RESEARCH AND DEVELOPMENT TAX INCENTIVE PROGRAMME

Report to Parliament

2014/15

science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

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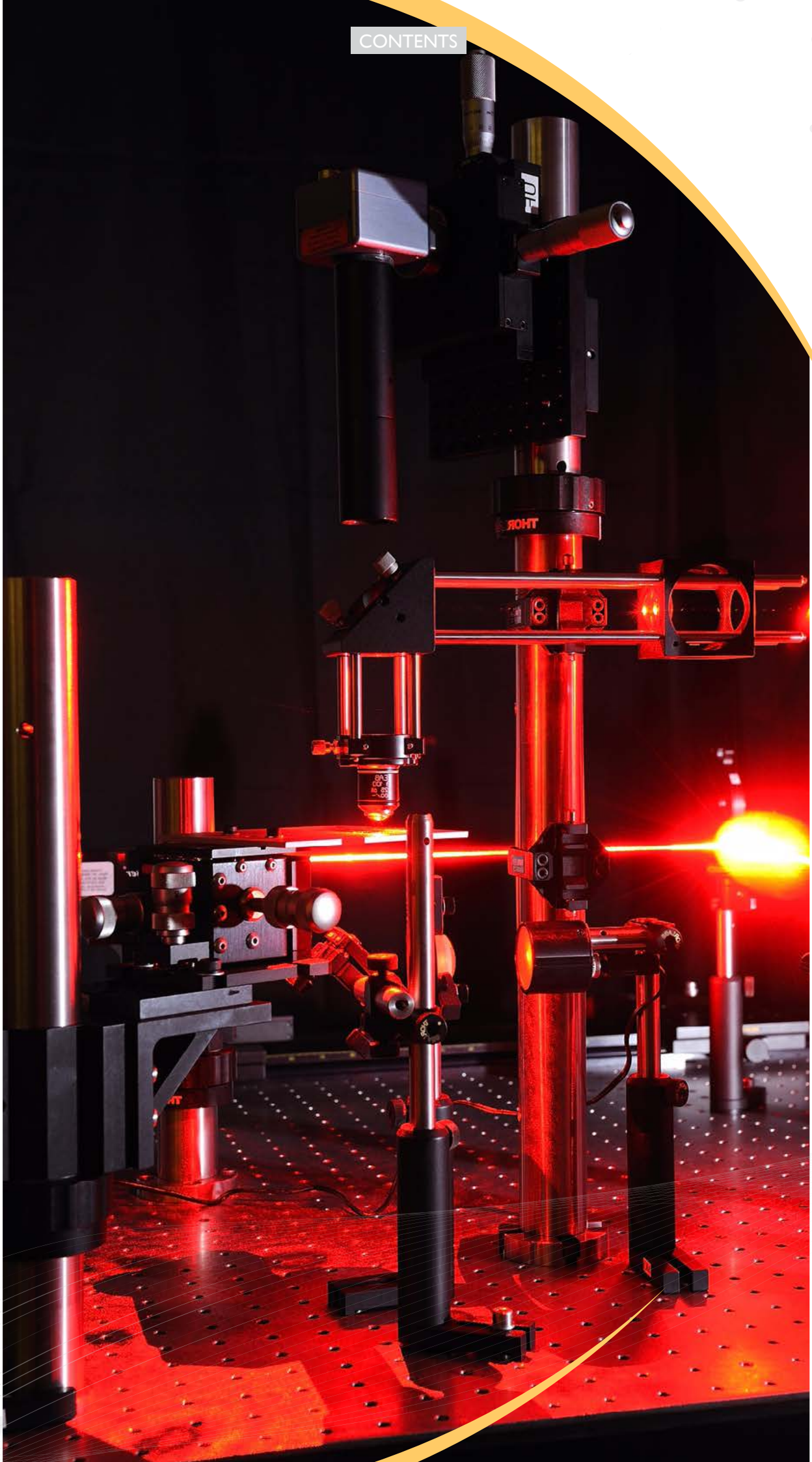

PREFACE

It is my pleasure to table the 2014/15 Research and Development (R&D) Tax Incentive Programme Report. The Report is an important mechanism through which the Department of Science and Technology (DST) communicates with stakeholders about the performance of the R&D Tax Incentive.

The period 2014/15 provided important lessons for the DST and its implementation partners, namely the South African Revenue Service (SARS) and the National Treasury about the operations of the Incentive and its expected impact.

Firstly, industry clearly regards an incentive for R&D as an essential part of the domestic policy landscape. The current incentive design principles match global practices and we feel that the Incentive should be allowed to mature for it to have the desired impact in both increasing R&D expenditure towards 1,5% of GDP and improving South Africa's innovation performance.

Secondly, the pre-approval system, which was meant to improve certainty and enable companies to use the approval in leveraging external funding, introduced new challenges, one of long turnaround times and one of uncertainty in the tax administration process. The system has been evaluated to see if it was an optimal method for administering this type of incentive.

Thirdly, the high non-approval rates for SMEs and applications involving information and communication technology (ICT)-related activities highlight a crucial gap in government support for industry innovation. Some of the non-approved companies, which require funding support to scale up, introduce innovations without necessarily engaging in R&D as defined in section 11D of the Income Tax Act, and therefore do not get approval. Processes will be initiated within government with a view to formulating a response to this issue.

Amendments to section 11D of the Income Tax Act that came into effect in January 2014 and January 2015 facilitated the issuing of regulations in respect of the eligibility of clinical trials and multi-source pharmaceutical products. Such amendments, which were refinements and technical corrections, provided the clarification needed by both the government and industry.

To advance the incentive, a series of activities will be undertaken to enhance communication between the government and the private sector about the R&D Tax Incentive. The aim is to attract a larger number of companies and to increase private sector R&D as well as improve South Africa's innovation performance and competitiveness.

Naledi Pandor

Mrs GNM Pandor, MP
Minister: Science and Technology

EXECUTIVE SUMMARY

This report presents information on the performance on the R&D Tax Incentive programme for the period March 2014 to February 2015 (hereinafter 2014/15) in line with the requirements of section 11D(17) of the Income Tax Act (1962), as amended.

