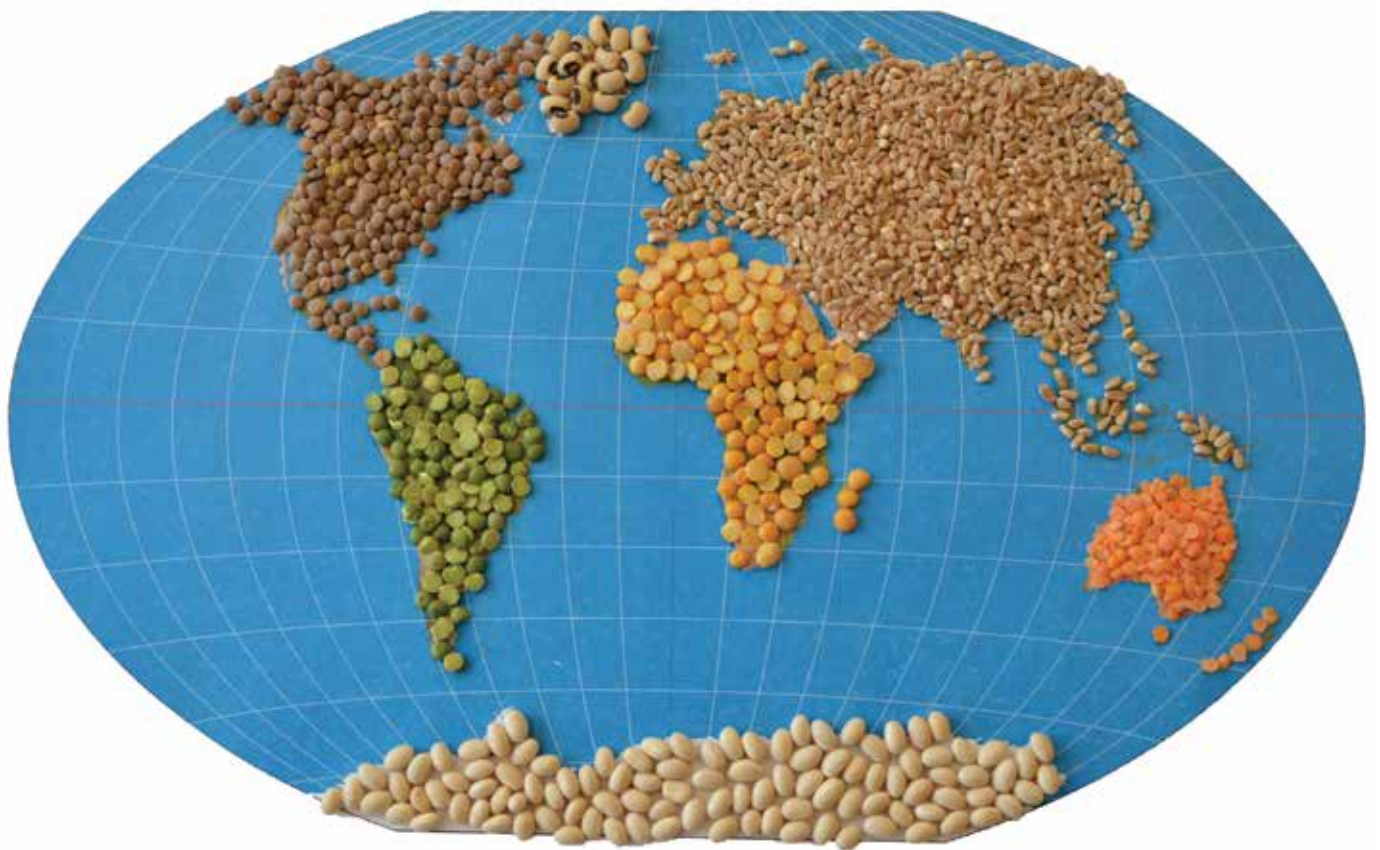


THRIP ANNUAL REPORT 2015/16



INTERNATIONAL YEAR OF
PULSES

The International Year of Pulses

The International Year of Pulses 2016 aims to heighten public awareness of the nutritional benefits of pulses as part of sustainable food production aimed towards food security and nutrition. The Year will create a unique opportunity to encourage connections throughout the food chain that would better utilize pulse-based proteins, further global production of pulses, better utilize crop rotations and address the challenges in the trade of pulses.

PULSES CONTRIBUTE TO FOOD SECURITY

Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Food insecurity is a major issue for many people and households in poor and developing countries — it is estimated that 795 million people are undernourished. Pulses can help contribute to food security in a number of ways.



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Acronyms and Abbreviations

BBBEE	Broad Based Black Economic Empowerment
CEO	Chief Executive Officer
GRAP	Generally Recognised Accounting Practice
HEI	Higher Education Institution
ICT	Information Communication and Technology
KPI	Key Performance Indicator
NRF	National Research Foundation
NSTF	National Science and Technology Forum
PFMA	Public Finance Management Act
SETI	Science, Engineering and Technology Institution
SIC	Standard Industrial Cluster
SMME	Small, Medium and Micro Enterprise
the dti	The Department of Trade and Industry
THRIP	Technology and Human Resources for Industry Programme

THRIP Profile

THRIP is funded by the Department of Trade and Industry (**the dti**) and is administered by the National Research Foundation (NRF).

THRIP was established in 1991, in response to the shortage of high-level technical skills for industry seen at the time, and the need to improve the competitive edge of South Africa's industry through the development of advanced technologies and highly skilled people.

On a cost-sharing basis with industry, THRIP fosters collaboration in science, engineering and technology research to help government create long-term associations that can resolve technology challenges and boost the economy, as well as provide high-level education and skills training to improve the technological proficiency of our people.

VISION

Enhanced industry competitiveness and broadened collaborations generating skills and technologies.

MISSION

Leveraging collaborative partnerships on a cost-sharing basis, for research and development in science, engineering and technology, to produce highly skilled human resources and technology solutions, for improved industry competitiveness.

THRIP's strategic objectives for the period under review are to:

An increase in the number and quality of people with appropriate skills in the development and management of research-based technology for industry.

Improved knowledge exchange and technology transfer through increased interaction and mobility among researchers in universities and science, engineering and technology institutions (SETIs) on the one hand, and technology personnel in industry on the other.

An increase in investment by industry and government, in research and technology development.

Technology transfer and product or process improvement or development, through research collaboration between enterprises (large and small) on the one hand, and universities and SETIs on the other.

PRIORITIES

In pursuing its goals THRIP should prioritise the following:

Working to achieve equity with respect to beneficiaries from THRIP, specifically in terms of:

Gender and race of students and grant-holders;

Institutions;

Strengthening participation of small, medium and micro enterprises (SMMEs);

Strengthening support for cooperatives;

Strengthening participation of broad-based black empowerment enterprises (BBBEEs); and

Support for projects within the manufacturing sector, with a special emphasis on: green industries; agro-processing; metal fabrication; capital and transport equipment; automotives; advanced manufacturing and materials; and renewable, sustainable and efficient energy generation.

The statistics that THRIP reports annually are short-term indicators of performance against its strategic long-term goals.

Foreword NRF CEO



THRIP has been the research flagship and development programme of the Department of trade and Industry (**the dti**) managed by the National Research Foundation (NRF).

THRIP supports Science, Engineering and Technology (SET) research collaboration that address the technology needs of the participating firms on a cost-sharing basis with industry. THRIP also encourage the development and mobility of research personnel and students between participating organisations.

THRIP projects were funded from the income of R156 million received from **the dti** for the 2015/16 financial year. This income has decreased by 6% from the 2014/15 allocation of R165,5 million. The funding provided was split between research grants (R148 million) and operational expenses (R8 million).

This report presents the performance of THRIP for the 2015/16 financial year as well as the report of the auditor general to THRIP.

Key Performance Indicator (KPI)

THRIP performance per its Key Performance Indicators, from 2011/12 to 2015/16.									
Key Performance Indicators	2011/12 Achievements	2012/13 Achievements	2013/14 Achievements	2014/15 Achievements	2015/16 Target	2015/16 Achievements	Variance to 2015/16 targets	% Variance	Comments on variances
TIPTOPS	176	168	178	221	202	71	-131	-185%	A few researchers moved between universities and industry partners in the year under review. This was due to the change in the process of transferring THRIP funds to institutions as a result of integrating THRIP to the dti .
Number of projects supporting Green Economy	21	27	64	58	69	66	-3	-5%	The variance is aligned to the decrease in the number of projects funded.
Patents	25	32	45	52	32	45	13	29%	More patents were filed as many projects funded in 2015/16 were in their third year of funding.
Products & artefacts	276	264	272	310	285	270	-15	-6%	This was due to the change in the transfer of funds to funded institutions as a result of integrating THRIP to the dti .
Students	1551	1506	1548	1634	1591	1660	69	4%	Participation of students in THRIP have been steady and the target was slightly exceeded.
Researchers	961	1036	1047	1362	1095	1681	586	35%	Extensive collaborations in THRIP funded researchers were observed in the period under review. Year on year increase in the number of researchers participating in THRIP projects is an indication of a growing need for innovative technology solutions by South African Industry.
THRIP Grant Contribution (Rm)	141	149	148	155	163	156	7	-4%	This was due to the change in the transfer of funds to funded institutions as a result of integrating THRIP to the dti .

THRIP KPIs

PROJECTS SUPPORTED

THRIP Awards

In 2015/16 THRIP:

Funding was awarded to 377 Applications compared to 401 awards for 2014/15, the 6% decrease is mainly due to a number of projects not meeting the funding requirements.

Supported 303 projects as compared to 335 projects supported in 2014/15, the 10% decrease is due to the delays in the transfer of funds to institutions.

FUNDING

During 2015/16, THRIP paid an amount of R148,2 million to approved projects at 18 universities and 5 science councils/research centers.

THRIP Grant Funding Summary for 2015/16 compared to 2014/15

Item	Expenditure (R,m)	Total (R,m)
Grants 2015/16	148 211	155 988
OPEX 2015/16	7 777	
Grants 2014/15	155 963	165 433
OPEX 2014/15	9 470	

The decrease of 6% in the total THRIP expenditure in 2015/16 as compared to 2014/15 is a result of a change in the grant payment process to institutions which was influenced by the integration of THRIP to **the dti**. In the past years, monthly payments were made to funded research institutions to repay for incurred project expenses, whereas in 2015/16 a once off payment was made towards the year end.

For the same reasons expressed above, the matching industry partner contribution decreased by 16% from R223,0 million in 2014/15 to R186,8 million in 2015/16.

