.7%
Payments for financial assets	0.1	0.1	0.1	-	-100.0%	-	-	-	-	-	-
Total	351.4	357.9	379.5	391.3	3.7%	100.0%	360.3	378.1	395.0	0.3%	100.0%
Proportion of total programme expenditure to vote expenditure	4.7%	4.8%	4.8%	4.8%	-	-	4.1%	4.0%	4.1%	-	-
Details of selected transfers and subsidies											
Non-profit institutions											
Current	9.2	16.6	11.6	15.1	18.1%	3.5%	15.6	15.9	16.5	3.0%	4.1%
Various institutions: Institutional and programme support research	9.2	16.6	11.6	15.1	18.1%	3.5%	15.6	15.9	16.5	3.0%	4.1%
Higher education institutions											
Current	6.0	-	-	-	-100.0%	0.4%	-	-	-	-	-
Various institutions: Institutional and programme support research	6.0	-	-	-	-100.0%	0.4%	-	-	-	-	-

1. Estimates of National Expenditure data tables can be downloaded from www.treasury.gov.za. These tables contain detailed information by goods and services, and transfers and subsidies items by programme.

Programme 2: Technology Innovation

Programme purpose

Enable research and development in space science and technology, energy security and the bioeconomy, and in the emerging and converging areas of nanotechnology, robotics, photonics and indigenous knowledge systems, to promote the realisation of commercial products, processes and services. Promote the protection and utilisation of intellectual property, technology transfer and technology commercialisation through the implementation of enabling policies and interventions along the entire innovation value chain.

Objectives

- Facilitate and resource strategic investments in space science and technology, energy, the bio-economy, nanotechnology, robotics, photonics, indigenous knowledge systems, intellectual property management, technology transfer and technology commercialisation by 31 March 2023, by:
 - funding and/or maintaining 57 instruments to support the use of knowledge
 - generating 365 knowledge products (including peer-reviewed scientific articles published in scientific publications, and the filing of applications for or the registration/granting of intellectual property rights)
 - developing and approving 11 science, technology and innovation strategic policy directives to enhance understanding and analyses that support the implementation of relevant interventions
 - developing and/or maintaining 8 decision support interventions to improve the delivery of government services or functions
 - providing recommendations for all genetically modified organism permit applications received to support decision-making by government.
- Oversee, monitor and regulate key policy initiatives in the strategic areas of space science and technology, energy, bio-innovation, nanotechnology, robotics and photonics by 31 March 2023 by overseeing 615 new disclosures reported by publicly funded institutions.

Subprogrammes

- Space Science* supports the creation of an environment conducive to the implementation of the national space strategy and South African earth observation strategy, and that addresses the development of innovative applications and human capital to respond to national priorities and support socioeconomic development.
- Hydrogen and Energy* provides policy leadership in research, development and innovation initiatives in the energy sector. This subprogramme plays a key role in developing a sustainable and globally competitive South African energy knowledge base and industry.
- Bio-innovation* leads the implementation of the national bio-economy strategy.
- Innovation Priorities and Instruments* supports and strengthens the innovation policy package aimed at creating and sustaining an enabling environment for innovation, technology and development, and the commercialisation of publicly funded research and development initiatives.
- National Intellectual Property Management Office* is the implementing agency established to provide for the more effective use of intellectual property emanating from publicly financed research and development.
- Office of the Deputy Director-General: Technology Innovation* provides management and administrative support to the programme and the office of the deputy director-general.

Expenditure trends and estimates

Table 35.7 Technology Innovation expenditure trends and estimates by subprogramme and economic classification

Subprogramme	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expenditure/ Total (%)
	2016/17	2017/18	2018/19				2019/20	2020/21	2021/22		
R million											
Space Science	167.8	191.8	170.1	209.4	7.7%	16.4%	230.1	252.2	232.1	3.5%	14.2%
Hydrogen and Energy	143.6	147.5	164.8	178.5	7.5%	14.1%	185.2	194.5	201.5	4.1%	11.7%
Bio-innovation	220.2	161.9	215.3	193.3	-4.3%	17.5%	201.2	215.3	223.5	5.0%	12.8%
Innovation Priorities and Instruments	442.0	526.8	531.4	585.4	9.8%	46.2%	826.9	1 151.9	1 176.0	26.2%	57.5%
National Intellectual Property Management Office	42.2	88.2	62.1	53.6	8.3%	5.5%	55.8	59.1	61.3	4.5%	3.5%
Office of the Deputy Director-General: Technology Innovation	3.9	4.4	5.2	4.2	2.0%	0.4%	5.3	5.3	5.5	9.9%	0.3%
Total	1 019.8	1 120.6	1 149.0	1 224.3	6.3%	100.0%	1 504.5	1 878.3	1 899.9	15.8%	100.0%
Change to 2019 Budget estimate				-			211.3	523.2	494.5		

Table 35.7 Technology Innovation expenditure trends and estimates by subprogramme and economic classification

Economic classification	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average Expenditure/ Total (%)
	2016/17	2017/18	2018/19				2019/20	2016/17 - 2019/20	2020/21		
R million											
Current payments	59.6	58.8	65.6	78.8	9.8%	5.8%	84.2	89.3	92.6	5.5%	5.3%
Compensation of employees	45.8	45.0	45.4	56.7	7.4%	4.3%	60.9	65.2	67.6	6.0%	3.8%
Goods and services ¹	13.8	13.8	20.1	22.1	17.0%	1.5%	23.4	24.1	25.0	4.3%	1.5%
<i>of which:</i>											
Communication	1.0	0.8	0.7	1.1	1.7%	0.1%	1.1	1.1	1.2	3.8%	0.1%
Consultants: Business and advisory services	2.1	1.2	5.2	1.7	-7.5%	0.2%	1.8	1.9	2.0	5.7%	0.1%
Agency and support/outourced services	0.2	0.5	0.8	6.6	215.0%	0.2%	6.9	7.2	7.4	4.0%	0.4%
Entertainment	0.0	0.0	0.0	3.4	419.1%	0.1%	3.5	3.7	3.8	4.1%	0.2%
Travel and subsistence	7.4	8.4	10.6	5.3	-10.7%	0.7%	5.5	5.6	5.8	3.5%	0.3%
Venues and facilities	2.0	1.9	1.1	2.3	5.2%	0.2%	2.6	2.6	2.7	6.2%	0.2%
Transfers and subsidies¹	960.2	1 061.7	1 083.4	1 145.5	6.1%	94.2%	1 420.3	1 789.0	1 807.3	16.4%	94.7%
Departmental agencies and accounts	656.3	699.4	714.9	727.8	3.5%	62.0%	988.3	1 334.5	1 335.9	22.4%	67.4%
Higher education institutions	120.3	-	-	-	-100.0%	2.7%	-	-	-	-	-
Public corporations and private enterprises	138.0	103.1	127.8	112.7	-6.5%	10.7%	116.5	121.5	126.0	3.8%	7.3%
Non-profit institutions	45.4	259.1	240.6	305.0	88.7%	18.8%	315.5	333.0	345.3	4.2%	20.0%
Households	0.2	0.1	0.1	-	-100.0%	-	-	-	-	-	-
Payments for capital assets	0.0	-	-	-	-100.0%	-	-	-	-	-	-
Machinery and equipment	0.0	-	-	-	-100.0%	-	-	-	-	-	-
Payments for financial assets	-	0.1	0.0	-	-	-	-	-	-	-	-
Total	1 019.8	1 120.6	1 149.0	1 224.3	6.3%	100.0%	1 504.5	1 878.3	1 899.9	15.8%	100.0%
Proportion of total programme expenditure to vote expenditure	13.7%	14.9%	14.5%	15.0%	-	-	17.1%	20.0%	19.6%	-	-
Details of selected transfers and subsidies											
Departmental agencies and accounts											
Departmental agencies (non-business entities)											
Current	656.3	699.4	714.9	727.8	3.5%	62.0%	988.3	1 334.5	1 335.9	22.4%	67.4%
Various institutions: Technology transfer offices: Support of research units	0.7	41.4	2.1	-	-100.0%	1.0%	-	-	-	-	-
Various institutions: Implementation of bio-economy strategy	9.5	21.0	30.9	-	-100.0%	1.4%	-	-	-	-	-
Various institutions: Energy grand challenge research	22.3	16.0	-	40.9	22.4%	1.8%	42.9	45.1	46.8	4.5%	2.7%
Various institutions: Health innovation research	37.5	21.1	72.8	-	-100.0%	2.9%	-	-	-	-	-
Various institutions: Hydrogen strategy research	4.0	2.9	-	-	-100.0%	0.2%	-	-	-	-	-
Various institutions: Innovation projects research	10.0	15.0	-	19.5	24.8%	1.0%	241.4	544.9	546.5	204.0%	20.8%
National Research Foundation: Indigenous knowledge systems	-	1.6	-	-	-	-	-	-	-	-	-
Technology Innovation Agency	382.4	396.7	420.3	440.9	4.9%	36.3%	455.9	471.4	488.9	3.5%	28.5%
South African National Space Agency	154.6	131.2	138.0	143.5	-2.5%	12.6%	182.1	201.0	178.9	7.6%	10.8%
Various institutions: Emerging research areas	11.5	7.5	3.4	-	-100.0%	0.5%	-	-	-	-	-
National Research Foundation: Research and development in indigenous knowledge systems	-	-	9.7	5.1	-	0.3%	5.4	6.9	7.2	11.9%	0.4%
Various institutions: HIV and AIDS prevention and treatment technologies research	23.8	-	24.6	27.9	5.4%	1.7%	29.2	31.5	32.6	5.4%	1.9%
Various institutions: Space science research: Economic competitiveness and support package	-	44.9	13.2	50.0	-	2.4%	31.4	33.8	35.0	-11.2%	2.3%
Public corporations and private enterprises											
Public corporations											
Other transfers to public corporations											
Current	135.1	100.6	102.9	112.7	-5.9%	10.0%	116.5	121.5	126.0	3.8%	7.3%
Various institutions: Technology transfer offices: Support of research units	29.0	0.9	7.7	-	-100.0%	0.8%	-	-	-	-	-
Various institutions: Implementation of bio-economy strategy	76.6	9.4	6.0	-	-100.0%	2.0%	-	-	-	-	-
Various institutions: Energy grand challenge research	15.9	-	10.2	-	-100.0%	0.6%	-	-	-	-	-
Various institutions: Hydrogen strategy research	-	-	4.9	-	-	0.1%	-	-	-	-	-
Various institutions: Innovation projects research	7.5	9.8	4.9	-	-100.0%	0.5%	-	-	-	-	-
National Research Foundation: Indigenous knowledge systems	6.2	2.7	1.5	-	-100.0%	0.2%	-	-	-	-	-
Various institutions: Emerging research areas	-	77.9	67.8	112.7	-	5.7%	116.5	121.5	126.0	3.8%	7.3%
Capital	-	-	24.0	-	-	0.5%	-	-	-	-	-
Various institutions: Hydrogen strategy (capital)	-	-	24.0	-	-	0.5%	-	-	-	-	-
Public corporations and private enterprises											
Private enterprises											
Other transfers to private enterprises											
Current	2.9	2.5	0.3	-	-100.0%	0.1%	-	-	-	-	-
Various institutions: Health innovation research	2.9	2.5	0.3	-	-100.0%	0.1%	-	-	-	-	-
Non-profit institutions											
Current	45.4	192.1	193.6	230.1	71.8%	14.6%	238.2	251.8	261.2	4.3%	15.1%
Various institutions: Biofuels research	1.8	5.1	7.2	7.7	62.0%	0.5%	7.9	9.5	9.9	8.8%	0.5%
Various institutions: Implementation of the bio-economy strategy	11.6	21.1	0.9	41.7	53.3%	1.7%	42.9	45.2	46.8	4.0%	2.7%