In the reporting period, the Department of Science and Technology (DST) received 221 applications for the R&D Tax Incentive from 170 companies. These applications contained 754 projects with an estimated R&D expenditure of R5,8 billion. Of these companies, 66 were applying for the incentive for the first time, increasing the total number of companies that have participated in the Incentive since its inception in November 2006 to 876 companies.

The period 2014/15 was largely devoted to evaluation and adjudication of applications received in the previous years, since the introduction of the preapproval system in October 2012. By end of the reporting period, 469 of 824 applications were processed by the DST. This comprised of 225 (or 48%) applications that had been granted approval to access the Incentive. The approved applications amounted to R7,7 billion in estimated R&D expenditure that would be supported.

EXECUTIVE SUMMARY (CONT.)

The distribution of uptake per industry sector has remained the same over the years, with just more than 80% of the applicant companies coming from two sectors, namely, the manufacturing and financial intermediation sector, and the real estate and business services sector (with the latter dominated by information and communication technology (ICT) activities). Larger companies in the manufacturing sector are dominant in respect of the number of applications received, the quantum of R&D expenditure, and also in terms of reported R&D personnel involved.

In the period between November 2006 and February 2015, a reported R33,1 billion in estimated R&D expenditure was supported by the Incentive. This amount includes R25,4 billion of the actually incurred R&D expenditure reported to the DST through claims made to the South African Revenue Service (SARS) for the incentive deduction since 2006, coupled with R7,7 billion in the applications approved under the new dispensation, referred to as the "pre-approval system". Approximately 67,3% of the supported R&D expenditure is attributed to the manufacturing sector, followed by the financial services sector at 13.9%. The remaining 18,7% of the R&D expenditure is spread across the remaining sectors.

Companies indicated an estimated 26 526 in R&D personnel that are directly involved in the R&D activities supported by the Incentive for the period since November 2006 to February 2015. Of these personnel, 60,7% are core to research (i.e. scientists, engineers, technologists and technicians), while 39,3% are support personnel (i.e. R&D managers and other technical staff). These estimates are an undercount of the potential employment impact of the supported R&D. It is well known that successful R&D could lead to opportunities for further or better quality employment. The tacit knowledge that is gained through undertaking R&D is also an important contribution to human capital in the country.

1. INTRODUCTION

The Department of Science and Technology (DST) administers the Research and Development (R&D) Tax Incentive Programme under section 11D of the Income Tax Act, 1962 (Act No. 58 of 1962) in order to promote private sector scientific and technological R&D in South Africa. The incentive offers a 150% tax deduction for approved R&D expenditure and can be accessed by companies of all sizes in all sectors of the economy.

Further, section 11D(17) of the Income Tax Act requires the Minister of Science and Technology to report to Parliament on the direct benefits of the R&D activities encouraged by the incentive programme in contributing to economic growth, employment and other broader government objectives.

This report tracks the activities of the Incentive in the period between March 2014 and February 2015 (hereinafter 2014/15), based on identified performance indicators, namely uptake and the profile of participating companies (by turnover size and industries), tax revenue foregone by government, estimated amounts of R&D expenditure, R&D by fields of science, the personnel involved in the supported R&D, as well as estimated results achieved by companies from the supported R&D.

The report is centered on the activities of 2014/15 and is based on information available at the DST as provided by companies in two processes. Firstly, it is information declared to the DST about the retrospective claims that companies have submitted to SARS (as retrospective claims). Secondly, it is the information on applications submitted to the DST under the preapproval system.

Where appropriate, the information is presented in cumulative terms in order to show the overall uptake and contribution of the incentive from November 2006 to February 2015.

2. POLICY CONTEXT OF R&D INCENTIVES

There are myriads of ways in which governments may influence private sector R&D and innovation in an economy. These can be through financial support, such as grants and tax incentives, or non-financial means to enhance the environment for R&D and innovation. The latter can include human capital development, provision of appropriate infrastructure and institutions, laws and regulatory and by encouraging competition.

In South Africa, the R&D Tax Incentive is one of the means of encouraging increased private sector R&D. Any company that undertakes R&D in the country can apply for the incentive. Approved companies can deduct 150% of the operational expenditure on qualifying scientific and technological R&D. The incentive can be accessed by companies of any size and across all industry sectors.

At the level of a firm, the tax deduction helps to reduce the after-tax price of R&D ("user cost of R&D"), thereby creating an incentive for any company to undertake or scale up on its R&D. In this way, the government seeks to correct market failures that result in less than socially-optimal R&D expenditure by the private sector. Put another way, there is a positive externality which is not accounted for by the private sector and this suggests that there is a role for the government to play in order to remedy this market failure.

The R&D Tax Incentive is also important in foreign direct investment (FDI) terms and it is notable that some of the companies that apply are multinational companies (MNCs). These MNCs perform a variety of R&D activities, ranging from basic research to product development and facilitate integration of South Africa's R&D system into their networks globally. It is the intention of the Incentive for MNCs to increase the stock of knowledge in South Africa and help spur knowledge spillovers and develop highly skilled human capital required for a knowledge economy.

A usual concern that governments have with financial incentives in general is a danger of crowding-out private investment, wherein companies substitute the incentive support for funds they would have otherwise invested themselves. A further concern is that of expenditure reclassification, wherein companies may use the incentive to recoup funds that are not directly attributable to R&D. These concerns inform the nature of administrative and compliance procedures that are put in place for the administration of the incentive.

Globally, governments that offer a tax incentive for R&D rely on the definition of "research and development", which is contained in the Organisation for Economic Co-operation and Development's (OECD) Frascati Manual, in order to set eligibility criteria for qualifying R&D for the tax relief. Amendments to section 11D of the Income Tax Act in South Africa over the past three years have sought to refine aspects of the eligibility criteria for R&D, learning from past experiences and practices internationally, in order to address domestic policy aims.

