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REPORT ON THE EVALUATION OF THE 2013 UNIVERSITIES' RESEARCH OUTPUTS

JANUARY 2015

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

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Abbreviations

ASSAf	Academy of Science of South Africa
CESM	Classification of Educational Subject Matter
CPUT	Cape Peninsula University of Technology
CREST	Centre for Research on Evaluation, Science and Technology
CUT	Central University of Technology
DHET	Department of Higher Education and Training
DST	Department of Science and Technology
DUT	Durban University of Technology
DVC	Deputy Vice Chancellor
HEIs	Higher Education Institutions
IBSS	International Bibliography of Social Science
ISBN	International Standard Book Number
ISI	Institute of Science Information
MJSS	Mediterranean Journal of Social Sciences
MUT	Mangosuthu University of Technology
NMMU	Nelson Mandela Metropolitan University
NRF	National Research Fund
NWU	North West University
ROE	Research Outputs Evaluation
RU	Rhodes University
SciSTIP	Centre of Excellence in Scientometrics and Science, Technology and Innovation Policy
SET	Science, Engineering and Technology

SMU	Sefako Makgatho Health Sciences University
SU	Stellenbosch University
TUT	Tshwane University of Technology
UCT	University of Cape Town
UFH	University of Fort-Hare
UFS	University of the Free State
WITS	University of the Witwatersrand
UJ	University of Johannesburg
UKZN	University of Kwa-Zulu Natal
UL	University of Limpopo
UNIVEN	University of Venda
UNISA	University of South Africa
UNIZULU	University of Zululand
UP	University of Pretoria
UWC	University of the Western Cape
VUT	Vaal University of Technology
WSU	Walter Sisulu University

1. Introduction

In terms of the *Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions (Research Output Policy) (2003)*, all public Higher Education Institutions (HEIs) must annually submit their subsidy claims for research outputs, in the form of publications, to the Department of Higher Education and Training (DHET). All research outputs submitted to the DHET for subsidy claims must meet the criteria as defined in the policy. The DHET allocates research subsidy based on unit calculations for approved publications. The policy aims to “encourage research productivity by rewarding quality research output at public higher education institutions”. It hopes to “enhance productivity by recognising the major types of research output produced by higher education institutions and further use appropriate proxies to determine the quality of such output”.

The policy defines research as “original, systematic investigation undertaken in order to gain new knowledge and understanding”. The policy indicates specific textual outputs for subsidy and that publications should “disseminate original research and new developments within specific disciplines, sub-disciplines or fields of study”. According to the policy, the target audience for all publications must be specialists in the specific field. This includes academic peers, but not normally students or practitioners. As stated before and in the policy, the Department is aware of other forms of research that take place at public institutions of higher learning and that the criteria for recognition of outputs for subsidy purposes are not necessarily indicators of value or quality of the research that is undertaken at public institutions. Among other forms of research, which are not recognised for subsidy purposes, are creative outputs, artefacts, patents, textbooks and articles in non-accredited journals. In this regard, institutional policies should take cognisance of such outputs and encourage growth in the types of research that is aligned with the institution’s mission and vision. 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.

It is against the above background that this report presents an analysis of the processes, procedures and outcomes of the research publication outputs for 2013 (assessed in 2014). Late publications for the year 2012 (n-2) were also considered where valid and legitimate reasons for late submission were provided and accepted, but submissions dating before 2012 (n-3 and beyond) were not considered, as per the Policy. As such, this report contains analysis of the number of units awarded to institutions for subsidy-earning research outputs in accredited journals, books, and published conference proceedings published in 2013.

Universities receive research subsidy for weighted research outputs. Weighted research output is calculated on the basis of set norms (targets) per permanently-employed academic/researcher at each institution and includes subsidy units for research Masters and Doctoral graduate outputs. This report largely focuses on accredited research publications and states specifically those instances where Masters and Doctoral graduates are included in the analysis.

2. Process and Procedures

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.