Table 35.7 Technology Innovation expenditure trends and estimates by subprogramme and economic classification

Subprogramme	Audited outcome			Adjusted appropriation 2019/20	Average growth rate (%) 2016/17 - 2019/20	Average Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%) 2019/20 - 2022/23	Average Expenditure/ Total (%)
	2016/17	2017/18	2018/19				2020/21	2021/22	2022/23		
R million											
Various institutions: Energy grand challenge research	0.7	16.7	26.9	–	-100.0%	1.0%	–	–	–	–	–
Various institutions: Health innovation research	0.3	20.6	2.6	82.8	551.2%	2.4%	52.7	55.9	57.9	-11.3%	3.8%
Various institutions: Hydrogen strategy research	–	30.6	35.3	42.5	–	2.4%	43.8	44.3	45.9	2.6%	2.7%
Various institutions: Innovation projects research	1.0	4.4	4.5	–	-100.0%	0.2%	–	–	–	–	–
International Centre for Genetic Engineering and Biotechnology	22.2	17.0	31.2	14.3	-13.6%	1.9%	15.0	16.8	17.4	6.8%	1.0%
Various institutions: Space science research	–	3.6	5.3	–	–	0.2%	–	–	–	–	–
Various institutions: Technology transfer offices: Support for research units	1.8	35.5	37.4	41.2	182.2%	2.6%	42.5	44.8	46.4	4.0%	2.7%
National Research Foundation: Indigenous knowledge systems	–	5.4	16.9	–	–	0.5%	–	–	–	–	–
South African Association of Science and Technology Centres: Technology top 100 awards	–	1.8	–	–	–	–	–	–	–	–	–
Various institutions: Emerging research areas	6.0	6.7	25.2	–	-100.0%	0.8%	–	–	–	–	–
Various institutions: Hydrogen strategy (capital)	–	23.7	–	–	–	0.5%	33.4	35.3	37.0	–	1.6%
Capital	–	67.1	47.0	74.9	–	4.2%	77.3	81.2	84.1	3.9%	4.9%
Various institutions: Hydrogen strategy (capital)	–	67.1	47.0	74.9	–	4.2%	77.3	81.2	84.1	3.9%	4.9%
Higher education institutions											
Current	118.9	–	–	–	-100.0%	2.6%	–	–	–	–	–
Various institutions: Biofuels	2.0	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Energy grand challenge research	5.3	–	–	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Hydrogen strategy research	81.4	–	–	–	-100.0%	1.8%	–	–	–	–	–
Various institutions: Innovation projects research	2.0	–	–	–	-100.0%	–	–	–	–	–	–
International Centre for Genetic Engineering and Biotechnology	10.0	–	–	–	-100.0%	0.2%	–	–	–	–	–
National Research Foundation: Indigenous knowledge systems	3.7	–	–	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Emerging research areas	14.5	–	–	–	-100.0%	0.3%	–	–	–	–	–

1. Estimates of National Expenditure data tables can be downloaded from www.treasury.gov.za. These tables contain detailed information by goods and services, and transfers and subsidies items by programme.

Programme 3: International Cooperation and Resources

Programme purpose

Strategically develop, promote and manage international partnerships that strengthen the national system of innovation. Enable an exchange of knowledge, capacity and resources between South Africa and its international partners, with a focus on building capacity to support science, technology and innovation in Africa. Support South African foreign policy through science diplomacy.

Objectives

- Complement South Africa's national investments in science, technology and innovation, including access to resources for departmental initiatives that require external investment, by securing international funding of R900 million over the medium term.
- Enhance South Africa's national science, technology and innovation capabilities to contribute to the attainment of the department's targets for human capital development by accessing international knowledge and resources through securing the participation of 2 090 South African researchers in international postgraduate training programmes by 31 March 2023.
- Build capacity in and support initiatives for the Southern African Development Community (SADC) and African Union (AU) to advance Africa's growth and development agenda by strengthening cooperation in science, technology and innovation through providing technical and financial support for 67 approved SADC and AU science, technology and innovation initiatives and programmes by 31 March 2023.
- Support South Africa's foreign policy objectives of creating a better Africa and world by maximising the country's strategic interests in international science, technology and innovation cooperation through interventions that ensure South Africa occupies 12 new leadership positions in international science, technology and innovation governance structures by 31 March 2023.

Subprogrammes

- *Multilateral Cooperation and Africa* advances and facilitates South Africa's participation in bilateral science, technology and innovation cooperation initiatives with other African partners; in African multilateral programmes, especially those of the SADC and AU; and in broader multilateral science, technology and innovation partnerships, with a strategic focus on South-South cooperation.
- *International Resources* works to increase the flow of international funding into South African science, technology and innovation initiatives, as well as African regional and continental programmes, through concerted efforts to promote foreign investment and the fostering of strategic relations with partners such as the European Union, as well as foundations and philanthropic organisations and the multinational private sector.
- *Overseas Bilateral Cooperation* promotes and facilitates South Africa's cooperation in bilateral science, technology and innovation agreements with partners in Europe, the Americas, Asia and Australasia, especially for human capital development and collaborative research and innovation; and secures support for joint cooperation with other African partners.
- *Office of the Deputy Director-General: International Cooperation and Resources* provides management and administrative support to the programme and the office of the deputy director-general.

Expenditure trends and estimates

Table 35.8 International Cooperation and Resources expenditure trends and estimates by subprogramme and economic classification

Subprogramme	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average Expenditure/ Total (%)
	2016/17	2017/18	2018/19				2019/20	2020/21	2021/22		
R million											
Multilateral Cooperation and Africa	30.4	31.4	36.1	32.7	2.5%	23.5%	34.7	35.8	37.2	4.3%	22.0%
International Resources	54.2	61.5	61.9	66.9	7.3%	43.9%	70.0	73.1	75.8	4.3%	44.8%
Overseas Bilateral Cooperation	33.9	37.8	41.9	43.8	9.0%	28.3%	46.1	48.6	50.4	4.8%	29.6%
Office of the Deputy Director-General: International Cooperation and Resources	7.4	6.1	5.3	5.6	-8.7%	4.4%	5.7	5.7	5.9	1.9%	3.6%
Total	125.8	136.7	145.2	149.0	5.8%	100.0%	156.4	163.3	169.3	4.4%	100.0%
Change to 2019 Budget estimate				-			(1.7)	(1.8)	(1.8)		
Economic classification											
Current payments	64.9	72.5	77.0	77.0	5.9%	52.3%	81.8	85.5	88.7	4.8%	52.2%
Compensation of employees	48.9	51.0	51.8	58.5	6.1%	37.8%	62.7	65.8	68.3	5.3%	40.0%
Goods and services ¹	16.1	21.4	25.2	18.6	5.0%	14.6%	19.1	19.7	20.4	3.2%	12.2%
<i>of which:</i>											
Communication	1.4	1.1	1.3	1.6	6.3%	1.0%	1.7	1.8	1.8	4.0%	1.1%
Agency and support/outsourced services	0.1	0.5	-	0.7	72.7%	0.3%	0.8	0.8	0.8	4.2%	0.5%
Entertainment	0.2	0.7	0.2	0.9	58.9%	0.3%	0.9	1.0	1.0	4.1%	0.6%
Travel and subsistence	10.4	14.4	10.7	7.5	-10.5%	7.7%	7.4	7.6	7.9	1.7%	4.7%
Operating payments	0.4	0.8	0.5	1.3	48.8%	0.5%	1.4	1.4	1.5	4.0%	0.9%
Venues and facilities	1.3	1.4	7.9	3.9	44.6%	2.6%	4.1	4.2	4.4	4.2%	2.6%
Transfers and subsidies¹	60.9	64.2	68.2	72.0	5.7%	47.6%	74.6	77.8	80.6	3.9%	47.8%
Departmental agencies and accounts	44.6	45.1	29.5	16.0	-29.0%	24.3%	16.7	17.5	18.2	4.5%	10.7%
Higher education institutions	8.5	-	-	-	-100.0%	1.5%	-	-	-	-	-
Public corporations and private enterprises	4.3	4.8	8.8	-	-100.0%	3.2%	-	-	-	-	-
Non-profit institutions	3.4	14.3	29.0	56.0	155.1%	18.4%	57.9	60.2	62.5	3.7%	37.1%
Households	0.1	0.0	0.9	-	-100.0%	0.2%	-	-	-	-	-
Payments for capital assets	-	-	0.0	-	-	-	-	-	-	-	-
Machinery and equipment	-	-	0.0	-	-	-	-	-	-	-	-
Payments for financial assets	-	0.0	-	-	-	-	-	-	-	-	-
Total	125.8	136.7	145.2	149.0	5.8%	100.0%	156.4	163.3	169.3	4.4%	100.0%
Proportion of total programme expenditure to vote expenditure	1.7%	1.8%	1.8%	1.8%	-	-	1.8%	1.7%	1.7%	-	-
Details of selected transfers and subsidies											
Departmental agencies and accounts											
Departmental agencies (non-business entities)											
Current	44.6	45.1	29.5	16.0	-29.0%	24.3%	16.7	17.5	18.2	4.5%	10.7%
National Research Foundation: Bilateral cooperation for global science development	13.6	14.0	14.8	16.0	5.5%	10.5%	16.7	17.5	18.2	4.5%	10.7%
Various institutions: Global science: International multilateral agreements	28.1	27.9	9.5	-	-100.0%	11.8%	-	-	-	-	-
Various institutions: Global science: African multilateral agreements	2.9	3.3	5.2	-	-100.0%	2.0%	-	-	-	-	-

Table 35.8 International Cooperation and Resources expenditure trends and estimates by subprogramme and economic classification

Details of transfers and subsidies		Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expenditure/ Total (%)
		2016/17	2017/18	2018/19				2019/20	2020/21	2021/22		
R million												
Public corporations and private enterprises												
Public corporations												
Other transfers to public corporations												
Current	4.3	4.8	8.4	–	-100.0%	3.1%	–	–	–	–	–	–
Various institutions: Global science: International multilateral agreements	2.1	1.7	4.4	–	-100.0%	1.5%	–	–	–	–	–	–
Various institutions: Global science: African multilateral agreements	2.2	3.1	4.0	–	-100.0%	1.7%	–	–	–	–	–	–
Non-profit institutions												
Current	3.4	14.3	29.0	56.0	155.1%	18.4%	57.9	60.2	62.5	3.7%	37.1%	
Various institutions: Global science: International multilateral agreements	0.4	13.6	28.8	46.0	377.0%	16.0%	47.6	49.3	51.1	3.6%	30.4%	
Various institutions: Global science: African multilateral agreements	3.0	0.6	0.2	10.0	50.3%	2.5%	10.4	10.9	11.3	4.2%	6.7%	
Higher education institutions												
Current	8.3	–	–	–	-100.0%	1.5%	–	–	–	–	–	–
Various institutions: Global science: International multilateral agreements	8.3	–	–	–	-100.0%	1.5%	–	–	–	–	–	–

1. Estimates of National Expenditure data tables can be downloaded from www.treasury.gov.za. These tables contain detailed information by goods and services, and transfers and subsidies items by programme.