TEXT BOX 1: GOVERNMENT SUPPORT FOR R&D

South Africa has a number of policy instruments or incentives to promote private sector R&D and technological innovation. The R&D Tax Incentive, therefore, is implemented alongside such instruments, in order to complement the policy package to address a number of objectives, ranging from new enterprise formation, R&D and technology innovation, industrial development, export promotion and attracting of foreign direct investment. All these aspects contribute to the National Development Plan (NDP).

The following are examples of some of the existing funding support and incentives:

- Support Programme for Industrial Innovation (SPII) – this offers direct financial grants to private sector companies to support the development of market-ready technologies, including software development.
- Technology for Technology and Human Resources for Industry Programme (THRIP) – this offers direct financial grants, on a cost-sharing basis, to promote collaborative R&D and human resource development between private sector companies and public institutions (e.g. universities and science councils).
- Technology Innovation Agency (TIA) – this offers direct financial assistance (through loans/grants/equity holdings) to stimulate various forms of technology innovation investment and commercialisation. The support is available to private sector companies, science councils and universities, as well as other organisations.
- Manufacturing Competitiveness Enhancement Programme (MCEP) – this offers direct financial support (which may be a loan or a cost-sharing grant) to private sector companies to enhance the competitiveness of existing manufacturing companies to help them acquire new assets to upgrade or expand manufacturing capacity, to implement cleaner (green) production and energy-efficient technologies, to fund working capital and/or undertake feasibility studies on qualifying activities.
- Other complementary tax-based incentives that encourage companies to modernise and implement innovative smart approaches, for instance under section 12K of the Income Tax Act for emissions reduction; section 12L for cleaner production and energy-efficiency; section 12B for production of renewable energy and fuels; and section 37B for recycling and waste disposal.

Besides the financial support and incentives, other measures include partnerships and technical support through government research institutions and universities (laboratory experimentation, testing facilities, standards, etc.), contracts for public R&D work, collaborations and partnerships with local and multinational companies and organisations, administration of intellectual property (IP) laws and regulation in the spheres of innovation, and industrial policy and sector-based skills training initiatives.

A collection of the above programmes and related programmes can be referred to as a "policy mix" for business R&D and innovation. Most of these instruments fall under the responsibility of the DST and the Department of Trade and Industry (DTI). Achieving coherence and efficiency across the various aspects of the policy mix is crucial. Time and again the government reviews these individual programmes and make adjustments and changes where necessary to address redundancies and introduce new initiatives to pursue new opportunities.

3. UPTAKE OF THE R&D TAX INCENTIVE

The following section provides a summary on the uptake of the R&D Tax Incentive in terms of number of applications, profile of companies participating, R&D expenditure. These indicators are shown for both the period under review (i.e. 2014/15) and as cumulative figures since November 2006.

3.1 NUMBER OF APPLICATIONS RECEIVED BY THE DST

For the period under review, 221 applications, for 754 projects and submitted by 170 companies, reached the DST. Of these, 66 companies applied for the first time. This brings the total number of companies participating in this Incentive – from November 2006 to October 2015 – to 876.

The 221 applications contained an estimated R5.8 billion in R&D expenditure at the application stage.

TABLE 1: NUMBER OF APPLICATIONS RECEIVED BY THE DST

	RECEIVED IN 2014/15	CUMULATIVE (NOV. 2006 TO FEB. 2015)
Number of applications received	221	2 392
Number of companies that submitted applications	170	876
Number of projects contained in the applications	754	4 366
Estimated R&D expenditure in the applications	R5,8 billion	R49,9 billion

Almost 2 400 applications were received in the period between 2006 and 2015. A peak of 305 applications was received in 2012. As most R&D projects span multiple years – given the nature of R&D – the legislative amendments of 2012 allow an applicant to apply once and receive approval for a number of years in which R&D is performed. Accordingly, the number of applications appears to have declined from 305 in 2012/13 to 221 in 2014/15. This is due to the legislative amendments in 2012 whereby companies need not re-apply on a yearly basis, but merely apply for new R&D projects. This was not the case prior to the 2012 as companies had to submit retrospective claims every year when claiming the R&D tax deduction.

There is an established pattern of certain companies undertaking R&D on an ongoing basis, hence the repeat claims. Such companies tend to be larger in size and are found in industries that dominate participation in the incentive, particularly manufacturing and financial intermediation and business services. This is not surprising because these sectors contribute the bulk of the Business Expenditure on Research and Development (BERD) reported in the annual National Survey of Research and Experimental Development (R&D survey). The phenomenon of repeat claimants highlighted here is common with this type of incentives.

Some companies undertake R&D continuously and thus claim every year, while other companies will claim in some years but not in others, depending on their strategies.

Companies that did not come back as repeat applicants can be categorised as either simply not undertaking R&D every year, or having applied the previous year for multi-year R&D, or just not been keen to apply in that period.

3.2 PARTICIPATION BY INDUSTRY SECTOR AND SIZE OF COMPANIES

TABLE 2: PARTICIPATION PER INDUSTRY SECTOR

	RECEIVED IN 2014/15		CUMULATIVE (NOV. 2006 TO FEB. 2015)	
Sector	Number of companies	% of total	Number of companies	% of total
Agriculture, Hunting, Forestry and Fishing	7	4,1%	43	4.9%
Mining and Quarrying	7	4,1%	45	5.1%
Manufacturing	68	40,0%	389	44.4%
Electricity, Gas and Water Supply	3	1,8%	17	1.9%
Construction	5	2,9%	12	1.4%
Wholesale and Retail Trade	2	1,2%	8	0.9%
Transport, Storage and Communication	10	5,9%	38	4.3%
Financial Intermediation, Real Estate and Business Services	67	39,4%	313	35.7%
Community, Social and Personal Services	1	0,6%	11	1.3%
TOTAL	170	100,0%	876	100.0%

TABLE 3: PARTICIPATION PER COMPANY TURNOVER SIZE

TURNOVER SIZE (IN R MILLION)	CUMULATIVE NUMBER OF COMPANIES PARTICIPATING (NOV. 2006 TO FEB. 2015)	% TOTAL
Turnover not indicated	70	8.0%
10 and below	242	27.6%
10 < 15	56	6.4%
15 < 20	38	4.3%
20 < 30	49	5.6%
30 < 40	31	3.5%
40 < 50	28	3.2%
50 < 100	79	9.0%
Above 100	283	32.3%
Totals	876	100.0%

Table 2 presents the number of participating companies per industry sector (Standard Industrial Classification - SIC), for the year under review and the cumulative totals from November 2006 to February 2015.

