Vote 30

Science and Technology

Budget summary

	2018/19				2019/20	2020/21
R million	Total	Current payments	Transfers and subsidies	Payments for capital assets	Total	Total
MTEF allocation						
Administration	383.8	357.3	14.3	12.2	340.4	362.1
Technology Innovation	1 131.7	71.9	1 059.9	–	1 224.4	1 292.8
International Cooperation and Resources	136.4	68.9	67.5	–	143.4	152.4
Research, Development and Support	4 360.3	52.6	4 307.7	–	4 661.4	4 918.6
Socioeconomic Innovation Partnerships	1 778.3	52.6	1 725.6	–	1 878.9	1 983.2
Total expenditure estimates	**7 790.5**	**603.3**	**7 175.0**	**12.2**	**8 248.4**	**8 709.2**
Executive authority	Minister of Science and Technology					
Accounting officer	Director General of Science and Technology					
Website address	www.dst.gov.za					

The Estimates of National Expenditure e-publications for individual votes are available on www.treasury.gov.za. These publications provide more comprehensive coverage of vote specific information, particularly about goods and services, transfers and subsidies, personnel, entities, donor funding, public private partnerships, conditional grants to provinces and municipalities, and expenditure information at the level of service delivery, where appropriate.

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 Technology 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 the country 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 30.1 Performance indicators by programme and related outcome

Indicator	Programme	MTSF outcome	Past			Current	Projections		
			2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Number of instruments funded in support of knowledge utilisation per year	Technology Innovation	Outcome 4: Decent employment through inclusive growth	3	6	25	19	21	19	19
Number of commercial outputs in designated areas per year	Technology Innovation		1	3	8	4	3	3	3
Amount of international funds directly invested in research, innovation, and science, technology and innovation human capital development programmes as well as research infrastructure investments in South Africa, accounted for as part of cooperation initiatives implemented by the department per year	International Cooperation and Resources		–[1]	R619m	R689m	R420m	R440m	R480m	R500m

Table 30.1 Performance indicators by programme and related outcome

Indicator	Programme	MTSF outcome	Past			Current	Projections		
			2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Amount of funds invested by international partners in their own organisations and initiatives, but targeted at cooperation in research, innovation, and science, technology and innovation human capital development with South African partners as part of cooperation initiatives implemented by the department per year[2]	International Cooperation and Resources	Outcome 4: Decent employment through inclusive growth	–[1]	R2.2m	R1.3bn[3]	R250m	R280m	R300m	R320m
Number of PhD students awarded bursaries annually as reflected in the reports from the National Research Foundation and relevant entities per year	Research, Development and Support	Outcome 5: A skilled and capable workforce to support an inclusive growth path	2 845	3 404	3 454	3 100	3 100	3 100	3 100
Number of pipeline postgraduate students (BTech and honours, and masters students) awarded bursaries annually as reflected in the reports from the National Research Foundation and relevant entities per year	Research, Development and Support		7 711	10 996	10 268	10 800	10 800	10 800	10 800
Number of researchers awarded research grants through programmes managed by the National Research Foundation as reflected in the foundation's project reports per year	Research, Development and Support		4 064	4 315	4 520	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	Outcome 4: Decent employment through inclusive growth	29	38	36	17	26	34	34

1. *No historical data available.*
2. *Old indicator selected for publication in the Estimates of National Expenditure.*
3. *Actual figure higher than target due to an increased funding from international partners, especially the European Union Horizon 2020 programme.*

Expenditure analysis

The National Development Plan (NDP) acknowledges that science, technology and innovation are crucial to enabling broad-based socioeconomic development through a skilled and innovative population. This is expressed in terms of outcome 5 (a skilled and capable workforce to support an inclusive growth path) and outcome 6 (an efficient, competitive and responsive economic infrastructure network) of government's 2014-2019 medium-term strategic framework. The work of the Department of Science and Technology is closely aligned with these outcomes. As such, over the medium term, the department plans to focus on: producing new knowledge; generating and exploiting knowledge and innovation for inclusive economic development; developing human capital; and funding research, innovation and infrastructure.

The department's total budget is expected to increase at an average annual rate of 4.8 per cent, from R7.6 billion in 2017/18 to R8.7 billion in 2020/21, 92.5 per cent (R22.9 billion) of which is set aside for transfers to its entities. As part of government's decision to lower the national aggregate expenditure ceiling, Cabinet has approved budget reductions on the department's budget amounting to R186.1 million over the MTEF period. These reductions will be effected on spending on goods and services, and on the baseline budgets of entities.

Producing new knowledge

Over the medium term, the department intends to carry out various activities that enable the production of new knowledge, and the development and commercialisation of technology. Funding for these activities is provided in the *Technology Innovation* programme, which has a total allocation of R3.6 billion (14.6 per cent of the department's total budget) over the medium term. Of this, R1.3 billion is set aside specifically to fund technological innovation with the ultimate aim of commercialisation.

The department seeks to use bio-innovation to strengthen research and innovation competencies to contribute to the achievement of government's industrial, health and social development goals, as well as to develop indigenous knowledge applications. This will allow the department to strengthen research and innovation competencies that form the strategic foundation for bio-based scientific innovation, and develop and support strategic research and innovation programmes. R500 million is allocated over the MTEF period to the *Bioinnovation* subprogramme for spending on these activities.

To ensure that publicly funded intellectual property is protected and used to create products, processes and services that improve the quality of life in South Africa, the department plans to spend R123.6 million over the medium term in the *Technology Innovation* programme. R27.3 million has been set aside over the MTEF period for the implementation of the national space strategy, which is intended to ensure that South Africa captures a reasonable share of the global space market, which involves economic activities related to manufacturing components that go into the earth's orbit or beyond.

Exploiting knowledge and innovation for inclusive economic development

The department has earmarked R433.8 million in the *Socioeconomic Innovation Partnerships* programme over the MTEF period to advance a set of technology-based interventions to enhance South Africa's economic competitiveness. This includes the sector innovation funds, a partnership between industry and government, to co-fund research, development and innovation. The key focus of sector innovation funds is to incentivise the private sector to invest more into research development and innovation, thereby increasing exports and improving the competitiveness of existing sectors such as agriculture, forestry and manufacturing.

The *Socioeconomic Innovation Partnerships* programme is allocated R130.8 million over the MTEF period for activities related to generating and exploiting knowledge and innovation that aligns with government's priorities for inclusive economic development. The department expects to invest R113.9 million over the medium term on a range of ICT initiatives such as the ICT-enabled agriculture model to support small-scale producers in the agriculture, forestry and fisheries sector.

Other knowledge generation initiatives include strengthening a network of technology stations and technology upgrading support to companies within supply chains that are linked to large government procurement projects, and advancing a mining research and development hub supported by both industry and government. This will be done under the *Technology Localisation, Beneficiation and Advanced Manufacturing* subprogramme, which has a total allocation of R1.1 billion over the MTEF period.

Developing human capital

Human capital is key in the development of a national system of innovation that is globally competitive and responsive to South Africa's developmental needs. Accordingly, R4.6 billion is allocated over the medium term to the *Research, Development and Support* programme for the development of human capital through postgraduate bursaries and scholarships; internships; and support for emerging and established researchers, which includes support for the South African research chairs initiative, centres of excellence, and the human and social development dynamics programme. To date, the department has established 211 research chairs and 15 centres of excellence. Research chairs are designed to attract and retain excellence in research and innovation at South African public universities by expanding scientific research and innovation capacity, while centres of excellence act as hubs that draw together a range of universities and science councils in partnerships to tackle challenges in health care and food security, among others.

Funding research, innovation and infrastructure

The availability of adequate infrastructure is vital in the development of a robust and competitive national system of innovation. To this end, the department has allocated R2.2 billion over the MTEF period to the *Research, Development and Support* programme to provide for research and development infrastructure across the national system of innovation. These funds will be used specifically for the acquisition of research equipment, and the development of pilot plants (small production plants that are operated to test processes before using them on a large scale), technology demonstrators (proof concepts with the primary purpose of showcasing the possible applications, feasibility, performance and method of an idea for a new technology), and specialised facilities such as aerospace.

The *Basic Science and Infrastructure* subprogramme receives R747 million over the medium term for the implementation of the national integrated cyber infrastructure system by the Council for Scientific and Industrial Research. The system is expected to enable the successful and sustainable implementation of national projects such as MeerKAT and the Square Kilometre Array, as well as large research infrastructure that is dependent on the presence of a robust cyber infrastructure system. In addition, through funds allocated to the subprogramme, continued support will be provided to students and researchers to access global and international infrastructure such as the Large Hadron Collider in Switzerland, the Joint Institute for Nuclear Research in Russia, and the European Synchrotron Radiation Facility in France.

Scientific research in strategic research areas defined by South Africa's geographic advantage, such as palaeosciences, astronomy, climate change, marine and polar research, and indigenous knowledge will be supported by an allocation of R660.8 million over the MTEF period to the *Science Missions* subprogramme. The department plans to invest R244.9 million over the medium term to promote science, which, in addition to implementing initiatives that promote science awareness, will strengthen the coordination of department-led science engagements such as festivals and exhibitions through the South African Agency for Science and Technology Advancement. The aim and mandate of the agency is to advance public awareness, appreciation and engagement of science, engineering and technology in South Africa.

Expenditure trends

Table 30.2 Vote expenditure trends 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	Annual budget	Adjusted appropriation	Audited outcome	Annual budget	Adjusted appropriation	Audited outcome	Annual budget	Adjusted appropriation	Audited outcome	Annual budget	Adjusted appropriation	Revised estimate	Average: Outcome/Annual budget (%)	Average: Outcome/Adjusted appropriation (%)
R million	2014/15			2015/16			2016/17			2017/18			2014/15 - 2017/18	
Programme 1	291.0	291.9	278.4	299.8	300.5	302.0	304.0	345.1	332.6	383.7	376.0	378.0	101.0%	98.3%
Programme 2	991.6	1 008.9	974.0	1 008.8	1 008.5	1 063.3	1 007.1	1 005.4	1 015.9	1 073.6	1 075.1	1 075.1	101.2%	100.7%
Programme 3	119.7	119.3	107.6	122.0	121.4	115.0	124.5	124.5	118.5	128.7	132.4	130.4	95.3%	94.7%
Programme 4	3 436.2	3 429.4	3 489.8	4 247.1	4 238.8	4 218.9	4 200.6	4 171.0	4 152.6	4 348.9	4 350.1	4 350.1	99.9%	100.1%
Programme 5	1 631.7	1 630.3	1 539.2	1 804.5	1 796.9	1 738.3	1 792.9	1 783.0	1 764.0	1 622.3	1 623.6	1 623.7	97.3%	97.5%
Total	**6 470.2**	**6 479.9**	**6 389.0**	**7 482.1**	**7 466.1**	**7 437.5**	**7 429.0**	**7 429.0**	**7 383.6**	**7 557.2**	**7 557.2**	**7 557.2**	**99.4%**	**99.4%**
Change to 2017 Budget estimate											–			
Economic classification														
Current payments	**486.7**	**494.5**	**445.9**	**496.4**	**495.0**	**464.8**	**509.7**	**532.3**	**507.9**	**575.8**	**570.7**	**570.7**	**96.2%**	**95.1%**
Compensation of employees	283.8	284.9	276.0	291.3	295.3	301.1	309.2	313.8	319.0	315.5	326.8	326.8	101.9%	100.2%
Goods and services	202.9	209.6	169.8	205.1	199.7	163.7	200.5	218.5	188.9	260.2	243.9	243.9	88.2%	87.9%
Transfers and subsidies	**5 981.2**	**5 983.1**	**5 936.9**	**6 983.4**	**6 968.8**	**6 956.1**	**6 917.0**	**6 872.2**	**6 860.1**	**6 960.5**	**6 964.5**	**6 964.5**	**99.5%**	**99.7%**
Departmental agencies and accounts	4 409.3	4 393.7	4 011.0	5 466.0	5 457.1	4 762.4	5 344.7	5 311.4	4 696.6	5 204.3	5 204.3	5 204.3	–	–
Higher education institutions	21.4	38.9	228.0	114.6	114.6	230.3	–	–	210.3	–	–	–	491.9%	435.8%
Public corporations and private enterprises	1 140.8	1 145.5	1 573.1	1 253.3	1 249.8	1 833.7	1 307.4	1 299.4	1 794.0	1 447.1	1 447.1	1 447.1	129.1%	129.3%
Non-profit institutions	409.7	405.0	120.3	149.6	147.3	128.8	264.9	261.4	157.7	309.1	313.1	313.1	63.5%	63.9%
Households	–	–	4.4	–	–	0.8	–	–	1.4	–	–	–	–	–
Payments for capital assets	**2.3**	**2.3**	**6.2**	**2.3**	**2.3**	**16.5**	**2.3**	**24.5**	**15.5**	**21.0**	**22.0**	**22.0**	**215.7%**	**117.8%**
Machinery and equipment	2.3	2.3	6.2	2.3	2.3	16.5	2.3	24.5	15.5	21.0	22.0	22.0	215.7%	117.8%
Payments for financial assets	**–**	**–**	**0.1**	**–**	**–**	**0.1**	**–**	**–**	**0.1**	**–**	**–**	**–**	**–**	**–**
Total	**6 470.2**	**6 479.9**	**6 389.0**	**7 482.1**	**7 466.1**	**7 437.5**	**7 429.0**	**7 429.0**	**7 383.6**	**7 557.2**	**7 557.2**	**7 557.2**	**99.4%**	**99.4%**