Programme 4: Research, Development and Support

Programme purpose

Provide an enabling environment for research and knowledge production that promotes the strategic development of basic sciences and priority science areas through the promotion of science human capital development, and the provision of research infrastructure and relevant research support, in pursuit of South Africa's transition to a knowledge economy.

Objectives

- Contribute to the development of representative, high-level human capital able to pursue locally relevant, globally competitive research and innovation activities over the medium term by:
 - awarding 7 400 bursaries to doctoral students
 - awarding 20 600 bursaries to pipeline postgraduate (bachelor of technology, honours and masters) students
 - placing 2 250 graduates and students in work preparation programmes funded by the department in science, engineering and technology institutions.
- Ensure the availability of and access to internationally comparable research and innovation infrastructure in order to generate new knowledge and train new researchers by:
 - increasing the number of research infrastructure grants awarded from 25 in 2020/21 to 30 in 2022/23
 - increasing the total available broadband capacity provided by the South African National Research Network from 5 800 Gbps in 2020/21 to 7 000 Gbps in 2022/23.
- Support and promote research that develops basic sciences through the production of new knowledge and relevant training opportunities over the medium term by:
 - maintaining the number of researchers awarded research grants through programmes managed by the National Research Foundation at no fewer than 13 500
 - maintaining the number of research articles published by researchers funded by the National Research Foundation and cited in the Web of Science database at 21 000.
- Develop strategic priority science areas in which South Africa enjoys a competitive advantage by promoting internationally competitive research and training activities and outputs by:
 - installing 64 S-band science mode receivers on the MeerKAT telescope in 2020/21, approving the production plan for L-band receivers for 20 additional MeerKAT antennas by 2021/22, and completing the

production of L-band receivers for the additional 20 MeerKAT antennas by 2022/23

- obtaining approval from the minister for regulations pertaining to the Indigenous Knowledge Act (2019) by 2020/21; launching the registration of indigenous knowledge through the national recordal system, to store indigenous knowledge for the benefit of South African communities, by 2021/22; and supporting and protecting the intellectual property of indigenous communities by 2022/23
- promoting citizen engagement with science over the medium term through 15 initiatives or projects, including the South African Public Relationship with Science survey, that promote the development of a scientifically literate society able to form independent opinions about science.

Subprogrammes

- *Human Capital and Science Promotions* formulates and implements policies and strategies that address the availability of human capital for science, technology and innovation; provide fundamental support for research activities; and contribute to the development of a society that is knowledgeable about science, critically engaged and scientifically literate.
- *Science Missions* promotes the development of research, the production of scientific knowledge, and the development of human capital in fields of science in which South Africa enjoys a geographic advantage.
- *Basic Science and Infrastructure* facilitates the strategic implementation of research and innovation equipment and facilities to promote knowledge production in areas of national priority, and sustain innovation led by research and development.
- *Astronomy* supports the development of astronomical sciences around a new multiwavelength astronomy strategy, and provides strategic guidance and support to relevant astronomy institutions in the implementation of strategic astronomy programmes.
- *Office of the Deputy Director-General: Research, Development and Support* provides management and administrative support to the programme and the office of the deputy director-general.

Expenditure trends and estimates

Table 35.9 Research, Development and Support expenditure trends and estimates by subprogramme and economic classification

Subprogramme	Audited outcome			Adjusted appropriation	Average growth rate (%)		Medium-term expenditure estimate			Average growth rate (%)	
	2016/17	2017/18	2018/19		2019/20	2016/17 - 2019/20	2020/21	2021/22	2022/23	2019/20 - 2022/23	Average: Expenditure/ Total (%)
R million											
Human Capital and Science Promotions	2 354.6	2 379.6	2 447.2	2 608.7	3.5%	55.8%	2 707.9	2 837.0	2 942.2	4.1%	55.8%
Science Missions	213.1	201.7	223.3	235.5	3.4%	5.0%	247.4	262.7	272.4	5.0%	5.1%
Basic Science and Infrastructure	895.5	977.5	1 095.3	993.5	3.5%	22.6%	1 094.9	1 154.3	1 198.7	6.5%	22.3%
Astronomy	689.5	733.2	750.8	731.9	2.0%	16.6%	827.7	866.8	898.4	7.1%	16.7%
Office of the Deputy Director-General: Research, Development and Support	4.9	4.5	3.8	3.4	-11.9%	0.1%	4.5	4.7	4.8	12.9%	0.1%
Total	4 157.5	4 296.5	4 520.4	4 572.9	3.2%	100.0%	4 882.5	5 125.3	5 316.5	5.2%	100.0%
Change to 2019 Budget estimate				-			(18.4)	(30.1)	(30.5)		
Economic classification											
Current payments	53.2	52.0	53.2	58.6	3.2%	1.2%	62.2	66.1	68.6	5.4%	1.3%
Compensation of employees	38.3	38.8	37.9	42.6	3.6%	0.9%	45.8	49.0	50.8	6.0%	0.9%
Goods and services ¹	14.9	13.3	15.3	15.9	2.2%	0.3%	16.4	17.1	17.7	3.6%	0.3%
of which:											
Administrative fees	0.3	0.3	0.5	0.7	27.4%	-	0.7	0.8	0.8	7.3%	-
Communication	0.7	0.5	0.6	0.8	3.2%	-	0.8	0.8	0.9	4.0%	-
Consultants: Business and advisory services	2.3	1.1	1.3	1.3	-17.9%	-	1.3	1.4	1.4	4.2%	-
Agency and support/outsourced services	0.8	0.2	0.7	1.0	5.5%	-	1.0	1.1	1.1	5.3%	-
Travel and subsistence	8.4	8.0	8.5	8.2	-0.8%	0.2%	8.3	8.6	8.9	2.7%	0.2%
Venues and facilities	1.0	0.7	1.8	2.3	29.6%	-	2.4	2.5	2.5	4.1%	-

Table 35.9 Research, Development and Support expenditure trends and estimates by subprogramme and economic classification

Economic classification	Audited outcome			Adjusted appropriation	Average growth rate (%)		Medium-term expenditure estimate			Average growth rate (%)	Average Expenditure/ Total (%)
	2016/17	2017/18	2018/19		2019/20	2016/17 - 2019/20	2020/21	2021/22	2022/23		
R million											
Transfers and subsidies¹	4 104.3	4 244.4	4 467.3	4 514.4	3.2%	98.8%	4 820.2	5 059.2	5 247.9	5.1%	98.7%
Departmental agencies and accounts	3 588.4	3 678.3	3 900.1	4 262.7	5.9%	87.9%	4 560.0	4 784.0	4 962.5	5.2%	93.3%
Higher education institutions	37.5	–	–	–	-100.0%	0.2%	–	–	–	–	–
Public corporations and private enterprises	429.0	418.5	425.7	251.7	-16.3%	8.7%	260.2	275.2	285.4	4.3%	5.4%
Non-profit institutions	48.8	146.7	141.4	–	-100.0%	1.9%	–	–	–	–	–
Households	0.5	0.8	0.0	–	-100.0%	–	–	–	–	–	–
Payments for capital assets	–	–	0.0	–	–	–	–	–	–	–	–
Machinery and equipment	–	–	0.0	–	–	–	–	–	–	–	–
Payments for financial assets	0.0	0.1	0.0	–	-100.0%	–	–	–	–	–	–
Total	4 157.5	4 296.5	4 520.4	4 572.9	3.2%	100.0%	4 882.5	5 125.3	5 316.5	5.2%	100.0%
Proportion of total programme expenditure to vote expenditure	56.0%	57.1%	56.9%	56.0%	–	–	55.5%	54.7%	54.9%	–	–
Details of selected transfers and subsidies											
Departmental agencies and accounts											
Departmental agencies (non-business entities)											
Current	2 470.1	2 501.7	2 615.9	2 850.7	4.9%	59.5%	2 962.4	3 124.4	3 240.2	4.4%	61.2%
Academy of Science of South Africa	–	25.3	25.7	27.0	–	0.4%	27.9	36.4	37.8	11.9%	0.6%
Various institutions: Astronomy research and development	14.1	29.3	30.6	32.8	32.6%	0.6%	34.4	42.3	43.9	10.2%	0.8%
Various institutions: Policy development on basic science development and support	10.3	26.0	25.6	28.9	41.1%	0.5%	30.3	38.5	39.9	11.4%	0.7%
National Research Foundation: Human resources development for science and engineering	832.7	744.6	851.9	950.6	4.5%	19.3%	994.0	1 034.4	1 072.7	4.1%	20.4%
National Research Foundation	882.8	926.0	904.8	943.4	2.2%	20.8%	966.1	1 013.1	1 050.7	3.7%	20.0%
Various institutions: Science awareness, research and initiatives to encourage youth participation in science	66.2	73.0	58.1	81.6	7.2%	1.6%	85.5	95.4	99.0	6.7%	1.8%
National Research Foundation: South African research chairs initiative to develop human resources in science	482.2	496.9	530.3	566.3	5.5%	11.8%	593.5	619.4	642.3	4.3%	12.2%
Various institutions: Strategic science platforms for research and development	181.8	180.6	188.9	220.2	6.6%	4.4%	230.8	244.9	253.9	4.9%	4.8%
Capital	1 079.9	1 137.6	1 243.2	1 390.0	8.8%	27.6%	1 574.6	1 640.3	1 702.2	7.0%	31.7%
Various institutions: Infrastructure projects for research and development	413.3	443.7	534.0	703.0	19.4%	11.9%	793.8	829.2	861.6	7.0%	16.0%
National Research Foundation: Square Kilometre Array: Capital contribution to research	666.6	693.9	709.2	687.0	1.0%	15.7%	780.8	811.0	840.6	7.0%	15.7%
Public corporations and private enterprises											
Public corporations											
Other transfers to public corporations	43.0	44.3	49.8	22.0	-20.0%	0.9%	23.1	19.4	20.1	-3.0%	0.4%
National Research Foundation: Human resources development for science and engineering: Economic competitiveness and support package	38.4	39.1	41.0	22.0	-16.9%	0.8%	23.1	19.4	20.1	-3.0%	0.4%
Various institutions: Science awareness	–	–	2.4	–	–	–	–	–	–	–	–
Various institutions: Strategic science platforms for research and development	4.6	5.2	6.4	–	-100.0%	0.1%	–	–	–	–	–
Capital	424.4	413.3	417.0	251.7	-16.0%	8.6%	260.2	275.2	285.4	4.3%	5.4%
Council for Scientific and Industrial Research: Cyberinfrastructure research and development	214.5	413.3	236.3	251.7	5.5%	6.4%	260.2	275.2	285.4	4.3%	5.4%
Various institutions: Infrastructure projects for research and development	209.8	–	180.7	–	-100.0%	2.2%	–	–	–	–	–
Non-profit institutions											
Current	37.5	62.1	34.2	–	-100.0%	0.8%	–	–	–	–	–
Academy of Science of South Africa	25.1	12.5	–	–	-100.0%	0.2%	–	–	–	–	–
Various institutions: Policy development on basic science development and support	–	–	1.8	–	–	–	–	–	–	–	–
National Research Foundation: Human resources development for science and engineering	6.0	49.6	4.6	–	-100.0%	0.3%	–	–	–	–	–
Various institutions: Science awareness	3.1	–	16.8	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Strategic science platforms for research and development	3.3	–	11.1	–	-100.0%	0.1%	–	–	–	–	–
Capital	11.3	84.6	107.1	–	-100.0%	1.2%	–	–	–	–	–
Various institutions: Infrastructure projects for research and development	11.3	84.6	107.1	–	-100.0%	1.2%	–	–	–	–	–