All 23 universities submitted their 2013 research outputs for the purposes of subsidy claims in May 2014. 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 of research outputs by the DHET approved mechanisms. In previous years, the research outputs were only evaluated by a Research Outputs Evaluation (ROE) Panel appointed by the Department. This Panel is comprised of Deputy Vice-Chancellors responsible for research at their respective

institutions. The Panel is chaired by Prof Tshilidzi Marwala, Deputy Vice-Chancellor: Research, University of Johannesburg. Other members of the Panel are:

Prof Danie Visser	DVC: Research, University of Cape Town
Prof Jan Crafford	DVC: Academic, University of Venda
Prof Peter Clayton	DVC: Research & Development, Rhodes University
Prof Robin Crewe	Vice-Principal: Faculties, University of Pretoria
Dr Thandi Mgwebi	Executive Director: IEPD, NRF
Prof Thoko Mayekiso	DVC: Research and Engagement, Nelson Mandela Metropolitan University
Prof Mamokgethi Phakeng	DVC: Research and Innovation, University of South Africa
Prof Urmilla Bob	Dean: Research, University of KwaZulu-Natal
Prof Rob Midgley	DVC: Research and Innovation, University of Zululand

In order to bring credibility and transparency, and to improve the evaluation process, the Department provided for expert/discipline-based subpanels to evaluate books and conference proceedings in 2014, with the ROE Panel having complete oversight of the process. The Academy of Science of South Africa (ASSAf) was approached to assist the Department in evaluating the research outputs due to their existing capacity in evaluating South African journals for scholarliness.

In April 2014, the Department commissioned ASSAf to undertake a pilot study for the review of scholarly books and conference proceedings through expert/discipline-based panels for the 2014 reporting year (publications produced in 2013). ASSAf established 8 field-specific peer review panels to evaluate books and conference proceedings using evaluation criteria developed by ASSAf based on the DHET's research output policy. Panel members were drawn from the ranks of researchers and other experienced scholars in and around the fields concerned in each case, as well as from other persons with practical publishing experience. While Panel members were drawn primarily from the

universities, there were also members from science councils. Following the field-specific panel evaluation meetings which took place on 16 and 17 July 2014, ASSAf produced a report for the DHET's ROE Panel to make the final recommendations on which books and conference proceedings qualify for subsidy.

The ROE Panel met on 2 September 2014 to make its final recommendations on the ASSAf-led discipline-based panel evaluations. The ROE Panel considered and approved the report submitted by ASSAf in respect of the approved publications. The ROE Panel reconsidered all books and conference proceedings that were not recommended for subsidy by the discipline-based panels and these were, therefore, re-evaluated.

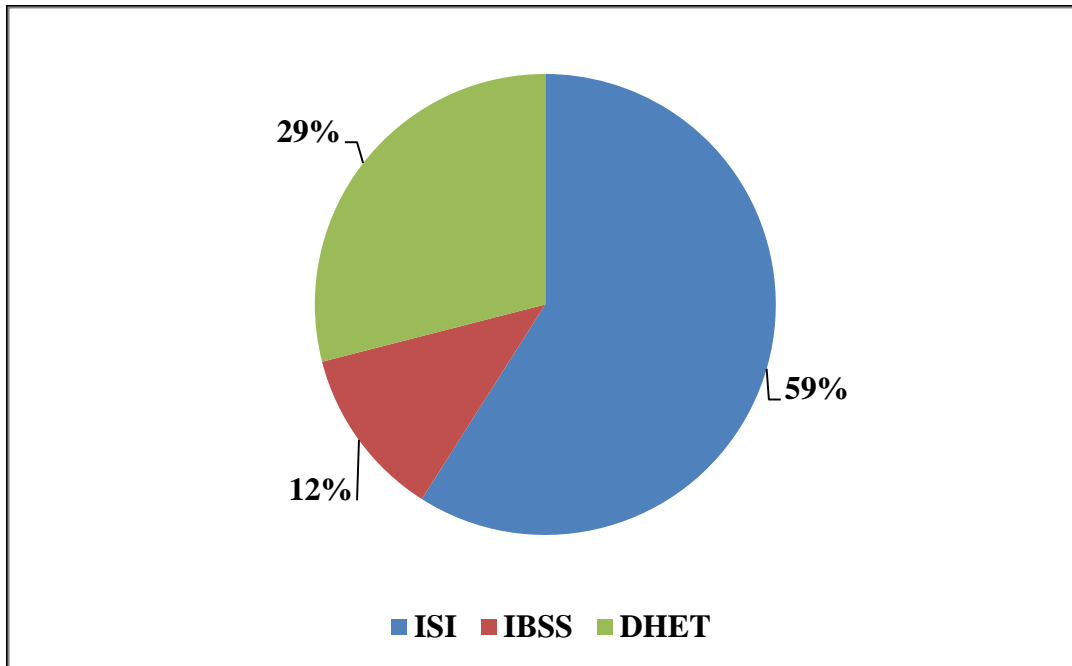
The Directorate: University Policy and Development Support provided the necessary administrative support, such as recording the decisions of the Panel and calculating the number of units allocated to each institution for publications in scholarly books and approved published conference proceedings. The Directorate also verified audited claims for publications in accredited journals submitted by the universities, and calculated the final unit allocations for each institution.