Expenditure estimates

Table 30.3 Vote expenditure 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	Revised estimate	Average growth rate (%)	Average: Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expenditure/ Total (%)
R million	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Programme 1	378.0	9.0%	4.5%	383.8	340.4	362.1	-1.4%	4.5%
Programme 2	1 075.1	2.1%	14.4%	1 131.7	1 224.4	1 292.8	6.3%	14.6%
Programme 3	130.4	3.0%	1.6%	136.4	143.4	152.4	5.4%	1.7%
Programme 4	4 350.1	8.3%	56.4%	4 360.3	4 661.4	4 918.6	4.2%	56.6%
Programme 5	1 623.7	-0.1%	23.2%	1 778.3	1 878.9	1 983.2	6.9%	22.5%
Total	**7 557.2**	**5.3%**	**100.0%**	**7 790.5**	**8 248.4**	**8 709.2**	**4.8%**	**100.0%**
Change to 2017 Budget estimate				(125.5)	57.1	60.2		
Economic classification								
Current payments	**570.7**	**4.9%**	**6.9%**	**603.3**	**577.3**	**616.1**	**2.6%**	**7.3%**
Compensation of employees	326.8	4.7%	4.3%	352.9	380.5	408.4	7.7%	4.5%
Goods and services	243.9	5.2%	2.7%	250.4	196.8	207.6	-5.2%	2.8%
Transfers and subsidies	**6 964.5**	**5.2%**	**92.9%**	**7 175.0**	**7 668.5**	**8 090.3**	**5.1%**	**92.5%**
Departmental agencies and accounts	5 204.3	5.8%	64.9%	5 312.3	5 689.5	6 002.4	4.9%	68.7%
Public corporations and private enterprises	1 447.1	8.1%	23.1%	1 519.9	1 613.0	1 701.7	5.6%	19.4%
Non-profit institutions	313.1	-8.2%	2.5%	342.8	366.0	386.1	7.2%	4.4%
Payments for capital assets	**22.0**	**112.1%**	**0.2%**	**12.2**	**2.7**	**2.8**	**-49.6%**	**0.1%**
Machinery and equipment	22.0	112.1%	0.2%	12.2	2.7	2.8	-49.6%	0.1%
Total	**7 557.2**	**5.3%**	**100.0%**	**7 790.5**	**8 248.4**	**8 709.2**	**4.8%**	**100.0%**

Expenditure trends and estimates for significant spending items

Table 30.4 Expenditure trends and estimates for significant spending items

	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expen-diture/ Total Vote (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen-diture/ Total Vote (%)
R thousand	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Research and development, including research institutions	2 268 652	2 755 781	2 694 140	2 671 437	5.6%	36.1%	2 745 048	2 882 500	3 048 091	4.5%	35.1%
National Research Foundation	2 442 346	2 942 514	2 904 025	2 977 089	6.8%	39.2%	3 062 678	3 277 193	3 457 439	5.1%	39.5%
Human Sciences Research Council	285 667	294 152	290 149	314 093	3.2%	4.1%	315 479	335 007	353 432	4.0%	4.1%
Council for Scientific and Industrial Research	1 053 993	1 059 827	1 112 916	1 197 878	4.4%	15.4%	1 302 829	1 373 221	1 448 748	6.5%	16.5%
Technology Innovation Agency	338 386	385 188	382 364	396 732	5.4%	5.2%	420 322	443 860	468 272	5.7%	5.4%
Total	**6 389 044**	**7 437 462**	**7 383 594**	**7 557 229**	**25.4%**	**100.0%**	**7 846 356**	**8 311 781**	**8 775 982**	**25.8%**	**100.6%**

Goods and services expenditure trends and estimates

Table 30.5 Vote goods and services expenditure trends and estimates

	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expen-diture/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen-diture/ Total (%)
R thousand	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Administrative fees	3 826	1 877	1 220	6 234	17.7%	1.7%	6 586	6 955	7 344	5.6%	3.0%
Advertising	23 223	22 792	28 711	9 008	-27.1%	10.9%	10 397	10 849	12 001	10.0%	4.7%
Minor assets	630	537	249	608	-1.2%	0.3%	644	680	717	5.7%	0.3%
Audit costs: External	4 761	5 061	4 249	8 702	22.3%	3.0%	9 869	6 488	6 900	-7.4%	3.6%
Bursaries: Employees	1 256	1 067	1 485	2 620	27.8%	0.8%	3 540	2 927	3 088	5.6%	1.4%
Catering: Departmental activities	3 221	5 138	3 500	2 049	-14.0%	1.8%	3 246	3 426	3 613	20.8%	1.4%
Communication	5 064	7 540	8 234	13 031	37.0%	4.4%	13 666	11 545	12 178	-2.2%	5.6%

Table 30.5 Vote goods and services expenditure trends and estimates

	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expen-diture/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen-diture/ Total (%)
R thousand	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Computer services	12 728	10 418	21 055	8 571	-12.3%	6.9%	9 067	9 082	9 777	4.5%	4.1%
Consultants: Business and advisory services	5 603	3 762	9 870	19 098	50.5%	5.0%	21 512	13 261	14 124	-9.6%	7.6%
Legal services	–	–	167	997	–	0.2%	1 054	1 113	1 174	5.6%	0.5%
Science and technological services	2 801	580	866	–	-100.0%	0.6%	–	–	–	–	–
Contractors	6 771	7 547	3 523	9 508	12.0%	3.6%	10 544	9 560	10 086	2.0%	4.4%
Agency and support/outsourced services	8 053	8 135	15 304	16 702	27.5%	6.3%	17 639	17 873	18 702	3.8%	7.9%
Entertainment	735	1 021	658	5 332	93.6%	1.0%	5 608	5 190	5 475	0.9%	2.4%
Fleet services (including government motor transport)	978	764	882	–	-100.0%	0.3%	–	–	–	–	–
Inventory: Clothing material and accessories	1 028	48	–	–	-100.0%	0.1%	–	–	–	–	–
Inventory: Fuel, oil and gas	10	72	–	136	138.7%	–	144	152	160	5.6%	0.1%
Inventory: Materials and supplies	319	103	–	–	-100.0%	0.1%	–	–	–	–	–
Inventory: Medical supplies	–	1	–	–	–	–	–	–	–	–	–
Inventory: Other supplies	–	1	–	1 270	–	0.2%	1 343	1 417	1 494	5.6%	0.6%
Consumable supplies	1 940	993	1 160	–	-100.0%	0.5%	–	–	–	–	–
Consumables: Stationery, printing and office supplies	3 244	2 660	4 954	8 792	39.4%	2.6%	9 098	5 885	6 209	-10.9%	3.3%
Operating leases	5 488	2 906	4 117	7 534	11.1%	2.6%	7 762	4 397	4 639	-14.9%	2.7%
Rental and hiring	8 368	6 657	1 280	–	-100.0%	2.1%	–	–	–	–	–
Property payments	–	–	10 455	18 207	–	3.7%	18 853	8 164	8 613	-22.1%	6.0%
Transport provided: Departmental activity	41 566	38 249	–	–	-100.0%	10.4%	–	–	–	–	–
Travel and subsistence	3 411	13 416	46 484	56 563	155.0%	15.6%	58 126	42 399	44 754	-7.5%	22.5%
Training and development	11 438	7 919	4 944	7 968	-11.4%	4.2%	8 101	6 221	6 563	-6.3%	3.2%
Operating payments	12 141	11 311	9 848	7 691	-14.1%	5.3%	8 138	8 593	9 065	5.6%	3.7%
Venues and facilities	1 246	3 148	5 661	33 281	198.9%	5.7%	25 488	20 628	20 955	-14.3%	11.2%
Total	**169 849**	**163 723**	**188 876**	**243 902**	**12.8%**	**100.0%**	**250 425**	**196 805**	**207 631**	**-5.2%**	**100.0%**

Transfers and subsidies expenditure trends and estimates

Table 30.6 Vote transfers and subsidies trends and estimates

	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expen-diture/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen-diture/ Total (%)
R thousand	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Households											
Social benefits											
Current	**4 123**	**573**	**845**	**–**	**-100.0%**	**–**	**–**	**–**	**–**	**–**	**–**
Households	4 123	573	845	–	-100.0%	–	–	–	–	–	–
Departmental agencies and accounts											
Departmental agencies (non-business entities)											
Current	**3 019 586**	**3 625 986**	**3 616 650**	**3 791 656**	**7.9%**	**52.6%**	**3 948 593**	**4 216 669**	**4 448 585**	**5.5%**	**54.9%**
Various institutions: Institutional and programme support research	3 500	4 000	1 500	–	-100.0%	–	–	–	–	–	–
Various institutions: Biofuels	6 000	6 000	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Technology transfer offices: Support of research units	2 199	4 411	687	–	-100.0%	–	–	–	–	–	–
Various institutions: Implementation of bioeconomy strategy	13 290	9 500	9 500	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Energy grand challenge research	24 396	26 373	22 316	35 149	12.9%	0.4%	37 049	40 946	43 198	7.1%	0.5%
Various institutions: Health innovation research	36 000	37 568	37 500	–	-100.0%	0.4%	–	–	–	–	–
Various institutions: Research in HIV and AIDS prevention and treatment technologies	22 596	24 535	23 800	23 711	1.6%	0.4%	24 588	27 866	29 399	7.4%	0.4%
Various institutions: Hydrogen strategy research	16 005	16 984	4 007	–	-100.0%	0.1%	–	–	–	–	–