Table 35.9 Research, Development and Support expenditure trends and estimates by subprogramme and economic classification

Details of selected transfers and subsidies	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expenditure/ Total (%)
	2016/17	2017/18	2018/19				2019/20	2020/21	2021/22		
R million											
Higher education institutions											
Current	10.3	–	–	–	-100.0%	0.1%	–	–	–	–	–
National Research Foundation: Human resources development for science and engineering	3.0	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Strategic science platforms for research and development	7.2	–	–	–	-100.0%	–	–	–	–	–	–
Capital	27.1	–	–	–	-100.0%	0.2%	–	–	–	–	–
Various institutions: Infrastructure projects for research and development	27.1	–	–	–	-100.0%	0.2%	–	–	–	–	–

1. Estimates of National Expenditure data tables can be downloaded from www.treasury.gov.za. These tables contain detailed information by goods and services, and transfers and subsidies items by programme.

Programme 5: Socioeconomic Innovation Partnerships

Programme purpose

Enhance government's growth and development priority areas through targeted science and technology-based innovation interventions, and the development of strategic partnerships with other government departments, industry, research institutions and communities.

Objectives

- Inform and influence how science and technology can be used to achieve inclusive development through knowledge, evidence and learning over the medium term by:
 - publishing 26 knowledge products on innovation for inclusive development
 - maintaining and improving 10 decision support systems
 - generating 45 learning interventions.
- Identify, grow and sustain niche, high-potential science, technology and innovation capabilities for sustainable development and the greening of society and the economy by fully funding and co-funding 375 honours, masters and doctoral students, and adding 22 knowledge and innovation products to the intellectual property portfolio over the medium term.
- Identify, grow and sustain niche, high-potential science, technology and innovation capabilities that improve the competitiveness of existing industries with growth potential in aerospace, advanced manufacturing, chemicals, advanced metals, mining, ICT and sector innovation funds; and facilitate the development of new targeted industries over the medium term by:
 - fully funding or co-funding 1 454 masters and doctoral students, and 590 interns
 - adding 137 new knowledge and innovation products to the intellectual property portfolio
 - funding 9 instruments in support of increased localisation and competitiveness.
- Strengthen provincial and rural innovation and production systems through analysis and catalytic interventions over the medium term by funding or co-funding 12 interventions that strengthen provincial or rural innovation systems.
- Enhance understanding and analysis that support improvements in the functioning and performance of the national system of innovation through executive committee approval by publishing 29 reports and policy briefings on the national system of innovation and innovation policy over the medium term.
- Introduce and manage interventions and incentive programmes that increase the level of private sector investment in scientific or technological research and development by providing pre-approval decisions for the research and development tax incentive within 90 days of the date of receipt of applications over the medium term.

Subprogrammes

- *Sector Innovation and Green Economy* provides policy, strategy and direction for research and the development-led growth of strategic sectors of the economy; and supports the transition to a green economy.
- *Innovation for Inclusive Development* supports the development of science and technology-based innovations for tackling poverty, including the creation of sustainable jobs and human settlements, and the enhanced delivery of basic services.
- *Science and Technology Investment* leads and supports the development of indicators and instruments for monitoring investments in science and technology, the performance of the national system of innovation, and ways of strengthening policy in relation to the national system of innovation.
- *Technology Localisation, Beneficiation and Advanced Manufacturing* funds technology and innovation development programmes to advance strategic, sustainable economic growth for the medium and long term; sector development priorities; and service delivery.
- *Office of the Deputy Director-General: Socioeconomic Innovation Partnerships* provides management and administrative support to the programme and the office of the deputy director-general.

Expenditure trends and estimates

Table 35.10 Socioeconomic Innovation Partnerships expenditure trends and estimates by subprogramme and economic classification

Subprogramme	Audited outcome			Adjusted appropriation	Average growth rate (%)		Medium-term expenditure estimate			Average growth rate (%)	Average Expenditure/ Total (%)
	2016/17	2017/18	2018/19		2019/20	2016/17 - 2019/20	2020/21	2021/22	2022/23		
R million											
Sector Innovation and Green Economy	1 016.8	985.3	1 102.9	1 046.0	0.9%	59.5%	1 081.2	1 122.6	1 164.1	3.6%	59.2%
Innovation for Inclusive Development	344.4	356.7	340.0	378.1	3.2%	20.3%	383.8	401.3	416.2	3.3%	21.2%
Science and Technology Investment	22.2	22.2	29.9	34.9	16.4%	1.6%	37.0	44.0	45.6	9.3%	2.2%
Technology Localisation, Beneficiation and Advanced Manufacturing	380.6	248.4	278.5	372.3	-0.7%	18.3%	388.1	261.4	271.1	-10.0%	17.3%
Office of the DDG: Socio-Economic Innovation Partnership	4.6	4.4	4.0	3.5	-9.1%	0.2%	3.5	3.6	3.8	3.0%	0.2%
Total	1 768.6	1 617.0	1 755.2	1 834.7	1.2%	100.0%	1 893.7	1 832.9	1 900.8	1.2%	100.0%
Change to 2019 Budget estimate				10.3			(34.5)	(35.0)	(36.5)		
Economic classification											
Current payments	51.3	49.7	51.7	58.3	4.4%	3.0%	62.3	66.2	68.7	5.6%	3.4%
Compensation of employees	41.0	42.9	44.0	48.6	5.9%	2.5%	52.2	55.9	57.9	6.0%	2.9%
Goods and services ¹	10.3	6.9	7.7	9.7	-2.1%	0.5%	10.0	10.4	10.8	3.4%	0.5%
of which:											
Advertising	0.0	0.0	–	0.2	259.3%	–	0.2	0.3	0.3	4.1%	–
Catering: Departmental activities	0.1	0.0	0.0	0.3	66.3%	–	0.3	0.4	0.4	4.0%	–
Communication	0.8	0.6	0.7	1.2	13.3%	–	1.2	1.3	1.3	4.1%	0.1%
Consultants: Business and advisory services	0.4	0.4	0.7	2.8	92.5%	0.1%	2.8	2.9	3.0	2.4%	0.2%
Travel and subsistence	3.1	3.4	2.3	3.7	5.9%	0.2%	3.8	3.9	4.1	3.7%	0.2%
Venues and facilities	0.0	0.1	0.0	0.9	206.2%	–	0.9	1.0	1.0	4.1%	0.1%
Transfers and subsidies¹	1 717.3	1 567.3	1 703.5	1 776.4	1.1%	97.0%	1 831.4	1 766.6	1 832.1	1.0%	96.6%
Departmental agencies and accounts	444.2	384.4	398.9	598.8	10.5%	26.2%	614.9	499.8	518.4	-4.7%	29.9%
Higher education institutions	14.6	–	–	–	-100.0%	0.2%	–	–	–	–	–
Public corporations and private enterprises	1 207.4	1 157.1	1 245.7	1 177.6	-0.8%	68.6%	1 216.6	1 266.8	1 313.7	3.7%	66.7%
Non-profit institutions	51.0	25.8	58.8	–	-100.0%	1.9%	–	–	–	–	–
Households	0.1	0.0	0.1	–	-100.0%	–	–	–	–	–	–
Payments for financial assets	–	0.0	0.0	–	–	–	–	–	–	–	–
Total	1 768.6	1 617.0	1 755.2	1 834.7	1.2%	100.0%	1 893.7	1 832.9	1 900.8	1.2%	100.0%
Proportion of total programme expenditure to vote expenditure	23.8%	21.5%	22.1%	22.5%	–	–	21.5%	19.5%	19.6%	–	–

Table 35.10 Socioeconomic Innovation Partnerships expenditure trends and estimates by subprogramme and economic classification

Details of selected transfers and subsidies	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expenditure/ Total (%)		
	2016/17	2017/18	2018/19				2019/20	2020/21	2021/22			2022/23	2019/20 - 2022/23
	R million												
Departmental agencies and accounts													
Departmental agencies (non-business entities)													
Current	443.2	384.4	398.6	598.8	10.6%	26.2%	614.9	499.8	518.4	-4.7%	29.9%		
Various institutions: Economic competitiveness and support package: Local manufacturing capacity research and technical support	–	–	–	80.0	–	1.1%	83.8	–	–	-100.0%	2.2%		
Various institutions: Economic competitiveness and support package: Local systems of innovation for the cold chain technologies project	–	–	–	62.0	–	0.9%	65.0	–	–	-100.0%	1.7%		
Various institutions: Innovative research and development	6.9	36.3	19.1	42.0	82.8%	1.5%	46.4	50.3	52.2	7.5%	2.6%		
Human Sciences Research Council	290.1	304.7	303.7	324.2	3.8%	17.5%	324.6	337.3	349.8	2.6%	17.9%		
Various institutions: Local manufacturing capacity research and technical support	70.7	21.2	57.5	28.7	-26.0%	2.6%	30.1	33.9	35.2	7.1%	1.7%		
Various institutions: Local systems of innovation for the cold chain technologies project	64.0	11.6	–	11.8	-43.1%	1.3%	12.4	15.7	16.3	11.3%	0.8%		
National Research Foundation: Research information management system	7.2	3.8	4.0	8.4	5.5%	0.3%	8.9	11.6	12.1	12.6%	0.5%		
Human Science Research Council: Develop and monitor science and technology indicators	–	3.2	10.0	12.4	–	0.4%	13.0	16.3	16.9	11.0%	0.8%		
Various institutions: Environmental innovation	4.2	3.8	4.3	29.4	91.2%	0.6%	30.8	34.7	36.0	7.0%	1.8%		
Public corporations and private enterprises													
Public corporations													
Other transfers to public corporations													
Current	335.4	224.2	271.3	211.7	-14.2%	14.9%	218.9	236.5	245.3	5.0%	12.2%		
Various institutions: Advanced manufacturing technology strategy implementation	43.1	48.2	41.2	59.5	11.3%	2.8%	61.6	66.0	68.4	4.7%	3.4%		
Various institutions: Innovative research and development	19.2	5.3	–	–	-100.0%	0.4%	–	–	–	–	–		
Various institutions: Local manufacturing capacity research and technical support	141.9	65.2	48.3	–	-100.0%	3.7%	–	–	–	–	–		
Council for Scientific and Industrial Research: Mining research and development	–	–	–	60.0	–	0.9%	62.0	66.9	69.4	5.0%	3.5%		
Various institutions: Local systems of innovation for the cold chain technologies project	54.5	4.3	31.6	–	-100.0%	1.3%	–	–	–	–	–		
Various institutions: Resource-based industries research and development	41.1	62.6	107.4	53.7	9.3%	3.8%	55.5	60.1	62.3	5.1%	3.1%		
Various institutions: Environmental innovation	13.7	11.7	16.5	–	-100.0%	0.6%	–	–	–	–	–		
Various institutions: Information and communications technology	21.8	26.9	26.2	38.5	20.9%	1.6%	39.8	43.5	45.2	5.4%	2.2%		
Public corporations and private enterprises													
Private enterprises													
Other transfers to private enterprises													
Current	–	17.3	10.7	–	–	0.4%	–	–	–	–	–		
Various institutions: Advanced manufacturing technology strategy implementation	–	1.5	10.7	–	–	0.2%	–	–	–	–	–		
Various institutions: Local manufacturing capacity research and technical support	–	7.8	–	–	–	0.1%	–	–	–	–	–		
Various institutions: Resource-based industries research and development	–	8.0	–	–	–	0.1%	–	–	–	–	–		
Public corporations and private enterprises													
Public corporations													
Public corporations (subsidies on products and production)													
Current	872.0	915.6	963.2	965.8	3.5%	53.3%	997.7	1 030.3	1 068.4	3.4%	54.4%		
Council for Scientific and Industrial Research	872.0	915.6	963.2	965.8	3.5%	53.3%	997.7	1 030.3	1 068.4	3.4%	54.4%		