The Directorate once again observed that the quality of submissions has improved from previous years particularly at those institutions making use of well-developed and customised software for this purpose. This suggests that the data management systems are assisting institutions with their research outputs.

3. Journal Publication Output Units

Publications in journal titles have continued to show a healthy growth as in previous years. In 2013, journal publication output units increased from 11 035.72 units in 2012 to 11 997.38, a 8.7% growth. Publications in journals listed on the approved international indices, which are Thomson Reuters ISI Web of Science Indices and the ProQuest IBSS index, remain collectively high, at 59% and 12%, respectively (71% combined) (see Figure 1). The overall proportion of publications in journals listed on the two international indices dropped by a percentage, from 72% in 2012 to 71% in 2013.

Figure 1: Journal output by index, 2013



Overall, the total number of journal titles in all three DHET approved indices is 15 661, with ISI having 12 498 journals (80%), IBSS with 2 894 journals (18%) and the DHET with only 269 journals (a mere 2%). The 29% journal publication share towards the DHET list as shown in figure 1 can be both worrisome and exciting. The worrisome aspect is that journal titles in the DHET list do not even make 2% of the total journal titles when all three indices are combined. Unfortunately, there is also a high possibility that a large number of these journals have limited international exposure. With South Africa having a small pool of researchers who know each other and well-established researchers in most cases have collaboration links, whether in the past or present; this raises the question about quality and whether or not biased peer-review practices exist in local journals. Do editors select local experts for peer review processes? It is hoped that editors of local journals follow a thorough process and eliminate any kind of conflict of interest. The guiding principle in accepting or rejecting publications should be based solely on the quality of research.

The exciting part is that this could be a sign of expanding scholarship in the country and that about the third of the research being conducted in the country is addressing regional needs. However, the sector should be striving for more international exposure as this could also be a reflection of quality and impact. Table 1 shows journal publication units accrued in the DHET/SA journal list and their distribution per CESM category.

Table 1: 2013 Journal publication output units accrued in the DHET/SA journal list, by CESM Category.

CESM category	Journal units	% total
CESM 9(Health profession and related clinical sciences)	621.33	18%
CESM 17(Philosophy, religion and theology)	579.33	16.8%
CESM 12(Law)	375.61	10.9%
CESM 7(Education)	326.31	9.5%
CESM 4(Business, economics and management studies)	316	9.2%
CESM 20(Social sciences)	306.19	8.9%
CESM 11(Languages, linguistics and literature)	267.98	7.8%
CESM 3(Visual and performing arts)	103	3%
CESM 18(Psychology)	94.81	2.7%
CESM 19(Public management and services)	94.88	2.7%
CESM 13(Life sciences)	64.59	1.9%
CESM 5(Communication, journalism and related studies)	50.49	1.5%
CESM 8(Engineering)	53.48	1.5%
CESM 6(Computer and information sciences)	47.91	1.4%
CESM 2(Architecture and building environment)	39.18	1.1%
CESM 1(Agriculture, agricultural operations and related sciences)	35.15	1%
CESM 14(Physical sciences)	33.39	1.0%
CESM 15(Mathematics and statistics)	21.66	0.6%
CESM 10(Family ecology and consumer sciences)	10.41	0.3%
CESM 16(Military sciences)	7.00	0.2%
Total	3448.70	100%

Most publication units were awarded for CESM 9 (Health profession and related clinical sciences) and CESM 17 (philosophy, religion and theology) totalling 621.33 (18%) and 579.33 (16.8%), respectively. These were followed by CESM 12 (Law) with 375.61 units (10.9%); CESM 7 (Education) with 326.31 units (9.5%); CESM 4 (Business, economics and management studies) with 316 (9.2%); CESM 20 (Social sciences) with 306.19 units (8.9%); and CESM 11 (Language, Linguistics and Literature) with 267.98 units (7.8%).

Collectively these CESMs made up 81.1% of the publications in DHET/SA approved journals.

How does an index with less than 2% of the total journal titles enjoy 29% of the overall journal outputs publication units? What factors are influencing our HEIs to publish in the DHET list? This needs to be looked at thoroughly as it could have both positive and negative effects on the research and innovation within the HE sector.