Table 30.6 Vote transfers and subsidies trends and estimates

R thousand	Audited outcome 2014/15	Audited outcome 2015/16	Audited outcome 2016/17	Adjusted appropriation 2017/18	Average growth rate (%) 2014/15 - 2017/18	Average: Expen-diture/ Total (%) 2014/15 - 2017/18	Medium-term expenditure estimate 2018/19	Medium-term expenditure estimate 2019/20	Medium-term expenditure estimate 2020/21	Average growth rate (%) 2017/18 - 2020/21	Average: Expen-diture/ Total (%) 2017/18 - 2020/21
Various institutions: Innovation projects research	1 122	12 000	10 000	27 911	191.9%	0.2%	29 529	35 318	37 260	10.1%	0.4%
International Centre for Genetic Engineering and Biotechnology	–	–	–	12 795	–	–	13 537	14 295	15 081	5.6%	0.2%
Various institutions: Space science research – economic competitiveness and support package	40 000	71 978	–	28 860	-10.3%	0.5%	9 200	30 000	31 650	3.1%	0.3%
National Research Foundation: Indigenous knowledge systems	–	1 840	–	–	–	–	–	–	–	–	–
Technology Innovation Agency	338 386	385 188	382 364	396 732	5.4%	5.6%	420 322	443 860	468 272	5.7%	5.8%
South African National Space Agency	118 298	124 355	154 630	131 226	3.5%	2.0%	138 036	145 453	153 453	5.4%	1.9%
Various institutions: Emerging research areas	–	11 802	11 498	–	–	0.1%	–	–	–	–	–
National Research Foundation: Research and development in indigenous knowledge systems	2 896	–	–	4 604	16.7%	–	4 871	5 144	5 427	5.6%	0.1%
National Research Foundation: Bilateral cooperation for global science development	12 935	13 530	13 598	14 130	3.0%	0.2%	14 948	15 952	16 829	6.0%	0.2%
Various institutions: Global science: International multilateral agreements	1 656	22 353	28 088	–	-100.0%	0.2%	–	–	–	–	–
Various institutions: Global science: African multilateral agreements	–	958	2 900	–	–	–	–	–	–	–	–
Academy of Science of South Africa	21 577	–	–	25 261	5.4%	0.2%	25 668	27 105	28 596	4.2%	0.4%
Various institutions: Astronomy research and development	12 707	25 155	14 069	29 348	32.2%	0.3%	31 050	32 789	34 592	5.6%	0.4%
Various institutions: Policy development on human and social development dynamics	9 838	10 283	10 283	26 012	38.3%	0.2%	27 409	28 896	30 485	5.4%	0.4%
National Research Foundation: Human resources development for science and engineering	465 658	835 665	832 662	833 804	21.4%	11.1%	889 172	950 582	1 002 864	6.3%	12.3%
National Research Foundation	851 286	878 399	882 805	925 964	2.8%	13.2%	904 752	953 365	1 005 799	2.8%	12.7%
Various institutions: Science awareness, research and initiatives to encourage youth participation in science	37 926	57 766	66 221	73 018	24.4%	0.9%	77 253	81 579	86 066	5.6%	1.1%
National Research Foundation: South African research chairs initiative to develop human resources in science	451 779	470 446	482 243	500 875	3.5%	7.1%	530 274	566 305	597 452	6.1%	7.3%
Various institutions: Strategic science platforms for research and development	138 044	149 943	181 819	199 572	13.1%	2.5%	208 325	220 176	232 286	5.2%	2.9%
Various institutions: Economic competitiveness and support package: Local manufacturing capacity research and technical support	–	–	–	80 000	–	0.3%	80 000	80 000	84 400	1.8%	1.1%
Various institutions: Economic competitiveness and support package: Local systems of innovation for the cold chain technologies project	–	–	–	–	–	–	62 000	62 000	65 410	–	0.6%
Various institutions: Innovative research and development	16 678	13 786	6 866	41 823	35.9%	0.3%	39 890	44 249	46 683	3.7%	0.6%
Human Sciences Research Council	276 010	288 706	290 149	304 656	3.3%	4.3%	303 733	320 053	337 656	3.5%	4.2%
Various institutions: Local manufacturing capacity research and technical support	43 712	42 000	70 739	3 311	-57.7%	0.6%	25 864	28 689	30 267	109.1%	0.3%
Various institutions: Local systems of innovation for the cold chain technologies project	33 000	60 000	64 000	35 781	2.7%	0.7%	10 632	11 793	12 442	-29.7%	0.2%
Various institutions: Resource-based industries research and development	1 000	1 304	1 000	–	-100.0%	–	–	–	–	–	–

Table 30.6 Vote transfers and subsidies trends and estimates

	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expen-diture/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen-diture/ Total (%)
R thousand	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
National Research Foundation: Research information management system	6 850	12 240	7 201	3 781	-18.0%	0.1%	4 000	8 448	8 913	33.1%	0.1%
Human Science Research Council: Develop and monitor science and technology indicators	9 657	5 445	–	9 437	-0.8%	0.1%	9 984	12 404	13 086	11.5%	0.2%
Various institutions: Environmental innovation	4 585	1 473	4 205	23 895	73.4%	0.1%	26 507	29 402	31 019	9.1%	0.4%
Capital	**988 950**	**1 136 449**	**1 079 949**	**1 412 632**	**12.6%**	**17.3%**	**1 363 697**	**1 472 815**	**1 553 856**	**3.2%**	**19.4%**
Various institutions: Infrastructure projects for research and development	343 751	449 034	413 312	718 701	27.9%	7.2%	654 285	703 015	741 717	1.1%	9.4%
National Research Foundation: Square Kilometre Array: Capital contribution to research	645 199	687 415	666 637	693 931	2.5%	10.1%	709 412	769 800	812 139	5.4%	10.0%
Households											
Other transfers to households											
Current	**325**	**250**	**533**	**–**	**-100.0%**	**–**	**–**	**–**	**–**	**–**	**–**
Households	–	–	303	–	–	–	–	–	–	–	–
Various institutions: Policy development on human and social development dynamics	125	125	200	–	-100.0%	–	–	–	–	–	–
National Research Foundation: Human resources development for science and engineering	–	125	–	–	–	–	–	–	–	–	–
Various institutions: Strategic science platforms for research and development	200	–	30	–	-100.0%	–	–	–	–	–	–
Public corporations and private enterprises											
Subsidies on products and production											
Current	**825 740**	**820 204**	**872 043**	**915 645**	**3.5%**	**12.9%**	**963 164**	**1 014 914**	**1 070 735**	**5.4%**	**13.3%**
Council for Scientific and Industrial Research	825 740	820 204	872 043	915 645	3.5%	12.9%	963 164	1 014 914	1 070 735	5.4%	13.3%
Higher education institutions											
Current	**134 455**	**134 561**	**183 249**	**–**	**-100.0%**	**1.7%**	**–**	**–**	**–**	**–**	**–**
Various institutions: Institutional and programme support research	410	4 640	6 000	–	-100.0%	–	–	–	–	–	–
Various institutions: Biofuels	–	490	2 000	–	–	–	–	–	–	–	–
Various institutions: Technology transfer offices: Support of research units	36 560	31 744	23 313	–	-100.0%	0.3%	–	–	–	–	–
Various institutions: Implementation of bioeconomy strategy	8 006	8 515	995	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Energy grand challenge research	5 550	7 360	5 250	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Health innovation research	700	150	463	–	-100.0%	–	–	–	–	–	–
Various institutions: Hydrogen strategy research	15 923	16 448	81 438	–	-100.0%	0.4%	–	–	–	–	–
Various institutions: Indigenous knowledge systems	894	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Innovation projects research	5 884	–	2 004	–	-100.0%	–	–	–	–	–	–
International Centre for Genetic Engineering and Biotechnology	–	504	10 000	–	–	–	–	–	–	–	–
National Research Foundation: Indigenous knowledge systems	–	4 789	3 663	–	–	–	–	–	–	–	–
Various institutions: Emerging research areas	12 806	13 500	14 500	–	-100.0%	0.2%	–	–	–	–	–
Various institutions: Global science: International multilateral agreements	15 666	11 187	8 332	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Global science: African multilateral agreements	4 320	1 937	200	–	-100.0%	–	–	–	–	–	–
National Research Foundation: Human resources development for science and engineering	4 940	3 736	3 024	–	-100.0%	–	–	–	–	–	–
Various institutions: Science awareness	9 652	8 118	200	–	-100.0%	0.1%	–	–	–	–	–

Table 30.6 Vote transfers and subsidies trends and estimates

R thousand	Audited outcome 2014/15	Audited outcome 2015/16	Audited outcome 2016/17	Adjusted appropriation 2017/18	Average growth rate (%) 2014/15 - 2017/18	Average: Expen-diture/Total (%) 2014/15 - 2017/18	Medium-term expenditure estimate 2018/19	Medium-term expenditure estimate 2019/20	Medium-term expenditure estimate 2020/21	Average growth rate (%) 2017/18 - 2020/21	Average: Expen-diture/Total (%) 2017/18 - 2020/21
Various institutions: Strategic science platforms for research and development	5 467	6 796	7 244	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Astronomy research and development	612	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Advanced manufacturing technology strategy implementation	2 321	2 892	330	–	-100.0%	–	–	–	–	–	–
Various institutions: Innovative research and development	631	4 498	8 000	–	-100.0%	–	–	–	–	–	–
Various institutions: Local manufacturing capacity research and technical support	747	2 407	1 974	–	-100.0%	–	–	–	–	–	–
Various institutions: Local systems of innovation for the cold chain technologies project	2 366	3 545	4 319	–	-100.0%	–	–	–	–	–	–
Various institutions: Resource-based industries research and development	1 000	1 305	–	–	-100.0%	–	–	–	–	–	–
Capital	**93 578**	**95 743**	**27 080**	**–**	**-100.0%**	**0.8%**	**–**	**–**	**–**	**–**	**–**
Various institutions: Hydrogen strategy – capital	60 772	63 568	–	–	-100.0%	0.5%	–	–	–	–	–
Various institutions: Infrastructure projects for research and development	32 806	32 175	27 080	–	-100.0%	0.3%	–	–	–	–	–
Non-profit institutions											
Current	**120 289**	**128 822**	**146 425**	**246 004**	**26.9%**	**2.4%**	**271 869**	**291 028**	**307 034**	**7.7%**	**3.7%**
Various institutions: Institutional and programme support research	4 356	5 325	9 170	17 503	59.0%	0.1%	14 286	15 086	15 916	-3.1%	0.2%
Various institutions: Biofuels research	–	–	1 799	5 348	–	–	7 245	7 651	8 072	14.7%	0.1%
Various institutions: Implementation of the Biotechnology strategy	3 810	8 089	11 556	36 112	111.6%	0.2%	37 742	41 651	43 942	6.8%	0.5%
Various institutions: Energy grand challenge research	2 350	–	700	–	-100.0%	–	–	–	–	–	–
Various institutions: Health innovation research	–	–	300	44 691	–	0.2%	46 947	51 160	53 974	6.5%	0.7%
Various institutions: Hydrogen strategy – research	–	–	–	38 002	–	0.1%	40 206	42 458	44 793	5.6%	0.6%
Various institutions: Innovation projects research	2 755	2 955	1 000	–	-100.0%	–	–	–	–	–	–
International Centre for Genetic Engineering and Biotechnology	36 280	11 621	22 186	–	-100.0%	0.3%	–	–	–	–	–
Various institutions: Technology transfer offices: Support for research units	–	–	1 833	36 000	–	0.1%	39 000	41 184	43 449	6.5%	0.5%
National Research Foundation: Indigenous knowledge systems	–	500	–	–	–	–	–	–	–	–	–
South African Association of Science and Technology Centres: Technology top 100 awards	–	3 507	–	3 701	–	–	3 916	4 135	4 362	5.6%	0.1%
South African National AIDS Council	–	–	–	15 000	–	0.1%	30 000	31 680	33 422	30.6%	0.4%
Various institutions: Emerging research areas	5 800	6 000	6 000	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Global science: International multilateral agreements	28	147	424	40 775	1033.5%	0.2%	43 139	46 009	48 539	6.0%	0.6%
Various institutions: Global science: African multilateral agreements	–	723	2 950	8 872	–	–	9 388	10 014	10 565	6.0%	0.1%
Academy of Science of South Africa	–	23 229	25 106	–	–	0.2%	–	–	–	–	–
National Research Foundation: Human resources development for science and engineering	80	5 578	6 042	–	-100.0%	–	–	–	–	–	–
Various institutions: Science awareness	18 377	3 310	3 060	–	-100.0%	0.1%	–	–	–	–	–
Square Kilometre Array	8 400	–	–	–	-100.0%	–	–	–	–	–	–

