

# REPORT ON THE EVALUATION OF THE 2015 UNIVERSITIES' RESEARCH OUTPUT

MARCH 2017

*Evaluated in terms of the Policy and Procedures for the  
Measurement of Research Output of Public Higher  
Education Institutions (2003)*



higher education  
& training

Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**





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## FOREWORD BY THE DIRECTOR-GENERAL

I am pleased to present the annual report on the evaluation of the 2015 universities' research output. The report outlines the analysis of the number of units awarded to institutions for subsidy-earning research outputs in accredited journals, books, and conference proceedings published in 2015.

The Department of Higher Education and Training continues to encourage research productivity by rewarding quality research outputs at public higher education institutions, through the implementation of the Research Outputs Policy. The Policy provides for research subsidy funding towards publications produced by academics in public higher education institutions. Under this Policy, all public higher education institutions must annually submit to the Department their subsidy funding claims for research outputs in the form of publications.

It is notable that out of the 26 public higher education institutions, 25 submitted 2015 research outputs for the purposes of subsidy claims. Research productivity has been on a steady rise across all institutions, at least over the past ten years.

The Department will continue with its effort to sustain current research strengths and to promote the kinds of research and other knowledge outputs required to meet national development needs. In future the Department intends to collect data on the demographics of the claiming author(s) to enable the Department to analyse transformation patterns in knowledge production by public higher education institutions.

This report is a collaborative achievement, and the Department express here its appreciation to the Research Outputs Evaluation Panel and field specific sub-panels for their contribution to its production.

.....

Mr GF Qonde

Director-General: Department of Higher Education



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## Abbreviations

<b>ASSAf</b>	Academy of Science of South Africa
<b>CESM</b>	Classification of Educational Subject Matter
<b>CPUT</b>	Cape Peninsula University of Technology
<b>CUT</b>	Central University of Technology
<b>DHET</b>	Department of Higher Education and Training
<b>DST</b>	Department of Science and Technology
<b>DUT</b>	Durban University of Technology
<b>DVC</b>	Deputy Vice Chancellor
<b>HDI</b> s	Historically Disadvantaged Institutions
<b>HE</b>	Higher Education
<b>HEI</b> s	Higher Education Institutions
<b>HEMIS</b>	Higher Education Management Information System
<b>IBSS</b>	International Bibliography of Social Science
<b>ISBN</b>	International Standard Book Number
<b>ISI</b>	Institute of Science Information
<b>MUT</b>	Mangosuthu University of Technology
<b>NMMU</b>	Nelson Mandela Metropolitan University
<b>NRF</b>	National Research Fund
<b>NWU</b>	North West University
<b>RDG</b>	Research Development grant
<b>ROE</b>	Research Outputs Evaluation
<b>RU</b>	Rhodes University
<b>SA</b>	South Africa



<b>SET</b>	Science, Engineering and Technology
<b>SMU</b>	Sefako Makgatho Health Sciences University
<b>SUN</b>	Stellenbosch University
<b>TUT</b>	Tshwane University of Technology
<b>UCT</b>	University of Cape Town
<b>UFH</b>	University of Fort-Hare
<b>UFS</b>	University of the Free State
<b>WITS</b>	University of the Witwatersrand
<b>UJ</b>	University of Johannesburg
<b>UKZN</b>	University of KwaZulu-Natal
<b>UL</b>	University of Limpopo
<b>UoTs</b>	Universities of Technology
<b>UNIVEN</b>	University of Venda
<b>UNISA</b>	University of South Africa
<b>UNIZULU</b>	University of Zululand
<b>UP</b>	University of Pretoria
<b>UWC</b>	University of the Western Cape
<b>VUT</b>	Vaal University of Technology
<b>WSU</b>	Walter Sisulu University





## 1. INTRODUCTION

Through the *Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions* (2003), the Department of Higher Education and Training (DHET) seeks to “encourage research productivity by rewarding quality research output at public higher education institutions”. The policy aims to “enhance productivity by recognising the major types of research outputs produced by higher education institutions and further use appropriate proxies to determine the quality of such output”.

According to the policy, all public higher education institutions must annually submit their subsidy funding claims for research outputs to the DHET. Based on calculations of units for approved publications, the Department allocates research subsidy. The rewarding of quality research output at public higher education institutions forms the basis for sustaining current research and promoting increased productivity of research outputs and other knowledge outputs required to meet national development needs. The research output policy is a goal-oriented and performance-related mechanism that explicitly links the allocation of funds for research output, thus contributing to the social and economic development of the country. All research outputs submitted to the DHET for subsidy claims must meet the criteria as stipulated in the policy. The policy uses the same proxies and indicators for quality as in any other science system around the globe, and these include “peer-review” and “scholarliness” of the published work. All institutions must have a relevant (to the mission, potential and environment of the institution) Research Policy identifying the institution’s focus areas and development needs. Strategies for attaining development targets must also be developed. This report should therefore be read in conjunction with, and construed in accordance with the *Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions* (2003).

This report constitutes a detailed and up to date analysis of the processes, procedures and outcomes of the research publication outputs for 2015. Late publications for the year 2014 (n-2) were also considered where valid and legitimate reasons for late submission



were provided and accepted, but submissions dating before 2014 (n-3 and beyond) were not considered, as stipulated in the Policy.

The report provides an analysis of the number of units awarded to institutions for subsidy-earning research outputs in accredited journals, books, and conference proceedings published in 2015.

## **2. PROCESS AND PROCEDURES FOR THE MEASUREMENT OF RESEARCH OUTPUTS**

The *Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions (2003)* gives all public higher education institutions the responsibility to enhance the effectiveness and efficiency of policy implementation. In order to reduce mistakes and incorrect submissions, institutions are urged to ensure that all research office personnel are well acquainted with the Policy and that an institutional panel sits to assess all publications before submitting to the Department. Only claims which meet the policy requirements should be submitted. In terms of the policy, institutions must submit their research output subsidy claims to the Department, on or before 15 May of each reporting year.

Out of the 26 public Higher Education Institutions (HEIs), 25 submitted 2015 research outputs for the purposes of subsidy claims. The Directorate: University Policy and Development Support administered the process and evaluated technical compliance of all submissions. Submissions that did not meet the requirements as set out in the Policy were returned to respective institutions before further evaluation.

In responding to a growing need to bring credibility and transparency, and to improve the evaluation process, the research outputs (books and conference proceedings) for the 2013, 2014 and 2015 reporting years were evaluated by field-specific peer review panels using pre-determined evaluation criteria in line with the *Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions (2003)*. For the 2013 and 2014 reporting years, the evaluation process was under the guidance of ASSAf.



However, for the 2015 reporting year, the field specific sub-panels conducted evaluations of books and conferences under the guidance of the Research Outputs Evaluation Panel. The Panel is mainly composed of Deputy Vice-Chancellors responsible for research at their respective institutions.

Below are the panel members who guided the evaluation of the 2015 research outputs and finalised the annual report:

1. Prof T Marwala                      DVC: Research, UJ (Panel Chair)
2. Prof J Crafford                      DVC: Academic, UV
3. Prof P Clayton                      DVC: Research & Development, RU
4. Prof M Phakeng                      DVC: Research, UCT
5. Prof U Bob                              Dean: Research, UKZN
6. Prof C Witthuhn                      Vice-Rector: Research, UFS
7. Dr C Nhlapo                          DVC: Research, CPUT
8. Prof R Crewe                          Chairperson: ASSAf Committee of Scholarly Publications  
in South Africa

The process that was followed in the evaluation of the 2015 research outputs can be summarised as follows:

- a) DHET received all institutional claims for outputs in Books, Conferences and Journals in May 2016.
- b) DHET screened all applications internally for eligibility according to the technical criteria as per the Policy.
- c) Based on the subject fields of the books and conference proceedings, a multi-perspective, multi-discipline-based set of evaluation panels was appointed by the Research Output Evaluation Panel and assisted by DHET officials.
- d) Expert/discipline-based panels evaluated the submitted research output publications according to predetermined criteria and made recommendations regarding acceptance or rejection.



- e) DHET officials analysed outcomes of the research output process and calculated the number of units allocated to each institution for publications in books and conference proceedings.
- f) Audited claims for publications in accredited journals submitted by the universities were also checked and verified against the three lists (ISI, IBSS and DHET) of approved journals as specified in the policy, and the final unit allocations for each institution were calculated.
- g) A Report on the Evaluation of 2015 Universities' Research Outputs was developed by the Directorate: University Policy and Development Support and subsequently finalised by the Research Output Evaluation Panel.

### 3. JOURNAL PUBLICATION OUTPUT UNITS

Publication in journals is widely accepted as the most appropriate and speedy form of communicating novel research findings. As a result, the bulk of global research outputs are in the form of Journal articles. Therefore it is not surprising that research outputs by South African HEIs follow a similar trend. In 2015, publications in journals continued to show a healthy growth as in previous years. Journal publication output units increased from 13 135.86 units in 2014 to 13 976.41 in 2015; a 6.4% growth. This growth is however lower than the 9.5% growth observed between 2013 and 2014.

**Table 1** shows the breakdown of journal publications across the different indices per institution for 2014 and 2015. Four institutions had at least 80% of their journal publications in international indices and these were UCT, WITS, RU, and UFH. This observation excludes UMP as it only had one collaborative article, which was in an international journal publication. Another eight institutions had 70-78% of their publications in international indices and these were UKZN, UP, SUN, UJ, NMMU, UNIVEN, DUT and MUT. This is good for global exposure of South African researchers. All other intuitions, apart from SMU, had between 50% and 70% of their journal publications in international journals. SMU, which is one of the newly established universities published 33% of their publications in international indices.



In comparison with their 2014 research outputs, in 2015, 14 institutions improved their publication in international indices. UNISA had the highest publication units in local list, amounting to 488 units. Overall, UKZN accrued the most journal publication units with 73% in international indices and 27% in the DHET list. Closely following UKZN in overall publication units is UP, with 74% of their publications in international indices. Overall, all institutions with the exception of SUN, UFS, RU and VUT showed improved productivity in journal publication units compared to 2014.