Table 2 shows the breakdown of journal publications across the different indices per institution for 2013 and 2012. Table 1 shows that six institutions had at least 80% of their journal publications in international indices and these were UCT, WITS, UFH, RU, DUT and CPUT. UCT and RU had the most with both institutions publishing 87% of their journal outputs in international indices. This is great for global exposure as this exposes South African research to a global audience. The majority of the institutions are also doing relatively well in publishing in international indices with their proportion of publication in international indices lying between 60%-80%. UNISA, CUT and UNIZULU have at least 50% of their journal publications in local (SA) journal titles. UNISA had the most publication units in the local list, amounting to 538.15 units (56%). Overall, UKZN had the most journal publications with 74% in international indices and 26% in the DHET list. Closely behind UKZN in the overall publications is UP, with 77% of their publications in international indices.

NWU has shown a robust increase in journal publications in 2013, from 790.60 units in 2012 to 1009.68 units, an increase of 219.08 units, equating to a 28% growth. This is 3 times the overall growth of 8.7% experienced for all journal publication outputs for the entire system. Going forward, NWU is encouraged to publish more in international indices. Currently they publish 36% of their journal outputs in the DHET/SA list.

Table 2: Journal Publications Outputs by Index, 2013 and 2012

Institution	2013 journal units						2012 journal units					
	ISI	IBSS	Total international	% International	SA journal list	Total Journal outputs	ISI	IBSS	Total international	% International	SA journal list	Total Journal outputs
UKZN	929.2	169.46	1098.66	74%	391.12	1489.78	862.55	128.18	990.73	75%	338.39	1325.12
UP	953.65	129.58	1083.23	77%	331.77	1415	813.77	115.08	928.85	73%	348.50	1277.35
UCT	977.12	162.92	1140.04	87%	172.99	1315.03	930.97	107.88	1038.85	87%	152.48	1191.33
SU	848.28	68.96	917.24	74%	327.62	1244.86	799.12	64	863.12	74%	295.56	1158.68
WITS	841.1	86.05	927.15	83%	195.23	1122.38	759.55	90.72	850.27	84%	160.71	1010.98
NWU	484.58	153.26	637.84	64%	371.84	1009.68	434.21	86.42	520.63	66%	269.97	790.60
UNISA	137.9	247.65	385.55	46%	538.15	923.7	99.29	160.27	259.56	32%	552.87	812.43
UJ	365.75	90.7	456.45	70%	199.64	656.09	429.36	107.54	536.90	73%	201.74	738.64
UFS	304.48	58.83	363.31	63%	214.11	577.42	332.02	42.5	374.52	66%	191.55	566.07
RU	321.66	31.08	352.74	87%	52.75	405.49	285.20	23.00	308.20	88%	42.40	350.60
UWC	170.43	48.77	219.2	61%	140.82	360.02	165.97	63.14	229.11	67%	113.69	342.8
NMMU	131.81	39.76	171.57	68%	81.24	252.81	157.80	22.13	179.93	67%	88.59	268.52
UFH	142.58	30.75	173.33	82%	41.7	215.03	137.98	25.5	163.48	81%	38.35	201.83
TUT	125.24	18.88	144.12	69%	66.41	210.53	120.96	13.13	134.09	71%	55.71	189.80
UL*	80.89	36.24	117.13	58%	86.06	203.19	126.75	29.08	155.83	71%	62.36	218.19
UNIVEN	39.084	24.33	63.414	48%	68.616	132.03	49.20	18.18	67.38	60%	45.50	112.88
CPUT	70.46	11.9	82.36	81%	20.62	102.98	109.79	1.00	110.79	75%	36.33	147.12
DUT	49.24	30	79.24	80%	19.74	98.98	44.02	9.00	53.02	78%	14.75	67.77
UNIZULU	38.02	2.08	40.1	49%	41.98	82.08	43.83	0.5	44.33	64%	25.45	69.78
VUT	17.45	13.41	30.86	64%	39.02	69.88	23.57	0.5	24.07	36%	42.52	66.59
CUT	12.65	12.99	25.64	47%	29.38	55.02	11.27	18.74	30.01	55%	24.32	54.33
WSU	17.05	11.3	28.35	71%	11.75	40.1	26.32	23.63	49.95	87%	7.67	57.62
MUT	6.15	5	11.15	73%	4.15	15.3	12.36	4.00	16.36	98%	0.33	16.69
TOTAL	7064.774	1483.9	8548.674	72%	3446.706	11997.38	6775.86	1154.12	7929.98	16.28	3109.74	11035.72

* = Includes 57 units for Medunsa campus of UL, which will accrue to Sefako Makgatho Health Sciences University (SMU)

3.1 Journal publication output units by Classification of Education Subject Matter

(CESM) category

Table 3 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 17.9% of all journal publication output units in 2013. This is followed by CESM 13 (Life Sciences) with 10.8% and CESM 20 (Social Sciences) with 8.6% of all units. CESM categories 5, 2, 10, and 16 accrued less than 1% each of overall research publication output units. In analysing research output by CESM category, however, many factors must be considered, including 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. Smaller proportions could actually mean that other forms of output not recognised in the Policy could be the major outputs in those particular CESM categories.