Table 30.6 Vote transfers and subsidies trends and estimates

R thousand	Audited outcome 2014/15	Audited outcome 2015/16	Audited outcome 2016/17	Adjusted appropriation 2017/18	Average growth rate (%) 2014/15 - 2017/18	Average: Expen-diture/Total (%) 2014/15 - 2017/18	Medium-term expenditure estimate 2018/19	Medium-term expenditure estimate 2019/20	Medium-term expenditure estimate 2020/21	Average growth rate (%) 2017/18 - 2020/21	Average: Expen-diture/Total (%) 2017/18 - 2020/21
Various institutions: Strategic science platforms for research and development	3 000	1 500	3 311	–	-100.0%	–	–	–	–	–	–
Various institutions: Advanced manufacturing technology strategy implementation	100	100	100	–	-100.0%	–	–	–	–	–	–
Various institutions: Innovative research and development	19 644	8 105	8 920	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Local systems of innovation for the cold chain technologies project	13 397	36 351	30 291	–	-100.0%	0.3%	–	–	–	–	–
Various institutions: Resource-based industries research and development	1 222	1 706	1 697	–	-100.0%	–	–	–	–	–	–
Various institutions: Environmental innovation	690	10 076	9 980	–	-100.0%	0.1%	–	–	–	–	–
Capital	**–**	**–**	**11 301**	**67 080**	**–**	**0.3%**	**70 971**	**74 945**	**79 067**	**5.6%**	**1.0%**
Various institutions: Hydrogen strategy – capital	–	–	–	67 080	–	0.3%	70 971	74 945	79 067	5.6%	1.0%
Various institutions: Infrastructure projects for research and development	–	–	11 301	–	–	–	–	–	–	–	–
Public corporations and private enterprises											
Other transfers to public corporations											
Current	**354 857**	**485 059**	**497 562**	**308 192**	**-4.6%**	**6.2%**	**320 356**	**346 399**	**365 451**	**5.8%**	**4.5%**
Various institutions: Institutional and programme support research	1 425	600	191	–	-100.0%	–	–	–	–	–	–
Households	32 215	–	–	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Technology transfer offices: Support of research units	–	6 592	5 680	–	–	–	–	–	–	–	–
Various institutions: Implementation of bioeconomy strategy	7 822	6 850	76 620	–	-100.0%	0.3%	–	–	–	–	–
Various institutions: Energy grand challenge research	1 500	–	15 923	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Health innovation research	5 000	5 900	2 853	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Hydrogen strategy research	1 500	2 580	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Indigenous knowledge systems	1 000	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Innovation projects research	100	14 657	7 450	–	-100.0%	0.1%	–	–	–	–	–
National Research Foundation: Indigenous knowledge systems	–	1 735	6 150	–	–	–	–	–	–	–	–
Various institutions: Emerging research areas	33 130	61 129	–	100 848	44.9%	0.7%	106 697	112 672	118 869	5.6%	1.5%
Various institutions: Technology transfer offices for support of research units	14 647	–	–	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Global science: International multilateral agreements	16 198	5 338	2 115	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Global science: African multilateral agreements	–	3 138	2 200	–	–	–	–	–	–	–	–
National Research Foundation: Human resources development for science and engineering	–	33 505	–	–	–	0.1%	–	–	–	–	–
National Research Foundation: Human resources development for science and engineering: Economic competitiveness and support package	–	–	38 388	51 140	–	0.3%	13 800	22 000	23 210	-23.2%	0.4%
National Research Foundation: Square Kilometre Array: Research and development	723	2 000	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Strategic science platforms for research and development	700	4 500	4 611	–	-100.0%	–	–	–	–	–	–
Various institutions: Advanced manufacturing technology strategy implementation	25 649	–	43 146	51 215	25.9%	0.4%	53 678	59 542	62 817	7.0%	0.8%

Table 30.6 Vote transfers and subsidies trends and estimates

R thousand	Audited outcome 2014/15	2015/16	2016/17	Adjusted appropriation 2017/18	Average growth rate (%) 2014/15 - 2017/18	Average: Expen-diture/ Total (%) 2014/15 - 2017/18	Medium-term expenditure estimate 2018/19	2019/20	2020/21	Average growth rate (%) 2017/18 - 2020/21	Average: Expen-diture/ Total (%) 2017/18 - 2020/21
Council for Scientific and Industrial Research	24 208	26 144	21 827	31 960	9.7%	0.4%	34 738	38 533	40 652	8.3%	0.5%
Various institutions: Innovative research and development	20 827	12 343	19 295	–	-100.0%	0.2%	–	–	–	–	–
Various institutions: Local manufacturing capacity research and technical support	68 034	143 101	141 925	–	-100.0%	1.3%	–	–	–	–	–
Council for Scientific and Industrial Research: Mining research and development	–	–	–	27 000	–	0.1%	63 000	60 000	63 300	32.8%	0.7%
Various institutions: Local systems of innovation for the cold chain technologies project	51 422	104 840	54 413	–	-100.0%	0.8%	–	–	–	–	–
Various institutions: Resource-based industries research and development	38 494	45 193	41 100	46 029	6.1%	0.6%	48 443	53 652	56 603	7.1%	0.7%
Various institutions: Environmental innovation	10 263	4 914	13 675	–	-100.0%	0.1%	–	–	–	–	–
Capital	**389 116**	**486 184**	**424 380**	**223 273**	**-16.9%**	**5.7%**	**236 339**	**251 686**	**265 529**	**5.9%**	**3.3%**
Council for Scientific and Industrial Research: Cyber infrastructure research and development	204 045	213 479	214 546	223 273	3.0%	3.2%	236 339	251 686	265 529	5.9%	3.3%
Various institutions: Infrastructure projects for research and development	185 071	272 705	209 834	–	-100.0%	2.5%	–	–	–	–	–
Public corporations and private enterprises											
Other transfers to private enterprises											
Current	**3 353**	**42 227**	**–**	**–**	**-100.0%**	**0.2%**	**–**	**–**	**–**	**–**	**–**
South African Association of Science and Technology Centres: Innovation projects	3 353	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Advanced manufacturing technology strategy implementation	–	42 227	–	–	–	0.2%	–	–	–	–	–
Total	**5 934 372**	**6 956 058**	**6 860 017**	**6 964 482**	**5.5%**	**100.0%**	**7 174 989**	**7 668 456**	**8 090 257**	**5.1%**	**100.0%**

Personnel information

Table 30.7 Vote personnel numbers and cost by salary level and programme[1]

Programmes
1. Administration
2. Technology Innovation
3. International Cooperation and Resources
4. Research, Development and Support
5. Socioeconomic Innovation Partnerships

Science and Technology	Number of posts estimated for 31 March 2018: Number of funded posts	Number of posts additional to the establishment	Actual 2016/17 Number	Cost	Unit cost	Revised estimate 2017/18 Number	Cost	Unit cost	Medium-term expenditure estimate 2018/19 Number	Cost	Unit cost	2019/20 Number	Cost	Unit cost	2020/21 Number	Cost	Unit cost	Number: Average growth rate (%) 2017/18 - 2020/21	Average: Salary level/Total (%) 2017/18 - 2020/21
			Number and cost[2] of personnel posts filled / planned for on funded establishment																
Salary level	**492**	**–**	**428**	**319.0**	**0.7**	**408**	**326.8**	**0.8**	**410**	**352.9**	**0.9**	**411**	**380.5**	**0.9**	**410**	**408.4**	**1.0**	**0.2%**	**100.0%**
1 – 6	70	–	62	15.0	0.2	61	16.0	0.3	62	17.5	0.3	62	18.9	0.3	62	20.4	0.3	0.5%	15.1%
7 – 10	141	–	129	57.3	0.4	124	60.2	0.5	124	65.1	0.5	124	70.2	0.6	123	75.2	0.6	-0.3%	30.2%
11 – 12	155	–	122	108.0	0.9	114	110.0	1.0	115	119.8	1.0	116	130.5	1.1	116	140.9	1.2	0.6%	28.1%
13 – 16	124	–	113	134.5	1.2	107	136.2	1.3	107	145.7	1.4	107	155.7	1.5	107	166.5	1.6	–	26.1%
Other	2	–	2	4.2	2.1	2	4.5	2.3	2	4.8	2.4	2	5.2	2.6	2	5.5	2.8	–	0.5%
Programme	**492**	**–**	**428**	**319.0**	**0.7**	**408**	**326.8**	**0.8**	**410**	**352.9**	**0.9**	**411**	**380.5**	**0.9**	**410**	**408.4**	**1.0**	**0.2%**	**100.0%**
Programme 1	265	–	225	161.2	0.7	210	160.4	0.8	212	174.0	0.8	213	188.1	0.9	212	201.5	1.0	0.3%	51.7%
Programme 2	58	–	50	42.9	0.9	49	45.9	0.9	49	49.3	1.0	49	53.0	1.1	49	57.0	1.2	–	12.0%
Programme 3	63	–	57	43.3	0.8	57	46.8	0.8	57	50.4	0.9	57	54.2	1.0	57	58.3	1.0	–	13.9%
Programme 4	49	–	45	34.6	0.8	41	33.7	0.8	41	36.2	0.9	41	38.9	0.9	41	41.9	1.0	–	10.0%
Programme 5	57	–	51	37.0	0.7	51	40.0	0.8	51	43.0	0.8	51	46.2	0.9	51	49.7	1.0	–	12.4%

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

Departmental receipts

Table 30.8 Departmental receipts by economic classification

	Audited outcome			Adjusted estimate	Revised estimate	Average growth rate (%)	Average: Receipt item/ Total (%)	Medium-term receipts estimate			Average growth rate (%)	Average: Receipt item/ Total (%)
R thousand	2014/15	2015/16	2016/17	2017/18		2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Departmental receipts	**1 602**	**514**	**8 199**	**8 189**	**8 440**	**74.0%**	**100.0%**	**555**	**545**	**545**	**-59.9%**	**100.0%**
Sales of goods and services produced by department	**50**	**51**	**57**	**58**	**58**	**5.1%**	**1.2%**	**35**	**35**	**35**	**-15.5%**	**1.6%**
Other sales	50	51	57	58	58	5.1%	1.2%	35	35	35	-15.5%	1.6%
of which:												
Services rendered: Commission on insurance.	*50*	*51*	*57*	*58*	*58*	*5.1%*	*1.2%*	*35*	*35*	*35*	*-15.5%*	*1.6%*
Sales of scrap, waste, arms and other used current goods	**–**	**–**	**–**	**3**	**4**	**–**	**–**	**–**	**–**	**–**	**-100.0%**	**–**
of which:												
Sales: scrap, waste and other goods	*–*	*–*	*–*	*3*	*4*	*–*	*–*	*–*	*–*	*–*	*-100.0%*	*–*
Interest, dividends and rent on land	**3**	**6**	**9**	**56**	**56**	**165.3%**	**0.4%**	**20**	**10**	**10**	**-43.7%**	**1.0%**
Interest	3	6	9	56	56	165.3%	0.4%	20	10	10	-43.7%	1.0%
Sales of capital assets	**–**	**–**	**45**	**–**	**250**	**–**	**1.6%**	**–**	**–**	**–**	**-100.0%**	**2.5%**
Transactions in financial assets and liabilities	**1 549**	**457**	**8 088**	**8 072**	**8 072**	**73.4%**	**96.9%**	**500**	**500**	**500**	**-60.4%**	**94.9%**
Total	**1 602**	**514**	**8 199**	**8 189**	**8 440**	**74.0%**	**100.0%**	**555**	**545**	**545**	**-59.9%**	**100.0%**

Programme 1: Administration

Programme purpose

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

Expenditure trends and estimates

Table 30.9 Administration expenditure trends and estimates by subprogramme and economic classification