Table 35.10 Socioeconomic Innovation Partnerships expenditure trends and estimates by subprogramme and economic classification

Details of selected transfers and subsidies	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expenditure/ Total (%)	
	2016/17	2017/18	2018/19				2019/20	2020/21	2021/22			2022/23
	R million							2019/20 - 2022/23				
Non-profit institutions												
Current	51.0	25.8	58.8	–	-100.0%	1.9%	–	–	–	–	–	
Various institutions: Advanced manufacturing technology strategy implementation	0.1	3.5	0.4	–	-100.0%	0.1%	–	–	–	–	–	
Various institutions: Innovative research and development	8.9	1.5	6.7	–	-100.0%	0.2%	–	–	–	–	–	
Various institutions: Local manufacturing capacity research and technical support	–	5.2	–	–	–	0.1%	–	–	–	–	–	
Various institutions: Local systems of innovation for the cold chain technologies project	30.3	6.7	40.0	–	-100.0%	1.1%	–	–	–	–	–	
Various institutions: Resource-based industries research and development	1.7	2.4	0.8	–	-100.0%	0.1%	–	–	–	–	–	
Various institutions: Environmental innovation	5.5	6.4	10.9	–	-100.0%	0.3%	–	–	–	–	–	
Various institutions: Information and communications technology	4.5	–	–	–	-100.0%	0.1%	–	–	–	–	–	
Higher education institutions												
Current	14.3	–	–	–	-100.0%	0.2%	–	–	–	–	–	
Various institutions: Innovative research and development	8.0	–	–	–	-100.0%	0.1%	–	–	–	–	–	
Various institutions: Local manufacturing capacity research and technical support	2.0	–	–	–	-100.0%	–	–	–	–	–	–	
Various institutions: Local systems of innovation for the cold chain technologies project	4.3	–	–	–	-100.0%	0.1%	–	–	–	–	–	

1. Estimates of National Expenditure data tables can be downloaded from www.treasury.gov.za. These tables contain detailed information by goods and services, and transfers and subsidies items by programme.

Entities

Council for Scientific and Industrial Research

Selected performance indicators

Table 35.11 Council for Scientific and Industrial Research performance indicators by programme/objective/activity and related priority

Indicator	Programme/Objective/Activity	MTSF priority	Past			Current	Projections		
			2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Number of journal articles published per year	Council for Scientific and Industrial Research science, engineering and technology operating units and centres	Priority 2: Education, skills and health	300	317	319	300	310	310	315
Number of conference papers delivered per year	Council for Scientific and Industrial Research science, engineering and technology operating units and centres		290	325	335	330	335	336	338
Number of new technology demonstrators per year	Council for Scientific and Industrial Research science, engineering and technology operating units and centres	Priority 1: Economic transformation and job creation	40	60	50	66	67	69	70
Amount of contract research and development income per year	Council for Scientific and Industrial Research science, engineering and technology operating units and centres		R1.9bn	R1.8bn	R1.7bn	R2.2bn	R2.3bn	R2.4bn	R2.5bn
Number of science, engineering and technology staff per year	Council for Scientific and Industrial Research science, engineering and technology operating units and centres	Priority 2: Education, skills and health	1 966	1 850	1 860	1 619	1 651	1 684	1 690

Table 35.11 Council for Scientific and Industrial Research performance indicators by programme/objective/activity and related priority

Indicator	Programme/Objective/Activity	MTSF priority	Past			Current	Projections		
			2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Percentage of black science, engineering and technology staff per year	Council for Scientific and Industrial Research science, engineering and technology operating units and centres	Priority 2: Education, skills and health	66% (1 808/ 2 740)	68% (1 780/ 2 618)	62% (1 452/ 2 342)	62%	63%	64%	66%
Number of science, engineering and technology staff with doctorates per year	Council for Scientific and Industrial Research science, engineering and technology operating units and centres		351	339	313	356	357	360	364
Number of new patents granted per year	Council for Scientific and Industrial Research science, engineering and technology operating units and centres		15	13	22	13	14	15	17

Entity overview

The Council for Scientific and Industrial Research was established in 1945 and is governed in terms of the Scientific Research Council Act (1988). The council fosters industrial and scientific development in the national interest through multidisciplinary research and technological innovation to improve the ability of the state to efficiently deliver basic services, in fields such as health, education, social security, energy and shelter, to all South Africans, and in so doing, reduce inequality. Over the medium term, the council will focus on conducting high-quality and relevant research, pursuing technological innovation to foster industrial and scientific development, and building on industrial development opportunities in fields such as pharmaceutical innovation and agro-processing.

The council's ability to generate revenue directly relates to its ability to attract and retain the requisite expertise to deliver favourable research outcomes. Competitive remuneration is a vital enabling factor for the retention of critical skills. As such, spending on compensation of employees accounts for an estimated 56.6 per cent of the council's total expenditure over the medium term, increasing at an average annual rate of 6.8 per cent, from R1.7 billion in 2019/20 to R2.1 billion in 2022/23. To retain a high calibre of staff, the council also offers non-monetary employee benefits, such as training and exchange programmes, to strengthen its value proposition.

Transfers from the department of R2.4 billion over the medium term account for an estimated 23.7 per cent of the council's total revenue over the period. Included in this amount is an allocation of R185 million for investment in infrastructure to improve the efficiency and competitiveness of scientific research. The council generates the remainder of its revenue through services rendered, such as contract research and development, income from intellectual property, proceeds from technology transfer, and royalties. Total revenue over the MTEF period is expected to be R10.4 billion.

Programmes/Objectives/Activities**Table 35.12 Council for Scientific and Industrial Research expenditure trends and estimates by programme/objective/activity**

R million	Audited outcome			Revised estimate 2019/20	Average growth rate (%)		Medium-term expenditure estimate			Average growth rate (%)	
	2016/17	2017/18	2018/19		2016/17	2019/20	2020/21	2021/22	2022/23	2019/20	2022/23
Administration	391.1	374.0	566.0	541.2	11.4%	17.4%	571.6	614.2	652.3	6.4%	17.9%
Council for Scientific and Industrial Research science, engineering and technology operating units and centres	2 277.4	2 182.4	1 980.9	2 476.9	2.8%	82.6%	2 616.2	2 811.0	2 985.2	6.4%	82.1%
Total	2 668.5	2 556.5	2 546.9	3 018.1	4.2%	100.0%	3 187.9	3 425.3	3 637.5	6.4%	100.0%

Statements of historical financial performance, cash flow and financial position**Table 35.13 Council for Scientific and Industrial Research statements of historical financial performance, cash flow and financial position**

Statement of financial performance									
R million	Budget	Audited outcome	Budget	Audited outcome	Budget	Audited outcome	Budget estimate	Revised estimate	Average: Outcome/Budget (%)
	2016/17		2017/18		2018/19		2019/20		2016/17 - 2019/20
Revenue									
Non-tax revenue	2 039.6	2 031.7	2 185.4	1 820.7	2 134.8	1 592.3	1 830.4	2 266.7	94.2%
Sale of goods and services other than capital assets	1 998.6	1 937.1	2 143.9	1 776.1	1 973.5	1 541.0	1 654.5	2 101.3	94.7%
<i>of which:</i>									
<i>Sales by market establishment</i>	1 998.6	1 937.1	2 143.9	1 776.1	1 973.5	1 541.0	1 654.5	2 101.3	94.7%
Other non-tax revenue	41.0	94.7	41.5	44.6	161.2	51.3	175.9	165.4	84.8%
Transfers received	815.6	714.1	835.7	722.4	1 262.5	962.7	1 277.5	758.1	75.3%
Total revenue	2 855.2	2 745.8	3 021.1	2 543.1	3 397.3	2 555.1	3 107.9	3 024.7	87.8%
Expenses									
Current expenses	2 793.1	2 668.5	2 958.9	2 556.5	2 903.5	2 546.9	3 026.1	3 018.1	92.4%
Compensation of employees	1 541.2	1 487.9	1 671.3	1 538.9	1 624.3	1 585.9	1 677.3	1 703.9	97.0%
Goods and services	1 194.2	1 109.9	1 222.2	951.6	1 195.9	895.9	1 261.2	1 184.4	85.0%
Depreciation	57.8	61.7	65.5	65.9	83.3	65.1	87.7	129.8	109.6%
Interest, dividends and rent on land	-	9.0	-	-	-	-	-	-	-
Total expenses	2 793.1	2 668.5	2 958.9	2 556.5	2 903.5	2 546.9	3 026.1	3 018.1	92.4%
Surplus/(Deficit)	62.1	77.3	62.2	(13.3)	493.7	8.2	81.8	6.6	
Cash flow statement									
Cash flow from operating activities	(91.2)	112.5	(164.7)	81.8	211.1	181.3	(433.8)	(241.8)	-27.9%
Receipts									
Non-tax receipts	2 039.6	2 044.1	2 185.4	1 881.5	2 005.1	1 812.4	1 695.0	1 618.1	92.8%
Sales of goods and services other than capital assets	1 998.6	1 979.3	2 143.9	1 837.2	1 969.5	1 761.7	1 651.5	1 578.7	92.2%
<i>Sales by market establishment</i>	1 998.6	1 979.3	2 143.9	1 837.2	1 969.5	1 761.7	1 651.5	1 578.7	92.2%
Other tax receipts	41.0	64.8	41.5	44.3	35.6	50.7	43.5	39.4	123.3%
Transfers received	792.1	694.8	1 170.9	729.4	1 262.5	760.1	1 277.5	1 277.5	76.9%
Total receipts	2 831.7	2 738.9	3 356.3	2 610.9	3 267.6	2 572.5	2 972.5	2 895.6	87.0%
Payment									
Current payments	2 922.9	2 626.4	3 521.0	2 529.1	3 056.5	2 391.3	3 406.4	3 137.5	82.8%
Compensation of employees	1 541.2	1 482.0	1 671.3	1 538.9	1 624.3	1 586.8	1 677.3	1 703.9	96.9%
Goods and services	1 381.7	1 135.5	1 849.7	990.2	1 432.3	804.4	1 729.1	1 433.6	68.3%
Interest and rent on land	-	9.0	-	0.0	-	-	-	-	-
Total payments	2 922.9	2 626.5	3 521.0	2 529.1	3 056.5	2 391.3	3 406.4	3 137.5	82.8%
Net cash flow from investing activities	(128.0)	(18.9)	(143.8)	(87.6)	(106.1)	(40.4)	(74.0)	(95.0)	53.5%
Acquisition of property, plant, equipment and intangible assets	(117.5)	(72.0)	(143.8)	(87.4)	(106.1)	(40.2)	(74.0)	(95.0)	66.7%
Proceeds from the sale of property, plant, equipment and intangible assets	-	67.0	-	3.3	-	1.8	-	-	-
Other flows from investing activities	(10.5)	(13.9)	-	(3.6)	-	(2.1)	-	-	186.4%
Net increase/(decrease) in cash and cash equivalents	(219.2)	93.6	(308.5)	(5.9)	105.0	140.9	(507.9)	(336.8)	
Statement of financial position									
Carrying value of assets	813.4	762.9	841.3	784.4	791.9	758.7	819.6	733.1	93.0%
<i>Acquisition of assets</i>	<i>(117.5)</i>	<i>(72.0)</i>	<i>(143.8)</i>	<i>(87.4)</i>	<i>(106.1)</i>	<i>(40.2)</i>	<i>(74.0)</i>	<i>(95.0)</i>	<i>66.7%</i>
Investments	18.1	20.2	20.7	9.1	19.0	5.1	19.0	9.1	56.6%
Inventory	106.9	85.4	107.9	113.7	113.6	124.8	120.8	120.8	99.0%
Receivables and prepayments	264.4	281.9	280.2	224.7	294.9	196.0	313.6	257.3	83.3%
Cash and cash equivalents	793.7	1 106.5	798.0	1 100.6	815.6	1 241.5	839.6	1 103.4	140.2%
Total assets	1 996.5	2 256.9	2 048.0	2 232.4	2 035.0	2 326.0	2 112.5	2 223.7	110.3%
Accumulated surplus/(deficit)	992.6	1 007.8	1 088.3	994.5	985.8	1 002.5	985.8	951.9	97.6%
Deferred income	-	4.2	-	-	-	-	-	-	-
Trade and other payables	991.3	1 234.1	945.9	1 227.0	1 038.4	1 301.4	1 115.7	1 260.7	122.8%
Provisions	12.7	10.8	13.8	11.0	10.9	22.1	11.0	11.2	113.9%
Total equity and liabilities	1 996.5	2 256.9	2 048.0	2 232.4	2 035.0	2 326.0	2 112.5	2 223.7	110.3%