List of projects supported

Economic Sectors	Applicant Name	THRIP claimed amount (Rands)	Industry contribution (Rands)	Short Title	Industry Partner	Industry size
Agricultural Research Council						
Agriculture	Dr ZH Swanevelde	177,873	177,873	Sorghum improvement for increased competitiveness	Sorghum Trust	Small
	Dr F Van Jaarsveld	100,000	200,000	Effect of grape temperature on the phenolic extraction and quality of Cap Classique	Winetech	Medium
Animal	Mr K Tobutt	1,584,395	3,168,790	Molecular markers in fruit	Canning Fruit Producers' Association	Medium
					Dried Fruit Technical Services	Large
					Hortgro	Small
					Culdevco	Large
Agriculture	Dr Y Petersen	221,040	110,520	Xylophilus ampelinus pathogenicity mechanisms	South African Table Grape Industry	Medium
Agro-Processing	Dr P Heinze	229,405	229,405	On-the-hook ageing of beef	Red Meat Research and Development Trust of SA	Medium
Agriculture	Dr T Tsilo	2,100,000	4,200,000	Germplasm development and characterisation of genes	Winter Cereal Trust	Small
	Dr K Mashingaidze	3,750,000	7,500,000	Developing and applying breeding technologies for maize	The Maize Trust	Large
	Mrs LM Blomerus	183,124	366,249	Novel biotechnological techniques for cultivar improvement and rootstock screening	Dried Fruit Technical Services	Large
					Canning Fruit Producers' Association	Large
	Prof J Rees	3,500,000	1,750,000	Genomics technologies for wheat breeding	Winter Cereal Trust	Large
Agro-Processing	Mr BS Wentzel	548,000	548,000	Dryland winter- and intermediate-, dryland winter rainfall- and spring wheat breeding	Winter Cereal Trust	Small
Agriculture	Dr B Janse van Rensburg	775,000	1,550,000	Managing mycotoxins in South African grain crops	Winetech	Large
					Hortgrow Science	Small
					NemaBio	Small
					South African Table Grape Industry	Medium
					The Maize Trust	Large
	Dr L Frylinck	200,640	200,640	Pig Leanness Insulin-like growth factor 2	Red Meat Research and Development Trust of SA	Medium
	Miss LP Shange	155,984	155,984	Composting using spent filter winery waste	Winetech	Medium
	Dr O Janse van Rensburg	856,261	856,261	Subtropical fruit improvement	SA Subtropical Fruit Growers Association	Medium
	Mrs SO Makina	223,847	223,847	Genomic technologies for the improvement of South African beef cattle	Red Meat Research and Development Trust of SA	Medium
	Dr F van Jaarsveld	100,000	200,000	Acetaldehyde production during fermentation	Winetech	Medium
					South African Rooibos Council	Small
	Dr F Halleen	100,000	200,000	Investigation into the cause of rootstock necrosis in grapevine nurseries	Winetech	Medium
	Dr M Craven	100,000	200,000	Characterisation of Exserohilum turcicum isolates within South African maize production areas	Maize Trust	Large
	Dr F Halleen	100,000	200,000	Investigation into the cause of rootstock necrosis in grapevine nurseries	Winetech	Medium
	Mr PP Minnaar	100,000	200,000	Chemical profiling of South African experimental wines (young wines) and non-Saccharomyces wines	Winetech	Medium
Mr JH Avenant	108,524	217,048	Evaluation of rootstocks for grapes	South African Table Grape Industry	Medium	
Dr JC Fourie	100,000	200,000	Effect cover crops on nematodes and grapevines	Winetech	Medium	
Dr M Cloete	140,000	280,000	Super sweet spuds	McCain Foods SA Pty Ltd	Large	

List of projects supported

Economic Sectors	Applicant Name	THRIP claimed amount (Rands)	Industry contribution (Rands)	Short Title	Industry Partner	Industry size
Agriculture	Mr JH Avenant	160,000	80,000	Evaluation of new table grape cultivars	South African Table Grape Industry	Medium
	Ms P Burger	270,023	135,012	Marker assisted breeding of grapes	Deciduous Fruit Producers Trust	Small
Agro-Processing	Dr NP Jolly	279,162	558,324	Yeast and bacteria interactions in a grape must and wine environment	Winetech	Medium
					Anchor BioTechnologies	Medium
Agriculture	Prof M Scholtz	120,000	120,000	Breeding to reduce methane production from beef cattle under extensive production systems	Simmentaler / Simbra Cattle Breeders' Society	Small
		63,052	63,052	Crossbreeding with indigenous beef breeds	Red Meat Research Development Trust	Small
		12,500	12,500	Crossbreeding effects on physical and sensory beef and leather quality traits	Red Meat Research Development Trust	Small
		110,211	110,211	Genomic assessment of wet carcass syndrome in sheep	Red Meat Research Development Trust	Small
Animal	Prof A Maiwashe	2,703	2,703	Marker detection in beef cattle	Red Meat Research and Development SA	Small
Mining and Minerals	Dr R Adeleke	188,789	377,578	Development of a model soil stockpiling operational procedure for South African coal mines	Coaltech	Medium
Sub-Total		16,660,533	24,393,996			

Bayworld Centre for Research and Education

ICT	Prof MJ Roberts	534,600	1,069,200	Multi-mooring single surface buoy array (M2S2A)	Eskom	Large
Sub-Total		534,600	1,069,200			

Cape Peninsula University of Technology

Power	Prof R Tzoneva	742,500	371,250	CSAEMS development and growth	etalumiSe	Micro
					MBSA Consulting cc	Small
Agriculture	Mrs S Henning	2,000,000	1,000,000	Optimisation of catfish production from fry to final processed products	Blue Karoo Trust	Small
Sub-Total		2,742,500	1,371,250			

Centre for Proteomic and Genomic Research

Agriculture	Dr J Mafofo	110,489	110,489	Genome sequencing and development of molecular breeding tools for Cucurbita crops	Starke Ayres Seed Pty Ltd	Medium
Sub-Total		110,489	110,489			

CSIR - Materials Science and Manufacturing

Materials and Manufacturing	Dr A Botha	53,865	53,865	Wool comfort properties and climate change	Cape Wools SA	Small
		79,800	79,800	Sterilization of wool/mohair bales by irradiation	Cape Wools SA	Small
	Dr A Els-Botes	106,000	106,000	Laser surface engineering	TRANSNET	Large
Agro-Processing	Dr B Sithole	100,000	200,000	Production of speciality cellulose pulps	Sappi Saiccor Pty Ltd	Large
	Dr V Somerset	35,839	71,678	Mercury ecosystem protection software index	Eskom Holding SOC Limited	Large
Sub-Total		375,504	511,343			

Durban University of Technology

Power	Mr F d'Almaine	592,000	296,000	RTPSS Centre capabilities extension	etalumiSe	Micro
Sub-Total		592,000	296,000			

Economic Sectors	Applicant Name	THRIP claimed amount (Rands)	Industry contribution (Rands)	Short Title	Industry Partner	Industry size
Elsenburg Agricultural Research Centre						
Animal	Prof S Cloete	211,500	211,500	Refinement of ostrich AI protocol	Western Cape Agricultural Research Trust	Small
					South African Ostrich Business Chamber	Small
		400,000	200,000	Ovine genomics applied to national sheep flock	Western Cape Animal Production Trust	Small
					Cape Wools SA	Small
Sub-Total		400,000	200,000			

Nelson Mandela Metropolitan University						
Agriculture	Dr G Dealtry	100,000	100,000	Development of a UV resistant CrleGV biopesticide	Citrus Reseach International	Small
	Dr P-P Steyn	132,030	66,015	Abalone ranching habitat suitability assessment.	Lidomix Investments Pty Ltd	Medium
Animal	Dr S Ploen	100,000	200,000	Impact of shipping on whales in Algoa Bay	Transnet National Ports Authority	Medium
ICT	Prof AWR Leitch	162,500	325,000	Advanced optical fibre telecommunication technology	Ingoma Communication Services Pty Ltd	Small
					Dartcom Pty Ltd	Large
					Telkom SA Ltd	Large
	Prof J Wesson	112,000	224,000	UbiServe: Ubiquitous access to services	Telkom SA Ltd	Large
Materials and Manufacturing	Dr F Vorster	75,000	150,000	Renewable energy technologies	TFMC Pty Ltd	Large
	Prof DG Hattingh	427,500	855,000	Friction processing technology development	Eskom Holdings Limited	Large
Power	Prof E Ferg	450,000	450,000	Pb-acid battery performance improvement	Willard Batteries	Medium
Process Manufacturing	Dr ZR Tshentu	100,000	200,000	Non-hydrogen based technologies for the removal of sulfur, nitrogen and metals from crude oils	Sasol Technology Research and Development	Large
Sub-Total		1,659,030	2,570,015			

North-West University						
Agriculture	Prof LJ Grobler	200,000	400,000	Beneficiation through Supercritical Fluid Extraction(SFE)	Gaborone Engineering Consulting	Micro
	Mr P van Deventer	113,600	56,800	Development on dolomites	AGES	Small
	Prof LJ Grobler	896,000	448,000	Extrusion by-product beneficiation	Gabarona Engineering and Consulting	Small
		896,000	448,000	Beneficiation through Supercritical Fluid Extraction(SFE)	Gaborone Engineering Consulting	Micro
Mining and Minerals	Prof J De Kock	2,005,000	1,002,500	Mining Energy Solutions (MES)	SM Enviro	Micro
					BBE Energy SA Pty Ltd	Small
Agriculture	Mr P van Deventer	194,000	97,000	Omnia water project	Omnia Fertilizer	Medium
	Prof LJ Grobler	400,000	200,000	Small to medium-scale aquaculture solutions	Moumou Integrated Development Pty Ltd	Small
	Prof J van den Berg	760,000	380,000	Ensuring the sustainable use of genetically modified maize	Genok	Small
	Dr EJ Cilliers	1,400,000	700,000	Rural land use management frameworks	PlanCentre	Small
Agro-Processing	Dr KR Uren	427,500	213,750	CREMA – Coffee Roasting with Environmental Management and Automation	Genio Roasters CC	Small
Animal	Prof C Vorster	520,000	260,000	Renewable energy technologies	TFMC Pty Ltd	Large
Bio-Process	Dr R Van der Walt	1,500,000	750,000	High solids anaerobic digestion of MSW in a CSTR	Enviroserv Waste Management Ltd	Medium
Business	Mrs M Grobler	344,000	172,000	Physical and virtual entrepreneurship and innovation platform	Innocentrix Pty Ltd	Micro