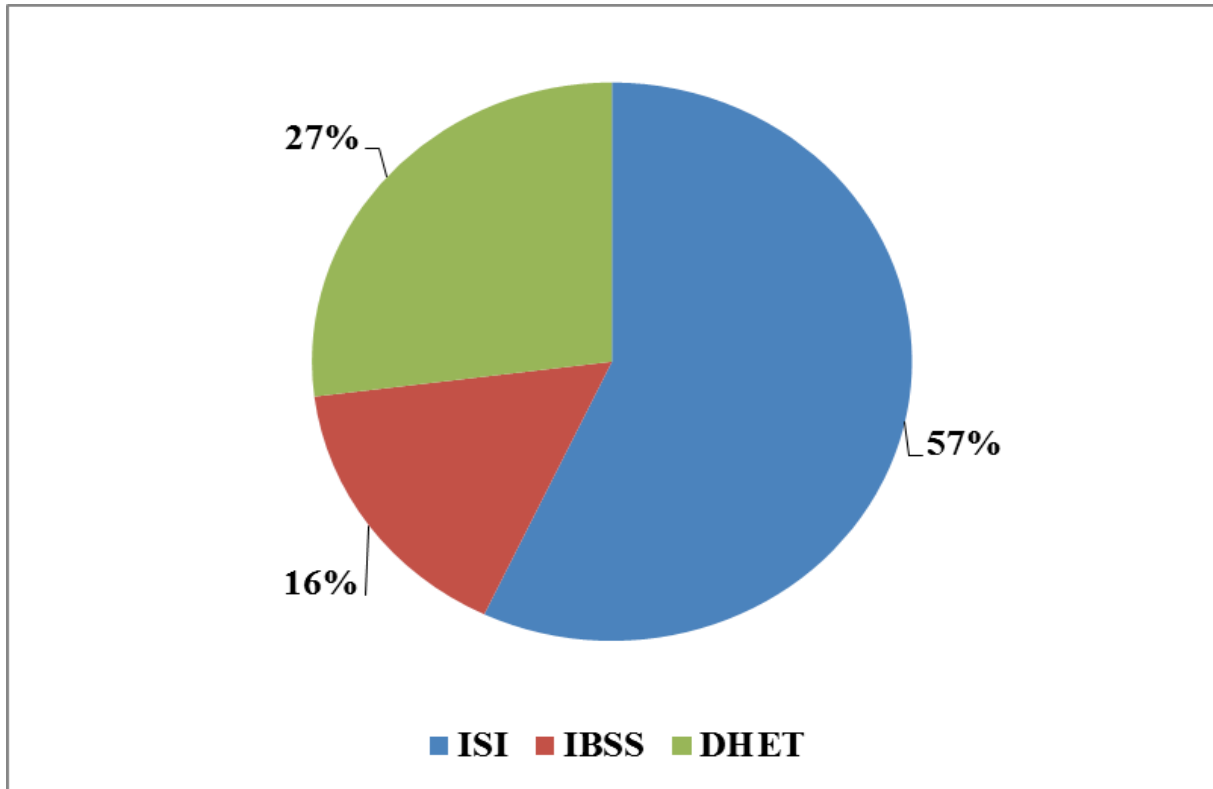


**Table 1: Journal Publications Outputs by Index, 2014 and 2015**

Institution	2014 Journal Units						2015 Journal Units					
	ISI	IBSS	Total international	SA journal list	Total Journal outputs	% International	ISI	IBSS	Total international	SA journal list	Total Journal outputs	% International
UKZN	993.27	203.76	1197.03	405.44	1602.47	75%	962.2	238.83	1201.03	444.54	1645.57	73%
UP	979.08	135.97	1115.05	346.41	1461.46	76%	1025.05	148.5	1173.55	411.33	1584.88	74%
UCT	1032.09	164.16	1196.25	176.32	1372.57	87%	1058	148.76	1206.76	182.6	1389.36	87%
WITS	964.53	122.15	1086.68	185.35	1272.03	85%	996.88	102.75	1099.63	209.23	1308.86	84%
SUN	897.51	96.62	994.13	340.45	1334.58	74%	876.6	87.66	964.26	291.74	1256	77%
UNISA	224.3	363.36	587.66	440.01	1027.67	57%	295.95	385.13	681.08	488	1169.08	58%
NWU	450.69	174.18	624.87	355.84	980.71	64%	494.71	206.17	700.88	373.73	1074.61	65%
UJ	427.75	139.96	567.71	194.21	761.92	75%	471.62	166.55	638.17	260.82	898.99	71%
UFS	329.58	86.12	415.7	212.01	627.71	66%	330.12	64.06	394.18	191.64	585.82	67%
UWC	223.14	56.43	279.57	165.64	445.21	63%	236.51	68.51	305.02	156.03	461.05	66%
RU	307.8	42	349.8	55.2	405	86%	317.99	26.58	344.57	59.94	404.51	85%
NMMU	168.6	32.5	201.1	80.32	281.42	71%	199.01	35.8	234.81	90	324.81	72%
UFH	118.7	85.18	203.88	56.2	260.08	78%	124.33	133.92	258.25	66.47	324.72	80%
TUT	113.63	30.57	144.2	74.08	218.28	66%	129.85	45.7	175.55	78.86	254.41	69%
UNIVEN	56.58	78.1	134.68	69.68	204.36	66%	57.95	125.7	183.65	68.1	251.75	73%
UL	61.35	80.76	142.11	91.85	233.96	61%	67.59	89.81	157.4	82.41	239.81	66%
DUT	62.95	45.75	108.7	27.06	135.76	80%	75.87	69.67	145.54	41.67	187.21	78%
CPUT	74.85	15.09	89.94	32.82	122.76	73%	70.94	44.84	115.78	57.36	173.14	69%
UNIZULU	39.01	14.66	53.67	49.54	103.21	52%	45.93	26.6	72.53	42.02	114.55	63%
SMU	25.36	2.5	27.86	64.87	92.73	30%	24.3	11.66	35.96	72.93	108.89	33%
CUT	22.52	26.5	49.02	23.81	72.83	67%	22.47	21.99	44.46	30.06	74.52	60%
VUT	32.62	15.99	48.61	31.48	80.09	61%	24.82	17.85	42.67	20.21	62.88	68%
WSU	9.83	4.1	13.93	11.14	25.07	56%	16.38	10.08	26.46	20.37	46.83	57%
MUT	6.95	3.53	10.48	3	13.48	78%	9.81	2.5	12.31	5.08	17.39	71%
UMP	0	0.5	0.5	0	0.5	100%	16.77	0	16.77	0	16.77	100%
<b>Total</b>	<b>7622.69</b>	<b>2020.44</b>	<b>9643.13</b>	<b>3492.73</b>	<b>13135.86</b>	<b>73%</b>	<b>7951.65</b>	<b>2279.62</b>	<b>10231.27</b>	<b>3745.14</b>	<b>13976.41</b>	<b>73%</b>



Publications in journals listed on the approved international indices, which are Thomson Reuters ISI Web of Science and the ProQuest IBSS, remain collectively high, at 57% and 16% respectively (see **Figure 1**). The overall proportion of publications in journals listed on the two international indices has remained constant from the 2014 reporting year.



**Figure 1:** Journal output by index, 2015

The DHET index which consist of less than 2% of the total journal titles had 27% of the overall journal outputs publication units. Factors influencing researchers to publish in the DHET index need further analysis as they could have effects on research and innovation within the HE sector.

### ***3.1 Journal publication output units by Classification of Education Subject Matter (CESM) category***

**Table 2** shows journal publication output units from all three lists disaggregated by Classification of Educational Subject Matter (CESM) categories. The highest proportion of journal publications was in CESM 9 (Health Care & Health Sciences) with 18.8% of all journal publication output units in 2015.



**Table 2:** Journal publication output units by CESM Category, 2014 and 2015

CESM category	2014		2015		
	No. Of Units	% of Total	No. Of Units	% of Total	% increase/decrease from 2014 to 2015
09: Health profession and related clinical sciences	2394.61	18.3%	2628.7	18.8%	9.7%
13: Life Sciences	1329.81	10.1%	1356.37	9.7%	1.9%
04: Business, Economics and Management Studies	1127	8.6%	1348.88	9.7%	19.6%
14: Physical Sciences	1171.08	8.9%	1273.58	9.1%	8.7%
20: Social Sciences	1202.62	9.3%	1200.8	8.6%	-0.2%
07: Education	889.67	6.8%	905.75	6.5%	1.8%
08: Engineering	676.11	5.1%	823.32	5.9%	21.7%
17: Philosophy, Religion and Theology	781.46	5.9%	817.81	5.9%	4.6%
12: Law	731.62	5.6%	758.63	5.4%	3.6%
01: Agriculture, Agricultural operations and related sciences	710.08	5.4%	706.88	5.1%	-0.5%
11: Languages, Linguistics and Literature	558.12	4.2%	516.63	3.7%	-7.4%
15: Mathematics and Statistics	505.09	3.8%	422.48	3.0%	-16.3%
18: Psychology	287.9	2.1%	366.86	2.6%	27.4%
19: Public Management and Services	199.63	1.5%	211.3	1.5%	5.8%
06: Computer and Information Sciences	166.61	1.3%	192.16	1.4%	15.3%
03: Visual and Performing Arts	153.41	1.2%	137.15	0.9%	-10.5%
05: Communication, Journalism and related studies	90.61	0.7%	122.93	0.9%	35.6%
02: Architecture and Building Environment	96.85	0.7%	99.79	0.7%	3%
10: Family Ecology and Consumer Sciences	23.05	0.3%	46.73	0.3%	102.7%
16: Military Sciences	40.53	0.2%	39.66	0.3%	-2.1%
<b>TOTAL</b>	<b>13135.86</b>	<b>100.0%</b>	<b>13976.41</b>	<b>100%</b>	

This is followed by CESM 13 (Life Sciences) and CESM 04 (Business, Economics and Management Studies) with 9.7% and CESM 14 (Physical Sciences) with 9.1% of all units. Journal publication units in CESM 9 increased from 2394.61 to 2628.7 units between 2014 and 2015, a 9.7% growth. This is a decrease in growth from the 12% growth between 2013 and 2014. However, significant growths (>10%) were observed in CESM 04, 06, 08, 10, and 18.