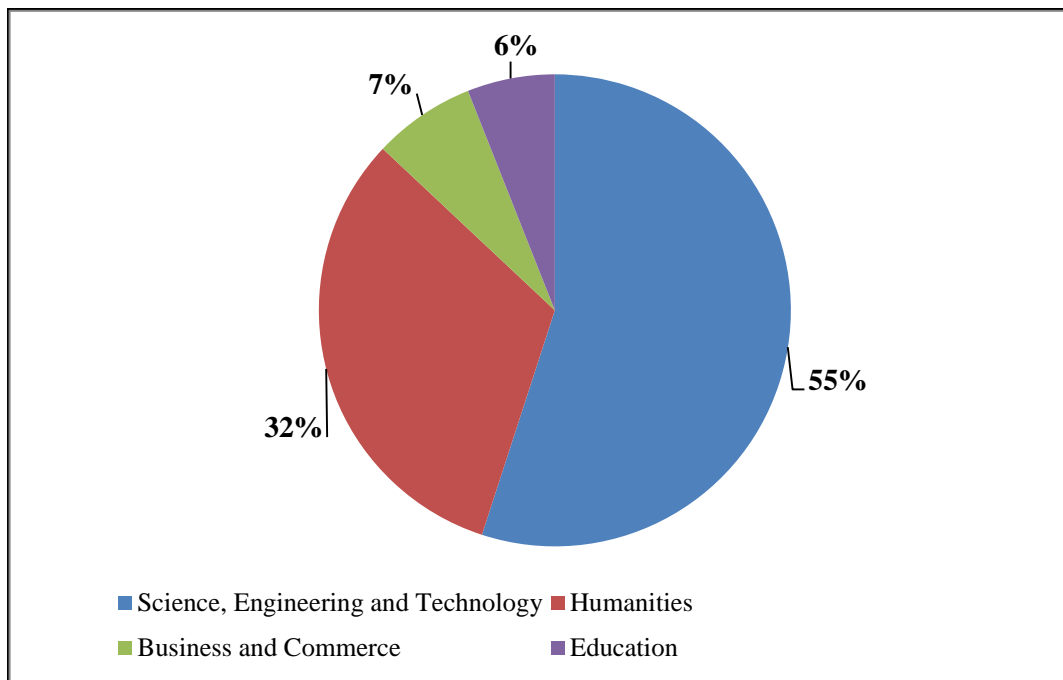
Table 3: Journal publication output units by CESM Category, 2013 and 2012

CESM category	2013		2012		% increase from 2012 to 2013
	No. of Units	% of Total	No. Of Units	% of Total	
09: Health profession and related clinical sciences	2146.38	17.9%	1862.32	16.9%	15%
13: Life Sciences	1293.46	10.8%	1108.53	10.0%	17%
20: Social Sciences	1035.1	8.6%	861.6	7.8%	20%
14: Physical Sciences	1034.71	8.6%	1005.51	9.1%	3%
04: Business, Economics and Management Studies	884.96	7.4%	910.33	8.2%	-3%
01: Agriculture, Agricultural operations and related sciences	836.46	7.0%	937.34	8.5%	-11%
17: Philosophy, Religion and Theology	822.39	6.9%	655.38	5.9%	25%
07: Education	680.93	5.7%	714.82	6.5%	-5%
12: Law	683.31	5.7%	642.45	5.8%	6%
08: Engineering	670.63	5.6%	598.5	5.4%	12%
11: Languages, Linguistics and Literature	493.13	4.1%	469.41	4.3%	5%
15: Mathematics and Statistics	448.49	3.7%	398.22	3.6%	13%
18: Psychology	268.02	2.2%	243.8	2.2%	10%
19: Public Management and Services	185.47	1.5%	156.62	1.4%	18%
03: Visual and Performing Arts	161.83	1.3%	140.83	1.3%	15%
06: Computer and Information Sciences	144.9	1.2%	112.65	1.0%	29%
05: Communication, Journalism and related studies	98.4	0.8%	87.47	0.8%	12%
02: Architecture and Building Environment	75.53	0.6%	81.1	0.7%	-7%
10: Family ecology and Consumer Sciences	19.41	0.2%	28.36	0.3%	-32%
16: Military Sciences	13.87	0.1%	24.45	0.2%	-43%
TOTAL	11997.38	100%	11035.72	100.0%	

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 (55%) of the units in the Science, Engineering and Technology (SET); followed by Humanities with 32%; Business and Commerce with 7%; and Education with 6% (see Figure 2).