List of projects supported

Economic Sectors	Applicant Name	THRIP claimed amount (Rands)	Industry contribution (Rands)	Short Title	Industry Partner	Industry size
Business	Prof HP Mashele	780,000	1,560,000	Business and risk analytics	S-Software Design	Small
					Absa Bank	Large
	Dr J Wehrmeyer	2,016,000	1,008,000	An artificially intelligent computer system that increases cognitive development	Imaginuity Pty Ltd	Small
	Mrs M Grobler	800,000	400,000	The creation of a physical and virtual innovation environment	Innocentrix Pty Ltd	Micro
Health	Prof A Grobler	3,600,000	1,800,000	Hybrid energy source power generation	Michelangelo Technology	Unknown
ICT	Prof A Helberg	639,000	639,000	Anti-poaching wildlife tracking system	YRless International	Small
		194,400	388,800	Verifica - utility management software	Motla Engineering	Medium
	Mrs M Grobler	700,000	350,000	Value chain	Research Institute for Innovation and Sustainability (RIIS)	Micro
	Prof AJ Hoffman	2,094,750	1,047,375	Intelligent Freight Management	EWC Vehicle Communication Pty Ltd	Small
					Digicore Management Service Pty Ltd	Small
					Liberty Lane Trading 379 Pty Ltd	Small
Prof ASJ Helberg	270,000	135,000	SDR/generic modem conforming to ACTA	Cherry Creek	Small	
Materials and Manufacturing	Prof G Van Schoor	364,000	728,000	Development of a Rotary Wing Unmanned Air Vehicle System (RWUAV)	Denel Aviation	Large
Materials and Manufacturing	Dr L Van Dyk	549,000	1,098,000	Development of a Southern African Regional Aircraft (SARA)	Denel Aviation	Large
	Prof C Storm	960,000	480,000	Hydrocarbon based fuel management, quality and enhancement	Raventech CC	Small
Mining and Minerals	M P van Deventer	207,000	103,500	Geotechnical classification of pedological soils	E-Tek Consulting	Small
					Kara Nawa Environmental Solutions	Small
					Soil Science Society of South Africa	Small
Materials and Manufacturing	Prof J Markgraaff	1,032,000	516,000	Ametex advanced casting research project	South African Fishing Tackle Agents and Distributors	Small
	Dr J Bosman	3,555,000	1,777,500	JS2-Control system	Aero Energy Research	Small
Power	Prof CG du Toit	3,000,000	1,500,000	Thermal-fluid system simulation for power generation and energy saving/ optimisation	Samahnzi Pty Ltd	Small
					M-Tech Industrial Pty Ltd	Small
Mining and Minerals	M P van Deventer	146,400	146,400	Bio-exploration of mineral resources	Cupric Africa	Small
	Prof Q Campbell	203,963	407,926	Moisture migration and retention in coal stockpile	Coaltech	Small
Process Manufacturing	Dr R van der Walt	2,000,000	1,000,000	Low pressure fixed bed gasification of High Calorific Value(CV) wastes and gas cleanup.	Umfazi Technical Services	Small
					Enviroserv Waste Management Pty Ltd	Medium
Mining and Minerals	Dr M Le Roux	237,719	475,438	Fine coal drying using a fluidised bed	Coaltech	Small
	M P van Deventer	186,400	93,200	Geological risks for humans from mine tailings	Agreenco Environmental Pty Ltd	Micro
	Mr PW van Deventer	175,500	87,750	Quantifying the wind speed amplification effect on mine dumps	Agreenco Environmental Pty Ltd	Micro
		117,000	58,500	Bio/chemical and physical ameliorants to initiate soil structure formation in mine waste	Fraser Alexander Tailings	Medium
Power	Prof APJ Rens	231,579	231,579	Synchrophasor application in the smart grid	CTLab Pty Ltd	Small
	Prof R Everson	30,702	61,404	Emission control in combustion processes	Eskom	Large
Agriculture	Prof H Fourie	100,000	200,000	Eco-friendly management of root-knot nematodes	Monsanto	Large
					Protein Research Foundation	Large
					Syngenta	Medium

Economic Sectors	Applicant Name	THRIP claimed amount (Rands)	Industry contribution (Rands)	Short Title	Industry Partner	Industry size
Power	Prof RC Everson	767,544	1,535,088	Process and atmospheric emission control	Eskom	Large
Power	Dr M van Eldik	630,000	315,000	Biomass waste to electricity and Bio-Carbon	OneGreen Engineering CC	Micro
	Prof CG Du Toit	720,000	360,000	Development of a computational fluid dynamic model of the patented Tecroveer Transfer Mixer system	Tecroveer Holdings Pty Ltd	Small
	Mr AG Hattingh	1,375,000	687,500	Waste-to-energy by plasma and Fischer Tropsch Technologies	iNkwazi Software Solutions Pty Ltd	Small
Process Manufacturing	Prof HWJP Neomagus	140,000	280,000	Towards improved coal gasification processes	SASOL	Large
	Prof G Van Schoor	210,000	420,000	Advanced process control in petrochemical environments	SASOL Limited	Large
	Dr L Lamont	160,000	80,000	Research on and development of a design guide for cathodic protection in SA	Proconics	Small
	Mr P van Deventer	262,000	131,000	Cenozoic deposits	AGES, Potchefstroom	Small
	Ms J Cilliers	1,600,000	800,000	Development of twin-screw woodlog extruder	Bakgatla Bioflame Pty Ltd	Micro
Sub-Total		39,711,057	26,030,010			

Rhodes University						
Agriculture	Prof M Hill	560,000	560,000	IPM of lepidopteran pests of citrus and other minor crops	River Bioscience	Medium
	Prof P Britz	119,880	59,940	Abalone dietary amino acids	Citrus Research International	Large
		100,000	50,000	Kob feed ingredient digestibility - cycle 2	Marifeed Pty Ltd	Small
					Marifeed Pty Ltd	Small
Bio-Process	Prof CG Palmer	135,000	270,000	Integrated water quality management process	TSB Sugar	Large
					Richards Bay Minerals	Large
					Delta EMD Pty Ltd	Large
					Eskom	Large
					Manganese Metal Company	Medium
Animal	Assoc Prof H Kaiser	100,000	50,000	Abalone stocking density 2	Marifeed Pty Ltd	Small
Business	Dr W Potts	200,000	100,000	Assessment of the economic impact of recreational fishing	South African Fishing Tackle Agents and Distributors	Small
ICT	Prof A Terzoli	317,500	635,000	Unified Communication in NGN (UNICO)	Easttel	Medium
					Tellabs / Coriant	Large
					Telkom	Large
Materials and Manufacturing	Prof P Britz	358,000	179,000	Abalone ranching	Lidomix Investments	Small
Sub-Total		1,890,380	1,903,940			

South African National Space Agency						
ICT	Dr L Mckinell	100,000	200,000	Ionospheric Model VII	GEW Technologies	Large
Sub-Total		100,000	200,000			

Stellenbosch University						
Agriculture	Dr A Mcleod	100,000	100,000	Development of an onion post-harvest disease risk assessment system	A en U Bemarking	Small
		288,000	288,000	Improving the management of apple plant diseases in a cost effective manner	South African Apple and Pear Association	Small
	Dr ME Setati	580,000	580,000	Screening and exploiting grapevine and wine biodiversity	Winetech	Large

List of projects supported

Economic Sectors	Applicant Name	THRIP claimed amount (Rands)	Industry contribution (Rands)	Short Title	Industry Partner	Industry size
Agriculture	Dr L Mostert	126,747	126,747	Quantification of soil borne pathogens in grapevine nurseries	Winetech	Medium
					SATI	Medium
	Dr A Mcleod	148,615	148,615	Precision management of avocado root rot through the measurement of root phosphite concentrations	South African Avocado Growers Association	Large
	Dr P Fourie	692,149	692,149	Citrus pathology in Southern Africa	Citrus Reseach International	Small
Materials and Manufacturing	Prof P Meyer	258,750	517,500	Microwave components and systems	GEW	Large
					Reutech Radar Systems	Large
Agriculture	Dr AE Strever	154,000	308,000	Assessing/modelling grapevine reaction to its environment at different measurement scales	Winetech	Medium
	Dr H Niewoudt	172,400	344,800	Development of sensometric methods for wine evaluation	Winetech	Large
	Prof JT Burger	62,500	125,000	Pathogen diagnostics and resistance in grapevine	Winetech	Medium
	Dr HJ Maree	135,000	135,000	Treatment of sewage, industrial effluent and sea water	Virtual Consulting Engineers	Small
					Key Structure Holdings	Medium
	Dr A Malan	308,000	616,000	Entomopathogens for control of insects	Proteien Research Foundation	Large
Dr JC Meitz/Lennox	219,000	109,500	Fungicide sensitivity of pome fruit pathogens	DFPT Finance	Small	
Agro-Processing	Mr CB Wessels	109,433	109,433	Optimising SA pine structural timber production	Sawmilling South Africa	Small
Materials and Manufacturing	Prof D Dimitrov	550,000	275,000	5 Axis HSM implementation research	Mould Technico Pty Ltd	Medium
					Daliff Precision Engineering	Small
					AZtech - CNC Programming Solutions	Medium
					HENTIQ 1627 Pty Ltd	Medium
Agro-Processing	Dr L Tyhoda	589,500	589,500	Biorefinery concepts for wood processing in South Africa	Paper Manufacturers Association of South Africa	Medium
Agriculture	Dr B du Toit	100,000	50,000	Forest productivity and sustainable utilization (FOR-PROD).	Terason	Small
					Wild Peach Investment Holdings Ltd	Small
Agro-Processing	Mr W Botes	297,000	297,000	Pre-breeding program for enhancing genetic resistance against wheat rust	Winter Cereal Trust	Medium
	Dr G Sigge	87,500	175,000	Anaerobic sequencing batch technology for winery wastewater	Winetech	Medium
	Prof M Vivier	878,250	1,756,500	Physiology of berry ripening	Winetech	Medium
	Dr E Pieterse	1,440,000	720,000	Bio-conversion of waste to animal feed	Agriprotein	Small
Agriculture	Mrs LJ Rose	600,000	600,000	Developing maize with enhanced resistance to mycotoxigenic Fusarium species	Maize Trust	Large
					Winter Cereal Trust	Small
Agro-Processing	Prof KI Theron	1,791,330	1,791,330	Innovative pre- and post-harvest technologies for the SA fruit and fynbos cut flower industries	SAAPPA/SASPA	Small
Animal	Prof LC Hoffman	160,000	80,000	Factors influencing the quality of exotic meat	Wildlife Ranching South Africa	Small
Materials and Manufacturing	Prof P Meyer	258,750	517,500	Microwave components and systems	GEW	Large
					Reutech Radar Systems	Large
Bio-Process	Prof JM Kossmann	599,648	599,648	Metabolic engineering in sugarcane	South African Sugarcane Research Institute	Small
Agro-Processing	Prof F Bauer	1,614,088	3,228,176	Understanding and exploiting wine microbial biodiversity	Oenobrand	Large
					Biolaffort	Large
					Lallemant	Large
					Winetech	Medium