Of the 170 companies that applied in the period under review, 68 (or 40%) were from the manufacturing sector. This is followed by financial intermediation and business services with 67 (39.4%) companies. Ten (or 5.9%) of the applicant companies were from the sector transportation, storage and communication. This is followed by Mining and Quarrying, and Agriculture, Hunting, Forestry and Fishing sectors, each with 4.1% in terms of number of companies.

The distribution of applying companies per industry sector in 2014/15 was just about similar to that observed over the years, with 80.1% of the applications coming from two sectors, namely, manufacturing (44.4%) and the financial and business services sector (35.9%) (with the latter dominated by ICT activities).

Caution should be used when interpreting industry breakdowns. Within the manufacturing category for instance, there is a range of industries, with some of the companies diversified into other industrial activities. Increasingly, from details contained in the applications, there are software related R&D and green R&D activities in the manufacturing sector. There are several cases where the current research is being conducted in a non-primary business area.

Table 3 presents the number of participating companies per turnover size for the period November 2006 to February 2015.

Of the 876 companies participating in the incentive, 47.5% are Small and Medium Enterprises (SMEs) (companies indicating latest year turnover of R40 million and below). Very large enterprises (turnover >100million) make up 32.3% of the companies. The remainder comprises large enterprises (R41 million to R100 million) with 12.2% and the 8.0% that did not disclose turnover size.

The OECD has defined high-tech sectors as those in which R&D expenditure exceeds 4% of their turnover. As such, within each sector there are some R&D-intensive companies that meet this threshold, while others fall below it.

Using this definition, many SMEs applications are for high-tech companies. Indeed, there are some companies whose R&D expenditure exceeds their turnover. Partly, this is due to timing differences concerning start-up research costs prior to trading their newly developed product. This is an important area that the incentive must have an impact. Where such companies are granted approval, they can carry-over their R&D tax deduction to the year in which they start generating taxable income. The limitation of this is that some R&D takes longer to materialise into commercial success.

4. STATUS OF PRE-APPROVAL APPLICATIONS AS AT FEBRUARY 2015

TABLE 4: NUMBER OF APPLICATIONS ADJUDICATED PER INDUSTRY SECTOR (1 OCT. 2012 TO FEB. 2015)

	NUMBER OF APPLICATIONS RECEIVED	ADJUDICATED AND FINALISED PER SIC	NUMBER OF APPROVALS PER SIC	ESTIMATED R&D EXPENDITURE ON APPROVED APPLICATIONS
10000 – Agriculture and related	37	15	14	259 642 679
20000 – Mining and Quarrying	47	15	8	1 011 422 818
30000 to 39000 – Manufacturing	344	237	148	4 875 982 807
40000 – Electricity, Gas and Water Supply	17	10	7	67 450 000
70000 – Transport, Storage and Communication	44	16	6	121 258 212
80000 – Financial and Business Services	317	172	41	1 359 440 880
*Others	18	4	1	6 822 287
TOTAL	824	469	225	7 702 019 683

*Others include 50000 – Construction; 60000 – Wholesale and Retail Trade and 90000 – Community and Social Service

TABLE 5: R&D EXPENDITURE SUPPORTED PER COMPANY TURNOVER SIZE (1 OCT. 2012 TO FEB. 2015)

TURNOVER SIZE (IN R MILLION)	NUMBER OF APPLICATIONS RECEIVED	ADJUDICATED AND FINALISED PER SIZE CATEGORY	NUMBER OF APPROVALS PER SIZE CATEGORY	ESTIMATED R&D EXPENDITURE ON APPROVED APPLICATIONS
Turnover not indicated	63	38	26	487 186 410
10 and below	170	91	31	47 649 422
10 < 15	51	25	6	37 712 746
15 < 20	35	22	8	401 172 354
20 < 30	50	27	11	139 910 285
30 < 40	25	13	6	64 611 370
40 < 50	32	15	2	3 931 690
50 < 100	74	42	25	164 725 874
Above 100	324	196	110	6 355 119 532
Total	824	469	225	7 702 019 683

The period 2014/15 was largely devoted to processing of applications received in the previous years. By the end of the reporting period, February 2015, 469 applications were processed by the DST, of which 225 applications received approval. This means that 47,9% of applications that were processed were approved.

Manufacturing industries got a higher rate of approval, with 61% of applications deemed to qualifying as R&D activities.

Two policy challenges are identified from analysis of approval rates. Firstly, SMEs have a higher non-approval rate than larger companies. Secondly, with just 25%, applica-

tions from finance and business services have the lowest percentage of approvals. Analysis of these two points indicates that some of the non-approved companies, which genuinely require funding support to scale up, introduce ICT related innovations without necessarily engaging in R&D, as defined in section 11D of the Income Tax Act. On one part, this highlights a crucial gap in the government support for industry innovation that is difficult to address under the current provisions of section 11D of the Income Tax Act. At another level, it also indicates misalignment between intention of the incentive and the activities actually taking place in the industry in South Africa.

In South Africa, most of the ICT activities taking place are focused on the integration of third-party software, the adaptation of existing software systems and the implementing of off-the-shelf technology to adapt for the South African market conditions. While these activities are important for business to maintain competitiveness, most do not meet the definition of R&D. There is arguably a need to support SMEs that adopt new technologies, but do not employ R&D to do so.
Treatment of ICT related activities for R&D tax incentive have presented challenges, not only in South Africa, but also in various jurisdictions that provide R&D incentives. The borderline nature of ICT related activities and software development is also acknowledged in the Frascati Manual. This is why some countries (Malaysia, United States of America, etc.) have adopted criteria specific for such activities in order to support their own policy objectives regarding role of ICT in industry innovation and competitiveness.