Statements of estimates of financial performance, cash flow and financial position

Table 35.14 Council for Scientific and Industrial Research statements of estimates of financial performance, cash flow and financial position

Statement of financial performance		Average growth rate (%)	Average: Expenditure/ Total (%)	Medium-term estimate			Average growth rate (%)	Average: Expenditure/ Total (%)
R million	Revised estimate	2016/17 - 2019/20	2019/20	2020/21	2021/22	2022/23	2019/20 - 2022/23	
Revenue								
Non-tax revenue	2 266.7	3.7%	70.7%	2 445.4	2 672.6	2 904.9	8.6%	76.3%
Sale of goods and services other than capital assets	2 101.3	2.7%	67.5%	2 275.0	2 497.2	2 724.1	9.0%	71.2%
<i>Sales by market establishment</i>	2 101.3	2.7%	67.5%	2 275.0	2 497.2	2 724.1	9.0%	71.2%
Other non-tax revenue	165.4	20.5%	3.2%	170.3	175.4	180.8	3.0%	5.2%
Transfers received	758.1	2.0%	29.3%	781.2	805.0	834.7	3.3%	23.7%
Total revenue	3 024.7	3.3%	100.0%	3 226.6	3 477.7	3 739.7	7.3%	100.0%
Current expenses	3 018.1	4.2%	100.0%	3 187.8	3 425.1	3 652.9	6.6%	100.0%
Compensation of employees	1 703.9	4.6%	58.7%	1 799.3	1 940.3	2 076.1	6.8%	56.6%
Goods and services	1 184.4	2.2%	38.3%	1 252.2	1 334.9	1 411.9	6.0%	39.0%
Depreciation	129.8	28.1%	2.9%	136.3	149.9	164.9	8.3%	4.4%
Total expenses	3 018.1	4.2%	100.0%	3 187.8	3 425.1	3 652.9	6.6%	100.0%
Surplus/(Deficit)	6.6			38.8	52.5	86.8		
Cash flow statement								
Cash flow from operating activities	(241.8)	-229.1%	201.1%	(212.3)	(204.2)	(176.2)	31.1%	171.8%
Receipts								
Non-tax receipts	1 618.1	-7.5%	68.3%	1 771.9	1 963.9	2 166.7	10.2%	58.1%
Sale of goods and services other than capital assets	1 578.7	-7.3%	66.4%	1 731.7	1 922.9	2 125.2	10.4%	56.8%
<i>Sales by market establishment</i>	1 578.7	-7.3%	66.4%	1 731.7	1 922.9	2 125.2	10.4%	56.8%
Other tax receipts	39.4	-15.3%	1.8%	40.2	41.0	41.5	1.7%	1.3%
Transfers received	1 277.5	22.5%	31.7%	1 319.9	1 372.4	1 423.2	3.7%	41.9%
Total receipts	2 895.6	1.9%	100.0%	3 091.8	3 336.3	3 589.9	7.4%	100.0%
Current payments	3 137.5	6.1%	98.8%	3 304.2	3 540.5	3 766.1	6.3%	100.0%
Compensation of employees	1 703.9	4.8%	58.6%	1 799.3	1 940.3	2 076.1	6.8%	54.7%
Goods and services	1 433.6	8.1%	40.1%	1 504.9	1 600.2	1 689.9	5.6%	45.3%
Total payment	3 137.5	6.1%	100.0%	3 304.2	3 540.5	3 766.1	6.3%	100.0%
Net cash flow from investing activities	(95.0)	71.3%	100.0%	(120.0)	(150.0)	(150.0)	16.4%	100.0%
Acquisition of property, plant, equipment and intangible assets	(95.0)	9.7%	100.0%	(120.0)	(150.0)	(150.0)	16.4%	100.0%
Net increase/(decrease) in cash and cash equivalents	(336.8)	-253.2%	100.0%	(332.3)	(354.2)	(326.2)	-1.1%	100.0%
Statement of financial position								
Carrying value of assets	733.1	-1.3%	33.6%	716.9	717.0	702.1	-1.4%	29.7%
<i>Acquisition of assets</i>	<i>(95.0)</i>	<i>9.7%</i>	<i>-3.3%</i>	<i>(120.0)</i>	<i>(150.0)</i>	<i>(150.0)</i>	<i>16.4%</i>	<i>-5.3%</i>
Investments	9.1	-23.5%	0.5%	9.1	9.1	9.1	-	0.4%
Inventory	120.8	12.3%	4.9%	128.3	137.9	148.9	7.2%	5.5%
Receivables and prepayments	257.3	-3.0%	10.6%	246.0	232.5	249.1	-1.1%	10.2%
Cash and cash equivalents	1 103.4	-0.1%	50.3%	1 237.7	1 381.1	1 551.2	12.0%	54.2%
Total assets	2 223.7	-0.5%	100.0%	2 337.9	2 477.5	2 660.4	6.2%	100.0%
Accumulated surplus/(deficit)	951.9	-1.9%	43.8%	1 009.2	1 080.8	1 167.6	7.0%	43.4%
Trade and other payables	1 260.7	0.7%	55.6%	1 317.5	1 385.3	1 481.3	5.5%	56.2%
Provisions	11.2	1.3%	0.6%	11.3	11.4	11.5	1.0%	0.5%
Total equity and liabilities	2 223.7	-0.5%	100.0%	2 337.9	2 477.5	2 660.4	6.2%	100.0%

Personnel information

Table 35.15 Council for Scientific and Industrial Research personnel numbers and cost by salary level

Number of posts estimated for 31 March 2020		Number and cost ¹ of personnel posts filled/planned for on funded establishment														Number			
Number of funded posts	Number of posts on approved establishment	Actual			Revised estimate			Medium-term expenditure estimate						Average growth rate (%)	Average: Salary level/Total (%)				
		2018/19		Unit cost	2019/20		Unit cost	2020/21		Unit cost	2021/22		Unit cost			2022/23		Unit cost	
		Number	Cost	Unit cost	Number	Cost	Unit cost	Number	Cost	Unit cost	Number	Cost	Unit cost	Number	Cost	Unit cost	2019/20 - 2022/23		
Council for Scientific and Industrial Research																			
Salary level	2 844	2 844	2 882	1 585.9	0.6	2 844	1 703.9	0.6	2 900	1 799.3	0.6	2 958	1 940.3	0.7	3 077	2 076.1	0.7	6.8%	100.0%
1-6	412	412	597	73.3	0.1	412	70.7	0.2	420	74.6	0.2	428	80.5	0.2	446	86.1	0.2	6.8%	14.5%
7-10	1 486	1 486	1 395	584.2	0.4	1 486	631.8	0.4	1 516	667.2	0.4	1 546	719.5	0.5	1 608	769.8	0.5	6.8%	52.3%
11-12	497	497	462	367.2	0.8	497	394.7	0.8	507	416.8	0.8	517	449.4	0.9	537	480.9	0.9	6.8%	17.5%
13-16	425	425	410	510.9	1.2	425	538.6	1.3	434	568.8	1.3	442	613.3	1.4	460	656.2	1.4	6.8%	15.0%
17-22	23	23	18	50.2	2.8	23	68.2	2.9	24	72.0	3.0	24	77.7	3.2	25	83.1	3.3	6.8%	0.8%

1. Rand million.

National Research Foundation

Selected performance indicators

Table 35.16 National Research Foundation performance indicators by programme/objective/activity and related priority

Indicator	Programme/Objective/Activity	MTSF priority	Past			Current	Projections		
			2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Number of members of the public reached through interactions focusing on science awareness activities per year	Science engagement		1 084 760	1 191 892	1 090 000	680 300	682 150	683 300	683 300
Number of black researchers funded per year	Research and innovation support and advancement		1 563	1 698	2 182	2 154	2 295	2 368	2 368
Number of female researchers funded per year	Research and innovation support and advancement		1 699	1 698	1 520	1 579	2 020	2 100	2 100
Number of black postgraduate students funded per year	Research and innovation support and advancement		10 747	11 328	10 980	9 157	9 675	5 885	5 885
Number of female postgraduate students funded per year	Research and innovation support and advancement		8 017	8 266	7 692	6 300	6 786	4 046	4 046
Number of masters students supported per year	Research and innovation support and advancement		4 995	5 435	4 990	3 586	3 770	2 289	2 289
Number of doctoral students supported per year	Research and innovation support and advancement		3 363	3 519	3 265	2 855	2 987	1 813	1 813
Number of researchers rated through the National Research Foundation system per year	Research and innovation support and advancement		970	1 069	1 026	1 120	1 337	1 512	1 512
Number of black female researchers rated by the National Research Foundation per year	Research and innovation support and advancement	Priority 2: Education, skills and health	1 176	1 285	1 292	1 365	1 499	1 638	1 638
Total number of researchers rated by the National Research Foundation	Research and innovation support and advancement		3 663	3 885	3 750	3 900	4 050	4 200	4 200
Number of active grants emanating from binational, multinational and agency-to-agency agreements per year	Research and innovation support and advancement		1 008	996	990	945	950	955	955
Number of users of equipment funded by the national equipment programme and national nanotechnology programme per year	Research and innovation support and advancement		2 937	2 881	2 641	2 252	2 014	1 976	1 976
Number of publications emanating from the use of equipment funded by the national equipment programme and the national nanotechnology equipment programme per year	Research and innovation support and advancement		779	908	695	682	530	520	520
Number of Web of Science publications in nuclear, biodiversity, conservation and environment at the National Research Foundation's facilities per year	National research infrastructure platforms	Priority 1: Economic transformation and job creation	321	574	397	551	575	615	615

Entity overview

In terms of the National Research Foundation Amendment Bill (2016), the National Research Foundation is mandated to support research through funding, the development of human resources, and the provision of research facilities to enable knowledge creation, innovation and development in all fields of science and technology. It is also mandated to promote indigenous knowledge.