Figure 2: Journal Output by Broad Field, 2013



Note: The CESM categories in each broad field are:

Science, Engineering and Technology = CESM categories 1, 6, 8, 9, 10, 13, 14, 15 and 16;

Humanities = CESM categories 2, 3, 5, 11, 12, 17, 18, 19, and 2;

Education = CESM 7; and

Business and Commerce = CESM 4.

4 Book Publication Output Units

Book publications have seen a significant increase in 2013. Research publications in scholarly books for 2013 amounted to 774.37 units, up from 580.8 units in 2012, representing a 33.3% growth. Although this is a massive growth, book publications continue to constitute the least produced research output, accounting for only 6% of the overall 2013 output units. This lower productivity in books could be mainly due to the fact that it takes longer to produce books publications compared to the other types of outputs recognised by the Policy. The revised 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. Therefore, the projected increase in units for book publications will likely see books overtake conference proceedings in future and also act as an incentive for more researchers to produce this type of output.

A total of 144.81 units (15.8% of the total book units claimed) were rejected for various reasons. All rejected books and the reasons for rejection are listed in each institutional report. The most common two reasons for the non-acceptance of books remain the same as in previous years: firstly book publications were found not to be scholarly and; secondly, peer review evidence was lacking, ambiguous or inadequate. This year, there was also a number of books submitted that had a 2014 publication date. These books should be submitted in 2015 together with all publications produced in 2014.

The 2013 rejection rate of 15.8% is the lowest we have witnessed in recent years. For example, 43% of units claimed for 2012 outputs were rejected. This significant drop in rejection can be attributed to the use of discipline-based evaluation panels. One of the challenges that the ROE Panel often encountered was with regard to the scholarly nature of books in certain disciplines. The Panel acknowledged that such books would be better evaluated by experts in the respective discipline. The use of discipline-based panels therefore ensured that each book was assessed by experts in the field, and eliminated the rejection of books based on technicality.

Table 4 shows book publication output units and percentages accrued to each individual university. The University of Cape Town (UCT) accrued the highest proportion of book units (14.4%) followed by University of Witwatersrand (WITS) at 14.1%. The five highest producing institutions accounted for 62.7% of all book publications, 33.1% was produced by the next seven institutions, while the remaining eleven institutions only produced 4.1%. As shown in table, the majority of institutions experienced increases in the number of units between 2012 and 2013 except RU which experienced a 43% decrease. UL and VUT did not submit any books for 2013 publication year, while UNIZULU submitted a total of 1.22 units, and had none approved.

Table 4: Percentage of book publication output units per institution, 2013 and 2012

Institution	2013		2012		% increase from 2012 to 2013
	Book units	% of total books	Book units	% of total books	
UCT	111.61	14.4%	93.44	16.10%	19%
WITS	109.45	14.1%	54.13	9.30%	102%
SU	105.41	13.6%	91.56	15.80%	15%
UP	80.7	10.4%	72.48	12.50%	11%
UKZN	79.09	10.2%	64.63	11.10%	22%
UJ	58.83	7.6%	31.36	5.40%	88%
UFS	58.19	7.5%	49.58	8.50%	17%
NWU	39.88	5.1%	28.51	4.90%	40%
UNISA	38.21	4.9%	32.45	5.60%	18%
UWC	29.62	3.8%	12.44	2.10%	138%
RU	20.17	2.6%	35.46	6.10%	-43%
DUT	11.8	1.5%	0.47	0.10%	2411%
UFH	8.64	1.1%	2.24	0.40%	286%
UV	7.59	1.0%	7.1	1.20%	7%
NMMU	5.12	0.7%	4.22	0.70%	21%
WSU	4.31	0.6%	0	0%	0%
CPUT	2.54	0.3%	0.1	0.02%	2440%
TUT	2.31	0.3%	0.26	0.04%	788%
MUT	0.46	0.1%	0	0%	0%
CUT	0.44	0.1%	0	0%	0%
UZ	0	0.0%	0	0%	0%
UL	0	0.0%	0.37	0%	-100%
VUT	0	0.0%	0	0%	0%
Total	774.37	100%	580.8	100%	