The approved applications totaled R7,7 billion in estimated R&D expenditure for the period between 2012 and 2015. Note that this information represents estimates known at the approval stage. Actual R&D expenditure can be determined when companies submit claims at SARS. The next section provides further explanations on R&D expenditure supported by the incentive.

During the year under review, the DST introduced specific measures to reduce the long turnaround times taken in providing decision on applications. The delays were due to the DST's internal capacity constraints in implementing the pre-approval system, and were seen as having potential for derailing the value and impact of the Incentive. The DST has adopted a target for providing decision to applicants within 90 days of receiving an application. Specific measures implemented include the following:

- Adjudication on Pharmaceuticals and Clinical Trials applications have proceeded well following publication of Regulations in April 2015 by the Minister of Finance.
- Use of external experts is making the required impact in terms of reducing the backlog and ensuring quality of decisions. The number of external experts was to be increased in order to reach the targeted level of efficiency in providing decision to applicants.

- Series of sessions to enhance communication with applicants (i.e. aims of the incentive, eligibility criteria and information required when applying) have been initiated.
- The guidelines and applications forms have been reviewed and published for final public comments. SARS Interpretation Note was also being reviewed in 2015. The two departments have worked together to ensure that the guidelines, forms and interpretation note are coherent.
- The "R&D Incentive Online", a new IT system that will enable online submission of applications, has been developed and targeted for launch in the first quarter of 2016/17.

5. ESTIMATED R&D EXPENDITURE SUPPORTED SINCE NOVEMBER 2006

Table 6 show estimates of R&D expenditure supported by the incentive under both the retrospective system (which operated since November 2006) and the pre-approval system (which operated since October 2012). The retrospective system was administered by SARS, and it was only a requirement for companies to report their R&D figures to the DST. Since 2012, the pre-approval was introduced, in which companies require approval from the Minister of Science and Technology before they may claim the tax deduction.

TABLE 6: OVERALL R&D EXPENDITURE SUPPORTED (NOV. 2006 TO FEB. 2015)

	AMOUNTS AT APPLICATION STAGE	AT APPROVAL STAGE OR DECLARED AMOUNTS FOR RETROSPECTIVE CLAIMS
Retrospective claims	R25,4 bn	R25,4bn
Pre-approvals, of which:	R24,5 bn	R7,7 bn
2012/13	R9,0 bn	-
2013/14	R9,7 bn	-
2014/15	R5,8 bn	-
TOTAL	R49,9 bn	R34,4 bn

Approximately R33,1 billion in R&D expenditure was supported by the Incentive in the period between 2006 and 2015. This amount includes R25,4 billion attributed to claimed R&D expenditure made to SARS under the retrospective system since 2006, and R7,7 billion reported on the applications approved under the pre-approval system.

Just more than 80% of the supported R&D expenditure is in the very large companies in two dominant sectors, namely manufacturing and the financial and business services sector. Approximately 67,3% of the supported R&D expenditure is attributed to the manufacturing sector, followed by the financial services sector at 13.9%. The remaining 18,7% of the R&D expenditure is spread across the remaining sectors.

By way of turnover size, 82,5% of the overall R&D expenditure that was supported by the Incentive went to very large companies, and the remainder spread across other size categories. This is largely due to the proportion and quantum of expenditure claims made by very large companies in comparison to SMEs.

The distribution explained above is consistent with the statistics presented by the R&D survey, which notes that more than 80% of the R&D expenditure in South Africa is contributed by a few larger companies.

The low success rate of SMEs that qualified for the incentive could be explained by a variety of factors. One reason may be a nexus between a large number of SMEs and those companies that engaging in ICT activities. While ICT activities may be R&D-related, many SMEs appear to absorb and adapt existing technologies for the purpose of the South African market. These activities are largely geared towards system integration, technology implementation and adding functionality to existing products, rather than R&D. It is also worth noting that not all novel ideas or products require systematic, investigative and experimental activities, as per the requirements of eligible R&D in terms of section 11D of the Income Tax Act.

6. CONTRIBUTION TO INDUSTRIAL POLICY PRIORITIES

The incentive shows a strong orientation in leveraging R&D that supports the priority focus areas of the current National Industrial Policy Action Plan (IPAP), with approved applications addressing those areas accounting for more than 73,8% of the R&D expenditure supported by the incentive.

The top five of the IPAP sectors in terms of supported R&D spending are:

- Upstream oil and gas, with estimated R5,9 billion;
- Electrotechnical and ICT, with R5,8 billion;
- Chemical, cosmetics, pharmaceuticals and plastics, with R4,2 billion;
- Automotives, components, medium and heavy commercial vehicles, with R3,4 billion; and
- Metal fabrication and capital equipment, with R1,6 billion.

TABLE 7: CONTRIBUTION TO INDUSTRIAL POLICY ACTION PLAN (IPAP) PRIORITY AREAS (NOV. 2012 TO FEB. 2015)

IPAP SECTOR DESCRIPTIONS	R&D EXPENDITURE UNDER RETRO-SPECTIVE SYSTEM (IN R'000)	R&D EXPENDITURE FOR APPROVED APPLICATIONS UN-DER PRE-APPROVAL SYSTEM (IN R'000)	CUMULATIVE (NOV. 2006 TO FEB 2012) (IN R'000)	% TOTAL OF IPAP SECTORS
Upstream oil and gas	4 669 185	1 260 749	5 929 934	24.3%
Electrotechnical and ICT	3 873 476	1 999 575	5 873 051	24.1%
Chemicals, Cosmetics, pharmaceuticals and Plastics	3 905 899	366 712	4 272 611	17.5%
Automotives, compo-nents, medium and heavy commercial vehicles	3 321 901	161 822	3 483 723	14.3%
Metal fabrication, capital and transport equipment sectors	1 217 985	460 796	1 678 781	6.9%
Business process services	1 172 476	889	1 173 365	4.8%
Aerospace and defence	497 888	94 257	592 145	2.4%
Agro-processing, linked to food security and food pricing imperatives	384 937	156 369	541 306	2.2%
Forestry, paper, pulp and furniture	256 300	228 724	485 024	2.0%
Advanced materials	243 761	-	243 761	1.0%
Nuclear	62 516	-	62 516	0.3%
Green' and energy-saving industries	35 057	-	35 057	0.1%
Boat building	-	32 400	32 400	0.1%
Clothing, textiles, foot-wear and leather	355	2 300	2 655	0.0%
Creative and cultural industries	-	-	-	0.0%
Biofuels	-	-	-	0.0%
TOTALS	19 641 736	4 764 594	24 406 330	100.0%