Subprogramme	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expen- diture/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen- diture/ Total (%)
R million	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Ministry	4.0	4.3	4.2	4.5	3.9%	1.3%	5.1	5.5	5.9	9.7%	1.4%
Management	81.7	90.1	99.2	115.9	12.3%	30.0%	119.6	123.9	131.9	4.4%	33.6%
Corporate Services	183.9	200.1	216.6	242.5	9.7%	65.4%	243.3	194.7	207.0	-5.1%	60.7%
Governance	7.6	7.5	8.2	8.3	3.3%	2.4%	10.7	11.0	11.7	12.0%	2.9%
Office Accommodation	1.3	–	4.4	4.8	56.1%	0.8%	5.0	5.3	5.6	5.4%	1.4%
Total	**278.4**	**302.0**	**332.6**	**376.0**	**10.5%**	**100.0%**	**383.8**	**340.4**	**362.1**	**-1.2%**	**100.0%**
Change to 2017 Budget estimate				–			(17.8)	(8.9)	(9.8)		
Economic classification											
Current payments	**262.2**	**270.5**	**299.6**	**336.4**	**8.7%**	**90.7%**	**357.3**	**322.6**	**343.4**	**0.7%**	**93.0%**
Compensation of employees	140.1	151.7	161.2	158.4	4.2%	47.4%	174.0	188.1	201.5	8.4%	49.4%
Goods and services[1]	122.1	118.8	138.4	178.0	13.4%	43.2%	183.3	134.5	141.9	-7.3%	43.6%
of which:											
Advertising	*23.1*	*22.8*	*28.0*	*7.9*	*-30.1%*	*6.3%*	*9.2*	*9.7*	*10.8*	*11.0%*	*2.6%*
Consultants: Business and advisory services	*3.3*	*3.1*	*4.0*	*12.3*	*55.0%*	*1.8%*	*14.4*	*7.2*	*7.6*	*-14.9%*	*2.8%*
Contractors	*6.8*	*7.5*	*3.5*	*9.5*	*12.0%*	*2.1%*	*10.5*	*9.6*	*10.1*	*2.0%*	*2.7%*
Property payments	*–*	*–*	*10.5*	*17.4*	*–*	*2.2%*	*18.0*	*7.3*	*7.7*	*-23.9%*	*3.4%*
Travel and subsistence	*3.4*	*5.0*	*21.3*	*30.5*	*108.9%*	*4.7%*	*32.8*	*20.5*	*21.7*	*-10.8%*	*7.2%*
Venues and facilities	*0.9*	*1.4*	*1.4*	*24.2*	*201.6%*	*2.2%*	*16.2*	*11.5*	*11.2*	*-22.6%*	*4.3%*
Transfers and subsidies[1]	**10.2**	**14.9**	**17.5**	**17.5**	**19.6%**	**4.7%**	**14.3**	**15.1**	**15.9**	**-3.1%**	**4.3%**
Departmental agencies and accounts	3.5	4.0	1.5	–	-100.0%	0.7%	–	–	–	–	–
Higher education institutions	0.4	4.6	6.0	–	-100.0%	0.9%	–	–	–	–	–
Public corporations and private enterprises	1.4	0.6	0.2	–	-100.0%	0.2%	–	–	–	–	–
Non-profit institutions	4.4	5.3	9.2	17.5	59.0%	2.8%	14.3	15.1	15.9	-3.1%	4.3%
Households	0.5	0.3	0.6	–	-100.0%	0.1%	–	–	–	–	–

Table 30.9 Administration expenditure trends and estimates by subprogramme and economic classification

Economic classification	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expen-diture/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen-diture/ Total (%)
R million	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Payments for capital assets	**6.0**	**16.5**	**15.4**	**22.0**	**54.6%**	**4.6%**	**12.2**	**2.7**	**2.8**	**-49.6%**	**2.7%**
Machinery and equipment	6.0	16.5	15.4	22.0	54.6%	4.6%	12.2	2.7	2.8	-49.6%	2.7%
Payments for financial assets	**0.0**	**0.1**	**0.1**	**–**	**-100.0%**	**–**	**–**	**–**	**–**	**–**	**–**
Total	**278.4**	**302.0**	**332.6**	**376.0**	**10.5%**	**100.0%**	**383.8**	**340.4**	**362.1**	**-1.2%**	**100.0%**
Proportion of total programme expenditure to vote expenditure	**4.4%**	**4.1%**	**4.5%**	**5.0%**	**–**	**–**	**4.9%**	**4.1%**	**4.2%**	**–**	**–**
Details of selected transfers and subsidies											
Departmental agencies and accounts											
Departmental agencies (non-business entities)											
Current	**3.5**	**4.0**	**1.5**	**–**	**-100.0%**	**0.7%**	**–**	**–**	**–**	**–**	**–**
Various institutions: Institutional and programme support research	3.5	4.0	1.5	–	-100.0%	0.7%	–	–	–	–	–
Higher education institutions											
Current	**0.4**	**4.6**	**6.0**	**–**	**-100.0%**	**0.9%**	**–**	**–**	**–**	**–**	**–**
Various institutions: Institutional and programme support research	0.4	4.6	6.0	–	-100.0%	0.9%	–	–	–	–	–
Non-profit institutions											
Current	**4.4**	**5.3**	**9.2**	**17.5**	**59.0%**	**2.8%**	**14.3**	**15.1**	**15.9**	**-3.1%**	**4.3%**
Various institutions: Institutional and programme support research	4.4	5.3	9.2	17.5	59.0%	2.8%	14.3	15.1	15.9	-3.1%	4.3%
Public corporations and private enterprises											
Public corporations											
Other transfers to public corporations											
Current	**1.4**	**0.6**	**0.2**	**–**	**-100.0%**	**0.2%**	**–**	**–**	**–**	**–**	**–**
Various institutions: Institutional and programme support research	1.4	0.6	0.2	–	-100.0%	0.2%	–	–	–	–	–

1. *Estimates of National Expenditure data tables are available and can be downloaded from www.treasury.gov.za. These data tables contain detailed information by goods and services, and transfers and subsidies item 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 bioeconomy, nanotechnology, robotics, photonics, indigenous knowledge systems, intellectual property management, technology transfer and technology commercialisation by March 2021, by:
  - funding and/or maintaining 59 instruments to support the use of knowledge
  - generating 446 knowledge products (including peer-reviewed scientific articles published in scientific publications, and filings/applications or the registration/granting of intellectual property rights)
  - developing and approving 15 science, technology and innovation strategic policy directives to enhance understanding and analyses that support the implementation of relevant interventions
  - developing and/or maintaining 6 decision support interventions to improve the delivery of government services or functions
  - converting 100 per cent of the requests for regulations into recommendations for decision support 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 March 2021 by overseeing 630 new disclosures reported by publicly funded institutions.
- Coordinate and support high-end skills development by supporting 830 masters and doctoral students, and 720 trainees through department funded research and development initiatives by March 2021.
- Support, promote and advocate the development and translation of scientific research and development outputs into commercial products, processes and services that will contribute towards economic growth and better quality of life by March 2021, by:
  - supporting 16 knowledge application products, including prototypes, technology demonstrators and pilots
  - supporting 9 commercial outputs, including licences, assignments, options, new companies, products, processes and services.

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.
- *Bioinnovation* leads the implementation of the national bioeconomy strategy approved by Cabinet in 2013.
- *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.

Expenditure trends and estimates

Table 30.10 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 (%)
R million	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Space Science	168.5	209.1	167.8	174.9	1.3%	17.4%	161.9	190.7	201.4	4.8%	15.4%
Hydrogen and Energy	143.8	147.7	143.6	156.8	2.9%	14.3%	167.8	178.5	188.5	6.3%	14.6%
Bio-innovation	150.1	136.1	220.2	156.1	1.3%	16.0%	178.4	193.3	204.2	9.4%	15.5%
Innovation Priorities and Instruments	415.2	518.1	442.0	540.5	9.2%	46.4%	572.7	608.3	641.9	5.9%	50.0%
National Intellectual Property Management Office	96.4	52.4	42.2	46.8	-21.4%	5.8%	50.9	53.6	56.8	6.6%	4.4%
Total	**974.0**	**1 063.3**	**1 015.9**	**1 075.1**	**3.3%**	**100.0%**	**1 131.7**	**1 224.4**	**1 292.8**	**6.3%**	**100.0%**
Change to 2017 Budget estimate				–			11.6	29.3	31.0		
Economic classification											
Current payments	**51.8**	**51.6**	**55.7**	**67.3**	**9.2%**	**5.5%**	**71.9**	**73.9**	**79.1**	**5.5%**	**6.2%**
Compensation of employees	35.6	39.8	42.9	45.9	8.9%	4.0%	49.3	53.0	57.0	7.5%	4.3%
Goods and services[1]	16.2	11.7	12.7	21.4	9.8%	1.5%	22.6	20.9	22.1	1.0%	1.8%
of which:											
Communication	*0.4*	*0.7*	*0.9*	*0.9*	*26.4%*	*0.1%*	*0.9*	*1.0*	*1.0*	*5.6%*	*0.1%*
Consultants: Business and advisory services	*1.3*	*0.2*	*2.1*	*1.6*	*9.2%*	*0.1%*	*1.7*	*1.7*	*1.8*	*3.8%*	*0.1%*
Agency and support/outsourced services	*1.9*	*1.0*	*0.2*	*6.4*	*50.0%*	*0.2%*	*6.7*	*6.3*	*6.5*	*0.9%*	*0.5%*
Entertainment	*0.0*	*0.0*	*0.0*	*3.7*	*526.7%*	*0.1%*	*3.9*	*3.4*	*3.5*	*-1.4%*	*0.3%*
Travel and subsistence	*–*	*–*	*6.5*	*5.2*	*–*	*0.3%*	*5.4*	*4.6*	*4.9*	*-1.8%*	*0.4%*
Venues and facilities	*–*	*0.0*	*2.0*	*2.0*	*–*	*0.1%*	*2.1*	*2.2*	*2.4*	*5.6%*	*0.2%*

Table 30.10 Technology Innovation expenditure trends and estimates by subprogramme and economic classification

Economic classification	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expen-diture/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen-diture/ Total (%)
R million	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Transfers and subsidies[1]	**922.2**	**1 011.7**	**960.2**	**1 007.8**	**3.0%**	**94.5%**	**1 059.9**	**1 150.4**	**1 213.7**	**6.4%**	**93.8%**
Departmental agencies and accounts	623.7	732.5	656.3	661.0	2.0%	64.8%	677.1	742.9	783.7	5.8%	60.6%
Higher education institutions	147.1	147.1	143.6	–	-100.0%	10.6%	–	–	–	–	–
Public corporations and private enterprises	100.3	99.4	114.7	100.8	0.2%	10.1%	106.7	112.7	118.9	5.6%	9.3%
Non-profit institutions	51.0	32.7	45.4	245.9	69.0%	9.1%	276.0	294.9	311.1	8.1%	23.9%
Households	0.2	–	0.2	–	-100.0%	–	–	–	–	–	–
Payments for capital assets	**0.1**	**–**	**0.0**	**–**	**-100.0%**	**–**	**–**	**–**	**–**	**–**	**–**
Machinery and equipment	0.1	–	0.0	–	-100.0%	–	–	–	–	–	–
Total	**974.0**	**1 063.3**	**1 015.9**	**1 075.1**	**3.3%**	**100.0%**	**1 131.7**	**1 224.4**	**1 292.8**	**6.3%**	**100.0%**
Proportion of total programme expenditure to vote expenditure	**15.2%**	**14.3%**	**13.8%**	**14.2%**	**–**	**–**	**14.5%**	**14.8%**	**14.8%**	**–**	**–**
Details of selected transfers and subsidies											
Departmental agencies and accounts											
Departmental agencies (non-business entities)											
Current	**621.2**	**732.5**	**656.3**	**661.0**	**2.1%**	**64.7%**	**677.1**	**742.9**	**783.7**	**5.8%**	**60.6%**
Various institutions: Biofuels	6.0	6.0	–	–	-100.0%	0.3%	–	–	–	–	–
Various institutions: Technology transfer offices: Support of research units	2.2	4.4	0.7	–	-100.0%	0.2%	–	–	–	–	–
Various institutions: Implementation of bio-economy strategy	13.3	9.5	9.5	–	-100.0%	0.8%	–	–	–	–	–
Various institutions: Energy grand challenge research	24.4	26.4	22.3	35.1	12.9%	2.6%	37.0	40.9	43.2	7.1%	3.3%
Various institutions: Health innovation research	36.0	37.6	37.5	–	-100.0%	2.7%	–	–	–	–	–
Various institutions: Research in HIV and AIDS prevention and treatmennt technologies	22.6	24.5	23.8	23.7	1.6%	2.3%	24.6	27.9	29.4	7.4%	2.2%
Various institutions: Hydrogen strategy research	16.0	17.0	4.0	–	-100.0%	0.9%	–	–	–	–	–
Various institutions: Innovation projects research	1.1	12.0	10.0	27.9	191.9%	1.2%	29.5	35.3	37.3	10.1%	2.8%
International Centre for Genetic Engineering and Biotechnology	–	–	–	12.8	–	0.3%	13.5	14.3	15.1	5.6%	1.2%
Various institutions: Space science research-Economic competitiveness and support package	40.0	72.0	–	28.9	-10.3%	3.4%	9.2	30.0	31.7	3.1%	2.1%
National Research Foundation: Indigenous knowledge systems	–	1.8	–	–	–	–	–	–	–	–	–
Technology Innovation Agency	338.4	385.2	382.4	396.7	5.4%	36.4%	420.3	443.9	468.3	5.7%	36.6%
South African National Space Agency	118.3	124.4	154.6	131.2	3.5%	12.8%	138.0	145.5	153.5	5.4%	12.0%
Various institutions: Emerging research areas	–	11.8	11.5	–	–	0.6%	–	–	–	–	–
National Research Foundation: Research and development in indigenous knowledge systems	2.9	–	–	4.6	16.7%	0.2%	4.9	5.1	5.4	5.6%	0.4%
Higher education institutions											
Current	**85.4**	**83.5**	**143.6**	**–**	**-100.0%**	**7.6%**	**–**	**–**	**–**	**–**	**–**
Various institutions: Biofuels	–	0.5	2.0	–	–	0.1%	–	–	–	–	–
Various institutions: Technology transfer offices: Support of research units	36.6	31.7	23.3	–	-100.0%	2.2%	–	–	–	–	–
Various institutions: Implementation of bio-economy strategy	8.0	8.5	1.0	–	-100.0%	0.4%	–	–	–	–	–
Various institutions: Energy grand challenge research	5.6	7.4	5.3	–	-100.0%	0.4%	–	–	–	–	–
Various institutions: Health innovation research	0.7	0.2	0.5	–	-100.0%	–	–	–	–	–	–
Various institutions: Hydrogen strategy research	15.9	16.4	81.4	–	-100.0%	2.8%	–	–	–	–	–
Various institutions: Innovation projects research	5.9	–	2.0	–	-100.0%	0.2%	–	–	–	–	–
International Centre for Genetic Engineering and Biotechnology	–	0.5	10.0	–	–	0.3%	–	–	–	–	–
National Research Foundation: Indigenous knowledge systems	–	4.8	3.7	–	–	0.2%	–	–	–	–	–
Various institutions: Emerging research areas	12.8	13.5	14.5	–	-100.0%	1.0%	–	–	–	–	–