Over the medium term, the foundation will focus on the implementation of its 10-year strategy: Vision 2030. This will entail interventions to catalyse transformation in the science and technology system through measures such as creating grant-funding instruments that focus on women and black researchers, and fast-tracking black women doctoral graduates towards obtaining their foundation rating. The foundation aims to invest 19.1 per cent (R2.5 billion) of its estimated total expenditure over the MTEF period to develop the next generation of researchers by providing free-standing scholarships, grant holder-linked bursaries and academic development programmes to honours, masters, doctoral and postdoctoral students. This investment is expected

to support 3 770 masters and 2 987 doctoral students in 2020/21, although these numbers are likely to decrease in 2021/22 in line with the increase in fees for the 2021 academic year.

Total expenditure over the MTEF period is expected to be R13.8 billion, with spending on transfers and subsidies accounting for 60 per cent of this amount for allocations to the Square Kilometre Array. Estimated capital expenditure of R644 million over the medium term is earmarked primarily for the Square Kilometre Array, specialised equipment at iThemba LABS for the isotope facility project, and the South African Radio Astronomy Observatory for the MeerKAT extension, comprising 20 antennae.

The foundation receives funding through the parliamentary grant, transfers from the department, contract funding for specific projects and programmes from other government departments and entities, and income generated through sales and interest earned. The parliamentary grant, which accounts for an estimated 91.7 per cent (R12.5 billion) of projected revenue over the MTEF period, is used primarily to fund the foundation's programmes and operational activities. Due to Cabinet's decision to reduce expenditure across government, transfers from the department are projected to increase from R4 billion in 2019/20 to R4.2 billion in 2022/23, due to the completion of phase 1 of the Square Kilometre Array.

Programmes/Objectives/Activities

Table 35.17 National Research Foundation expenditure trends and estimates by programme/objective/activity

R million	Audited outcome			Revised estimate 2019/20	Average growth rate (%) 2016/17 - 2019/20	Average: Expenditure/Total (%) 2016/17 - 2019/20	Medium-term expenditure estimate			Average growth rate (%) 2019/20 - 2022/23	Average: Expenditure/Total (%) 2019/20 - 2022/23
	2016/17	2017/18	2018/19				2020/21	2021/22	2022/23		
Administration	85.0	89.7	101.3	126.7	14.2%	2.4%	143.0	132.7	136.2	2.4%	2.9%
Science engagement	169.5	169.9	119.7	119.3	-11.1%	3.5%	127.4	124.6	123.9	1.3%	2.7%
Research and innovation support and advancement	2 690.5	2 793.8	2 638.3	2 846.0	1.9%	65.2%	2 585.7	2 863.1	2 780.4	-0.8%	60.5%
National research infrastructure platforms	430.0	1 175.4	1 251.4	1 391.8	47.9%	25.0%	1 534.8	1 552.5	1 722.9	7.4%	33.8%
National research facilities: Astronomy	637.9	-	-	-	-100.0%	4.0%	-	-	-	-	-
Total	4 013.0	4 228.8	4 110.7	4 483.8	3.8%	100.0%	4 390.9	4 673.0	4 763.4	2.0%	100.0%

Statements of historical financial performance, cash flow and financial position

Table 35.18 National Research Foundation statements of historical financial performance, cash flow and financial position

Statement of financial performance										
R million	Audited outcome		Audited outcome		Audited outcome		Budget estimate	Revised estimate	Average: Outcome/Budget (%) 2016/17 - 2019/20	
	Budget	2016/17	Budget	2017/18	Budget	2018/19				2019/20
Revenue										
Non-tax revenue		1 241.6	1 383.0	1 237.5	1 419.6	1 011.5	608.7	1 010.7	445.6	85.7%
Sale of goods and services other than capital assets		130.5	106.7	129.7	115.3	65.8	60.4	67.9	67.9	88.9%
<i>of which:</i>										
<i>Sales by market establishment</i>		76.6	68.0	81.7	80.6	63.6	57.1	66.2	66.2	94.3%
<i>Other sales</i>		53.9	38.7	48.0	34.7	2.1	3.4	1.7	1.7	74.2%
Other non-tax revenue		1 111.1	1 276.3	1 107.8	1 304.2	945.7	548.3	942.8	377.7	85.4%
Transfers received		3 197.8	3 118.2	3 378.1	3 309.8	3 478.2	3 504.8	3 605.5	4 042.8	102.3%
Total revenue		4 439.4	4 501.1	4 615.6	4 729.3	4 489.6	4 113.5	4 616.2	4 488.4	98.2%
Expenses										
Current expenses		1 362.2	1 415.0	1 459.6	1 508.7	1 577.8	1 537.8	1 727.4	1 715.9	100.8%
Compensation of employees		678.8	627.1	750.0	717.8	792.0	729.4	870.6	815.4	93.5%
Goods and services		585.5	663.1	596.9	617.7	636.0	544.9	675.5	719.0	102.0%
Depreciation		97.9	124.7	112.7	173.2	149.8	263.5	181.4	181.4	137.1%
Interest, dividends and rent on land		0.0	0.0	0.0	0.0	-	0.0	-	-	181.3%
Transfers and subsidies		2 460.5	2 598.0	2 504.6	2 720.1	2 450.6	2 572.9	2 730.2	2 767.9	105.1%
Total expenses		3 822.6	4 013.0	3 964.2	4 228.8	4 028.4	4 110.7	4 457.6	4 483.8	103.5%
Surplus/(Deficit)		616.8	488.1	651.4	500.6	461.2	2.8	158.6	4.6	

Table 35.18 National Research Foundation statements of historical financial performance, cash flow and financial position

Statement of financial performance									
R million	Audited		Audited		Audited		Budget	Revised	Average: Outcome/ Budget (%)
	Budget	outcome	Budget	outcome	Budget	outcome	estimate	estimate	
	2016/17		2017/18		2018/19		2019/20		2016/17 - 2019/20
Cash flow statement									
Cash flow from operating activities	659.4	453.1	795.8	662.0	688.8	467.0	241.1	84.2	69.9%
Receipts									
Non-tax receipts	1 087.3	1 357.2	1 089.1	1 400.3	1 145.4	935.3	1 145.7	330.2	90.1%
Sales of goods and services other than capital assets	135.3	54.4	134.3	121.4	70.3	85.1	71.2	81.0	83.2%
<i>Sales by market establishment</i>	76.6	–	81.7	80.6	63.6	57.1	66.2	66.2	70.7%
<i>Other sales</i>	58.7	54.4	52.5	40.8	6.7	28.0	5.0	14.8	112.3%
Other tax receipts	952.0	1 302.8	954.8	1 278.9	1 075.0	850.2	1 074.5	249.1	90.7%
Transfers received	2 800.6	2 942.4	3 028.2	2 906.4	3 240.3	3 504.8	3 328.7	3 198.8	101.2%
Total receipts	3 887.8	4 299.6	4 117.3	4 306.7	4 385.7	4 440.0	4 474.4	3 529.0	98.3%
Payment									
Current payments	1 267.0	1 241.6	1 367.9	1 356.7	1 436.9	1 283.8	1 535.1	1 539.5	96.7%
Compensation of employees	687.4	628.1	750.3	691.0	792.0	754.2	870.6	817.1	93.2%
Goods and services	579.6	613.4	617.5	665.7	644.9	529.5	664.5	722.4	101.0%
Interest and rent on land	0.0	0.0	0.0	0.0	–	0.0	–	–	181.3%
Transfers and subsidies	1 961.4	2 605.0	1 953.6	2 288.0	2 260.0	2 689.2	2 698.2	1 905.2	106.9%
Total payments	3 228.5	3 846.6	3 321.4	3 644.7	3 696.9	3 973.0	4 233.3	3 444.7	103.0%
Net cash flow from investing activities	(741.7)	(629.6)	(776.0)	(693.3)	(620.5)	(252.9)	(330.3)	(192.1)	71.6%
Acquisition of property, plant, equipment and intangible assets	(741.7)	(629.0)	(776.0)	(690.3)	(620.4)	(250.7)	(326.8)	(188.6)	71.3%
Acquisition of software and other intangible assets	–	(1.1)	–	(3.8)	(0.1)	(2.6)	(3.5)	(3.5)	304.3%
Proceeds from the sale of property, plant, equipment and intangible assets	–	0.5	–	0.8	–	0.4	–	–	–
Net cash flow from financing activities	(0.0)	(0.2)	(0.0)	(0.1)	(0.0)	(19.8)	(0.0)	0.0	–
Repayment of finance leases	(0.0)	(0.2)	(0.0)	(0.1)	(0.0)	(0.1)	(0.0)	0.0	634.8%
Other flows from financing activities	–	–	–	–	–	(19.7)	–	–	–
Net increase/(decrease) in cash and cash equivalents	(82.4)	(176.7)	19.8	(31.4)	68.3	194.4	(89.2)	(107.8)	–
Statement of financial position									
Carrying value of assets	2 353.6	2 209.7	2 873.0	2 669.0	3 216.1	2 630.8	3 365.1	2 641.4	86.0%
Acquisition of assets	(741.7)	(629.0)	(776.0)	(690.3)	(620.4)	(250.7)	(326.8)	(188.6)	71.3%
Investments	20.0	18.4	17.0	16.1	15.0	13.8	14.0	12.0	91.5%
Inventory	6.5	7.1	6.3	6.1	3.4	4.5	3.3	4.3	113.1%
Receivables and prepayments	986.4	1 513.0	945.7	1 080.8	890.1	1 195.2	842.1	855.1	126.7%
Cash and cash equivalents	589.1	494.8	510.0	463.4	505.0	657.8	406.0	550.0	107.8%
Defined benefit plan assets	1.3	3.7	1.2	4.0	4.2	2.0	4.3	2.1	108.1%
Total assets	3 956.9	4 246.7	4 353.2	4 239.4	4 633.7	4 504.1	4 634.7	4 064.9	97.0%
Accumulated surplus/(deficit)	–	0.4	–	2.6	–	2.4	–	–	–
Capital and reserves	78.3	94.5	83.1	89.0	82.1	86.7	80.8	83.0	108.9%
Capital reserve fund	2 353.6	2 209.7	2 873.0	2 669.0	3 216.1	2 630.8	3 365.1	2 641.4	86.0%
Finance lease	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.1	68.1%
Deferred income	1 420.4	1 798.7	1 294.4	1 335.9	1 232.0	1 662.4	1 090.1	1 226.7	119.6%
Trade and other payables	94.9	134.8	94.5	107.7	95.0	111.5	90.0	105.0	122.6%
Provisions	9.4	8.4	8.0	35.2	8.5	10.4	8.7	8.7	180.9%
Total equity and liabilities	3 956.9	4 246.7	4 353.2	4 239.4	4 633.7	4 504.1	4 634.7	4 064.9	97.0%