7. ESTIMATES OF TAX REVENUE FORGONE DUE TO THE INCENTIVE

TABLE 8: TAX REVENUE FORGONE DUE TO THE R&D TAX INCENTIVE

REPORTING PERIOD	TAX REVENUE FORGONE (R'000)
2005/06	183 000
2006/07	449 000
2007/08	358 000
2008/09	594 000
2009/10	987 000
2010/11	1 216 000
2011/12	1 131 000
2012/13	360 000
2013/14	745 000
2014/15	Information not available
TOTAL	6 023 000

Table 8 above shows the estimated tax revenue forgone in the different financial years as reported in the National Treasury Budget Review report. Accordingly, the tax revenue that was foregone due to the R&D Tax Incentive is estimated at just over R6 billion for the period 2005/06 to 2013/14. Estimates for 2014 and 2015 were not available at the time this memorandum was prepared. The figure includes claims that were made under section 11B of the Income Tax Act that applied prior to November 2006. These figures represent deductions allowed by SARS on claims by companies for each particular tax year. The figures are revised annually as companies submit their claims. The amount of tax revenue foregone represents the cost of the Incentive to government.

TEXT BOX 2: EXAMPLES OF SUCCESS STORIES OF COMPANIES BENEFITING FROM THE R&D TAX INCENTIVE

Information about applying companies is kept confidential, but some companies have agreed to share their experiences. Information of three companies is presented anonymously and is meant to indicate influence of the current R&D Tax Incentive on a firm's decisions to invest in R&D.

Company A, which specialises in providing professional analytical and geochemical services to the mineral exploration and mining industry, stated that the Incentive helped them to maintain and run the capital equipment that is used to research rare earth elements (REE). Company A was also able to purchase the required standards and certified material needed to analyse REEs and they were able to employ several new staff members who focused on furthering their research.

Company B, which develops high-tech simulators for the military and the mining industry, stated that the R&D Tax Incentive allowed them to invest more in R&D activities, which increased their market share, turnover and company size. This resulted in the employment of greater numbers of R&D staff, and provided downstream growth and employment opportunities for their suppliers.

Company C, which develops antennas for military and mobile markets, said that the tax break allowed for a higher reinvestment into R&D than would have been possible. This was an important contributing factor to the growth of the company – both in terms of turnover (despite the financial crisis in the main markets, a 82% turnover increase over the past five years) – and staff (a 50% increase of R&D staff from 12 to 18 over the past five years). This growth in turn secured their position as a worldwide leader in services, products and patents in the area of the computational electromagnetics.
A large number of companies that were supported by the Incentive highlighted the fact that it helped South Africa stay competitive internationally from a cost perspective. At an elementary level, the Incentive lowered the cost of doing R&D by 14%. Smaller companies report that the value of the Incentive was its ability to mitigate some of the financial risks involved in carrying out R&D.

The following figures show short-term R&D outputs reported by beneficiary companies to the DST for the period November 2006 to February 2015. Note that these results may not show the complete picture of the effect or impact of the incentive. This is because R&D can be a lengthy process, with results and outcomes only materialising after several years of investment:

- 765 scientific publications, reported by 55 companies.
- 649 conference proceedings, reported by 53 companies.
- 33 companies reported local and international patents.
- 1 062 new products launched, reported by 416 companies.
- 111 other forms of intellectual property (i.e. trade secrets, trademarks, designs, copyright, etc.), reported by 50 companies.

8. R&D PERSONNEL

One way to assess the effect of the R&D Tax Incentive is to focus on the human capital that it supports. Tables 9 and 10 show the number of R&D personnel that have been reported to be involved in R&D at companies. The value of the Incentive lies in supporting the work of such key personnel, whose contributions lead to the generation of new knowledge, processes and products for the South African economy. The tables show that the total number of R&D personnel involved in the Incentive came to 26 thousand for the period between 2006 and 2015. These consisted chiefly of scientists, engineers, technologists and technicians. R&D operations also underpin existing manufacturing operations. Thus, the Incentive can be viewed as vital support for jobs, as it helps embed R&D activities in South Africa. It further allows companies to claim R&D expenditure that has been invested in universities and science councils. Companies have a motivation to collaborate with universities and science councils in areas of R&D with which they do not have capability, ensuring that the domestic economy benefits as far as possible.

TABLE 9: REPORTED R&D PERSONNEL PER COMPANY TURNOVER SIZE (NOV. 2006 TO FEB. 2015)

TURNOVER SIZE (IN R MILLION)	TOTAL	SCIENTISTS	ENGINEERS	TECHNOLOGISTS	TECHNICIANS	MANAGERS	OTHER TECHNICAL STAFF
Turnover not indicated	2 826	358	761	288	638	271	510
10 and below	7 032	342	1 225	862	1 659	711	2 233
10 < 15	2 543	111	340	211	284	162	1 435
15 < 20	804	79	117	165	136	91	216
20 < 30	853	81	202	169	192	80	129
30 < 40	691	52	73	155	103	83	225
40 < 50	897	146	197	137	120	78	219
50 < 100	2 606	275	697	262	634	185	553
Above 100	8 274	784	1 567	1 099	1 590	816	2 418
TOTAL	26 526	2 228	5 179	3 348	5 356	2 477	7 938

TABLE 10: REPORTED R&D PERSONNEL PER INDUSTRY SECTOR (NOV. 2006 TO FEB. 2015)