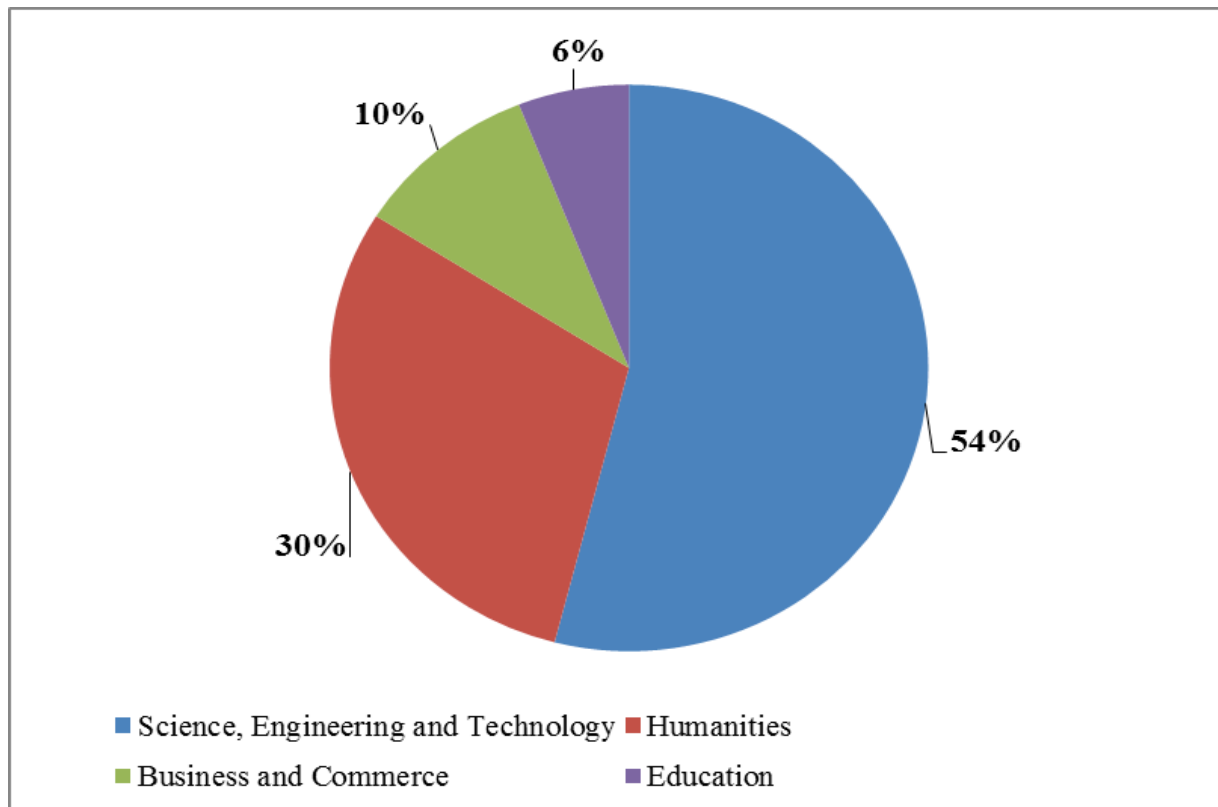




CESM categories 2, 3, 5, 10, and 16 accrued less than 1% each of overall research publication output units. Many factors must be considered when analysing research output by CESM category. Such factors include the size of the academic field with respect to: the proportion of academics working in the field compared to other fields; postgraduate student enrolment; teaching load for the various disciplines; and the tradition of the field with regard to publications. Also to be noted is that the varying proportions per CESM do not necessarily reflect the overall sector's outputs or outcomes since the policy only recognises a limited set of outputs; i.e. journal publications, book publications and conference proceedings. A complete picture would also include patents and creative research outputs.

### 3.2 Journal Publication Output Units by Broad Field of Study

The distribution of journal publications by broad fields has been consistent in the past few years, with over half (54%) of the units in the Science, Engineering and Technology (SET) and within SET predominantly the Health Sciences; followed by Humanities with 30%; Business and Commerce with 10%; and Education with 6% (see **Figure 2**).



**Figure 2:** Journal Publication Output Units by Broad Field of Study, 2015



#### 4. BOOK PUBLICATION OUTPUT UNITS

Research publications in scholarly books for 2015 amounted to 994.77 units, up from 879.68 units in 2014, representing a 13% growth. Though the increase is significant, it is marginally lower than the 13.6% increase observed between 2013 and 2014. Book publications continue to constitute the least produced research output, accounting for only 6% of the overall 2015 output units.

**Table 3:** Percentage of book publication output units per institution, 2014 and 2015

Institution	2014		2015		% increase/decrease from 2014 to 2015
	Book units	% of total books	Book units	% of total books	
UCT	133.75	15.2%	161.47	16.2%	20.7%
WITS	131.71	15.0%	159.4	16.0%	21%
UP	69.09	7.9%	101.1	10.1%	46.3%
UJ	59.52	6.8%	92.37	9.3%	55.1%
UFS	92.58	10.5%	79.08	7.9%	-14.5%
SU	116.25	13.2%	78	7.8%	-32.9%
UNISA	66.56	7.6%	71.79	7.2%	7.8%
UKZN	53.79	6.1%	66.47	6.9%	23.5%
NWU	38.9	4.4%	48.84	4.9%	25.5%
RU	56.8	6.5%	48.1	4.8%	-15.3%
UWC	26.03	3.0%	29.34	2.9%	12.7%
DUT	5.44	0.6%	16.59	1.7%	204.9%
UNIVEN	7.12	0.8%	10.8	1.1%	51.6%
NMMU	7.21	0.8%	10.05	1.0%	39.3%
CPUT	2.45	0.3%	5.99	0.6%	144.4%
UNIZULU	0.68	0.1%	4.52	0.5%	564.7%
UL	0.53	0.1%	3.66	0.4%	590.5%
TUT	4.43	0.5%	3.02	0.3%	-31.8%
UFH	5.4	0.6%	2.99	0.3%	-44.6%
CUT	0.69	0.1%	1.11	0.1%	60.8%
WSU	0	0.0%	0.08	0.0%	0%
MUT	0.53	0.1%	0	0.0%	0%
SMU	0.22	0.02%	0	0.0%	0%
VUT	0	0.0%	0	0.0%	0%
UMP	0	0.0%	0	0.0%	0%
<b>Total</b>	<b>879.68</b>	<b>100.0%</b>	<b>994.77</b>	<b>100%</b>	<b>13.0%</b>



This relatively low productivity in books is mainly due to the fact that it takes longer to produce book publications compared to other types of outputs recognised by the Policy. The revised research output policy takes cognisance of the long process in producing books and as a result the number of units for a full book will be doubled upon implementation of the revised Policy.

**Table 3** shows book publication output units and percentages accrued to each university. The University of Cape Town (UCT) accrued the highest proportion of book units (16.2%) followed by the University of Witwatersrand (WITS) at 16.0%. The five highest research outputs/publications producing institutions accounted for 59.5% of all book publications as compared to 61.8% in 2014 and this is as a result of increased productivity across the board. Stellenbosch University (SUN) and University of Free state (UFS) experienced significant declines in the production of book units of 32.9% and 14.5% respectively.

#### ***4.1 Book Publication output units by Classification of Education Subject Matter (CESM) Category***

**Table 4** shows book publication output units by CESM category. The majority of CESM categories showed an increase in the number of units awarded for book publications in 2015. The highest number of units, over 5% of total book publications, were accrued to the following CESM categories: CESM 20 (Social Sciences) 29.9% of book publication units; CESM 17 (Philosophy, Religion & Theology) 11.7%; CESM 12 (Law) 10.3%; CESM 11 (Language, Linguistics & Literature) 10.1% and CESM 7 (Education) 8.3%. CESM 10 (Family Ecology and Consumer Sciences), CESM 1 (Agriculture, Agricultural Operations & Related Sciences), CESM 15 (Mathematics & Statistics) and CESM 16 (Military Sciences) accrued 1% or less of the book publications output units.

Between 2014 and 2015, significant increases in accrued book publication units are observed in CESM 14 (Physical Sciences) with an increase of 205.6%; CESM 9 (Health Professions & Related Clinical Sciences) an increase of 128.6%; CESM 19 (Public Management and Services) an increase of 82.1% and, CESM 7 (Education) an increase of 68%. Decreases in the number of units are observed for CESM 05 (Communication, Journalism & Related Studies), CESM 13 (Life Sciences), CESM 2 (Architecture & Built Environment) and CESM 18 (Psychology) between 2014 and 2015.