Table 30.10 Technology Innovation expenditure trends and estimates by subprogramme and economic classification

Details of selected transfers and subsidies	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expen- diture/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen- diture/ Total (%)
R million	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Capital	**60.8**	**63.6**	**–**	**–**	**-100.0%**	**3.0%**	**–**	**–**	**–**	**–**	**–**
Various institutions: Hydrogen strategy - capital	60.8	63.6	–	–	-100.0%	3.0%	–	–	–	–	–
Non-profit institutions											
Current	**51.0**	**32.2**	**45.4**	**178.9**	**51.9%**	**7.4%**	**205.1**	**219.9**	**232.0**	**9.1%**	**17.7%**
Various institutions: Biofuels research	–	–	1.8	5.3	–	0.2%	7.2	7.7	8.1	14.7%	0.6%
Various institutions: Implementation of the Bio-technology strategy	3.8	8.1	11.6	36.1	111.6%	1.4%	37.7	41.7	43.9	6.8%	3.4%
Various institutions: Energy grand challenge research	2.4	–	0.7	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Health innovation research	–	–	0.3	44.7	–	1.1%	46.9	51.2	54.0	6.5%	4.2%
Various institutions: Hydrogen strategy- research	–	–	–	38.0	–	0.9%	40.2	42.5	44.8	5.6%	3.5%
Various institutions: Innovation projects research	2.8	3.0	1.0	–	-100.0%	0.2%	–	–	–	–	–
International Centre for Genetic Engineering and Biotechnology	36.3	11.6	22.2	–	-100.0%	1.7%	–	–	–	–	–
Various institutions: Technology transfer offices: Support for research units	–	–	1.8	36.0	–	0.9%	39.0	41.2	43.4	6.5%	3.4%
South African Association of Science and Technology Centres: Technology top 100 awards	–	3.5	–	3.7	–	0.2%	3.9	4.1	4.4	5.6%	0.3%
South African National AIDS Council	–	–	–	15.0	–	0.4%	30.0	31.7	33.4	30.6%	2.3%
Various institutions: Emerging research areas	5.8	6.0	6.0	–	-100.0%	0.4%	–	–	–	–	–
Capital	**–**	**–**	**–**	**67.1**	**–**	**1.6%**	**71.0**	**74.9**	**79.1**	**5.6%**	**6.2%**
Various institutions: Hydrogen strategy - capital	–	–	–	67.1	–	1.6%	71.0	74.9	79.1	5.6%	6.2%
Public corporations and private enterprises											
Public corporations											
Other transfers to public corporations											
Current	**96.9**	**99.4**	**114.7**	**100.8**	**1.3%**	**10.0%**	**106.7**	**112.7**	**118.9**	**5.6%**	**9.3%**
Households	32.2	–	–	–	-100.0%	0.8%	–	–	–	–	–
Various institutions: Technology transfer offices: Support of research units	–	6.6	5.7	–	–	0.3%	–	–	–	–	–
Various institutions: Implementation of bio-economy strategy	7.8	6.9	76.6	–	-100.0%	2.2%	–	–	–	–	–
Various institutions: Energy grand challenge research	1.5	–	15.9	–	-100.0%	0.4%	–	–	–	–	–
Various institutions: Health innovation research	5.0	5.9	2.9	–	-100.0%	0.3%	–	–	–	–	–
Various institutions: Hydrogen strategy research	1.5	2.6	–	–	-100.0%	0.1%	–	–	–	–	–
Various insititutions: Indigenous knowledge systems	1.0	–	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Innovation projects research	0.1	14.7	7.5	–	-100.0%	0.5%	–	–	–	–	–
National Research Foundation: Indigenous knowledge systems	–	1.7	6.2	–	–	0.2%	–	–	–	–	–
Various institutions: Emerging research areas	33.1	61.1	–	100.8	44.9%	4.7%	106.7	112.7	118.9	5.6%	9.3%
Various institutions: Technology transfer offices for support of research units	14.6	–	–	–	-100.0%	0.4%	–	–	–	–	–

1. *Estimates of National Expenditure data tables are available and can be downloaded from www.treasury.gov.za. These data tables contain detailed information by goods and services, and transfers and subsidies item 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 supporting science, technology and innovation capacity building 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 R1.4 billion 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 2 030 South African researchers in international postgraduate training programmes by March 2021.
- Build capacity in and support initiatives for the Southern African Development Community (SADC) and African Union (AU) to advance Africa's growth and development by strengthening cooperation in science, technology and innovation in Africa through technical and financial support for 60 approved SADC and AU science, technology and innovation initiatives and programmes by March 2021.
- Support South Africa's foreign policy objectives of creating a better South Africa and contributing to a better Africa and a better world by maximising South Africa'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 March 2021.

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 SADC and AU programmes; 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 partnerships with partners such as the European Union, philanthropic foundations and organisations, and the multinational private sector.
- *Overseas Bilateral Cooperation* promotes and facilitates South Africa's bilateral science, technology and innovation cooperation 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.

Expenditure trends and estimates

Table 30.11 International Cooperation and Resources expenditure trends and estimates by subprogramme and economic classification

Subprogramme	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expen-diture/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen-diture/ Total (%)
R million	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Multilateral Cooperation and Africa	22.2	25.7	30.4	31.2	12.0%	23.1%	31.4	32.7	34.9	3.8%	23.0%
International Resources	54.0	56.6	54.2	60.5	3.8%	47.6%	63.0	66.9	70.9	5.5%	46.3%
Overseas Bilateral Cooperation	31.4	32.7	33.9	40.7	9.1%	29.3%	42.0	43.8	46.6	4.6%	30.7%
Total	**107.6**	**115.0**	**118.5**	**132.4**	**7.2%**	**100.0%**	**136.4**	**143.4**	**152.4**	**4.8%**	**100.0%**
Change to 2017 Budget estimate				–			1.2	(1.0)	(1.0)		

Table 30.11 International Cooperation and Resources expenditure trends and estimates by subprogramme and economic classification

Economic classification	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expen-diture/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen-diture/ Total (%)
R million	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Current payments	**53.3**	**55.6**	**57.6**	**68.6**	**8.7%**	**49.7%**	**68.9**	**71.4**	**76.5**	**3.7%**	**50.6%**
Compensation of employees	36.8	41.3	43.3	48.8	9.9%	35.9%	50.4	54.2	58.3	6.1%	37.5%
Goods and services[1]	16.6	14.4	14.3	19.8	6.0%	13.7%	18.6	17.2	18.2	-2.7%	13.1%
of which:											
Communication	*0.5*	*0.7*	*1.2*	*1.4*	*40.7%*	*0.8%*	*1.5*	*1.5*	*1.6*	*5.6%*	*1.1%*
Agency and support/outsourced services	*0.3*	*0.7*	*0.1*	*0.7*	*26.1%*	*0.4%*	*0.7*	*0.7*	*0.8*	*5.6%*	*0.5%*
Entertainment	*0.2*	*0.3*	*0.2*	*0.8*	*53.0%*	*0.3%*	*0.8*	*0.9*	*0.9*	*5.7%*	*0.6%*
Travel and subsistence	*–*	*–*	*8.8*	*9.5*	*–*	*3.9%*	*8.1*	*6.6*	*7.0*	*-10.0%*	*5.5%*
Operating payments	*3.9*	*1.2*	*0.4*	*1.1*	*-34.2%*	*1.4%*	*1.2*	*1.2*	*1.3*	*5.7%*	*0.9%*
Venues and facilities	*0.4*	*0.0*	*1.3*	*4.3*	*126.7%*	*1.3%*	*4.1*	*3.9*	*4.1*	*-1.0%*	*2.9%*
Transfers and subsidies[1]	**54.1**	**59.3**	**60.9**	**63.8**	**5.6%**	**50.3%**	**67.5**	**72.0**	**75.9**	**6.0%**	**49.4%**
Departmental agencies and accounts	14.6	36.8	44.6	14.1	-1.1%	23.3%	14.9	16.0	16.8	6.0%	11.0%
Higher education institutions	20.0	13.1	8.5	–	-100.0%	8.8%	–	–	–	–	–
Public corporations and private enterprises	16.2	8.5	4.3	–	-100.0%	6.1%	–	–	–	–	–
Non-profit institutions	0.0	0.9	3.4	49.6	1110.4%	11.4%	52.5	56.0	59.1	6.0%	38.5%
Households	3.3	0.0	0.1	–	-100.0%	0.7%	–	–	–	–	–
Payments for capital assets	**0.1**	**–**	**–**	**–**	**-100.0%**	**–**	**–**	**–**	**–**	**–**	**–**
Machinery and equipment	0.1	–	–	–	-100.0%	–	–	–	–	–	–
Total	**107.6**	**115.0**	**118.5**	**132.4**	**7.2%**	**100.0%**	**136.4**	**143.4**	**152.4**	**4.8%**	**100.0%**
Proportion of total programme expenditure to vote expenditure	**1.7%**	**1.5%**	**1.6%**	**1.8%**	**–**	**–**	**1.8%**	**1.7%**	**1.8%**	**–**	**–**
Details of selected transfers and subsidies											
Departmental agencies and accounts											
Departmental agencies (non-business entities)											
Current	**14.6**	**36.8**	**44.6**	**14.1**	**-1.1%**	**23.3%**	**14.9**	**16.0**	**16.8**	**6.0%**	**11.0%**
National Research Foundation: Bilateral cooperation for global science development	12.9	13.5	13.6	14.1	3.0%	11.4%	14.9	16.0	16.8	6.0%	11.0%
Various institutions: Global science: International multilateral agreements	1.7	22.4	28.1	–	-100.0%	11.0%	–	–	–	–	–
Various institutions: Global science: African multilateral agreements	–	1.0	2.9	–	–	0.8%	–	–	–	–	–
Higher education institutions											
Current	**20.0**	**13.1**	**8.5**	**–**	**-100.0%**	**8.8%**	**–**	**–**	**–**	**–**	**–**
Various institutions: Global science: International multilateral agreements	15.7	11.2	8.3	–	-100.0%	7.4%	–	–	–	–	–
Various institutions: Global science: African multilateral agreements	4.3	1.9	0.2	–	-100.0%	1.4%	–	–	–	–	–
Non-profit institutions											
Current	**0.0**	**0.9**	**3.4**	**49.6**	**1110.4%**	**11.4%**	**52.5**	**56.0**	**59.1**	**6.0%**	**38.5%**
Various institutions: Global science: International multilateral agreements	0.0	0.1	0.4	40.8	1033.5%	8.7%	43.1	46.0	48.5	6.0%	31.6%
Various institutions: Global science: African multilateral agreements	–	0.7	3.0	8.9	–	2.6%	9.4	10.0	10.6	6.0%	6.9%
Public corporations and private enterprises											
Public corporations											
Other transfers to public corporations											
Current	**16.2**	**8.5**	**4.3**	**–**	**-100.0%**	**6.1%**	**–**	**–**	**–**	**–**	**–**
Various institutions: Global science: International multilateral agreements	16.2	5.3	2.1	–	-100.0%	5.0%	–	–	–	–	–
Various institutions: Global science: African multilateral agreements	–	3.1	2.2	–	–	1.1%	–	–	–	–	–