Economic Sectors	Applicant Name	THRIP claimed amount (Rands)	Industry contribution (Rands)	Short Title	Industry Partner	Industry size
Bio-Process	Prof G Wolfaardt	324,000	324,000	Management of pathogens and pharmaceuticals in water	East Rand Water Care Company (Erwat)	Medium
	Prof J Gorgens	2,400,000	4,800,000	Recovery of valuable chemicals from waste tyres	REDISA	Large
Business	Mr CSL Schutte	270,000	135,000	SMART business processes	Sakhubukumkani Cooperative	Small
Health	Dr MJ Kotze	100,000	200,000	Implementation of genomic medicine	Winetech	Medium
Materials and Manufacturing	Mr J Van Eeden	100,000	100,000	Wine supply chain benchmarking	Vinpro	Medium
					Winetech	Medium
ICT	Prof GJ Van Rooyen	826,800	1,653,600	Digital media technology	MultiChoice	Large
Materials and Manufacturing	Prof G Venter	159,750	159,750	Dunnage bag material characterisation and development	Vortex Innovation Worx Pty Ltd	Small
	Prof G Venter	100,000	200,000	Numerical modelling with experimental validation of heat generation and distribution in a tyre	Anglo American Corporaton of South Africa	Large
	Dr AJ de Villiers	100,000	200,000	Sasol technology research and development	Analytical Capacity Building	Large
Agriculture	Dr L Mostert	103,200	206,400	Quantification of soil borne pathogens in grapevine nurseries	SATI	Medium
					Winetech	Medium
Materials and Manufacturing	Prof D Dimitrov	705,000	352,500	Laser cusing implementation research	Product One	Medium
					Polyoak Mould Services	Medium
	Prof WP Boshoff	190,000	380,000	Development and implementation of innovative construction materials	Pretoria Portland Cement	Large
	Prof H Pasch	186,318	372,636	Multidimensional poymer analysis	SASOL	Large
	Prof G Van Zijl	272,250	544,500	Smart infrastructure and materials	The Concrete Institute	Large
Mining and Minerals	Prof A Botha-Oberholster	184,783	184,783	AMD impacts on fresh food produce	Loskop Irrigation Board	Small
Agro-Processing	Dr L Tyhoda	267,000	534,000	Sustainable forestry utilisation	Hans Merensky	Medium
					Margadant Wood cc	Small
					Mondi Limited	Small
Mining and Minerals	Dr A Bekker	22,292	44,584	Human vibration exposure at Richards Bay Minerals	Richards Bay Minerals	Large
Mining and Minerals	Prof AM Botha-Oberholster	648,722	324,361	AMD impacts on fresh food produce	Loskop Irrigation Board	Small
Power	Dr J Van der Spuy	67,634	135,268	Improving axial fan performance prediction methods	Eskom-TESP	Large
ICT	Prof AE Krzesinski	43,860	87,719	Software engineeering and managing IP networks	Nokia Siemens Networks	Large
					Telkom Sa Ltd	Large
Power	Prof JL Van Niekerk	1,385,749	2,771,498	Development of renewable energy technology	Eskom Holding SOC Limited	Large
Process Manufacturing	Prof AJ Burger	125,000	250,000	Separation technology research	SASOL Technology	Large
	Prof W du Toit	468,675	937,350	Developing advanced analytical techniques to assess winemaking techniques	Lallemand Inc. (Danstar Ferment AG, Trading)	Large
					Winetech	Medium
Sub-Total		21,371,693	29,778,348			

Tshwane University of Technology						
Agriculture	Prof DS Sivakumar	75,553	75,553	Improving post-harvest quality of avocados	South African Avocado Growers Association	Large
Business	Dr JA Jordaan	480,000	480,000	Rally pacemaker route mapper and time keeper	Rally Pacemaker	Micro
Health	Prof OJ Okonkwo	225,000	450,000	Levels and sample extraction protocol for analysis of persistent organic	Rand Water	Large
ICT	Mrs B Abe	100,000	100,000	Development of AC/DC data acquisition technique for monitoring pipeline	Rand Water	Large

List of projects supported

Economic Sectors	Applicant Name	THRIP claimed amount (Rands)	Industry contribution (Rands)	Short Title	Industry Partner	Industry size
Mining and Minerals	Mrs L Tshabalala	150,560	75,280	Retreatment of copper mine dumps	Marvin Resources	Small
Health	Dr A Khalaf	596,490	298,245	Wireless medical devices with health information and telemedicine management system	Medpal Wellness Promotion cc	Micro
					Telemedicine Africa Pty Ltd	Small
Power	Prof O Dintchev	320,000	640,000	Centre for Sustainable Energy Management	Eskom Holdings Limited	Large
	Prof O Dintchev	315,000	630,000	Developing of evaluation tool for solar water heating	Eskom	Large
Sub-Total		2,262,603	2,749,078			

University of Cape Town						
Bio-Process	Dr KD Dheda	800,000	400,000	Dendritic cell vaccines for cancer	Bioclones	Small
Health	Prof K Chibale	1,001,247	1,001,247	Optimisation of Antimalarial leads	Medicines for Malaria Venture	Medium
Process Manufacturing	Prof JCQ Fletcher	990,000	1,980,000	Fuels and chemicals from synthesis gas	AngloPlatinum	Large
					SASOL	Large
Health	Prof E Lambert	656,672	1,313,344	Innovation in benefits design to promote health	Discovery Health	Large
Materials and Manufacturing	Prof M Alexander	426,118	852,237	Concrete of structural integrity repair, rehabilitation and retrofitting	The Concrete Institute	Small
					Eskom TESP	Medium
					SIKA	Large
					PPC	Large
ICT	Mr MJ Ventura	178,750	357,500	Connectivity services for the future internet	Telkom SA Ltd	Large
					Jasco Group	Medium
Health	Prof K Chibale	1,885,459	3,770,918	Development of optimised leads against malaria and tuberculosis	Gates Foundation	Large
Power	Assoc Prof KA Folly	150,000	300,000	Modelling and control of Intelligent Grid	Eskom	Large
					Zeta Power Consulting cc	Micro
Mining and Minerals	Prof AE Lewis	374,036	748,072	Eutectic freeze crystallization	Technical University of Delft, The Netherlands.	Large
					LHOIST	Large
					Fine Chemicals Corp	Large
					Eskom TESP	Large
Health	Prof H Kathard	120,000	60,000	Generating disability employment innovations	Epilepsy SA	Small
	Prof K Dheda	2,400,000	1,200,000	Immunotherapy against HIV and TB using dendritic cells	Bioclones Pty Ltd	Small
Mining and Minerals	Prof D Deglon	2,250,000	4,500,000	Multi-component modelling of mineral milling and flotation circuits	AMIRA International Africa	Small
					Anglo American Corporation of South Africa	Large
		487,500	975,000	Influence of chemical grinding environment of flotation	Pilanesberg Platinum Mines Pty Ltd	Large
					Impala Platinum Ltd Refineries	Large
			Senmin	Large		
Health	Prof Lecour SC	207,800	207,800	Ivabradine and peripartum cardiomyopathy	Servier Laboratories South Africa Pty Ltd	Small
Mining and Minerals	Prof AN Mainza	205,066	410,132	Evaluating ways of reducing energy consumption in comminution and classification	Kansanshi Mining PLC	Large
					Bafoken Rasimone Platinum Mine	Large
					De Beers Marine Pty Ltd	Large
					Lonmin Pty Ltd	Large

Economic Sectors	Applicant Name	THRIP claimed amount (Rands)	Industry contribution (Rands)	Short Title	Industry Partner	Industry size
Materials and Manufacturing	Prof R Knutsen	439,675	879,350	Thermomechanical processing of aluminium alloys	Hulamin Aluminium	Large
	Prof M Clays	101,250	202,500	Crystallite size effects in the PROX reaction captured in-situ	Johnson & Matthey	Large
		498,750	997,500	Crystallite size effects in Fischer-Tropsch synthesis	SASOL	Large
	Prof T Douglas	500,000	250,000	Low dose Xrays for medical imaging	Lodox Systems	Small
Business	Prof H Suleman	96,250	192,500	Telecommunications for development	JASCO Group	Medium
					Telkom	Large
Materials and Manufacturing	Prof P Moyo	99,905	99,905	Civil Infrastructure Performance Management and Maintenance	Water Resesarch Commission	Large
Mining and Minerals	Prof S Harrison	114,329	114,329	Optimisation of BIOX and ASTER: Process efficiency, resource conservation and effluent management	Biomim South Africa Pty Ltd	Small
	Prof S Harrison	463,500	463,500	An integrated, semi-passive process for arid rock drainage treatment with sulphur recovery	The Moss Group	Macro
	Dr M Becker	100,000	200,000	Developing an integrated approach for acid rock drainage prediction	Anglo Gold Ashanti	Large
Power	Dr S Chowdhury	187,974	187,974	Grid Integration of renewable energy resources	Eskom Holdings Ltd	Large
	Prof CT Gaunt	100,000	200,000	Small scale embedded generation	Eskom	Large
	Dr W Fuls	1,102,483	2,204,966	Development of an engineering simulator of a power plant and supporting research equipment	Eskom	Large
Sub-Total		15,936,764	24,068,773			

University of Fort Hare						
Agriculture	Prof V Muchenje	124,226	124,226	Red meat classification and meat inspection in the Eastern Cape Province of South Africa	Red Meat Research and Development Trust of SA	Medium
ICT	Prof MP Sibanda	171,000	342,000	eServices infrastructure and systems for marginalized rural communities	Khula Holdings	Micro
					Telkom SA Ltd	Large
Power	Prof E Meyer	1,234,924	2,469,848	Smart renewable energy systems and technologies	Eskom Holdings Ltd	Large
Sub-Total		1,530,150	2,936,074			

University of the Free State						
Agro-Processing	Dr A Geyer	224,000	448,000	Economic study groups - sheep, goats, cattle	ABSA Agribusiness	Large
					Red Meat Research and Development Trust of SA	Large
					Silostrat Pty Ltd, Welkom	Large
Process Manufacturing	Prof A Roodt	450,000	900,000	Fundamental chemistry of applied processes	PetLabs Pharmaceuticals	Small
					SASOL	Large
Sub-Total		674,000	1,348,000			

University of Johannesburg						
Agro-Processing	Dr LL Esterhuizen	19,912	19,912	An epidemiological analysis of the Southern African phytoplasma pathosystem	Bayer Pty Ltd	Medium
ICT	Prof J Meyer	98,004	98,004	Optical communications and sensors	Telkom SA Ltd	Large
	Prof AL Nel	54,000	108,000	Computer vision for security, surveillance and monitoring	Telkom Pty Ltd	Large
Materials and Manufacturing	Dr E Venter	100,000	100,000	Induced systemic resistance in wheat	Winter Cereal Trust	Small
Sub-Total		271,916	325,916			

List of projects supported

Economic Sectors	Applicant Name	THRIP claimed amount (Rands)	Industry contribution (Rands)	Short Title	Industry Partner	Industry size
University of KwaZulu-Natal						
Materials and Manufacturing	Mr I Kerr/Sithole	57,476	114,951	Natural resource optimization for pulp and paper	Paper Manufacturers Association of South Africa (PAMSA)	Small
	Prof HB Friedrich	19,278	38,556	Valorisation of low value chemicals	SASOL	Large
Agriculture	Prof MD Laing	198,223	396,445	Biocontrol and soluble silicon in agriculture	Plant Health Products Pty Ltd	Micro
					CRI Pty Ltd	Medium
					ICFR	Small
ICT	Prof S Mnene	263,157	526,314	Future generation networks: towards 5G	Alcatel - Lucent SA	Large
					Telkom Pty Ltd	Large
Power	Prof N Ijumba	490,377	980,754	High voltage direct current technology applications	Eskom	Large
Process Manufacturing	Prof N Ijumba	721,628	1,443,257	Centre of engineering postgraduate studies	Eskom	Large
Sub-Total		1,750,139	3,500,277			

University of Limpopo						
Health	Prof A Mogale	2,000,000	2,000,000	"Isolation of HIV-1 antiviral proteins produced by T lymphocytes and monocytes from long-term HIV non-progressors of anti-HIV protein/ or peptides"	Viro-Gem Pty Ltd	Small
ICT	Mr MJD Manamela	90,000	180,000	Speech technology for under-resourced languages	Telkom SA	Large
Sub-Total		2,090,000	2,180,000			