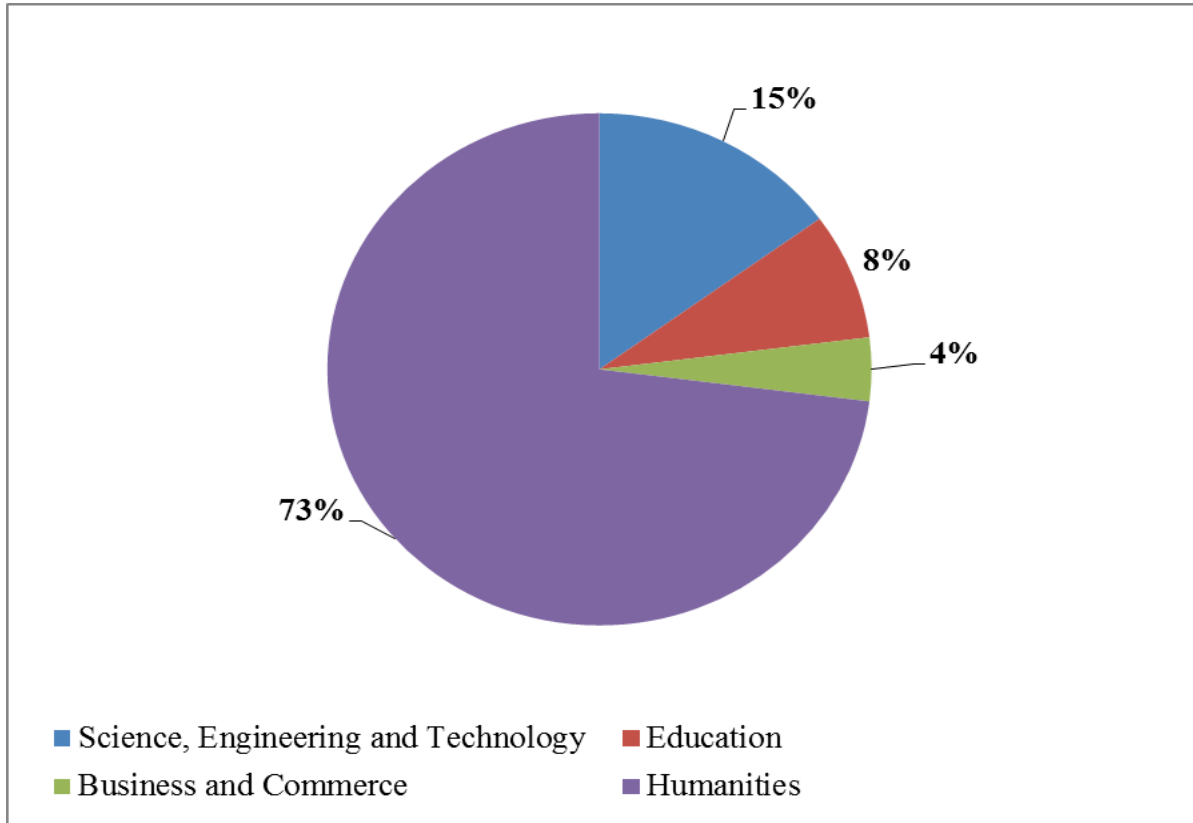
**Table 4:** Book Publication outputs units by CESM Categories, 2014 and 2015

CESM category and field	2014		2015		% increase/ decrease from 2014 to 2015
	Total units awarded	% total book publication unit	Total units awarded	% total book publication unit	
20: Social Sciences	307.6	35%	297.22	29.9%	-3.3%
17: Philosophy, Religion and Theology	118.74	9.3%	116.71	11.7%	-1.7%
12: Law	83.8	13.5%	102.39	10.3%	22.1%
11: Languages, Linguistics and Literature	81.64	9.5%	100.26	10.1%	22.8%
07: Education	48.98	5.6%	82.31	8.3%	68%
04: Business, Economics & Management Studies	38.87	4.4%	40.96	4.1%	5.3%
03: Visual & Performing Arts	29.29	2.9%	39.69	4.0%	35.5%
09: Health Professions & Related Clinical Sciences	16.01	0.6%	36.6	3.7%	128.6%
14: Physical Sciences	10.27	1.3%	31.39	3.2%	205.6%
19: Public Management and Services	13.81	2.8%	25.15	2.5%	82.1%
08: Engineering	14.48	2%	20.62	2.1%	42.4%
18: Psychology	25.96	1.6%	18.85	1.9%	-27.3%
13: Life Sciences	24.79	3.3%	14.32	1.4%	-42.2%
02: Architecture & Built Environment	17.43	1.8%	13.59	1.4%	-22%
05: Communication, Journalism & Related Studies	22.35	1.2%	11.28	1.1%	-49.5%
15: Mathematics & Statistics	5.18	1.6%	10.15	1.0%	95.9%
06: Computer & Information Sciences	11.1	0.8%	9.93	1.0%	-10.5%
01: Agriculture, Agricultural Operations & Related Sciences	6.69	2.5%	9.81	1.0%	46.6%
16: Military Sciences	0.58	0.2%	8.24	0.8%	1320.6%
10: Family Ecology & Consumer Sciences	2.11	0.06%	5.3	0.5%	151.1%
<b>Total</b>	<b>879.68</b>	<b>100%</b>	<b>994.77</b>	<b>100%</b>	13.0%

It is also interesting to note that some CESM categories that had the highest shares under journal publications, command a lesser share in book publications. This is an indication that each CESM has differing strengths which vary according to the types of outputs including those not recognised by the Policy.



Book publications in 2015 were highest in the Humanities (73%), followed by the SET (15%), Education (8%), and Business and Commerce (4%); see **Figure 3**. The Humanities are the major contributor in book publications, which has been consistently so over the years.



**Figure 3:** Book publications by broad field, 2015

## 5. PUBLISHED CONFERENCE PROCEEDING OUTPUT UNITS

Publications in conference proceedings in 2015 increased by 3.7% which is less than the 5.2% increase observed in 2014. The total number of conference publication units for 2015 amounted to 1349.58, a marginal increase of 48.3 units from 2014. **Table 5** shows the number of conference publication units accrued to each university. A number of institutions produced an increased number of approved units for conference proceedings.

The University of Johannesburg (UJ) accrued the most units for conference publications and gained a share of 21.4% of all units. The University of Johannesburg increased its conference publication units substantially from 253.47 units in 2014 to 288.44 in 2015, a 13.7% increase. The University of Pretoria (UP) has the second highest production in this category with a share of 11.2% (151.02 units). The North West University (NWU) followed with a share of 9.4% (126.8 units), an 18% increase from 2014.



The following universities more than doubled their units in 2015 compared to 2014: University of Limpopo (UL) with an increase from 9.21 units to 33.01 units, Durban University of Technology (DUT) with an increase from 10.93 units to 31.82 units and Central University of Technology (CUT) with an increase from 13.65 units to 30.85 units. Vaal University of Technology (VUT) had a significant decrease in conference proceeding units of 55% between 2014 and 2015. Other universities with decreases between 2014 and 2015 are University of Venda (UNIVEN) at 33%, University of Fort Hare (UFH) at 40% and Cape Peninsula University of Technology (CPUT) at 28%.

**Table 5:** Units in conference proceedings per institution, 2014 and 2015

HEI	2014		2015		% increase from 2014 to 2015
	Conference proceeding units	% of Conference Proceedings	Conference proceeding units	% of Conference Proceedings	
UJ	253.47	19.6%	288.44	21.4%	13.7%
UP	147.04	11.4%	151.02	11.2%	2.7%
NWU	107.34	8.2%	126.8	9.4%	18.1%
UCT	117.29	9.0%	102.62	7.6%	-12.5%
UNISA	78.61	6.0%	87.73	6.5%	11.6%
WITS	77.94	6.0%	86.38	6.4%	10.8%
SUN	103.51	8.0%	82.64	6.1%	-20.1%
NMMU	77.39	5.9%	63.64	4.7%	-17.7%
UKZN	52.35	4.0%	51.21	3.8%	-2.1%
UFS	39.59	3.0%	46.34	3.4%	17%
TUT	58.63	4.5%	44.43	3.3%	-24.2%
RU	29.8	2.3%	34.6	2.6%	16.1%
CPUT	46.5	3.6%	33.44	2.5%	-28%
UL	9.21	0.7%	33.01	2.4%	258.4%
DUT	10.93	0.8%	31.82	2.4%	191.1%
CUT	13.65	1.0%	30.85	2.3%	126%
VUT	29.85	2.3%	13.28	1.0%	-55.5%
UNIZULU	6.85	0.5%	11.33	0.8%	65.4%
UNIVEN	13.68	1.1%	9.08	0.7%	-33.6%
UFH	14.75	1.1%	8.85	0.6%	-40%
UWC	10.06	0.8%	6.82	0.5%	32.2%
WSU	1	0.07%	2.5	0.2%	150%
SMU	0.25	0.01%	1.5	0.10%	500%
MUT	1.63	0.1%	1.25	0.09%	-23.3%
UMP	0	0.0%	0	0.0%	0%
<b>Total</b>	<b>1301.32</b>	<b>100%</b>	<b>1349.58</b>	<b>100%</b>	<b>3.7%</b>



### 5.1 Conference Proceeding Output Units by Classification of Education Subject Matter (CESM) Category

The largest share of units for published conference proceedings in 2015 were: Engineering at 37.1% (CESM 8); followed by Computer & Information Sciences at 16.7% (CESM 6); and Business, Economics and Management Studies at 12.2% (CESM 4). These are fast-pace research fields whose findings are mostly shared through conferences.

The highest proportion of conference proceedings in 2015 accrued to the SET field (65%), followed by Humanities (12%), Business and Commerce (12%); and Education (11%) (Figure 4). The Education field went up from 7% in 2014 to 11% in 2015, whereas the Humanities field decreased from 14% to 12%, Business and Commerce from 13% to 12%; and SET from 66% to 65% . The SET field is the major contributor to conference proceedings and this is largely through outputs in Engineering (CESM 8) and Computer & Information Sciences (CESM 6).