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

The majority of CESM categories experienced an increase in the number of units awarded for book publications in 2013 as compared to 2012. The highest number of units (over 5% of total) for book publications were accrued to each CESM category as follows: CESM 20 (Social Sciences) accounted for 29.9% of all approved book publications; CESM 11 (Language, Linguistics & Literature) 13.8%; CESM 17 (Philosophy, Religion & Theology) 12.4%; CESM 12 (Law) 10.8%; and CESM 7 (Education) 6% (Table 5). CESM category 10 (Family Ecology and Consumer Sciences) accounted for less than one book unit (0.64) (there

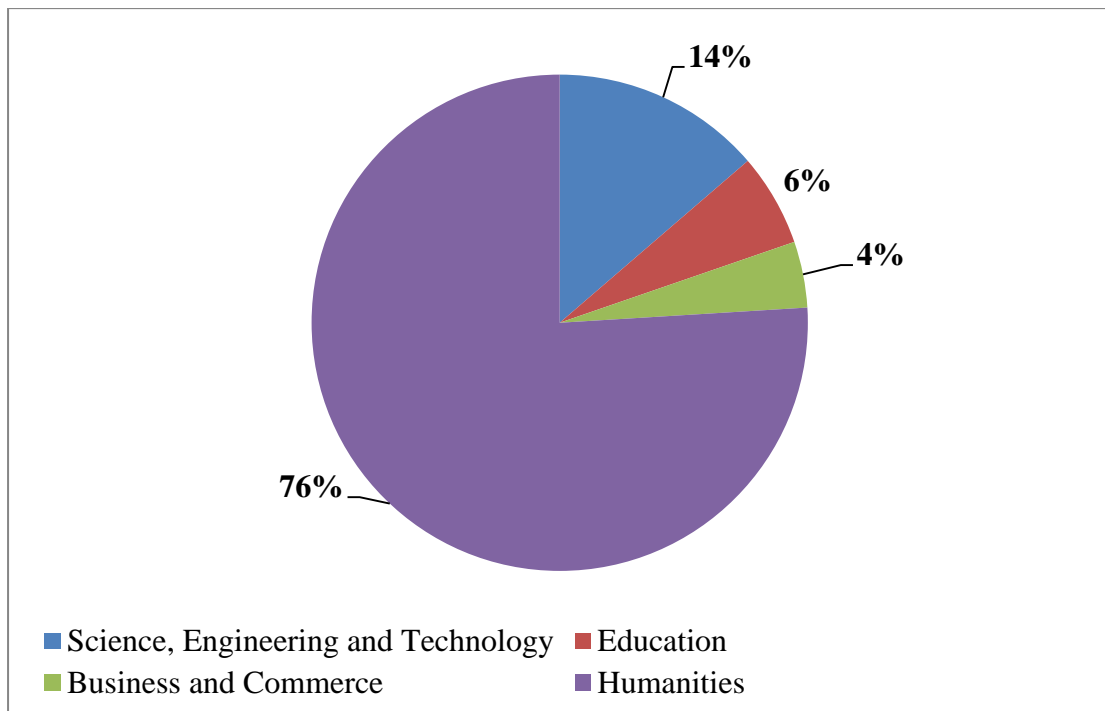
were no book units awarded to CESM 10 for 2012 publications). Encouragingly in 2013, there were dramatic increases in the number of units for CESM 18 (psychology), CESM 08 (Engineering) and CESM 15 (Mathematics and Statistics) compared to 2012 where they were among the lowest, thus a sign that other fields are recognising books as major type of publication. Also, to note is that some CESM categories that had the most share under journal publications command a lesser share in book publications, an indication that each CESM has differing strengths in types of outputs including those not recognised by the Policy.