University of Pretoria						
Agriculture	Mr T Vahrmeijer	222,750	222,750	Improved citrus growth with organic soil amendments and the use of soluble silicon	Citrus Research International	Small
Materials and Manufacturing	Dr F Meyer	254,826	509,652	Food and agricultural policy analysis	Potato South Africa	Small
					Absa Bank	Large
Bio-Process	Prof LJ Erasmus	370,000	740,000	Supplementation of ruminants under both intensive and extensive production systems	DSM Nutritional Products South Africa Pty Ltd	Small
					Red Meat Research and Development Trust	Small
					Vitam International	Small
					Allied Nutrition Pty Ltd	Small
					Alltech	Small
Agriculture	Dr L Moleleki	116,123	116,123	Potato tolerance against soft rot bacteria and root knot nematodes	Potato Industry Development Trust	Small
	Dr C Weldon	80,657	80,657	Dispersal capacity of bactrocera invadens	Citrus Research International	Small
	Mr T Vahrmeijer	257,500	257,500	Quantifying citrus water use and water stress at tree and orchard scale	Citrus Research International	Small
	Prof M Steyn	312,000	624,000	Sustainable potato production in SA	Potatoes South Africa	Micro
Materials and Manufacturing	Prof W Stumpf	100,000	200,000	Value addition in the secondary metals industry	Columbus Stainless Pty Ltd	Large
					South African Institute of Welding	Medium
					Arcelor Mittal South Africa Ltd	Large
					Eskom	Large
Agriculture	Prof K Kruger	100,000	200,000	Aster yellows phytoplasma	Winetech	Medium
	Prof K Kruger	100,000	200,000	Proportion of PVY- and PLRV-carrying aphids in suction trap samples	Potatoes South Africa	Large

Economic Sectors	Applicant Name	THRIP claimed amount (Rands)	Industry contribution (Rands)	Short Title	Industry Partner	Industry size
Agriculture	Dr N van den Berg	524,225	1,048,450	Stress responses in avocado	Hans Merensky Foundation	Large
	Prof W J Steyn	70,000	140,000	Vehicle telemetry-based road condition and anomaly evaluation	Tracker Connect	Large
Process Manufacturing	Assoc Prof AM Garbers-Craig	644,400	1,288,800	Pyrometallurgical process enhancement	Kumba Iron Ore Pty Ltd	Large
					Anglo Operations Limited	Large
Agriculture	Prof G Pietersen	348,300	696,600	Virus detection of viruses in grapevines	Citrus Research International	Small
	Prof N Labuschagne	832,950	416,475	Development of plant growth promoting rhizobacteria	Gallus technologia Pty Ltd t/a Galltec	Small
	Prof J van der Waals	46,375	46,375	Macrophomina phaseolina on sunflowers and soybeans	Protein Research Foundation	Large
Agro-Processing	Prof L Korsten	157,500	157,500	A health and safety model for mushrooms	South African Mushroom Farmers' Association	Small
Agro-Processing	Prof MD Heydenrych	100,000	200,000	Pyrolysis oil from plantation biomass	Sappi Forests	Large
Agriculture	Prof AZ Myburg	940,275	1,880,550	Forest genomics for tree improvement	Mondi	Large
					Hans Merensky Foundation	Large
					York Timbers	Medium
					Sappi	Large
Animal	Assoc Prof E Van Marle-Koster	112,000	112,000	Genomic approach to genetic improvement of beef cattle	RMRD	Medium
	Prof HC Schonfeldt	432,000	432,000	Nutrient content of South African meat	RMRD SA	Medium
	Prof A Guthrie	800,000	800,000	Digital identification system for horses	National Horseracing Authority of Southern Africa	Medium
ICT	Prof BS Maharaj	400,750	801,500	Broadband wireless and cognitive radio	ATNS	Large
					SENTECH	Large
					WorkSpace Africa	Small
Animal	Prof A Guthrie	1,325,000	1,325,000	AHS Surveillance systems	Racing South Africa Pty Ltd	Small
Animal	Dr C Jansen van Rensburg	501,300	1,002,600	Supplementation of poultry diets to increase profitability, carcass quality and bird welfare	Novus International, Inc	Unknown
Bio-Process	Prof W Nicol	100,000	200,000	Production of platform biobased chemicals	SASOL Technology Pty Ltd	Large
Business	Dr C Beyers	380,000	760,000	Assessing systemic and related extreme risks in South Africa and the African continent	Barclays Africa	Large
	Prof A Kijko	200,000	400,000	Modelling of seismic hazard and risk for Southern and Eastern Africa	Aon Re Africa Pty Ltd t/a Aon Benfield	Large
Power	Prof X Xia	724,500	1,449,000	Industrial energy efficiency optimisation	Exxaro Resources Ltd	Large
					Eskom Holdings Limited	Large
					Keap	Small
Business	Prof A Kijko	100,000	200,000	Contribution to assessment of Tsunami threat for SA	Nuclear Structural Engineering (NSE)	Small
Health	Prof RJ Van Aarde	200,000	400,000	Reducing failure risk of coastal dune forest restoration	Richards Bay Minerals	Large
	Prof MB Taylor	194,000	388,000	Novel and emerging waterborne enteric viruses	Rand Water	Large
ICT	Dr T Stander	25,000	50,000	Hybrid packaged mm-wave terrestrial communication subsystems	Eskom	Large
	Prof J Joubert	933,735	466,868	Decision support using vehicle telematics	Digicore Fleet Management	Small
Materials and Manufacturing	Prof M Du Toit	544,500	544,500	Welding engineering	Southern African Institute of Welding	Medium
	Dr EM van der Merwe	50,000	50,000	Surface modification of coal fly ash	Ash Resources	Small
Agriculture	Prof Z Apostolides	291,150	582,300	Bioinformatics and functional genomics of tea (Camellia sinensis)	Finlays	Large
					Tea Research Institute of Kenya	Small

List of projects supported

Economic Sectors	Applicant Name	THRIP claimed amount (Rands)	Industry contribution (Rands)	Short Title	Industry Partner	Industry size
ICT	Mr JH Van Wyk	100,000	200,000	Futurecloud	Tellumat Pty Limited	Large
					Bytes Universal Systems	Large
					Telkom SA Ltd	Large
Materials and Manufacturing	Dr L van der Merwe	30,000	60,000	Activation of high fly ash containing cement blends	AfriSam (South Africa) Pty Ltd	Large
	Dr C Siyasiya	1,200,000	2,400,000	Modelling and optimisation of ferrous metals processin	Arcelormittal SA	Large
	Dr M Rademeyer	75,000	150,000	Magnetic organic-inorganic hybrids and nanoparticles	SASOL	Large
Power	Prof PS Heyns	787,500	1,575,000	Condition based physical asset life cycle management	Exxaro Coal Pty Ltd	Micro
					Eskom	Large
					Anglo American Corporation of South Africa	Large
Materials and Manufacturing	Prof P Grabe	450,000	900,000	Track Infrastructure and future sustainability	Transnet Freight Rail	Large
Mining and Minerals	Dr N Naude	433,858	867,716	Minerals processing process optimisation	Bateman Engineering	Medium
					Kumba Iron Ore Pty Ltd	Large
Materials and Manufacturing	Prof P Crouse	330,750	661,500	Fluoropolymer development	Pelchem	Medium
	Prof WW Focke	144,450	288,900	Pyrotechnic systems	AEL Mining Services	Large
	Dr FJWJ Labuschagne	240,000	120,000	Development of composite protein-polymer bio-materials for surgical adhesion prevention	Engelbrecht and Mentz Pty Ltd	Small
ICT	Prof G Hancke	80,000	160,000	Advanced sensing and communication networks	Tracker Pty Ltd	Large
					Eskom TESP	Large
Materials and Manufacturing	Assoc Prof N Manyala	20,000	10,000	Graphene-based metal hydroxides and metal oxides for sensing application	Potechnik Laboratories	Small
	Prof JRN Taylor	333,924	166,962	Standard for substrat	Afri Operations Pty Ltd	Medium
	Prof H Venter	26,650	53,300	Digital forensics in the next-generation Internet	Cyberoam	Medium
					Deloitte Touche Tohmatsu Pty Ltd	Large
					IOActive	Small
MWR Infosecurity Pty Ltd	Small					
Mining and Minerals	Prof R Sandenbergh	100,000	100,000	Refractory gold treatment	Biomim	Small
	Dr M Landman	87,719	175,438	Synthesis of and chemical modelling of surfactants	African Explosives Pty Ltd	Medium
	Dr WF Truter	172,200	344,400	Deep incorporation of organic material and compost blends for compaction alleviation	Coaltech	Small
	Prof S Heyns	422,550	845,100	Improving reliability through maintenance	Exxaro Coal Pty Ltd	Large
Process Manufacturing	Prof F Venter	316,000	632,000	The Microbial ecology of water treatment and distribution systems	Rand Water	Large
Agriculture	Dr CW Weldon	100,000	100,000	Dispersal capacity of Bactrocera dorsalis	Citrus Research International	Small
					Hortgro Science	Medium
					Citrus Research International	Small
Agro-Processing	Prof MJ Wingfield	1,265,762	2,531,524	Pest and pathogens in SA forestry	TWK Agriculture Pty Ltd	Medium
					NCT Forestry Co-op	Medium
					Capepine	Micro
Process Manufacturing	Dr D Riley	90,000	180,000	Using flow technology for the manufacture of Fluorine containing active pharmaceutical ingredients	Pelchem	Large
Sub-Total		19,698,179	31,511,040			

Economic Sectors	Applicant Name	THRIP claimed amount (Rands)	Industry contribution (Rands)	Short Title	Industry Partner	Industry size
University of the Free State						
Agriculture	Dr G Marais	143,799	143,799	Pests and pathogens in pecans	South African Pecan Producers Association	Medium
Agro-Processing	Prof A Hugo	100,000	100,000	Sodium reduction in South African processed meat products	South African Pork Producers Organisation	Medium
Bio-Process	Prof JH Van der Westhuizen	139,500	139,500	Potato tolerance against soft rot bacteria and nematode pathogens	Potato Industry Development Trust	Micro
	Prof E Van Heerden	84,467	42,233	Development of a local biogas substrate database and a South African technical	Re-energise Africa Pty Ltd	Small
ICT	Prof PJ Blignaut	74,976	149,951	Social costs of electricity generating technologies in South Africa: A system dynamics approach	Eskom	Large
Materials and Manufacturing	Prof FB Dejene	50,000	100,000	Green energy sources as solutions for sustainable energy for the past, present and future	Eskom	Large
Sub-Total		592,741	675,484			
University of the Western Cape						
Materials and Manufacturing	Dr SJJG Titinchi	30,000	60,000	CO2 from capturing into liquid fuels	Eskom	Large
	Prof BJ Bladergroen	569,937	1,139,874	Water recovery membrane module development	Eskom Holdings Limited	Large
ICT	Mr J Connan	129,527	259,054	South African signlanguage translation	Telkom SA Ltd	Large
					Cisco Systems South Africa Pty Ltd	Large
					Aria Technologies Africa	Large
Materials and Manufacturing	Dr MV Lototskyy	499,964	999,928	Advanced materials and technologies for hydrogen-powered utility vehicles	Impala Platinum Limited	Large
ICT	Prof W Tucker	129,999	259,997	Community-based communication alternatives	Aria Technologies SA	Medium
					Cisco SA	Medium
					Telkom SA	Large
Materials and Manufacturing	Dr LE Khotseng	1,799,981	899,990	Thermal battery components manufacturing	Eskom Holdings Limited	Large
Mining and Minerals	Prof L Petrik	150,480	300,959	Pilot demonstration of fly ash reuse	Eskom	Large
Sub-Total		3,309,887	3,919,802			
University of the Witwatersrand						
Bio-Process	Prof TJ Sheer	102,674	205,348	Vibratory prevention of ore/coal build-up	Hatch Africa Pty Ltd	Large
	Prof MEC Rey	100,000	200,000	Screening of cassava improved germplasm for potential resistance against cassava mosaic diseases	Ingredion Pty Ltd	Large
Mining and Minerals	Prof J Kinnaird	140,625	281,250	Mineralisation processes in the bushveld complex	Caracle Creek International Consulting	Small
					Platreef Resources Pty Ltd	Medium
Bio-Process	Prof B Erasmus	1,217,250	2,434,500	Acid mine drainage treatment	Exxaro Resources Ltd	Large
Business	Prof IR Jandrell	457,627	915,255	Applying integration multidisciplinary technologies & ops research methodologies to benefit Transnet	TRANSNET	Large
Health	Mr JA Kotzen	141,886	141,886	Hyperthermia technology	C-Therm Africa	Small
ICT	Prof R van Olst	215,260	430,520	ICT Convergence softwaredevelopment issues	Telsaf Data Pty Ltd	Small
Materials and Manufacturing	Dr F Kienhofer	100,000	100,000	Designing safer, more productive trucks using PBS	Barloworld Transport Solution	Large
	Dr J van Coller	1,295,554	2,591,108	Monitoring and diagnostics of high voltage equipment	Eskom	Large
	Prof IR Jandrell	1,016,447	2,032,893	Using systems engineering to solve challenges at Transnet	TRANSNET	Large