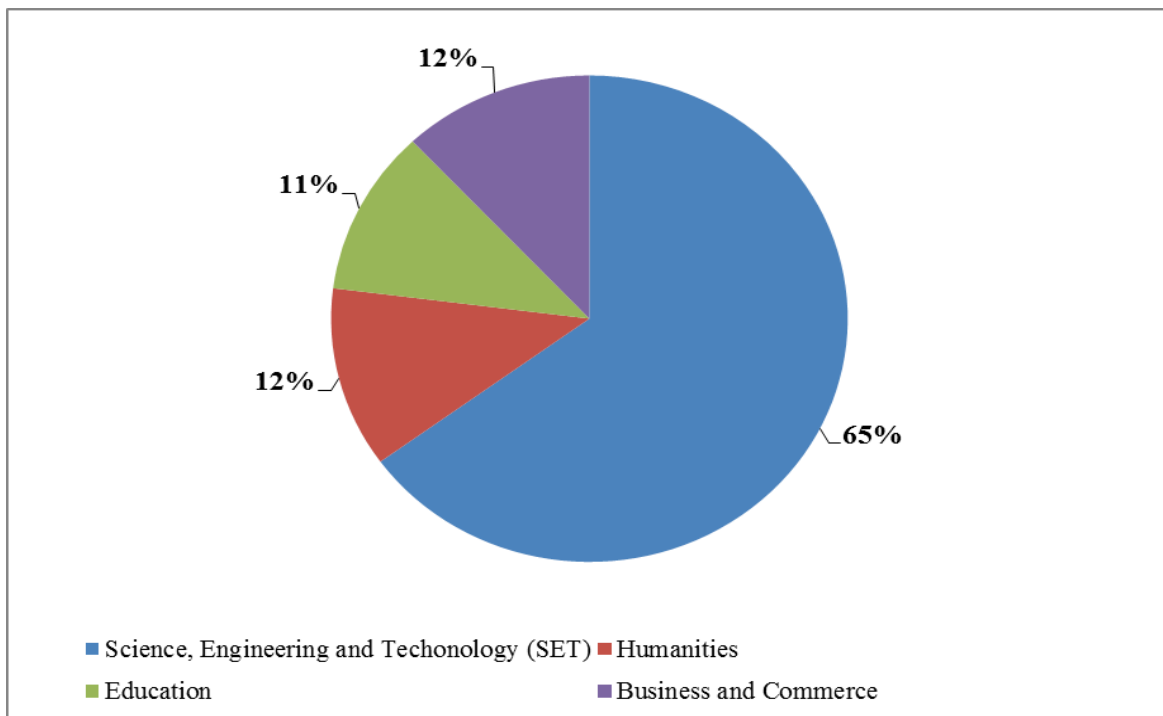


Figure 4: Conference proceedings outputs by broad field, 2015

Table 6 shows the number of units accrued to each CESM category and the percentage proportion of each. CESM 1 (Agriculture, Agricultural Operations and Related Sciences) experienced a modest growth in 2015, from 11.88 units in 2014 to 27.10 units in 2015.



The most impressive growth is seen in CESM 7 (Education), with an increase of 57 units; from 89.30 in 2014 to 146.30 in 2015. There is a strong correlation between the institutional shares and the CESM category shares, meaning that those institutions with larger shares are strong in one or more CESM categories with the most shares.

**Table 6:** Conference Proceeding Output Units by CESM Category, 2014 and 2015

CESM	2014		2015		
	Number of Units	% of total	Number of Units	% of total	% increase/decrease from 2014 to 2015
08: Engineering	492.72	37.9%	501.71	37.1%	1.8%
06: Computer and Information Sciences	219.00	16.8%	225.15	16.7%	2.8%
04: Business, Economics and Management Studies	171.85	13.3%	164.07	12.2%	-4.5%
07: Education	89.30	6.9%	146.30	10.8%	63.8%
14: Physical Sciences	96.16	7.4%	88.15	6.5%	-8.3%
02: Architecture and Built Environment	87.86	6.8%	60.28	4.5%	31.3%
19: Public Management and Services	18.82	1.4%	30.73	2.3%	63.2%
15: Mathematics and Statistics	18.35	1.4%	28.79	2.1%	56.8%
01: Agriculture, Agricultural Operations and Related Sciences	11.88	0.9%	27.10	2.0%	128.1%
20: Social Sciences	19.67	1.5%	19.73	1.5%	0.3%
03: Visual and Performing Arts	15.82	1.2%	19.33	1.4%	22.1%
17: Philosophy, Religion and Theology	13.17	1.0%	10.67	0.8%	-18.9%
12: Law	5.58	0.4%	8.00	0.6%	43.3%
5: Communication, Journalism and Related Studies	5.83	0.4%	5.25	0.4%	-9.9%
11: Languages, Linguistics and Literature	9.84	0.8%	5.00	0.4%	-49.1%
13: Life Sciences	10.16	0.8%	3.72	0.3%	-63.3%
09: Health Professions and Related Clinical Sciences	9.22	0.7%	2.60	0.2%	-71.8%
18: Psychology	5.42	0.4%	2.50	0.2%	-53.8%
16: Military Sciences	0.25	0.01%	0.50	0.03%	100%
10: Family Ecology and Consumer Sciences	0.42	0.03%	0.00	0.0%	-100%
<b>Total</b>	<b>1301.32</b>	<b>100.0%</b>	<b>1349.58</b>	<b>100.0%</b>	<b>3.7%</b>





## 6. OVERALL RESEARCH PUBLICATION OUTPUT UNITS

Overall, there has been a modest increase in overall publication outputs in 2015. The total approved research outputs for 2015 amounted to 16 320.76 units, an increase of 6.5% from the 2014 units. Journal articles increased from 13 135.86 units in 2014 to 13 976.41 units in 2015 (6.4% growth), while books increased from 879.68 units to 994.77 units (13% growth). Conference proceedings also showed a marginal increase from 1301.32 units in 2014 to 1349.58 units in 2015 (a 3.7% growth).

A list of all the institutions with their respective research publications outputs for 2015 is presented in **Table 7**. Institutions have been listed according to the volume of their publication output units, from the highest to the lowest number of units. The University of Pretoria (UP), had the most publication output units in 2015 followed by UKZN, UCT, WITS and SUN. The University of Pretoria replaced UKZN which was at the top of the list in 2014. The University of Johannesburg which came after NWU in 2014, accrued more publication output units in 2015 mostly from an increased output in journal publication units.

**Table 7** shows a new pattern in terms of research productivity. Previously, 5 institutions were dominant. However, for the first time as can clearly be seen from the table above, there are now eight institutions accruing more than 1200 publication units. The 8 institutions make up 74% of the overall publication units, totalling 12083.63 units out of 16 320.76 units. The remaining 17 institutions make up the remaining 26% with a total of 4237.13 units. This can only be good for the higher education sector. The increase in the number of research productive institutions can only mean that the research capacity in the sector is indeed expanding. Additionally, high research productivity by these additional institutions will make them attractive institutions to those who want to pursue their post-graduate and post-doctoral studies and therefore alleviate the pressure on the top 5 research intensive institutions by volume of output.



**Table 7: Overall Publication Output Units per Institution, 2015**

Institution	Book Units		Conference Proceedings Units		Journal Units		Overall Units in 2015	% Overall Sector Units
	Actual Units	% of total institutional outputs	Actual Units	% of total institutional outputs	Actual Units	% of total institutional outputs	Overall Units in 2015	% Overall Sector Units
UP	101.1	5.5%	151.02	8.2%	1584.88	86.3%	1837	11.3%
UKZN	66.47	3.8%	51.21	2.9%	1645.57	93.3%	1763.25	10.8%
UCT	161.47	9.8%	102.62	6.2%	1389.36	84.0%	1653.45	10.1%
WITS	159.4	10.3%	86.38	5.6%	1308.86	84.2%	1554.64	9.5%
SUN	78	5.5%	82.64	5.8%	1256	88.7%	1416.64	8.7%
UNISA	71.79	5.4%	87.73	6.6%	1169.08	88.0%	1328.6	8.1%
UJ	92.37	7.2%	288.44	22.5%	898.99	70.2%	1279.8	7.8%
NWU	48.84	3.9%	126.8	10.1%	1074.61	86.0%	1250.25	7.7%
UFS	79.08	11.1%	46.34	6.5%	585.82	82.4%	711.24	4.4%
UWC	29.34	5.9%	6.82	1.4%	461.05	92.7%	497.21	3%
RU	48.1	9.9%	34.6	7.1%	404.51	83.0%	487.21	3%
NMMU	10.05	2.5%	63.64	16.0%	324.81	81.5%	398.5	2.4%
UFH	2.99	0.9%	8.85	2.6%	324.72	96.5%	336.56	2.1%
TUT	3.02	1.0%	44.43	14.7%	254.41	84.3%	301.86	1.8%
UL	3.66	1.3%	33.01	11.9%	239.81	86.7%	276.48	1.7%
UNIVEN	10.8	4.0%	9.08	3.3%	251.75	92.7%	271.63	1.7%
DUT	16.59	7.0%	31.82	13.5%	187.21	79.5%	235.62	1.4%
CPUT	5.99	2.8%	33.44	15.7%	173.14	81.5%	212.57	1.3%
UNIZULU	4.52	3.5%	11.33	8.7%	114.55	87.8%	130.40	0.8%
SMU	0	0.0%	1.5	1.4%	108.89	98.6%	110.39	0.7%
CUT	1.11	1.0%	30.85	29.0%	74.52	70.0%	106.48	0.7%
VUT	0	0.0%	13.28	17.4%	62.88	82.6%	76.16	0.5%
WSU	0.08	0.2%	2.5	5.1%	46.83	94.8%	49.41	0.3%
MUT	0	0.0%	1.25	6.7%	17.39	93.3%	18.64	0.1%
UMP	0	0.0%	0	0.0%	16.77	100.0%	16.77	0.1%
<b>TOTAL</b>	<b>994.77</b>	<b>6%</b>	<b>1349.58</b>	<b>9%</b>	<b>13976.41</b>	<b>85%</b>	<b>16320.76</b>	<b>100%</b>

The proportion of the total output units awarded to each institution in 2015, expressed as a percentage, is shown in **Table 8**. The University of Pretoria contributed the highest proportion of the total output units awarded, with 11.3%, followed very closely by the UKZN at 10.8%.