INDUSTRY (BY SIC CATEGORY)	TOTAL	SCIENTISTS	ENGINEERS	TECHNOLOGISTS	TECHNICIANS	MANAGERS	OTHER TECHNICAL STAFF
10000 – Agriculture and related	1 043	109	215	186	216	113	204
20000 – Mining and Quarrying	1 134	36	121	73	82	89	733
30000 to 39000 – Manufacturing	13 515	1 417	2 668	1 596	2 512	1 143	4 179
40000 – Electricity, Gas and Water Supply	576	7	104	167	59	61	178
50000 – Construction	132	12	21	26	6	21	46
60000 – Wholesale and Retail Trade	381	5	77	25	31	61	182
70000 – Transport, Storage and Communication	1 240	38	250	234	184	224	310
80000 – Finance and Business Services	8 042	563	1 663	821	2 228	718	2 049
90000 – Community and Social Services	463	41	60	220	38	47	57
TOTALS	26 526	2 228	5 179	3 348	5 356	2 477	7 938

The estimates of R&D personnel provided above are an undercount of the potential employment impact of the supported R&D. Further employment opportunities can arise from successful R&D, and even later when resulting innovations are commercialised. The knowledge gained from undertaking R&D, whether the R&D becomes successful or not, contributes to the human capital stock, technology transfer and learning in the country.

Spillovers also occur, through various mechanisms of technology transfer and learning within and across firms, and in the system of innovation. This helps in deepening capabilities for value addition and competitiveness at different levels of the economy.

9. CONCLUSION

Any company that undertakes eligible R&D in South Africa can apply for the R&D tax incentive. The Incentive can be accessed by companies of all sizes in all sectors of the economy.

The Incentive is part of a package policy instruments to encourage private sector R&D investment in the country. This is important in order to increase the overall investment in R&D; to promote innovation, i.e. development of new products, processes and services; to promote technological advancement and competitiveness and to secure innovation spillovers and retain/expand R&D workforce in the country.

Feedback from industry indicates that the Incentive is an essential part of the domestic policy landscape. At a very elementary level it reduces the cost of carrying out R&D in South Africa by 14%. This allows companies to invest R&D personnel in such activities. The tax deduction was particularly crucial during the period of economic crisis, where both internal and external sources of R&D funding were constrained, while companies wanted to maintain their ongoing R&D programmes.

The Incentive is also found to be useful in helping South African subsidiaries of multinational companies to compete for and bring new projects to South Africa. The existence of R&D operations of MNCs facilitates integration of South Africa's R&D system into their networks globally and also underpins existing manufacturing operations. Thus, the R&D Tax Incentive is viewed as vital to providing support for knowledge –based jobs.

Several companies indicated that delays experienced in accessing the Incentive through the administrative system remains a challenge. It creates uncertainty in the tax system and companies are unable to claim the benefit until approval is given. The DST has taken measures to address this problem, including the use of external experts to assist in evaluating applications.

To advance the incentive, a series of activities have been planned to enhance communication between the government and the private sector about the R&D Tax Incentive to find ways on how its impact can be enhanced, in attracting a larger number of companies, in increasing private sector R&D and in improving South Africa's innovation performance and competitiveness.

By November 2016, the 150% R&D Tax Incentive will have been 10 years in operation. The DST has planned an impact evaluation of the Incentive to gauge its economic impact on the basis of performance indicators over and above those presented in the current report.

10. APPENDIX A: DEFINITIONS OF SCIENTIFIC FIELDS

Agricultural science is a broad multidisciplinary field that encompasses parts of exact, natural, economic and social sciences that are used in the practice and understanding of agriculture.

Animal science can be described as a study of the biology of animals that are under the control of humankind.

Biological science is a branch of science that is defined as the study of life. It provides the fundamental study for the biotechnology industry. Biological science has a great impact on our lives and stands to have an even bigger impact in the future.

Chemical science consists of a diversity of disciplines in pharmaceuticals, polymers, paints and coatings, and household and personal care products, etc.

Environmental science is an interdisciplinary academic field that integrates physical and biological sciences (including but not limited to ecology, physics, chemistry, biology, soil science, geology, atmospheric science and geography) into the study of the environment and the solution of environmental problems. Environmental science provides an integrated, quantitative and interdisciplinary approach to the study of environmental systems.

Food science is concerned with all the technical aspects of food, beginning with harvesting or slaughtering and ending with cooking and consumption; it is a science that is commonly referred to as "from field to fork".

Forestry science is the scientific management of forests for the production of lumber and other resources. It is the science of cultivating, maintaining and developing forests.

Geographical information system (GIS) science includes the design of systems to capture, store, manipulate, analyse, manage and present all types of geographically referenced data.

Geological science is the science comprising the study of the Earth, the rocks of which it is composed and the processes by which it evolves. It is commercially important for mineral and hydrocarbon exploration and for evaluating water resources.

I**ndustrial science** is made up of multidisciplinary fields, e.g. combining information technology, physical science and the science of machinery to advance industries.

Materials science is an interdisciplinary field that applies the properties of matter to various areas of science and engineering. It investigates the relationship between the structure of materials at atomic or molecular scale and their macroscopic properties. It incorporates elements of applied physics and chemistry.

Mathematical science refers to disciplines that are mathematical in nature. It includes fields like computer science, computational science, statistics, theoretical physics and actuarial science.

Metallurgical science includes disciplines concerned with the science and technology of metals and alloys. It includes fields such as process metallurgy, physical metallurgy and mechanical metallurgy.

Physical science is any of the sciences, such as physics, chemistry, astronomy and geology, which analyse the nature and properties of energy and non-living matter.