List of projects supported

Economic Sectors	Applicant Name	THRIP claimed amount (Rands)	Industry contribution (Rands)	Short Title	Industry Partner	Industry size
Materials and Manufacturing	Dr F Kienhofer	47,960	95,920	Designing safer, more productive trucks using PBS	Barloworld Transport Solution	Large
Mining and Minerals	Prof W Schmitz	1,443,998	2,887,996	Coal combustion engineering	Eskom	Large
	Prof J Kinnaird	315,000	630,000	Metallogenesis in space and time	ENRC Management South Africa Pty Ltd	Small
	Prof E Witkowski	4,000,000	8,000,000	Re-valuation of gold and uranium mine land and hazardous waste	Anglo Gold Ashanti	Unknown
Power	Prof IR Jandrell	35,000	70,000	High voltage engineering	Eskom	Large
Sub-Total		10,629,281	21,016,677			

University of Venda						
Mining and Minerals	Dr WM Gitari	35,000	70,000	Water treatment	Eskom	Small
Sub-Total		35,000	70,000			

Vaal University of Technology						
Materials and Manufacturing	Prof DJ de Beer	104,492	104,492	Direct digital manufacturing	Technimark Advanced Prototyping Services Pty Ltd	Small
					Advanced design Engineering and Production Techniques Pty Ltd	Small
					Eos Gmbh	Small
	229,639	229,639	Development of an open access manufacturing system	Incomor Sensors Pty Ltd	Medium	
				Technimark Advanced Prototyping Services Pty Ltd	Small	
				CAD House cc	Medium	
Power	Prof C Pienaar	150,000	300,000	Solar/hydrogen/fuel cell power for telecommunications industry and small rural communities	TFMC Pty Ltd	Large
Sub-Total		484,130	634,130		Telkom Pty Ltd	Large

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THE FINANCIAL STATEMENTS SET OUT ON PAGES 25 TO 47 WERE APPROVED BY THE NATIONAL RESEARCH FOUNDATION (NRF) BOARD ON 27 JULY 2016 AND ARE SIGNED ON ITS BEHALF BY:



Professor L Nongxa
CHAIRPERSON



Dr M Qhobela
CHIEF EXECUTIVE OFFICER

Annual Financial Statements

REPORT OF THE AUDITOR-GENERAL TO THE ACCOUNTING AUTHORITY OF THE NATIONAL RESEARCH FOUNDATION ON THE TECHNOLOGY AND HUMAN RESOURCES FOR INDUSTRY PROGRAMME

Report on the financial statements

Introduction

1. I have audited the financial information of Technology and Human Resources for Industry Programme (THRIP) set out on pages [25] and [47], which comprises the statement of financial position as at 31 March 2016, the statement of financial performance for the year then ended, as well as its related accounting policies (together “the financial statements”) excluding the detail notes to the financial statements.

The accounting authority’s responsibility for the financial statements

2. The accounting authority is responsible for the preparation and fair presentation of these financial statements in accordance with the Standards of Generally Recognised Accounting Practice (GRAP), and for such internal control as the accounting authority determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor-general’s responsibility

3. My responsibility is to express an opinion on these financial statements based on my audit. I conducted my audit in accordance with the International Standards on Auditing. Those standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.
4. An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor’s judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity’s preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity’s internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.
5. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Opinion

6. In my opinion the financial statements presents fairly, in all material respects, the financial position of THRIP as at 31 March 2016, and its financial performance for the year then ended in accordance with GRAP.

Auditor-General.

Pretoria

29 August 2016



A U D I T O R - G E N E R A L
S O U T H A F R I C A

Auditing to build public confidence

Annual Financial Statements

BOARD REPORT FOR THE YEAR ENDED 31 MARCH 2016

Introduction

The National Research Foundation Board has pleasure in presenting their report on the activities of the Technology and Human Resources for Industry Programme (THRIP) for the year ended 31 March 2016.

Principal Activities Of Thrip

The principal activity of THRIP is to award and manage grants for research projects, on behalf of the Department of Trade and Industry (**the dti**).

Financial Results

The financial results of THRIP are set out in the financial statements on pages xx to xx.

Amounts Received From the dti

Contributions receivable from **the dti** towards the funding of grants amounted to R147 150 304 (2015: R154 700 000).

Contributions receivable from **the dti** towards the funding of National Science and Technology Forum (NSTF) bursaries amounted to R1 061 000 (2015: R821 000).

Contributions receivable from **the dti** towards the funding of operations amounted to R7 859 131 (2015: R10 052 000).

Events Subsequent To Year-End

The Board is not aware of any matter or circumstances arising since the end of the financial year, not otherwise dealt with in the financial statements that would affect the operations of THRIP or the results of operations significantly.

Contact Persons

The National Research Foundation (NRF) has appointed the Executive Director: Applied Research, Innovation and Collaboration (ARIC) as the official contact person between **the dti** and the NRF.

The registered address of THRIP is:

P O Box 2600, Pretoria, 0001

STATEMENT OF FINANCIAL PERFORMANCE FOR THE YEAR ENDED 31 MARCH 2016

	Note	2016 R'000	2015 R'000
Contributions received from the dti:			
- Grant funding	2	148 211	155 521
- Operating funding	2	7 859	10 052
Interest received	3	48	392
Revenue		156 118	165 965
Grant expenditure	4	(148 211)	(155 963)
Operating expenditure	5	(7 777)	(9 470)
Net surplus for the year		130	532

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STATEMENT OF COMPARISON OF BUDGET AND ACTUAL AMOUNTS FOR THE YEAR ENDED 31 MARCH 2016

	Approved budget R'000	Actual amounts R'000	Difference between the approved budget and actual amounts R'000	Note
Contributions received from the dti:				
- Grant funding	164 331	148 211	16 120	14
- Operating funding	10 318	7 859	2 459	14
Interest received	-	48	(48)	14
Revenue	174 649	156 118	18 531	
Grant expenditure	(164 331)	(148 211)	(16 120)	14
Operating expenditure	(10 318)	(7 777)	(2 541)	14
Net surplus for the year	-	130	(130)	

STATEMENT OF FINANCIAL POSITION AS AT 31 MARCH 2016

	Note	2016 R'000	2015 R'000
ASSETS			
Current assets			
Cash and cash equivalents	6	227	3 359
Trade and other receivables	7	156 070	-
TOTAL ASSETS		156 297	3 359
LIABILITIES			
Current liabilities			
Interest payable to the dti	8	48	392
the dti account	9	82	140
Trade and other payables	10	156 167	2 827
TOTAL LIABILITIES		156 297	3 359

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STATEMENT OF CHANGES IN the dti ACCOUNT FOR THE YEAR ENDED 31 MARCH 2016

	Note	Total R'000
Balance as at 31 March 2014		618
Net surplus for the year		532
2014/15 Interest received to be returned to the dti transferred to interest payable to the dti		(392)
Unused contributions repaid to the dti		(618)
Balance as at 31 March 2015		140
Net surplus for the year		130
2015/16 Interest received to be returned to the dti transferred to interest payable to the dti		(48)
Unused contributions repaid to the dti	11	(140)
Balance as at 31 March 2016	9	82

CASH FLOW STATEMENT FOR THE YEAR ENDED 31 MARCH 2016

	Note	2016 R'000	2015 R'000
OPERATING ACTIVITIES			
Cash receipts from the dti	6	-	165 573
Cash paid to the dti	7	(532)	(1 351)
Cash paid to the NRF		(409)	-
Operational costs paid		(2 239)	(7 158)
Cash paid to grant-holders		-	(155 963)
Cash (used in)/generated from operations		(3 180)	1 101
Interest received		48	392
Net cash flows (used in)/generated from operating activities		(3 132)	1 493
Net (decrease)/increase in cash and cash equivalents	8	(3 132)	1 493
Cash and cash equivalents at the beginning of the year	9	3 359	1 866
Cash and cash equivalents at the end of the year	10	227	3 359

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NOTE TO THE CASH FLOW STATEMENT FOR THE YEAR ENDED 31 MARCH 2016

	2016 R'000	2015 R'000
A RECONCILIATION OF SURPLUS FOR THE YEAR TO CASH (USED IN)/GENERATED FROM OPERATIONS		
Surplus for the year	130	532
Adjusted for:		
Interest received	(48)	(392)
Surplus before working capital changes	82	140
Working capital changes	(3 262)	961
Increase in trade and other receivable	(156 070)	-
Decrease in interest payable to the dti	(344)	(341)
Decrease in the dti account	(188)	(1 010)
Increase in trade and other payables	153 340	2 312
Cash (used in)/generated from operations	(3 180)	1 101

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 MARCH 2016

1. Presentation of Annual Financial Statements

The annual financial statements have been prepared in accordance with the Standards of Generally Recognised Accounting Practice (GRAP), issued by the Accounting Standards Board.

These annual financial statements have been prepared on an accrual basis of accounting and are in accordance with historical cost convention, unless specified otherwise. They are presented in South African Rand and all values are rounded to the nearest thousand (R'000), except when otherwise indicated. The financial statements have been prepared on a going concern basis.

A summary of the significant accounting policies, which have been consistently applied, are disclosed below.

1.1 Financial instruments

Classification

The entity classifies financial assets and financial liabilities into the following categories:

- Financial assets measured at amortised cost
- Financial liabilities measured at amortised cost

Classification depends on the purpose for which the financial instruments were obtained / incurred and takes place at initial recognition. Classification is re-assessed on an annual basis.

Initial recognition and measurement

Financial instruments are recognised initially when the entity becomes a party to the contractual provisions of the instruments.