**Table 8:** Percentage of total output units produced by each institution (2011-2015)

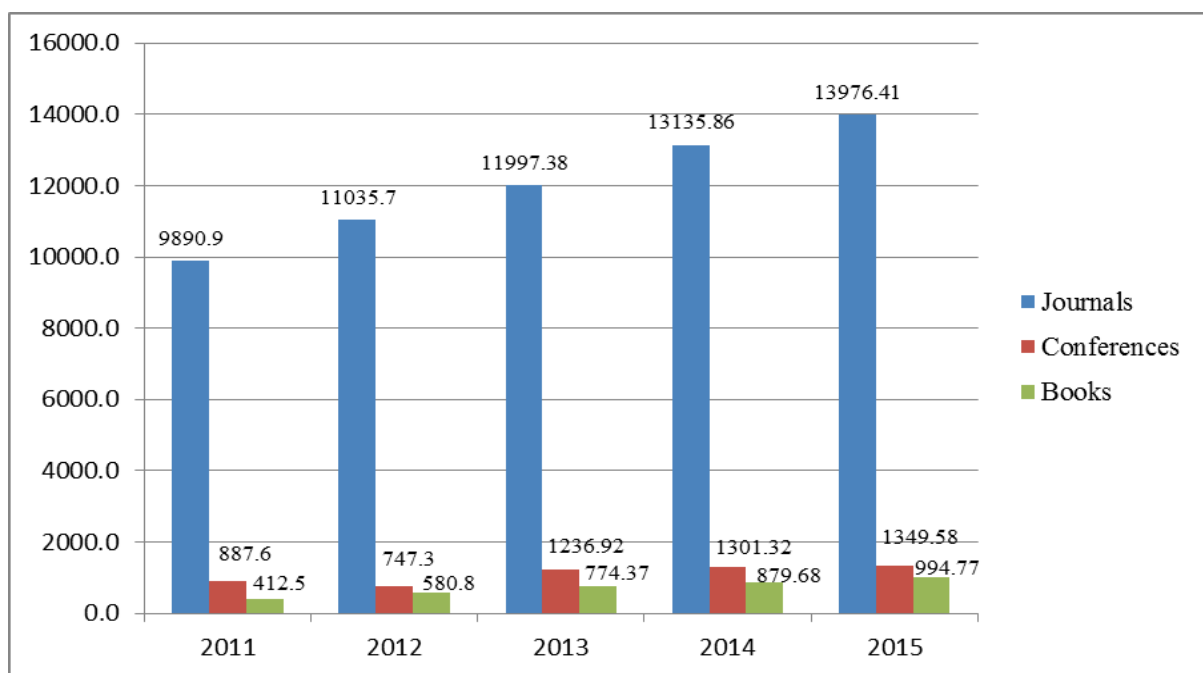
Institution	2015	2014	2013	2012	2011
UP	11.3%	11.0%	11.5%	11.5%	11.7%
UKZN	10.8%	11.2%	11.6%	11.5%	11.2%
UCT	10.1%	10.6%	11.1%	11.2%	11.7%
WITS	9.5%	9.7%	9.3%	9.0%	9.3%
SUN	8.7%	10.1%	10.5%	10.7%	10.3%
UNISA	8.1%	7.7%	7.4%	7.2%	7.1%
UJ	7.8%	7.0%	6.4%	7.1%	6.9%
NWU	7.7%	7.4%	8.3%	7.0%	6.6%
UFS	4.4%	5.0%	4.8%	5.2%	5.1%
RU	3%	3.2%	3.2%	3.3%	3.2%
UWC	3%	3.1%	2.9%	3.0%	3.1%
NMMU	2.4%	2.4%	2.4%	2.5%	3.1%
UFH	2.1%	1.8%	1.7%	1.7%	1.6%
TUT	1.8%	1.8%	2.0%	1.9%	2.2%
UL	1.7%	1.6%	1.6%	1.8%	1.3%
UNIVEN	1.7%	1.5%	1.1%	1.0%	1.2%
DUT	1.4%	1.0%	0.9%	0.7%	0.8%
CPUT	1.3%	1.1%	1.1%	1.4%	1.3%
UNIZULU	0.8%	0.7%	0.6%	0.6%	0.6%
CUT	0.7%	0.6%	0.5%	0.5%	0.4%
SMU	0.7%	0.6%	0.0%	0.0%	0.0%
VUT	0.5%	0.7%	0.6%	0.6%	0.7%
WSU	0.3%	0.2%	0.30%	0.50%	0.40%
MUT	0.1%	0.1%	0.1%	0.1%	0.2%
UMP	0.1%	0.0%	0.0%	0.0%	0.0%

Between 2011 and 2014, it is clear that that 5 institutions were distinctly dominant as highlighted in Table 8 above. However in 2015, of the eight institutions highlighted, there is no significant difference from one institution (starting with NWU) to the one immediately above it. The next 10 institutions, from UFS to CPUT, accounted for 22.8% while the rest produced 3.2 % of the total units. This change in pattern is an indication that other institutions are improving their research endeavours. **Table 8** shows the differentiation within the system with respect to research productivity. Institutions that have lower productivity are generally institutions with smaller numbers of academics with PhDs, Historically Disadvantaged Institutions (HDIs) and Universities of Technology (UoTs).



## 7. OVERALL RESEARCH PUBLICATION AND WEIGHTED OUTPUTS UNITS

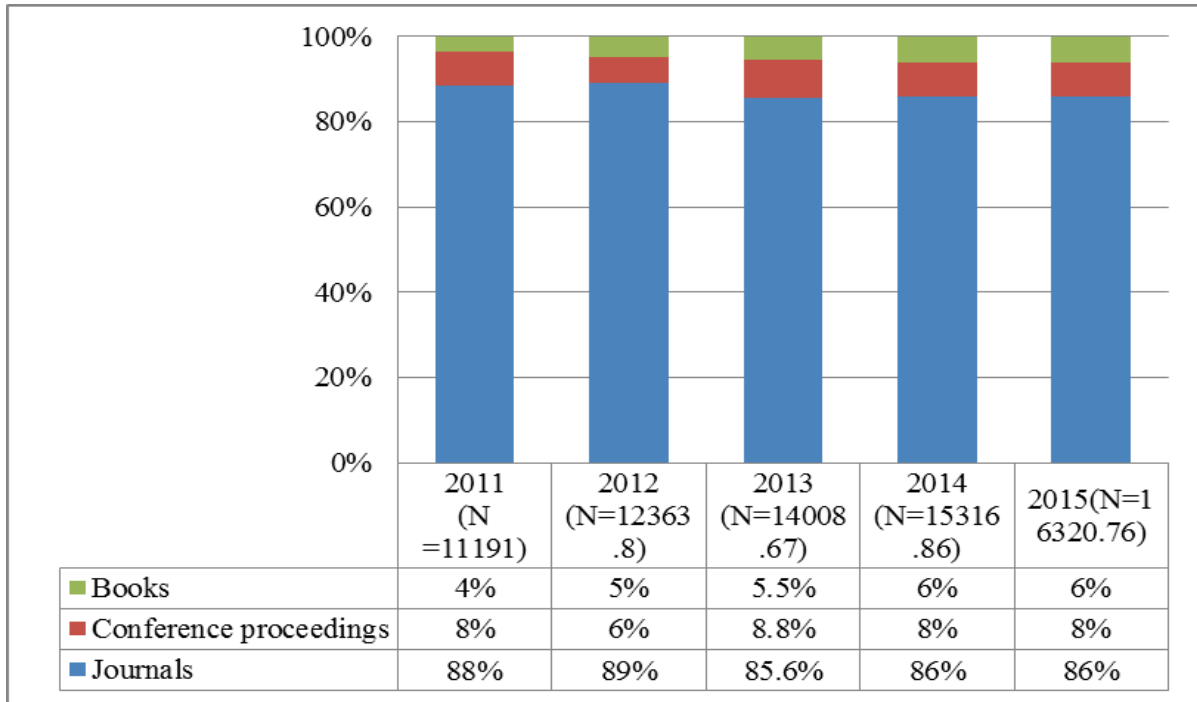
There has been an overall steady increase in research publication output units over the years since the inception of the current policy. **Figure 5** illustrates the contribution of the three publication types to this growth. Between 2011 and 2015, journal publication output units have increased by about 41.3%. During the same period (2011-2015), books increased by 141.1% while conference proceedings increased by 52%. Such considerable growth is a testament to the investment made by the Department and other funding entities. These are huge returns in investments for the country.



**Figure 5:** Total Research Output by type of publication, 2011-2015

**Figure 6** shows the proportional contribution of each publication type over the past five years. As in previous years, journal publications were the largest contributor to the overall output, with 86% of the overall units, followed by conference proceedings at 8% and book publications at 6%. The proportional contribution of books in the overall publication output units has increased from 4% in 2011 to 6% in 2015, a 2% increase.

The 2003 policy has been reviewed, and a new revised research output policy was published in March 2015 for implementation from 2016 onwards. The revised policy will increase the number of units to be allocated for book publications. The maximum amount of units that can be claimed for a book will be doubled to 10 units. Hopefully, this incentive will encourage researchers to publish books and thus increase this type of output.



**Figure 6:** Proportion of research output units by type of publication, 2011 – 2015

### ***7.1 Overall Publication Output Units by Classification of Education Subject Matter (CESM) Category***

An analysis of the Classification of Education Subject Matter (CESM) aggregated for all publication types (journals, books and conference proceedings), indicates the most productive research output subject areas in general and per institution. This information can assist individual institutions to focus their efforts in developing their niche or areas of potential. In analysing research outputs by CESM category, consideration should be given to the fact that research publications can be affected by different patterns of authorship; frequency of publications; the time it takes to complete research and the publication waiting period for some publications, especially journals and books. This categorisation should be regarded as an indicator rather than be taken as an absolute, particularly if the analysis is over a number of years. The Department began this categorisation in its analysis of publications outputs in 2010.