Statements of estimates of financial performance, cash flow and financial position**Table 35.19 National Research Foundation statements of estimates of financial performance, cash flow and financial position**

Statement of financial performance									
R million	Revised estimate	Average growth rate (%)	Average: Expenditure/ Total (%)	Medium-term estimate			Average growth rate (%)	Average: Expenditure/ Total (%)	
				2020/21	2021/22	2022/23			
	2019/20	2016/17 - 2019/20		2020/21	2021/22	2022/23	2019/20 - 2022/23		
Revenue									
Non-tax revenue	445.6	-31.4%	21.4%	389.4	330.2	317.1	-10.7%	8.3%	
Sale of goods and services other than capital assets	67.9	-14.0%	1.9%	70.7	75.3	79.8	5.5%	1.6%	
<i>Sales by market establishment</i>	66.2	-0.9%	1.5%	69.1	73.7	78.2	5.7%	1.6%	
<i>Other sales</i>	1.7	-64.7%	0.4%	1.5	1.5	1.6	-1.5%	0.0%	
Other non-tax revenue	377.7	-33.4%	19.4%	318.7	254.9	237.3	-14.4%	6.6%	
Transfers received	4 042.8	9.0%	78.6%	3 974.2	4 282.8	4 215.0	1.4%	91.7%	
Total revenue	4 488.4	-0.1%	100.0%	4 363.5	4 613.0	4 532.1	0.3%	100.0%	
Current expenses	1 715.9	6.6%	36.7%	1 881.4	1 890.0	2 078.1	6.6%	41.3%	
Compensation of employees	815.4	9.1%	17.1%	861.4	898.6	945.0	5.0%	19.2%	
Goods and services	719.0	2.7%	15.1%	725.4	677.4	798.9	3.6%	16.0%	
Depreciation	181.4	13.3%	4.4%	294.5	314.0	334.2	22.6%	6.1%	
Transfers and subsidies	2 767.9	2.1%	63.3%	2 509.5	2 783.0	2 685.3	-1.0%	58.7%	
Total expenses	4 483.8	3.8%	100.0%	4 390.9	4 673.0	4 763.4	2.0%	100.0%	
Surplus/(Deficit)	4.6			(27.4)	(60.0)	(231.3)			

Table 35.19 National Research Foundation statements of estimates of financial performance, cash flow and financial position

Statement of financial performance		Revised estimate	Average growth rate (%)	Average: Expenditure/ Total (%)	Medium-term estimate			Average growth rate (%)	Average: Expenditure/ Total (%)
					2019/20	2016/17 - 2019/20	2020/21		
R million									
Cash flow statement									
Cash flow from operating activities									
		84.2	-42.9%	27.8%	177.0	204.1	62.9	-12.4%	15.2%
Receipts									
Non-tax receipts									
		330.2	-37.6%	23.6%	475.2	503.2	424.2	8.7%	11.1%
Sales of goods and services other than capital assets									
		81.0	14.2%	2.1%	74.7	79.3	83.7	1.1%	2.1%
<i>Sales by market establishment</i>									
		66.2	-	1.3%	69.1	73.7	78.2	5.7%	1.9%
<i>Other sales</i>									
		14.8	-35.2%	0.8%	5.6	5.6	5.6	-27.9%	0.2%
Other tax receipts									
		249.1	-42.4%	21.6%	400.4	423.9	340.5	11.0%	9.1%
Transfers received									
		3 198.8	2.8%	76.4%	3 388.4	3 533.4	3 663.8	4.6%	88.9%
Total receipts									
		3 529.0	-6.4%	100.0%	3 863.5	4 036.6	4 088.0	5.0%	100.0%
Current payments									
		1 539.5	7.4%	32.1%	1 593.1	1 574.3	1 743.7	4.2%	43.1%
Compensation of employees									
		817.1	9.2%	17.1%	861.1	898.4	944.8	5.0%	23.5%
Goods and services									
		722.4	5.6%	15.0%	732.0	675.9	798.9	3.4%	19.6%
Transfers and subsidies									
		1 905.2	-9.9%	56.7%	2 093.5	2 258.3	2 281.4	6.2%	56.9%
Total payment									
		3 444.7	-3.6%	100.0%	3 686.6	3 832.6	4 025.1	5.3%	100.0%
Net cash flow from investing activities									
		(192.1)	-32.7%	100.0%	(287.0)	(254.1)	(102.9)	-18.8%	100.0%
Acquisition of property, plant, equipment and intangible assets									
		(188.6)	-33.1%	99.2%	(286.0)	(253.3)	(102.1)	-18.5%	99.2%
Acquisition of software and other intangible assets									
		(3.5)	48.9%	0.9%	(0.9)	(0.8)	(0.8)	-38.3%	0.8%
Net cash flow from financing activities									
		0.0	-159.4%	100.0%	-	(0.0)	(0.0)	-150.4%	-
Repayment of finance leases									
		0.0	-159.4%	75.1%	-	(0.0)	(0.0)	-150.4%	-
Net increase/(decrease) in cash and cash equivalents									
		(107.8)	-15.2%	100.0%	(110.0)	(50.0)	(40.0)	-28.1%	100.0%
Statement of financial position									
Carrying value of assets									
		2 641.4	6.1%	59.6%	2 633.9	2 573.9	2 342.6	-3.9%	66.5%
Acquisition of assets									
		(188.6)	-33.1%	-10.3%	(286.0)	(253.3)	(102.1)	-18.5%	-5.4%
Investments									
		12.0	-13.4%	0.4%	10.5	9.0	8.0	-12.6%	0.3%
Inventory									
		4.3	-15.3%	0.1%	4.3	4.2	4.1	-1.6%	0.1%
Receivables and prepayments									
		855.1	-17.3%	27.2%	838.8	829.0	812.0	-1.7%	21.8%
Cash and cash equivalents									
		550.0	3.6%	12.7%	440.0	390.0	350.0	-14.0%	11.2%
Defined benefit plan assets									
		2.1	-17.2%	0.1%	2.2	2.3	2.3	3.1%	0.1%
Total assets									
		4 064.9	-1.4%	100.0%	3 929.6	3 808.4	3 519.0	-4.7%	100.0%
Capital and reserves									
		83.0	-4.2%	2.1%	63.2	63.2	63.2	-8.7%	1.8%
Capital reserve fund									
		2 641.4	6.1%	59.6%	2 633.9	2 573.9	2 342.6	-3.9%	66.5%
Finance lease									
		0.1	-24.6%	0.0%	0.1	0.1	0.1	-7.2%	0.0%
Deferred income									
		1 226.7	-12.0%	35.2%	1 128.4	1 069.0	1 013.7	-6.2%	28.9%
Trade and other payables									
		105.0	-8.0%	2.7%	95.0	93.0	90.0	-5.0%	2.5%
Provisions									
		8.7	1.3%	0.4%	9.0	9.2	9.4	2.6%	0.2%
Total equity and liabilities									
		4 064.9	-1.4%	100.0%	3 929.6	3 808.4	3 519.0	-4.7%	100.0%

Personnel information**Table 35.20 National Research Foundation personnel numbers and cost by salary level**

Number of posts estimated for 31 March 2020			Number and cost ¹ of personnel posts filled/planned for on funded establishment												Number				
Number of funded posts	Number of posts on approved establishment		Actual		Revised estimate			Medium-term expenditure estimate						Average growth rate (%)	Average: Salary level/Total (%)				
			2018/19	Unit cost	2019/20		2020/21		2021/22		2022/23		2019/20 - 2022/23						
			Number	Cost	Number	Cost	Unit cost	Number	Cost	Unit cost	Number	Cost	Unit cost	Number	Cost	Unit cost			
National Research Foundation			1 386	729.4	0.6	1 386	815.4	0.6	1 386	861.4	0.6	1 386	898.6	0.6	1 386	945.0	0.7	5.0%	100.0%
Salary level	1 386	1 386	1 210	729.4	0.6	1 386	815.4	0.6	1 386	861.4	0.6	1 386	898.6	0.6	1 386	945.0	0.7	5.0%	100.0%
1-6	210	210	187	33.9	0.2	210	43.1	0.2	210	46.2	0.2	210	48.2	0.2	210	50.7	0.2	5.6%	15.2%
7-10	851	851	725	358.2	0.5	851	358.4	0.4	851	384.4	0.5	851	401.0	0.5	851	421.7	0.5	5.6%	61.4%
11-12	213	213	191	176.0	0.9	213	213.8	1.0	213	229.4	1.1	213	239.3	1.1	213	251.6	1.2	5.6%	15.4%
13-16	107	107	102	145.9	1.4	107	179.9	1.7	107	179.7	1.7	107	187.5	1.8	107	197.2	1.8	3.1%	7.7%
17-22	5	5	5	15.5	3.1	5	20.2	4.0	5	21.7	4.3	5	22.6	4.5	5	23.8	4.8	5.6%	0.4%

1. Rand million.

Other entities

Comprehensive coverage of the following entities is provided with more detailed information for the vote at www.treasury.gov.za under the budget information link.

- The **Academy of Science of South Africa** links South Africa with scientific communities at the highest levels in the SADC region, the rest of Africa and internationally; promotes common ground in scientific thinking across all disciplines; encourages and promotes innovative and independent scientific thinking; promotes the

development of intellectual capacity in all people; provides effective scientific, evidence-based advice; and facilitates appropriate action in the public interest. The academy's total budget for 2020/21 is R39.5 million.

- The **Human Sciences Research Council** undertakes, promotes and coordinates research in the human and social sciences. The council's total budget for 2020/21 is R579.8 million.
- The **South African National Space Agency** was established in terms of the South African National Space Agency Act (2008) and came into existence in December 2010. The agency aims to be a key contributor to the South African earth observation strategy by providing space-based data platforms in collaboration with other entities that focus on observation measurements such as the South African earth observation network. The agency's total budget for 2020/21 is R292.2 million.
- The **Technology Innovation Agency** draws its mandate from the Technology Innovation Agency Act (2008) and came into operation in April 2010. The agency was established as an intervention to improve research and development from higher education institutions, scientific councils, public entities and private companies, as well as commercialisation, thereby increasing technological innovation in the economy. The agency's total budget for 2020/21 is R620.9 million.