The entity classifies financial instruments, or their component parts, on initial recognition as a financial asset or a financial liability in accordance with the substance of the contractual arrangement.

Financial instruments are measured initially at fair value. Short-term receivables or payables are initially measured at the transaction price, unless the terms of the arrangement are not market related.

For financial instruments which are not at fair value, transaction costs are included in the initial measurement of the instrument.

Financial assets are accounted for at trade date.

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NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 MARCH 2016

Subsequent measurement

Financial assets at amortised cost are subsequently measured at amortised cost, using the effective interest method, less accumulated impairment losses.

Financial liabilities at amortised cost are subsequently measured at amortised cost, using the effective interest method.

Fair value determination

Where market values are not available, fair values have been calculated by discounting expected future cash flows at prevailing interest rates. The fair values have been estimated using available market information and appropriate valuation methodologies, but are not necessarily indicative of the amounts that the THRIP could realise in the normal course of business.

Impairment of financial assets

At each end of the reporting period the entity assesses all financial assets to determine whether there is objective evidence that a financial asset or group of financial assets has been impaired.

For amounts due to the entity, significant financial difficulties of the debtor, probability that the debtor will enter bankruptcy and default of payments are all considered indicators of impairment.

Impairment losses are recognised in surplus or deficit.

Impairment losses are reversed when an increase in the financial asset's recoverable amount can be related objectively to a reversal of the event which caused the initial impairment and occurring after the impairment was recognised, subject to the restriction that the carrying amount of the financial asset at the date that the impairment is reversed shall not exceed what the carrying amount would have been had the impairment not been recognised.

Reversals of impairment losses are recognised in surplus or deficit.

Where financial assets are impaired through use of an allowance account, the amount of the loss is recognised in surplus or deficit within operating expenses. When such assets are written off, the write off is made against the relevant allowance account. Subsequent recoveries of amounts previously written off are credited against operating expenses.

Trade and other receivables

Trade receivables are measured at initial recognition at fair value, and are subsequently measured at amortised cost using the effective interest rate method. Appropriate allowances for estimated irrecoverable amounts are recognised in surplus or deficit when there is objective evidence that the asset is impaired. Significant financial difficulties of the debtor, probability that the

debtor will enter bankruptcy or financial reorganisation, and default or delinquency in payments (more than 30 days overdue) are considered indicators that the trade receivable is impaired. The allowance recognised is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows discounted at the effective interest rate computed at initial recognition.

The carrying amount of the asset is reduced through the use of an allowance account, and the amount of the deficit is recognised in surplus or deficit within operating expenses. When a trade receivable is uncollectible, it is written off against the allowance account for trade receivables. Subsequent recoveries of amounts previously written off are credited against operating expenses in surplus or deficit.

Trade and other receivables are classified as financial assets at amortised cost.

Trade and other payables

Trade payables are initially measured at fair value, and are subsequently measured at amortised cost, using the effective interest rate method.

Cash and cash equivalents

Cash and cash equivalents comprise cash on hand, demand deposits and other short-term highly liquid investments that are readily convertible to a known amount of cash and are subject to an insignificant risk of changes in value. These are measured at initial recognition at fair value, and are subsequently measured at amortised cost using the effective interest rate method.

De-recognition

Financial assets (or a portion thereof) are de-recognised when the THRIP realise the rights to the benefits specified in the contract, the rights expire or the THRIP surrenders or otherwise loses control and does not retain substantially all risks and rewards of the asset. The THRIP derecognises financial assets using trade date accounting. On de-recognition, the difference between the carrying amount of the financial asset and proceeds receivable is included in the Statement of Financial Performance.

Financial liabilities (or a portion thereof) are de-recognised when the obligation specified in the contract is discharged, cancelled or expires. On de-recognition, the difference between the carrying amount of the financial liability and the amount paid is included in the Statement of Financial Performance.

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NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 MARCH 2016

1.2 Provisions and contingencies

Provisions are recognised when:

- the entity has a present obligation as a result of a past event;
- it is probable that an outflow of resources embodying economic benefits or service potential will be required to settle the obligation; and
- a reliable estimate can be made of the obligation.

The amount of a provision is the best estimate of the expenditure expected to be required to settle the present obligation at the reporting date.

Where the effect of time value of money is material, the amount of a provision is the present value of the expenditure expected to be required to settle the obligation.

The discount rate is a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability.

Where some or all of the expenditure required to settle a provision is expected to be reimbursed by another party, the reimbursement is recognised when, and only when, it is virtually certain that reimbursement will be received if the entity settles the obligation. The reimbursement is treated as a separate asset. The amount recognised for the reimbursement does not exceed the amount of the provision.

Provisions are reviewed at each reporting date and adjusted to reflect the current best estimate. Provisions are reversed if it is no longer probable that an outflow of resources embodying economic benefits or service potential will be required, to settle the obligation.

Where discounting is used, the carrying amount of a provision increases in each period to reflect the passage of time. This increase is recognised as an interest expense.

A provision is used only for expenditures for which the provision was originally recognised.

Provisions are not recognised for future operating deficits.

If an entity has a contract that is onerous, the present obligation (net of recoveries) under the contract is recognised and measured as a provision.

Contingent assets and contingent liabilities are not recognised.

1.3 Revenue from exchange transactions

Revenue is the gross inflow of economic benefits or service potential during the reporting period when those inflows result in an increase in net assets.

An exchange transaction is one in which the entity receives assets or services, or has liabilities extinguished, and directly gives approximately equal value (primarily in the form of goods, services or use of assets) to the other party in exchange.

Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction.

Measurement

Revenue is measured at the fair value of the consideration received or receivable, net of trade discounts and volume rebates.

Interest

Revenue arising from the use by others of entity assets yielding interest is recognised when:

- It is probable that the economic benefits or service potential associated with the transaction will flow to the entity, and
- the amount of the revenue can be measured reliably.

Interest is recognised, in surplus or deficit, using the effective interest rate method.

1.4 Revenue from non-exchange transactions

Non-exchange transactions are transactions that are not exchange transactions. In a non-exchange transaction, an entity either receives value from another entity without directly giving approximately equal value in exchange, or gives value to another entity without directly receiving approximately equal value in exchange.

Recognition

An inflow of resources from a non-exchange transaction recognised as an asset is recognised as revenue, except to the extent that a liability is also recognised in respect of the same inflow.

As the entity satisfies a present obligation recognised as a liability in respect of an inflow of resources from a non-exchange transaction recognised as an asset, it reduces the carrying amount of the liability recognised and recognises an amount of revenue equal to that reduction.

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NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 MARCH 2016

Measurement

Revenue from a non-exchange transaction is measured at the amount of the increase in net assets recognised by the entity.

Where a liability is required to be recognised it will be measured as the best estimate of the amount required to settle the obligation at the reporting date, and the amount of the increase in net assets, if any, recognised as revenue. When a liability is subsequently reduced, because a condition is satisfied, the amount of the reduction in the liability is recognised as revenue.

Gifts and donations, including goods in-kind

Gifts and donations, including goods in kind, are recognised as assets and revenue when it is probable that the future economic benefits or service potential will flow to the entity and the fair value of the assets can be measured reliably.

Contributions from the dti and NRF

Contributions from **the dti** and NRF are recognised in the Statement of Financial Performance in the period to which the income relates. The income is recognised if there is reasonable assurance that the entity will comply with the conditions attached to the grant or contract and that the income will be received.

1.5 Research grants expenditure

Research grants granted are recognised as expenditure in the Statement of Financial Performance in the period which the grants are claimed.

1.6 Employee benefits

Employee benefits are all forms of consideration given by an entity in exchange for service rendered by employees.

Termination benefits are employee benefits payable as a result of either:

- an entity's decision to terminate an employee's employment before the normal retirement date; or
- an employee's decision to accept voluntary redundancy in exchange for those benefits.

Short-term employee benefits

Short-term employee benefits are employee benefits (other than termination benefits) that are due to be settled within twelve months after the end of the period in which the employees render the related service.

Short-term employee benefits include items such as:

- wages, salaries and retirement fund contributions;
- short-term compensated absences (such as paid annual leave and paid sick leave) where the compensation for the absences is due to be settled within twelve months after the end of the reporting period in which the employees render the related employee service;
- bonus, incentive and performance related payments payable within twelve months after the end of the reporting period in which the employees render the related service; and
- non-monetary benefits (for example, medical care, and free or subsidised goods or services such as housing, cars and cellphones) for current employees.

When an employee has rendered service to the entity during a reporting period, the entity recognises the undiscounted amount of short-term employee benefits expected to be paid in exchange for that service:

- as a liability (accrued expense), after deducting any amount already paid. If the amount already paid exceeds the undiscounted amount of the benefits, the entity recognise that excess as an asset (prepaid expense) to the extent that the prepayment will lead to, for example, a reduction in future payments or a cash refund; and
- as an expense, unless another Standard requires or permits the inclusion of the benefits in the cost of an asset.

The expected cost of compensated absences is recognised as an expense as the employees render services that increase their entitlement or, in the case of non-accumulating absences, when the absence occurs. The entity measure the expected cost of accumulating compensated absences as the additional amount that the entity expects to pay as a result of the unused entitlement that has accumulated at the reporting date.

The entity recognise the expected cost of bonus, incentive and performance related payments when the entity has a present legal or constructive obligation to make such payments as a result of past events and a reliable estimate of the obligation can be made. A present obligation exists when the entity has no realistic alternative but to make the payments.

Post-employment benefits: Defined contribution plans

Defined contribution plans are post-employment benefit plans under which an entity pays fixed contributions into a separate entity (a fund) and will have no legal or constructive obligation to pay further contributions if the fund does not hold sufficient assets to pay all employee benefits relating to employee service in the current and prior periods.

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NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 MARCH 2016

When an employee has rendered service to the entity during a reporting period, the entity recognise the contribution payable to a defined contribution plan in exchange for that service:

- as a liability (accrued expense), after deducting any contribution already paid. If the contribution already paid exceeds the contribution due for service before the reporting date, an entity recognise that excess as an asset (prepaid expense) to the extent that the prepayment will lead to, for example, a reduction in future payments or a cash refund; and
- as an expense, unless another Standard requires or permits the inclusion of the contribution in the cost of an asset.

1.7 Comparative figures

Where necessary, comparative figures have been reclassified to conform to changes in presentation in the current year.

1.8 Fruitless and wasteful expenditure

Fruitless expenditure means expenditure which was made in vain and would have been avoided had reasonable care been exercised.

All expenditure relating to fruitless and wasteful expenditure is recognised as an expense in the Statement of Financial Performance in the year that the expenditure was incurred. The expenditure is classified in accordance with the nature of the expense, and where recovered, it is subsequently accounted for as revenue in the Statement of Financial Performance.

1.9 Irregular expenditure

Irregular expenditure as defined in section 1 of the PFMA is expenditure other than unauthorised expenditure, incurred in contravention of or that is not in accordance with a requirement of any applicable legislation, including this Act.

1.10 Taxation

The THRIP is exempt from paying income taxation and Value-Added Tax (VAT).

1.11 Related parties

The THRIP operates in an economic environment currently denominated by entities directly or indirectly owned by the South African government. As a result of the constitutional independence of all three spheres of government in South Africa, only parties within the national sphere of government will be considered to be related parties. Only transactions with such parties which are not at arm's length and not on normal commercial terms are disclosed.