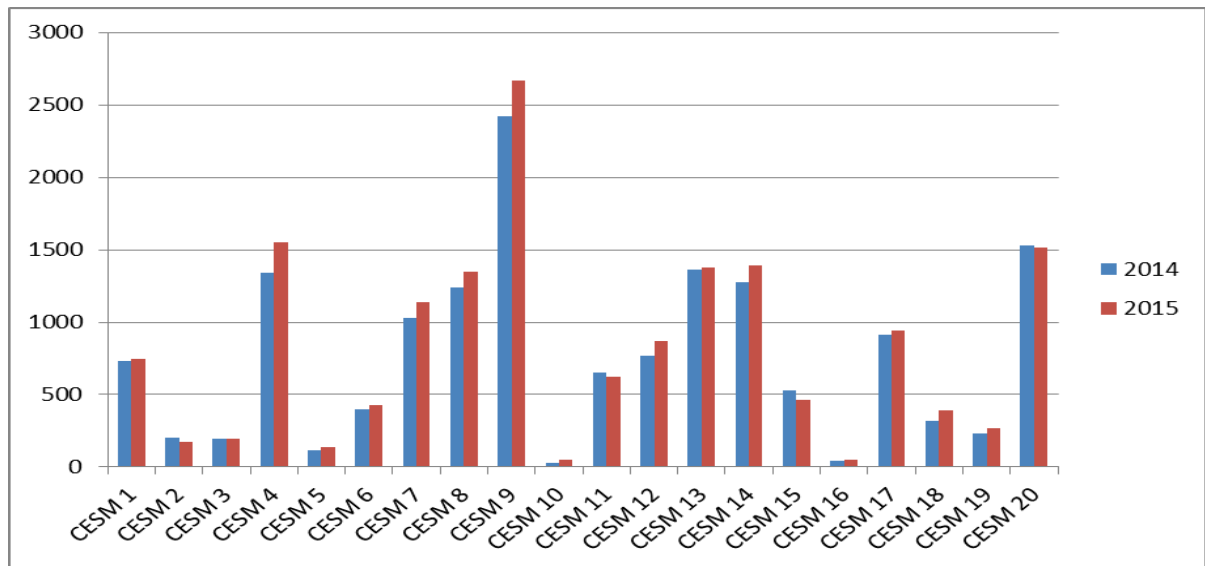
The purpose of the categorisation is not necessarily to compare CESM categories as there may be differences in the number of academics; the development and resourcing of the relevant fields by institutions and other factors. Instead, it should be used to identify potential for possible policy improvement and resource allocation at institutional level. The total publication output units by CESM categories for 2014 and 2015 are shown in **Table 9**.



**Table 9:** Total Research Output Units by CESM Categories, 2014 and 2015

CESM Category	2014		2015		% increase/decrease from 2014 to 2015
	No. of units	% of total	No. of units	% of total	
09: Health Professions and Related Clinical Sciences	2419.84	15.8	2667.9	16.3	10.2%
04: Business, Economics and Management Sciences	1337.72	8.7	1553.91	9.5	16.1%
20: Social Sciences	1529.89	10.0	1517.75	9.3	-0.7%
14: Physical Sciences	1277.51	8.3	1393.12	8.5	9%
13: Life Sciences	1364.76	8.9	1374.41	8.4	0.7%
08: Engineering	1238.82	8.1	1345.65	8.2	8.6%
07: Education	1027.95	6.7	1134.36	7.0	10.3%
17: Philosophy, Religion and Theology	913.37	6.0	945.19	5.8	3.4%
12: Law	765.49	5.0	869.02	5.3	13.5%
01: Agriculture, Agricultural Operations and Related Sciences	728.65	4.8	743.79	4.6	2%
11: Languages, Linguistics and Literature	649.6	4.2	621.89	3.8	-4.2%
15: Mathematics and Statistics	528.62	3.5	461.42	2.8	-12.7%
06: Computer & Information Sciences	396.71	2.6	427.24	2.6	7.6%
18: Psychology	319.28	2.1	388.21	2.4	21.5%
19: Public Management and Sciences	232.26	1.5	267.18	1.6	15%
03: Visual Arts and Performing Arts	198.52	1.3	196.17	1.2	-1.1%
02: Architecture and Built Environment	202.14	1.3	173.66	1.1	-14%
05: Communication, Journalism and Related Studies	118.79	0.8	139.46	0.9	17.4%
10: Family Ecology and Consumer Sciences	25.58	0.2	52.03	0.3	103.4%
16: Military Sciences	41.36	0.3	48.4	0.3	17%
<b>Total</b>	<b>15316.9</b>	<b>100</b>	<b>16320.76</b>	<b>100</b>	<b>6.5%</b>

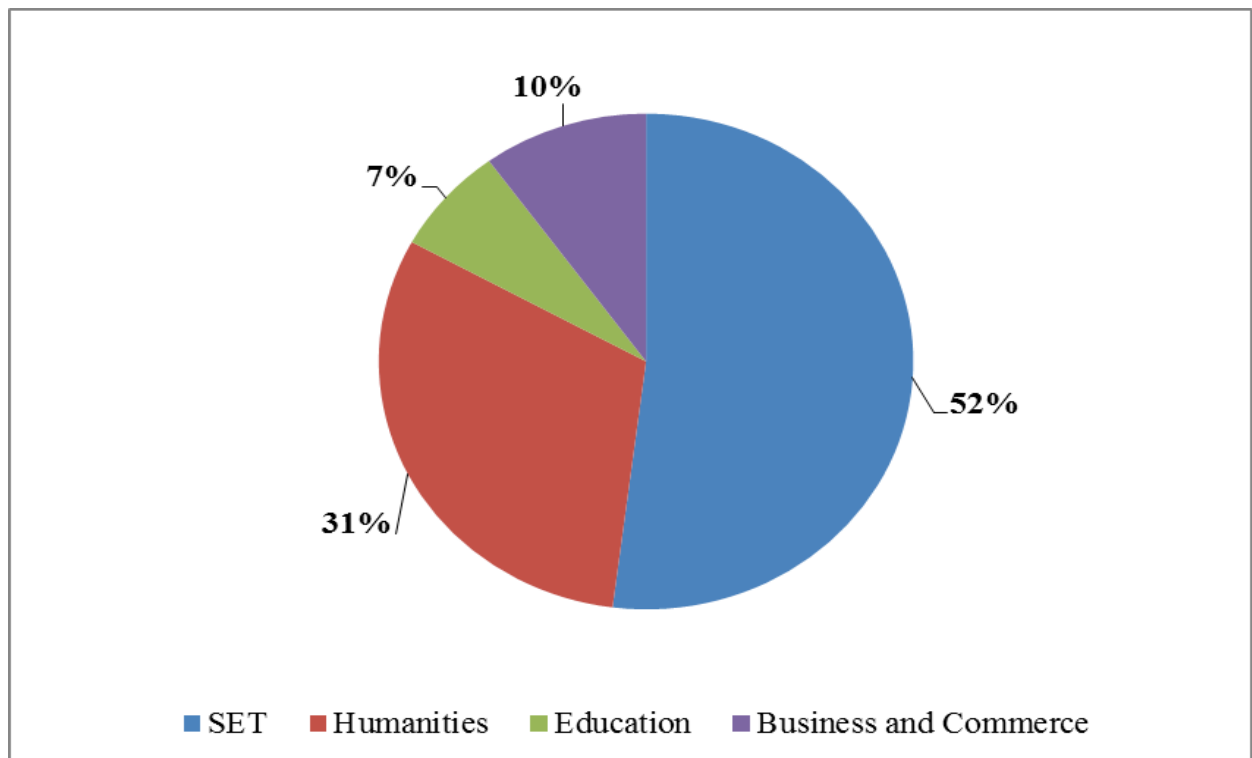
The order, from highest to lowest, of the overall research publications units per CESM has not changed from the one observed under journal output units, since 86% of the publication output units emanates from the journals. **Figure 7** presents a graphical representation of the CESM trend in 2014 and 2015.



**Figure 7:** Total output by Classification of Education Subject Matter (CESM) Category

### 7.2 Overall Publication Output Units by Broad Field of Study

The proportion of overall publication outputs units is highly skewed towards the SET field as shown in **Figure 8** below. Analysis of the 2015 output units by broad scientific field of study shows that more than half (52.%) of all output units are produced by researchers in the Science, Engineering and Technology (SET) fields, followed by Humanities (31%), Business and Commerce (10%) and Education (7%).



**Figure 8:** Total publication output units by broad field (2015)



### 7.3 Overall Research Output Units by Institution

The Research Output Subsidy is allocated to public higher education institutions based on the overall research outputs units which include units for publication outputs, research Masters graduates and Doctorate graduates. **Table 10** below shows both the per capita output units (i.e. publications output units per permanently employed academic per annum) as well as the weighted per capita research output units (i.e. output units per permanently employed academic per annum, including publications, Research Masters and PhD graduates).