1. *Estimates of National Expenditure data tables are available and can be downloaded from www.treasury.gov.za. These data tables contain detailed information by goods and services, and transfers and subsidies item 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 9 300 bursaries to PhD students
  - awarding 32 400 bursaries to postgraduate (BTech, honours and masters) students
  - placing 1 350 graduates and students in department funded work preparation programmes 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:
  - maintaining the number of research infrastructure grants at 30 per year over the MTEF period
  - increasing the total available broadband capacity provided by the South African National Research Network from 3 400 Gbps in 2018/19 to 3 500 Gbps in 2020/21.
- 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 total number of researchers awarded research grants through programmes managed by the National Research Foundation at above 13 500
  - maintaining the number of research articles published by researchers funded by the National Research Foundation and cited in the Thomson Reuters Web of Science citation database at 21 000.
- Strategically develop priority science areas in which South Africa enjoys a competitive advantage by promoting internationally competitive research and training activities and outputs, by:
  - installing 64 ultra high frequency science mode receivers in 2018/19, 8 large survey project correlators in 2019/20, and 64 s-band receivers on MeerKAT by 2018/19
  - ensuring that 2 reports on the state of climate change in South Africa are submitted to Cabinet by 2018/19.
- Promote public engagement on science, technology and innovation by creating an environment that enables up to 9 million people to participate in the science engagement programme over the medium term.

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, and is critically engaged and scientifically literate.
- *Science Missions* promotes the development of research, the production of scientific knowledge, and human capital in science areas in which South Africa enjoys a geographic advantage.
- *Basic Sciences 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 multi-wavelength astronomy strategy, and provides strategic guidance and support to relevant astronomy institutions in the implementation of strategic astronomy programmes.

Expenditure trends and estimates

Table 30.12 Research, Development and Support expenditure trends and estimates by subprogramme and economic classification

Subprogramme	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expen-diture/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen-diture/ Total (%)
R million	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Human Capital and Science Promotions	1 872.8	2 331.8	2 354.6	2 424.8	9.0%	55.4%	2 457.1	2 617.7	2 761.9	4.4%	56.1%
Science Missions	159.5	177.0	213.1	214.2	10.3%	4.7%	223.0	235.5	248.7	5.1%	5.0%
Basic Science and Infrastructure	783.7	987.0	895.5	976.6	7.6%	22.5%	927.6	993.5	1 048.3	2.4%	21.6%
Astronomy	673.8	723.0	689.5	734.5	2.9%	17.4%	752.6	814.7	859.7	5.4%	17.3%
Total	**3 489.8**	**4 218.9**	**4 152.6**	**4 350.1**	**7.6%**	**100.0%**	**4 360.3**	**4 661.4**	**4 918.6**	**4.2%**	**100.0%**
Change to 2017 Budget estimate				–			(116.0)	(95.6)	(100.7)		
Economic classification											
Current payments	**37.7**	**43.8**	**48.3**	**49.2**	**9.3%**	**1.1%**	**52.6**	**54.1**	**57.9**	**5.5%**	**1.2%**
Compensation of employees	29.4	31.1	34.6	33.7	4.6%	0.8%	36.2	38.9	41.9	7.5%	0.8%
Goods and services[1]	8.3	12.6	13.7	15.5	23.4%	0.3%	16.4	15.2	16.0	1.0%	0.3%
of which:											
Catering: Departmental activities	*0.1*	*0.2*	*0.1*	*0.6*	*81.1%*	–	*0.6*	*0.6*	*0.7*	*5.6%*	–
Communication	*0.3*	*0.2*	*0.6*	*0.6*	*24.0%*	–	*0.7*	*0.7*	*0.8*	*5.7%*	–
Consultants: Business and advisory services	*0.4*	*0.4*	*2.3*	*1.4*	*52.5%*	–	*1.4*	*1.3*	*1.3*	*-1.1%*	–
Agency and support/outsourced services	*0.9*	*1.5*	*0.8*	*0.9*	*-1.5%*	–	*0.9*	*1.0*	*1.0*	*5.6%*	–
Travel and subsistence	*0.1*	*5.4*	*7.3*	*8.5*	*418.1%*	*0.1%*	*8.9*	*7.6*	*8.0*	*-2.0%*	*0.2%*
Venues and facilities	–	*1.1*	*1.0*	*2.0*	–	–	*2.1*	*2.2*	*2.4*	*5.6%*	–
Transfers and subsidies[1]	**3 452.0**	**4 175.1**	**4 104.3**	**4 300.9**	**7.6%**	**98.9%**	**4 307.7**	**4 607.3**	**4 860.7**	**4.2%**	**98.8%**
Departmental agencies and accounts	2 977.8	3 564.1	3 550.1	4 026.5	10.6%	87.1%	4 057.6	4 333.6	4 572.0	4.3%	92.9%
Higher education institutions	53.5	50.8	37.5	–	-100.0%	0.9%	–	–	–	–	–
Public corporations and private enterprises	390.5	526.2	467.4	274.4	-11.1%	10.2%	250.1	273.7	288.7	1.7%	5.9%
Non-profit institutions	29.9	33.6	48.8	–	-100.0%	0.7%	–	–	–	–	–
Households	0.4	0.4	0.5	–	-100.0%	–	–	–	–	–	–
Payments for capital assets	**0.1**	**–**	**–**	**–**	**-100.0%**	**–**	**–**	**–**	**–**	**–**	**–**
Machinery and equipment	0.1	–	–	–	-100.0%	–	–	–	–	–	–
Payments for financial assets	**0.1**	**–**	**0.0**	**–**	**-100.0%**	**–**	**–**	**–**	**–**	**–**	**–**
Total	**3 489.8**	**4 218.9**	**4 152.6**	**4 350.1**	**7.6%**	**100.0%**	**4 360.3**	**4 661.4**	**4 918.6**	**4.2%**	**100.0%**
Proportion of total programme expenditure to vote expenditure	**54.6%**	**56.7%**	**56.2%**	**57.6%**	**–**	**–**	**56.0%**	**56.5%**	**56.5%**	**–**	**–**
Details of selected transfers and subsidies											
Departmental agencies and accounts											
Departmental agencies (non-business entities)											
Current	**1 988.8**	**2 427.7**	**2 470.1**	**2 613.9**	**9.5%**	**58.6%**	**2 693.9**	**2 860.8**	**3 018.1**	**4.9%**	**61.2%**
Academy of Science of South Africa	21.6	–	–	25.3	5.4%	0.3%	25.7	27.1	28.6	4.2%	0.6%
Various institutions: Astronomy research and development	12.7	25.2	14.1	29.3	32.2%	0.5%	31.1	32.8	34.6	5.6%	0.7%
Various institutions: Policy development on human and social development dynamics	9.8	10.3	10.3	26.0	38.3%	0.3%	27.4	28.9	30.5	5.4%	0.6%
National Research Foundation: Human resources development for science and engineering	465.7	835.7	832.7	833.8	21.4%	18.3%	889.2	950.6	1 002.9	6.3%	20.1%
National Research Foundation	851.3	878.4	882.8	926.0	2.8%	21.8%	904.8	953.4	1 005.8	2.8%	20.7%
Various institutions: Science awareness, research and initiatives to encourage youth participation in science	37.9	57.8	66.2	73.0	24.4%	1.4%	77.3	81.6	86.1	5.6%	1.7%
National Research Foundation: South African research chairs initiative to develop human resources in science	451.8	470.4	482.2	500.9	3.5%	11.8%	530.3	566.3	597.5	6.1%	12.0%
Various institutions: Strategic science platforms for research and development	138.0	149.9	181.8	199.6	13.1%	4.1%	208.3	220.2	232.3	5.2%	4.7%
Capital	**989.0**	**1 136.4**	**1 079.9**	**1 412.6**	**12.6%**	**28.5%**	**1 363.7**	**1 472.8**	**1 553.9**	**3.2%**	**31.7%**
Various institutions: Infrastructure projects for research and development	343.8	449.0	413.3	718.7	27.9%	11.9%	654.3	703.0	741.7	1.1%	15.4%
National Research Foundation: Square Kilometre Array: Capital contribution to research	645.2	687.4	666.6	693.9	2.5%	16.6%	709.4	769.8	812.1	5.4%	16.3%
Higher education institutions											
Current	**20.1**	**18.7**	**10.5**	**–**	**-100.0%**	**0.3%**	**–**	**–**	**–**	**–**	**–**
National Research Foundation: Human resources development for science and engineering	4.9	3.7	3.0	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Science awareness	9.7	8.1	0.2	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Strategic science platforms for research and development	5.5	6.8	7.2	–	-100.0%	0.1%	–	–	–	–	–

Table 30.12 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 (%)
R million	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Capital	**32.8**	**32.2**	**27.1**	**–**	**-100.0%**	**0.6%**	**–**	**–**	**–**	**–**	**–**
Various institutions: Infrastructure projects for research and development	32.8	32.2	27.1	–	-100.0%	0.6%	–	–	–	–	–
Non-profit institutions											
Current	**29.9**	**33.6**	**37.5**	**–**	**-100.0%**	**0.6%**	**–**	**–**	**–**	**–**	**–**
Academy of Science of South Africa	–	23.2	25.1	–	–	0.3%	–	–	–	–	–
National Research Foundation: Human resources development for science and engineering	0.1	5.6	6.0	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Science awareness	18.4	3.3	3.1	–	-100.0%	0.2%	–	–	–	–	–
Square Kilometre Array	8.4	–	–	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Strategic science platforms for research and development	3.0	1.5	3.3	–	-100.0%	–	–	–	–	–	–
Capital	**–**	**–**	**11.3**	**–**	**–**	**0.1%**	**–**	**–**	**–**	**–**	**–**
Various institutions: Infrastructure projects for research and development	–	–	11.3	–	–	0.1%	–	–	–	–	–
Public corporations and private enterprises											
Public corporations											
Other transfers to public corporations											
Current	**1.4**	**40.0**	**43.0**	**51.1**	**230.0%**	**0.8%**	**13.8**	**22.0**	**23.2**	**-23.2%**	**0.6%**
National Research Foundation: Human resources development for science and engineering	–	33.5	–	–	–	0.2%	–	–	–	–	–
National Research Foundation: Human resources development for science and engineering: Economic competitiveness and support package	–	–	38.4	51.1	–	0.6%	13.8	22.0	23.2	-23.2%	0.6%
National Research Foundation: Square Kilometre Array: Research and development	0.7	2.0	–	–	-100.0%	–	–	–	–	–	–
Various institutions: Strategic science platforms for research and development	0.7	4.5	4.6	–	-100.0%	0.1%	–	–	–	–	–
Capital	**389.1**	**486.2**	**424.4**	**223.3**	**-16.9%**	**9.4%**	**236.3**	**251.7**	**265.5**	**5.9%**	**5.3%**
Council for Scientific and Industrial Research: Cyberinfrastructure research and development	204.0	213.5	214.5	223.3	3.0%	5.3%	236.3	251.7	265.5	5.9%	5.3%
Various institutions: Infrastructure projects for research and development	185.1	272.7	209.8	–	-100.0%	4.1%	–	–	–	–	–

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

Programme 5: Socioeconomic Innovation Partnerships

Programme purpose

Enhance the growth and development priority areas of government 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 18 knowledge products on innovation for inclusive development
  – maintaining and improving 10 decision support systems
  – generating 27 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 180 honours, masters and doctoral students, and adding 14 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 744 masters and doctoral students, and 110 interns
  - adding 94 knowledge and innovation products to the intellectual property portfolio
  - funding 9 instruments in support of increased localisation, competitiveness
  - researching and developing the development-led industry.
- 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 18 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 within 90 days of the date of receipt of applications for the research and development tax incentive 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, as well as 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 development programmes for technology and innovation to advance strategic medium-term and long-term sustainable economic growth and sector development priorities, as well as public service delivery.