11. APPENDIX B: DESCRIPTION OF STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES

SIC OF ECONOMIC ACTIVITIES		
MAJOR DIVISION	SUB-DIVISION	DESCRIPTION
10 000	**10 000**	Agriculture, hunting, forestry and fishing
	11 000	Agriculture, hunting and related services
	12 000	Forestry, logging and related services
	13 000	Fishing, operation of fish hatcheries and fish farms
20 000	**20 000**	Mining and quarrying
	21 000	Mining of coal(hard) and lignite (brown coal)
	22 000	Extraction of crude petroleum oils and natural gas; service activities incidental to oil and gas extraction, excluding surveying
	23 000	Mining of gold and uranium ore
	24 000	Mining of metal ores, except gold and uranium ore
	25 000	Other mining and quarrying activities
	29 000	Service activities incidental to the mining of minerals
30 000	**30 000**	Manufacturing
	30 000	Manufacture of food products, beverages and tobacco products
	31 000	Manufacture of textiles, clothing and leather goods
	32 000	Manufacture of wood and products of wood and cork except furniture); manufacture of articles of straw and plaiting materials; manufacture of paper and paper products; manufacture of publishing, printing and reproduction of recorded material
	33 000	Manufacture of coke, refined petroleum products and nuclear fuel; manufacture of chemicals and chemical products; manufacture of rubber and plastic products
	34 000	Manufacture of non-metallic mineral products

	35 000	Manufacture of basic metals, fabricated metal products, machinery and equipment and of office, accounting and computing machinery
	36 000	Manufacture of electrical machinery and apparatus (not elsewhere classified)
	37 000	Manufacture of radio, television and communication equipment and apparatus for medical application, precision and optical instruments, watches and clocks
	38 000	Manufacture of transport equipment
	39 000	Manufacture of furniture; manufacturing (not elsewhere classified); recycling
40 000	**40 000**	Electricity, gas and water supply
	41 000	Electricity, gas, steam and hot water supply
	42 000	Collection, purification and distribution of water
50 000	**50 000**	Construction
	50 000	Construction
60 000	**60 000**	Wholesale and retail trade; repair of motor vehicles, motor cycles and personal and household goods; hotels and restaurants
	61 000	Wholesale and commission trade, except of motor vehicles and motor cycles
	62 000	Retail trade, except of motor vehicles and motor cycles; repair of personal household goods
	63 000	Sale, maintenance and repair of motor vehicles and motor cycles; retail trade in automotive fuel
	64 000	Hotels and restaurants
70 000	**70 000**	Transport, storage and communication
	71 000	Land transport; transport via pipelines
	72 000	Water transport
	73 000	Air transport
	74 000	Supporting and auxiliary transport activities; activities of travel agencies
	75 000	Post and telecommunications

80 000	**80 000**	Financial intermediation, insurance, real estate and business services
	81 000	Financial intermediation, except insurance and pension funding
	81 000	Insurance and pension funding, except compulsory social security
	83 000	Activities auxiliary to financial intermediation
	84 000	Real estate activities
	85 000	Renting of machinery and equipment, without operator, and of personal and household goods
	86 000	Computer and related activities
	87 000	Research and experimental development
	88 000	Other business activities
90 000	**90 000**	Community, social and personal services
	91 000	Public administration, compulsory social security and defence activities
	92 000	Education
	93 000	Health and social work
	94 000	Sewage and refuse disposal, sanitation and similar activities
	95 000	Activities of membership organisations (not elsewhere classified)
	96 000	Recreational, cultural and sporting activities
	99 000	Other service activities

12. APPENDIX C: CATEGORIES OF R&D PERSONNEL

Scientists or researchers are professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems, as well as the management of the projects concerned. They typically hold a basic university degree, a postgraduate degree or a PhD.

Technicians and technologists are people whose main tasks require technical knowledge and experience in one or more fields of engineering, physical or life sciences. They participate in R&D by performing scientific and technical tasks involving the application of concepts and operational methods, usually under the supervision of researchers.

Managers are involved in the planning and management of scientific and technical aspects of the researchers' work. Their rank is usually equal or superior to those of the researchers and they are often former or part-time researchers.

Directly supporting technical staff include associate professionals in physical and engineering sciences whose tasks include:

- carrying out bibliographic searches and selecting relevant material from archives and libraries;
- preparing computer programmes;
- carrying out experiments, tests and analyses;
- preparing materials and equipment for experiments, tests and analyses;
- recording measurements, doing calculations and preparing charts and graphs;
- carrying out statistical surveys and interviews.

13. APPENDIX D: METHODOLOGY

The report presents information on the performance of the R&D Tax Incentive Programme for the period March 2014 to February 2015. It is based on the information submitted to the DST by companies that participated in the programme.

The report relies on information available at the DST and the published data by National Treasury. All the information that companies declared to the DST about the claims they submitted to SARS (as retrospective claims) is taken as relating to R&D supported. For the preapproval system, data available at DST at two stages is used, namely application stage and approval stage.

There is no data that was sourced from SARS. Data is collected in accordance with the requirements of section 11D(11) of the Income Tax Act through an application form and progress report form (for approved activities) prescribed by the Department of Science and Technology (DST). The taxpayer completes the application form and progress report form manually or electronically and submits it to the DST. Data is captured in the R&D Tax Incentive Programme database at the DST.

For the applications, companies have to report on their annual R&D budget and the estimated R&D planned expenditure, which in many companies span a period of two to three years. Data on tax revenue foregone due to the R&D Tax Incentive programme is estimated by SARS, based on the deductions made against the claims for the R&D Tax Incentive. These figures are published by National Treasury in its annual budget review as part of the estimates for tax expenditure. Available figures are for the years 2005/06 until 2013/14 and are inclusive of deductions for both section 11D and section 11B of the Income Tax Act. Annual figures are revised from time to time based on retrospective claims.

Annual data stated in the report represents the totals that were available at the time of compiling the report.

Application and progress report forms collect information on the following:

- Particulars of the taxpayer, including the principal industrial activity in which they are involved.
- Summary of projects and R&D activities, in terms of the nature of the R&D, its classification in terms of fields of science, SIC and supporting information such as R&D documentation and research outputs for the projects.
- R&D expenditure and which components of R&D activities are contracted out.
- information on sources of funds for R&D activities, the nature of government grants received and the personnel involved in the R&D projects.

The Income Tax Act requires that the information be presented in an aggregated and anonymous form. The DST makes certain that the tables and graphs in the report do not unintentionally reveal the details of individual companies and their R&D activities. Consent by individual companies was given to the DST to publish their success stories in a unanimous format.

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