**Table 10:** Weighted Research Per Capita Output According to the Norms, 2015

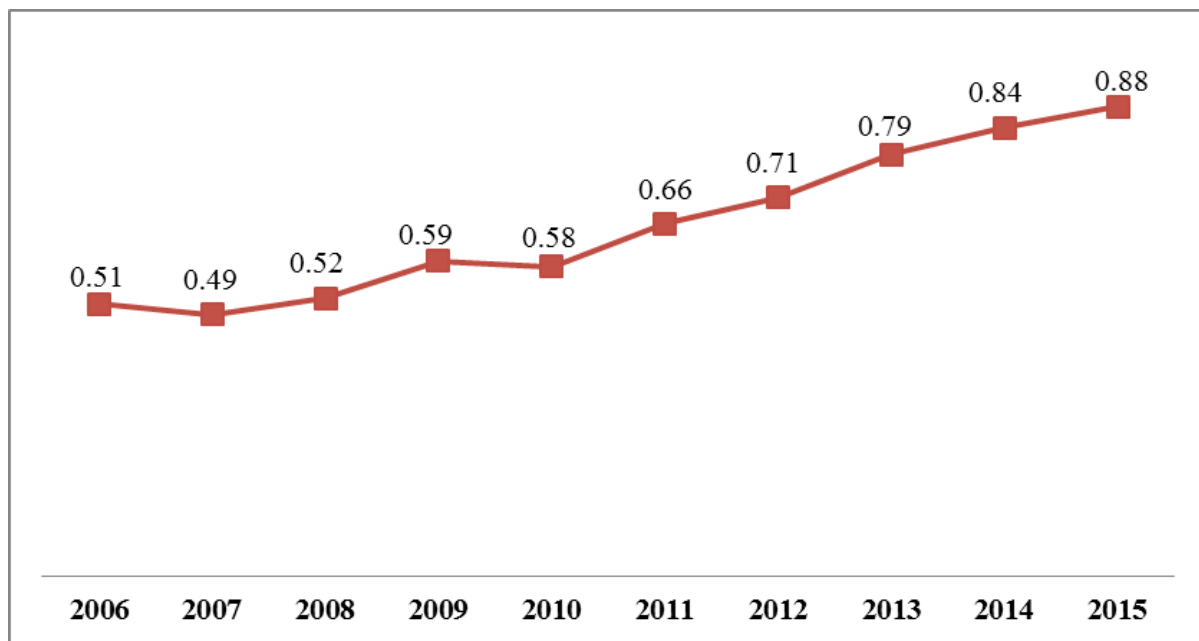
Institution	Headcount of permanently employed academics (a)	Research Publications in Units (1)	Per Capita Research Publications Units (1/a)	Research Masters Graduates in Units (2)	Doctorate Graduates in Units (3)	Total Weighted Research Output (1+2+3)	Weighted Output per capita (1+2+3)/a
UP	1192	1837.00	1.54	1023	999	3859.00	3.24
SUN	1076	1416.64	1.32	924	801	3141.64	2.92
RU	318	487.21	1.53	195	207	889.21	2.80
UKZN	1341	1763.25	1.31	799	1014	3576.25	2.67
UCT	1179	1653.45	1.40	595	669	2917.45	2.47
WITS	1144	1554.64	1.36	588	609	2751.64	2.41
UFH	345	336.56	0.98	153	180	669.56	1.94
UJ	1108	1279.80	1.16	350	315	1944.80	1.76
NWU	1453	1250.25	0.86	519	666	2435.25	1.68
UWC	645	497.21	0.77	274	288	1059.21	1.64
UFS	845	711.24	0.84	287	291	1289.24	1.53
UNISA	1715	1328.60	0.77	513	705	2546.60	1.48
NMMU	624	398.50	0.64	266	240	904.50	1.45
UL	543	276.48	0.51	169	75	520.48	0.96
UV	388	271.63	0.70	71	24	366.63	0.94
DUT	577	235.62	0.41	121	87	443.62	0.77
UZ	295	130.40	0.44	33	54	217.40	0.74
TUT	963	301.86	0.31	177	183	661.86	0.69
CUT	288	106.48	0.37	34	30	170.48	0.59
CPUT	807	212.57	0.26	127	57	396.57	0.49
SMU	504	110.39	0.22	55	24	189.39	0.38
UMP	45	16.77	0.37	0	0	16.77	0.37
VUT	367	76.16	0.21	32	27	135.16	0.37
WSU	582	49.41	0.08	12	45	106.41	0.18
MUT	193	18.64	0.10	0	0	18.64	0.10
<b>TOTALS</b>	<b>18537</b>	<b>16320.76</b>	<b>0.88</b>	<b>7317</b>	<b>7590</b>	<b>31227.76</b>	<b>1.68</b>





The University of Pretoria achieved the highest weighted per capita research publications output with 3.24 units, followed by SUN with 2.92 units. The University of KwaZulu-Natal produced the highest number of Doctoral graduates (338 = 1014 units). The University of Pretoria produced the most graduates at Masters' level (no. of graduates = 1023) in 2015 followed by SUN (no. of graduates = 924).

**Figure 9** below shows the publication output units per permanent academic staff member from 2006 to 2015. The average total publication output units per permanent academic staff member (or per capita output) for all institutions for 2015 was 0.88 units, a slight increase from 0.84 units in 2014, and 0.79 units in 2013. Generally, the per capita output across institutions has been on the increase at least since the current policy came into effect, albeit at a slow pace for some institutions.



**Figure 9:** Per capita output units (2006-2015)

The per capita output units show a 73% increase between 2006 and 2015. This reflects an average annual growth of 7.3%. Not all Higher Education Institutions in South Africa are at the same level of research activity and when institutional data is compared there are huge differences in performance between institutions.

**Table 11** shows permanently employed research staff with either a Masters or PhD as highest qualification in 2014 and 2015. UCT has the highest proportion (67%) of academics with a doctorate (taken as a proportion of its permanently employed staff), followed by UP at 63%.



**Table 11: Permanently employed academics by qualification, 2014 and 2015**

Institutions	Permanently Employed Academics by qualifications									
	2014				2015				Academics with Masters and PhD as Highest Qualifications	
	Academics with Masters as Highest Qualifications		Academics with PhD as Highest Qualifications		Academics with Masters as Highest Qualifications		Academics with PhD as Highest Qualifications			
	Head count	% of total staff	Headcount	% of total staff	Headcount	% of total staff	Headcount	% of total staff	2014	2015
UNISA	533	31%	690	40%	532	31%	732	43%	1223	1264
NWU	398	30%	699	52%	435	30%	734	51%	1097	1169
UKZN	470	35%	670	50%	480	36%	655	49%	1140	1135
UP	334	28%	724	62%	360	30%	754	63%	1058	1114
UCT	301	26%	772	67%	309	26%	787	67%	1073	1096
WITS	313	29%	661	62%	329	29%	701	61%	974	1030
UJ	451	41%	478	43%	462	42%	484	44%	929	946
SUN	256	25%	639	62%	260	24%	646	60%	895	906
UFS	458	46%	413	42%	363	43%	396	47%	871	759
TUT	350	37%	217	23%	386	40%	258	27%	567	644
CPUT	372	48%	155	20%	386	48%	187	23%	527	573
UWC	199	32%	332	54%	200	31%	358	56%	531	558
NMMU	203	34%	278	46%	210	34%	276	44%	481	486
DUT	281	49%	112	19%	291	50%	125	22%	393	416
UL	335	36%	154	16%	217	40%	139	26%	489	356
UNIVEN	167	45%	129	35%	173	45%	130	34%	296	303
WSU	200	34%	84	14%	210	36%	79	14%	284	289
UFH	136	41%	142	43%	138	40%	145	42%	278	283
RU	112	32%	191	54%	104	33%	175	55%	303	279
SMU	0	0%	0	0%	183	36%	76	15%	0	259
UNIZULU	111	39%	102	36%	118	40%	113	38%	213	231
VUT	151	40%	60	16%	164	45%	59	16%	211	223
CUT	121	41%	96	23%	123	43%	92	32%	217	215
MUT	87	46%	20	11%	91	47%	25	13%	107	116
UMP	2	5%	0	0%	16	36%	1	2%	2	17
<b>Totals</b>	<b>6341</b>	<b>35%</b>	<b>7818</b>	<b>43%</b>	<b>6540</b>	<b>35%</b>	<b>8127</b>	<b>44%</b>	<b>14159</b>	<b>14667</b>

The sector's overall number of academics with a PhD qualification increased slightly from 43% in 2014 to 44% in 2015. Government, including the DHET, the Department of Science and Technology (DST), and the National Research Foundation (NRF), is eager to improve staff qualifications at universities, particularly at doctoral level, through various funding mechanisms including the Research Development Grant (RDG). It is well known that institutions with a higher number of academics with PhDs are more research active and generally show a higher rate of research productivity.



## 8. GENERAL OBSERVATIONS AND CONCLUSIONS

Research productivity has been on a steady rise across all institutions, at least over the past ten years, particularly publications in journals. The continued increase in productivity could be attributed to a number of factors including an increase in the number of researchers with a PhD qualification; the ability of institutions and researchers to attract research funding from various sources locally and abroad; improved infrastructure and of course the incentive funding from government including from the Department in the form of research output subsidy and the research development grants. Institutions are encouraged to analyse their institutional research output data, together with the Higher Education Management Information System (HEMIS) data in order to learn patterns and influence targeted development.

The quality of research outputs produced by the sector is still under threat from a few individuals whose focus is to accrue subsidy by all means even if it means disregarding principles of scholarly publishing. The Department has had a number of researchers coming forth reporting certain suspect journals or publishers. Researchers are urged to continue assisting the Department in this matter so as to safeguard the quality and integrity of SA's research and improve its scholarship. Another new and emerging pattern of unethical practise is where individuals, for example members of editorial boards, primarily publish in the journals they are overseeing. This is a great concern due to possible conflict of interest by those individuals.

The Department reserves the right to withhold payment of research output subsidy in respect of any publication published in a journal that does not meet the criteria as outlined in the research output policy or where there is evidence of unethical conduct on the part of the researcher or publisher.

Institutions are advised to regulate appointing individuals, who are based elsewhere as honorary employees, for the purpose of claiming subsidy for the publications produced by these individuals. Such practices are counter-productive to the Department's targeted approach to develop institutions that are either showing potential or are less developed with regard to research and in developing the research potential of South African academics.



Institutions and researchers are reminded that the *Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions (2003)* has been replaced by the revised *Research Outputs Policy*, published in the Government Gazette (No.38552) in March 2015. The revised policy has been effective since January 2016. This means that all journal articles, books and conference proceedings published in 2016 have to meet the criteria as stipulated in the new policy, and that only research outputs published from 2016 onwards will be evaluated using the revised policy. Therefore, 2015 research outputs have been evaluated using the 2003 policy. The Department looks forward to the submission of 2016 research outputs claims by universities.

The Department has also realised that information pertaining to authors' demographics is lacking. Such information is necessary to understanding transformation patterns with regard to knowledge production. For reporting of 2016 research outputs and onwards, institutions are required to provide data on the demographics of the claiming author(s) to enable the Department to analyse transformation patterns on knowledge production by the public universities.