Expenditure trends and estimates

Table 30.13 Socioeconomic Innovation Partnerships expenditure trends and estimates by subprogramme and economic classification

Subprogramme	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expen-diture/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen-diture/ Total (%)
R million	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Sector Innovation and Green Economy	875.7	873.9	932.0	984.0	4.0%	55.0%	1 036.8	1 095.4	1 155.9	5.5%	58.8%
Innovation for Inclusive Development	340.1	334.5	344.5	356.6	1.6%	20.6%	354.8	376.3	397.2	3.7%	20.4%
Science and Technology Investment	29.9	32.3	22.2	25.3	-5.4%	1.6%	27.3	34.9	37.1	13.7%	1.7%
Technology Localisation, Beneficiation and Advanced Manufacturing	293.5	497.7	465.3	257.8	-4.2%	22.7%	359.3	372.3	393.1	15.1%	19.0%
Total	**1 539.2**	**1 738.3**	**1 764.0**	**1 623.6**	**1.8%**	**100.0%**	**1 778.3**	**1 878.9**	**1 983.2**	**6.9%**	**100.0%**
Change to 2017 Budget estimate				–			(4.5)	133.2	140.7		

Table 30.13 Socioeconomic Innovation Partnerships expenditure trends and estimates by subprogramme and economic classification

Economic classification	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expen-diture/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen-diture/ Total (%)
R million	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Current payments	**40.9**	**43.3**	**46.8**	**49.1**	**6.3%**	**2.7%**	**52.6**	**55.2**	**59.2**	**6.5%**	**3.0%**
Compensation of employees	34.2	37.1	37.0	39.9	5.3%	2.2%	43.0	46.2	49.7	7.6%	2.5%
Goods and services[1]	6.7	6.2	9.8	9.2	11.0%	0.5%	9.7	9.0	9.5	1.2%	0.5%
of which:											
Advertising	*0.0*	*0.0*	*0.0*	*0.2*	*72.7%*	–	*0.2*	*0.2*	*0.2*	*5.9%*	–
Catering: Departmental activities	*0.1*	*0.1*	*0.1*	*0.3*	*47.8%*	–	*0.3*	*0.3*	*0.3*	*5.4%*	–
Communication	*0.3*	*0.3*	*0.7*	*1.0*	*48.7%*	–	*1.0*	*1.1*	*1.2*	*6.2%*	*0.1%*
Consultants: Business and advisory services	*0.5*	*0.0*	*0.4*	*3.5*	*93.1%*	*0.1%*	*3.7*	*2.8*	*3.1*	*-4.5%*	*0.2%*
Travel and subsistence	–	*3.0*	*2.6*	*2.8*	–	*0.1%*	*3.0*	*3.1*	*3.2*	*4.4%*	*0.2%*
Venues and facilities	–	*0.5*	*0.0*	*0.8*	–	–	*0.9*	*0.9*	*0.9*	*2.2%*	–
Transfers and subsidies[1]	**1 498.3**	**1 695.0**	**1 717.3**	**1 574.5**	**1.7%**	**97.3%**	**1 725.6**	**1 823.7**	**1 924.0**	**6.9%**	**97.0%**
Departmental agencies and accounts	391.5	425.0	444.2	502.7	8.7%	26.5%	562.6	597.0	629.9	7.8%	31.6%
Higher education institutions	7.1	14.6	14.6	–	-100.0%	0.5%	–	–	–	–	–
Public corporations and private enterprises	1 064.6	1 199.0	1 207.4	1 071.8	0.2%	68.2%	1 163.0	1 226.6	1 294.1	6.5%	65.5%
Non-profit institutions	35.1	56.3	51.0	–	-100.0%	2.1%	–	–	–	–	–
Households	0.1	0.1	0.1	–	-100.0%	–	–	–	–	–	–
Total	**1 539.2**	**1 738.3**	**1 764.0**	**1 623.6**	**1.8%**	**100.0%**	**1 778.3**	**1 878.9**	**1 983.2**	**6.9%**	**100.0%**
Proportion of total programme expenditure to vote expenditure	**24.1%**	**23.4%**	**23.9%**	**21.5%**	**–**	**–**	**22.8%**	**22.8%**	**22.8%**	**–**	**–**
Details of selected transfers and subsidies											
Departmental agencies and accounts											
Departmental agencies (non-business entities)											
Current	**391.5**	**425.0**	**444.2**	**502.7**	**8.7%**	**26.5%**	**562.6**	**597.0**	**629.9**	**7.8%**	**31.6%**
Various institutions: Economic competitiveness and support package: Local manufacturing capacity research and technical support	–	–	–	80.0	–	1.2%	80.0	80.0	84.4	1.8%	4.5%
Various institutions: Economic competitiveness and support package: Local systems of innovation for the cold chain technologies project	–	–	–	–	–	–	62.0	62.0	65.4	–	2.6%
Various institutions: Innovative research and development	16.7	13.8	6.9	41.8	35.9%	1.2%	39.9	44.2	46.7	3.7%	2.4%
Human Sciences Research Council	276.0	288.7	290.1	304.7	3.3%	17.4%	303.7	320.1	337.7	3.5%	17.4%
Various institutions: Local manufacturing capacity research and technical support	43.7	42.0	70.7	3.3	-57.7%	2.4%	25.9	28.7	30.3	109.1%	1.2%
Various instituions: Local systems of innovation for the cold chain technologies project	33.0	60.0	64.0	35.8	2.7%	2.9%	10.6	11.8	12.4	-29.7%	1.0%
Various institutions: Resource-based industries research and development	1.0	1.3	1.0	–	-100.0%	–	–	–	–	–	–
National Research Foundation: Research information management system	6.9	12.2	7.2	3.8	-18.0%	0.5%	4.0	8.4	8.9	33.1%	0.3%
Human Science Research Council: Develop and monitor science and technology indicators	9.7	5.4	–	9.4	-0.8%	0.4%	10.0	12.4	13.1	11.5%	0.6%
Various institutions: Environmental innovation	4.6	1.5	4.2	23.9	73.4%	0.5%	26.5	29.4	31.0	9.1%	1.5%
Public corporations and private enterprises											
Public corporations											
Public corporations (subsidies on products and production)											
Current	**825.7**	**820.2**	**872.0**	**915.6**	**3.5%**	**51.5%**	**963.2**	**1 014.9**	**1 070.7**	**5.4%**	**54.6%**
Council for Scientific and Industrial Research	825.7	820.2	872.0	915.6	3.5%	51.5%	963.2	1 014.9	1 070.7	5.4%	54.6%
Higher education institutions											
Current	**7.1**	**14.6**	**14.6**	**–**	**-100.0%**	**0.5%**	**–**	**–**	**–**	**–**	**–**
Various institutions: Advanced manufacturing technology strategy implementation	2.3	2.9	0.3	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Innovative research and development	0.6	4.5	8.0	–	-100.0%	0.2%	–	–	–	–	–
Various institutions: Local manufacturing capacity research and technical support	0.7	2.4	2.0	–	-100.0%	0.1%	–	–	–	–	–
Various instituions: Local systems of innovation for the cold chain technologies project	2.4	3.5	4.3	–	-100.0%	0.2%	–	–	–	–	–
Various institutions: Resource-based industries research and development	1.0	1.3	–	–	-100.0%	–	–	–	–	–	–
Non-profit institutions											
Current	**35.0**	**56.2**	**50.9**	**–**	**-100.0%**	**2.1%**	**–**	**–**	**–**	**–**	**–**
Various institutions: Innovative research and development	19.6	8.1	8.9	–	-100.0%	0.6%	–	–	–	–	–
Various instituions: Local systems of innovation for the cold chain technologies project	13.4	36.4	30.3	–	-100.0%	1.2%	–	–	–	–	–
Various institutions: Resource-based industries research and development	1.2	1.7	1.7	–	-100.0%	0.1%	–	–	–	–	–
Various institutions: Environmental innovation	0.7	10.1	10.0	–	-100.0%	0.3%	–	–	–	–	–

Table 30.13 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: Expen-diture/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen-diture/ Total (%)
R million	2014/15	2015/16	2016/17	2017/18	2014/15 - 2017/18		2018/19	2019/20	2020/21	2017/18 - 2020/21	
Public corporations and private enterprises											
Public corporations											
Other transfers to public corporations											
Current	**238.9**	**336.5**	**335.4**	**156.2**	**-13.2%**	**16.0%**	**199.9**	**211.7**	**223.4**	**12.7%**	**10.9%**
Various institutions: Advanced manufacturing technology strategy implementation	25.6	–	43.1	51.2	25.9%	1.8%	53.7	59.5	62.8	7.0%	3.1%
Council for Scientific and Industrial Research	24.2	26.1	21.8	32.0	9.7%	1.6%	34.7	38.5	40.7	8.3%	2.0%
Various institutions: Innovative research and development	20.8	12.3	19.3	–	-100.0%	0.8%	–	–	–	–	–
Various institutions: Local manufacturing capacity research and technical support	68.0	143.1	141.9	–	-100.0%	5.3%	–	–	–	–	–
Council for Scientific and Industrial Research: Mining research and development	–	–	–	27.0	–	0.4%	63.0	60.0	63.3	32.8%	2.9%
Various instituions: Local systems of innovation for the cold chain technologies project	51.4	104.8	54.4	–	-100.0%	3.2%	–	–	–	–	–
Various institutions: Resource-based industries research and development	38.5	45.2	41.1	46.0	6.1%	2.6%	48.4	53.7	56.6	7.1%	2.8%
Various institutions: Environmental innovation	10.3	4.9	13.7	–	-100.0%	0.4%	–	–	–	–	–
Public corporations and private enterprises											
Private enterprises											
Other transfers to private enterprises											
Current	**–**	**42.2**	**–**	**–**	**–**	**0.6%**	**–**	**–**	**–**	**–**	**–**
Various institutions: Advanced manufacturing technology strategy implementation	–	42.2	–	–	–	0.6%	–	–	–	–	–

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

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 2018/19 is R32.2 million.
- The **Council for Scientific and Industrial Research** fosters industrial and scientific research in the national interest through multidisciplinary research and technological innovation. The council’s total budget for 2018/19 is R3.2 billion.
- The **Human Sciences Research Council** undertakes, promotes and coordinates research in the human and social sciences. The council’s total budget for 2018/19 is R572 million.
- The **National Research Foundation** is an independent statutory agency that promotes and supports research. It also conducts research at, and provides access to, national research facilities. The foundation provides funding and services to the research community through higher education institutions with a view to generating knowledge and promoting high-level research capacity development. The foundation’s total budget for 2018/19 is R4.1 billion.
- 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 in situ observation measurements such as the South African earth observation network. The agency’s total budget for 2018/19 is R217 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, private companies and commercialisation, thereby increasing technological innovation in the economy. The agency's total budget for 2018/19 is R536.6 million.

Additional table: Summary of expenditure on infrastructure

Project name R million	Service delivery outputs	Current project stage	Total project cost	Audited outcome			Adjusted appropriation	Medium-term expenditure estimate		
				2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Infrastructure transfers to other spheres, agencies and departments										
Mega projects (total project of at least R1 billion over the project life cycle)										
Square Kilometre Array	Construction of telescopes	Construction	1 649.2	645.2	–	652.8	693.9	709.4	769.8	812.1
Large projects (total project cost of at least R250 million but less than R1 billion over the project life cycle)										
Space infrastructure	Construction of satellite	Construction	290.8	40.0	31.4	–	28.9	–	9.2	–
Hydrogen strategy	Purchase of equipment	Various	440.7	60.8	63.6	–	67.1	71.0	74.9	77.7
National nanotechnology centres	Equipping of centres	Various	310.0	34.7	50.4	–	63.5	67.2	70.9	74.5
Cyber infrastructure	Creation of broadband network connectivity and high performance computing	Various	833.2	204.0	213.5	–	223.3	236.3	251.7	260.8
Total			**3 523.8**	**984.7**	**358.9**	**652.8**	**1 076.6**	**1 083.9**	**1 176.6**	**1 225.1**