Key management is defined as being individuals with the authority and responsibility for planning, directing and controlling the activities of the entity. All individuals from the level of Executive Directors up to the Board of Directors are regarded as key management.

Close family members of key management are considered to be those family members who may be expected to influence, or be influenced by key management individuals or other parties related to the entity.

1.12 Significant judgements and sources of estimation uncertainty

In preparing the annual financial statements, management is required to make estimates and assumptions that affect the amounts represented in the annual financial statements and related disclosures. Use of available information and the application of judgement are inherent in the formation of estimates. Actual results in the future could differ from these estimates which may be material to the annual financial statements. Significant judgements include:

- Trade receivables, loans and other receivables

The entity assesses its trade receivables, loans and other receivables for impairment at the end of each reporting period. In determining whether an impairment loss should be recorded in surplus or deficit, the entity makes judgements as to whether there is observable data indicating a measurable decrease in the estimated future cash flows from a financial asset. Each receivable is reviewed individually at year end.

- Fair value estimation

The carrying value less impairment provision of trade receivables and payables are assumed to approximate their fair values. The fair value of financial liabilities for disclosure purposes is estimated by discounting the future contractual cash flows at the current market interest rate that is available to the entity for similar financial instruments. The carrying amount of cash and cash equivalents, trade and other receivables and trade and other payables approximated their fair values due to the short-term maturities of these assets and liabilities.

1.13 Budget information

Entities are typically subject to budgetary limits in the form of appropriations or budget authorisation (or equivalent), which is given effect through authorising legislation, appropriation or similar.

General purpose financial reporting by entity shall provide information on whether resources were obtained and used in accordance with the legally adopted budget.

The approved budget is prepared on an accrual basis and presented by economic classification linked to performance outcome objectives.

The approved budget covers the fiscal period from on 1 April 2015 to 31 March 2016.

The budget for the economic entity includes all the entities' approved budgets under its control.

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NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 MARCH 2016

The financial statements and the budget are on the same basis of accounting, therefore a comparison with the budgeted amounts for the reporting period have been included in the Statement of comparison of budget and actual amounts.

Comparative information is not required.

1.14 Standards and interpretations issued but not yet effective

STANDARD OR INTERPRETATION		EFFECTIVE DATE
Applicable to the THRIP:		
GRAP 20	Related parties	None announced
GRAP 109	Accounting by Principals and Agents	None announced
<i>The impact of the above standards and interpretations is not expected to be material.</i>		
Not applicable to the THRIP:		
GRAP 108	Statutory Receivables	None announced

2. Grant and operating funding

A total allocation of R156 070 435 (2015: R R165 573 000) was made to THRIP for the current financial year by **the dti**.

	2016 R'000	2015 R'000
Grant funds	147 150	154 700
NSTF Bursaries funds	1 061	821
Operating funds	7 859	10 052
	156 070	165 573

3. Interest received

	2016 R'000	2015 R'000
Interest received on the bank account	48	392

4. Grant expenditure

Grant expenditure relates to grants for which proof of expenditure was received in the current financial year.

5. Operating expenditure

Included in operating expenditure are the remuneration of the executive director and personnel of THRIP. Only a portion of the total package of the executive director is allocated to THRIP as THRIP's executive director is also an executive director of the NRF. The remuneration allocated to THRIP is as follow:

	Short-term benefits R'000	Retirement fund contributions R'000	Medical contributions R'000	Other benefits R'000	Total 2016 R'000	Total 2015 R'000
Dr NSR Skeef (transferred to Review and Evaluation Directorate on 01 August 2014)	-	-	-	-	-	136
Dr KNF Mawila (Acting Executive Director: ARIC Directorate to 01 December 2015)	174	16	8	26	224	179
Dr BN Nthambeleni (appointed as Acting Executive Director: ARIC Directorate from 01 January 2016)	85	8	6	4	103	-
	259	24	14	30	327	315
Employee costs					3 939	4 155
Defined contribution plans					311	322

Annual Financial Statements

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 MARCH 2016

6. Cash and cash equivalents

Cash and cash equivalents consists of the balance with the bank

	2016 R'000	2015 R'000
Current account balance	227	3 359

Credit quality of cash at bank

Cash equivalents are placed with highly rated financial institutions.

7. Trade and other receivables

This balance is owed by **the dti** towards the funding of grants, National Science and Technology Forum (NSTF) bursaries and operational.

None of the financial assets that are fully performing have been renegotiated in the last year.

As at 31 March 2016, R156 070 435 (2015: nil) was past due but not impaired.

	2016 R'000	2015 R'000
Trade receivables	156 070	-

The maximum exposure to credit risk at the reporting date is the fair value of each class of receivable mentioned above. The entity does not hold any collateral as security.

8. Interest payable to the dti

All interest received is payable to **the dti**

	2016 R'000	2015 R'000
Interest received for the year	48	392

9. the dti account

	2016 R'000	2015 R'000
Balance at the beginning of the year	140	618
Add back: Interest payable (prior year)	392	733
	532	1 351
Contributions received from the dti	-	165 573
Contributions receivable from the dti	156 070	-
Interest received	48	392
Payment of unspent funds to the dti	(532)	(1 351)
Grant expenditure	(148 211)	(155 963)
Operating expenditure	(7 777)	(9 470)
Interest payable to the dti (current year)	(48)	(392)
Balance at the end of the year	82	140

10. Trade and other payables

This balance includes THRIP's operational expenditure which was incurred by the NRF in the management and operations of the programme and THRIP grants paid by NRF on behalf of THRIP, but not yet paid over to the NRF.

	2016 R'000	2015 R'000
Trade payables	155 662	2 239
Provision for leave and bonus pay	505	588
Trade and other payables	156 167	2 827

Annual Financial Statements

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 MARCH 2016

11. Unused contributions repaid to the dti

Unused contributions repaid to **the dti** consist of grant funds received from **the dti** which were committed as grants, but subsequently cancelled, as well as unspent funds on operating expenses.

12. Related party transactions

The remuneration of key management is included in operating expenditure (refer to note 6 for Executive Directors' remuneration).

All transactions with parties within the national sphere of government are at arm's length and on normal commercial terms.

13. Financial instruments

Financial assets by category

The accounting policies for financial instruments have been applied to the line items below:

2016	Financial assets at amortised cost	Total
Cash and cash equivalents	227	227
Trade and other receivables	156 070	156 070
	156 297	156 297

2015	Financial assets at amortised cost	Total
Cash and cash equivalents	3 359	3 359
	3 359	3 359

Financial liabilities by category

The accounting policies for financial instruments have been applied to the line items below:

2016	Financial liabilities at amortised cost	Total
Interest payable to the dti	48	48
the dti account	82	82
Trade and other payables	156 167	156 167
	156 297	156 297
2015	Financial liabilities at amortised cost	Total
Interest payable to the dti	392	392
the dti account	140	140
Trade and other payables	2 827	2 827
	3 359	3 359

Risk management

Financial risk management

The programme's activities expose it to a variety of financial risks: market risk (including currency risk and interest rate risk), credit risk and liquidity risk.

The programme's overall risk management program focuses on the unpredictability of financial markets and seeks to minimise potential adverse effects on the programme's financial performance. Risk management is carried out by a central treasury department under policies approved by the accounting authority. Programme treasury identifies, evaluates and hedges financial risks in close co-operation with the programme. The accounting authority provides written principles for overall risk management, as well as written policies covering specific areas, such as foreign exchange risk, interest rate risk, credit risk and investment of excess liquidity.

Liquidity risk

Prudent liquidity risk management implies maintaining sufficient cash and the availability of funding. The programme's risk to liquidity is a result of the funds available to cover future commitments. The programme manages liquidity risk through an on-going review of future commitments, through proper management of working capital, capital expenditure and actual vs. forecasted cash flows and its investment policy. Adequate reserves and liquid resources are also maintained.

The table below analyses the programme's financial liabilities into relevant maturity groupings based on the remaining period at the Statement of Financial Position to the contractual maturity date. The amounts disclosed in the table are the contractual undiscounted cash flows. Balances due within 12 months equal their carrying balances as the impact of discounting is not significant.

2016	Less than a year	2015	Less than a year
Interest payable to the dti	48	Interest payable to the dti	392
the dti account	82	the dti account	140
Trade and other payables	156 167	Trade and other payables	2 827

Interest rate risk

Interest rate risk results from the cash flow and financial performance uncertainty arising from interest rate fluctuations. Financial assets and liabilities affected by interest rate fluctuations include bank and cash deposits.

Interest rate exposure and investment strategies are evaluated by management on a regular basis. Interest-bearing investments are held with reputable banks in order to minimise exposure. The programme furthermore manages its interest rate risk by obtaining competitive rates from different banks. No significant risks have been identified with regards to interest rates.

Cash flow interest rate risk

Financial instrument	Current interest rate	Due in less than a year
Cash and cash equivalents	5.5%	227
Trade and other receivables	0%	156 070
Interest payable to the dti	0%	48
the dti account	0%	82
Trade and other payables	0%	156 167

Credit risk

Credit risk arises from the risk that a counter-party may default or not meet its obligations timeously. The programme is exposed to risk from its operating and financing activities. Credit risk consists mainly of cash deposits, cash equivalents and trade debtors. The programme only deposits cash with major banks with high quality credit standing and limits exposure to any one counter-party.

Grants recoverable comprise a widespread customer base. Management evaluates credit risk relating to customers on an on-going basis. Risk control assesses the credit quality of the customer, taking into account its financial position, past experience and other factors. The programme has no significant concentration of credit risk. The carrying amounts of the financial assets included in the Statement of Financial Position represent the programme's maximum exposure to credit risk in relation to these assets. The programme does not have any significant exposure to any individual customer or counterparty.

Foreign exchange risk

Foreign exchange risk arises on financial instruments that are denominated in a foreign currency, i.e. in a currency other than the functional currency in which they are measured. For the purposes of GRAP, currency risk does not arise from financial instruments that are non-monetary items or from financial instruments denominated in the functional currency.

There were no foreign currency transactions covered by forward exchange contracts at the end of the year. The programme transacts with foreign entities on a minimal basis and therefore the balance on foreign exchange debtors and creditors are considered immaterial and therefore minimal risk involved.

The programme does not use derivative financial instruments for speculative purposes.

14. Statement of comparison of budget and actual amounts

Total contributions budgeted and receivable from **the dti** are R174 649 000 and R156 070 435 respectively, and this was mainly due to the integration of THRIP into **the dti** which resulted in lower expenditure and delay in transfer of funds. **the dti** indicated that they will only transfer the actual amount of R156 070 435 spent by THRIP.

Interest received on THRIP of R47 882 should be paid back to **the dti** as per Memorandum of Agreement between the NRF and **the dti**, therefore not included in the budget.

Decrease in operating and grant expenditure was mainly due to the integration of THRIP into **the dti** which resulted in the cancellation of other operating activities and lower than expected take up of grants in the current financial year.

Eating is not merely a material pleasure. Eating well gives a spectacular joy to life and contributes immensely to goodwill and happy companionship. It is of great importance to the morale.

- Elsa Schiaparelli -



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ISBN 978-1-86868-091-7