Table 5: Book Publications by CESM Categories, 2013 and 2012

CESM category and field	2013		2012		% increase from 2012 to 2013
	Total units awarded	% total book publications	Total units awarded	% total book publications	
20: Social Sciences	231.65	29.9%	169.05	29.1%	37%
11: Languages, Linguistics and Literature	107.22	13.8%	80.06	13.8%	34%
17: Philosophy, Religion and Theology	95.89	12.4%	78.37	13.5%	22%
12: Law	83.86	10.8%	88.95	15.3%	-6%
07: Education	46.68	6.0%	37.22	6.4%	25%
04: Business, Economics & Management Studies	33.35	4.3%	29.92	5.2%	11%
18: Psychology	26.41	3.4%	3.21	0.6%	723%
08: Engineering	23.03	3.0%	4.17	0.7%	452%
03: Visual & Performing Arts	19.9	2.6%	19.96	3.4%	0%
14: Physical Sciences	17.51	2.3%	6.68	1.2%	162%
09: Health Professions & Related Clinical Sciences	17.02	2.2%	9.74	1.7%	75%
15: Mathematics & Statistics	14.82	1.9%	0.41	0.1%	3515%
02: Architecture & Built Environment	14.18	1.8%	6.22	1.1%	128%
13: Life Sciences	13.67	1.8%	16.8	2.9%	-19%
01: Agriculture, Agricultural Operations & Related Sciences	10.92	1.4%	3.54	0.6%	208%
06: Computer & Information Sciences	5.96	0.8%	0.6	0.1%	893%
05: Communication, Journalism & Related Studies	4.93	0.6%	15.1	2.6%	-67%
19: Public Management and Services	4.29	0.6%	8.33	1.4%	-48%
16: Military Sciences	2.44	0.3%	2.47	0.4%	-1%
10: Family Ecology & Consumer Sciences	0.64	0.1%	0	0.0%	0%
Total	774.37	100%	580.8	100%	

Book publications in 2013 were highest in the Humanities (76%), followed by the SET (14%), Education (6%), and Business and Commerce (4%); see Figure 3. Therefore this solidifies Humanities as the major contributor in book publications and this has been consistently so over the years.

Figure 3: Book publications by broad field, 2013



5 Published Conference Proceeding Output Units

Publications in conference proceedings accounted for 9% of the overall research publications outputs in 2013, totalling 1236.92, a 65.5% increase from 747.29 units in 2012. Table 6 shows the number of conference publication units accrued to each university. All institutions enjoyed increases in the number of approved units for conference proceedings. UJ, which was second to UCT last year, had a huge increase in 2013, from 103.91 units in 2012 to 182.5, a 14.8% share; while UCT, which had the highest share in 2012, had the third highest share of 9.9% (122.48 units) in 2013, surpassed by SU with the second highest share of 10.2% (126.74 units). NMMU and NWU more than doubled their units in 2013 compared to 2012, while UL had a massive increase from 0.67 units in 2012 to 23.83 units in 2013. This dramatic improvement can be attributable to the expert panels that evaluated the 2013

research outputs. This resulted in a massive reduction in the number of conference proceedings that were rejected this year. Also, it seems institutions are doing their best to improve their research outputs where possible. Interestingly, the order in terms of which institution has the most shares varies/changes from one type of research output to the next.

Table 6: Units in conference proceedings per institution for 2013

HEI	2013		2012		% increase from 2012 to 2013
	Conference proceeding units	% of Conference Proceedings	Conference proceeding units	% of Conference Proceedings	
UJ	182.5	14.8%	103.91	13.9%	76%
SU	126.74	10.2%	73.06	10.0%	73%
UCT	122.48	9.9%	106.12	14.2%	15%
NWU	119.98	9.7%	50.08	6.7%	140%
UP	119.64	9.7%	74.28	10.0%	61%
NMMU	84.16	6.8%	38.79	5.2%	117%
WITS	68.46	5.5%	49.35	6.6%	39%
UNISA	68.13	5.5%	47.64	6.4%	43%
TUT	65.37	5.3%	39.83	5.3%	64%
UKZN	58.34	4.7%	34.47	4.6%	69%
CPUT	41.79	3.4%	20.29	2.7%	106%
UFS	33.02	2.7%	28.28	3.8%	17%
RU	28.69	2.3%	23.87	3.2%	20%
UL	23.83	1.9%	0.67	0.1%	3457%
DUT	17.37	1.4%	12.2	1.6%	42%
UWC	16.73	1.3%	11.64	1.6%	44%
VUT	13.01	1.1%	8.71	1.2%	49%
CUT	13.02	1.0%	4.6	0.6%	183%
UFH	11.26	0.9%	4.5	0.6%	150%
UV	9.15	0.7%	7.87	1.1%	16%
UZ	7.00	0.6%	3.13	0.4%	124%
WSU	4.00	0.3%	3	0.4%	33%
MUT	2.25	0.2%	1	0.1%	125%
Total	1236.92	100%	747.29	100%	

A total of 68.66 conference proceeding units were rejected (5.2% of the total submitted), mostly due to lack of evidence of peer review, or due to inadequate proof of peer review provided. A list of all the rejected conference proceedings, which includes the reasons for rejection, has been included in each institutional report.

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

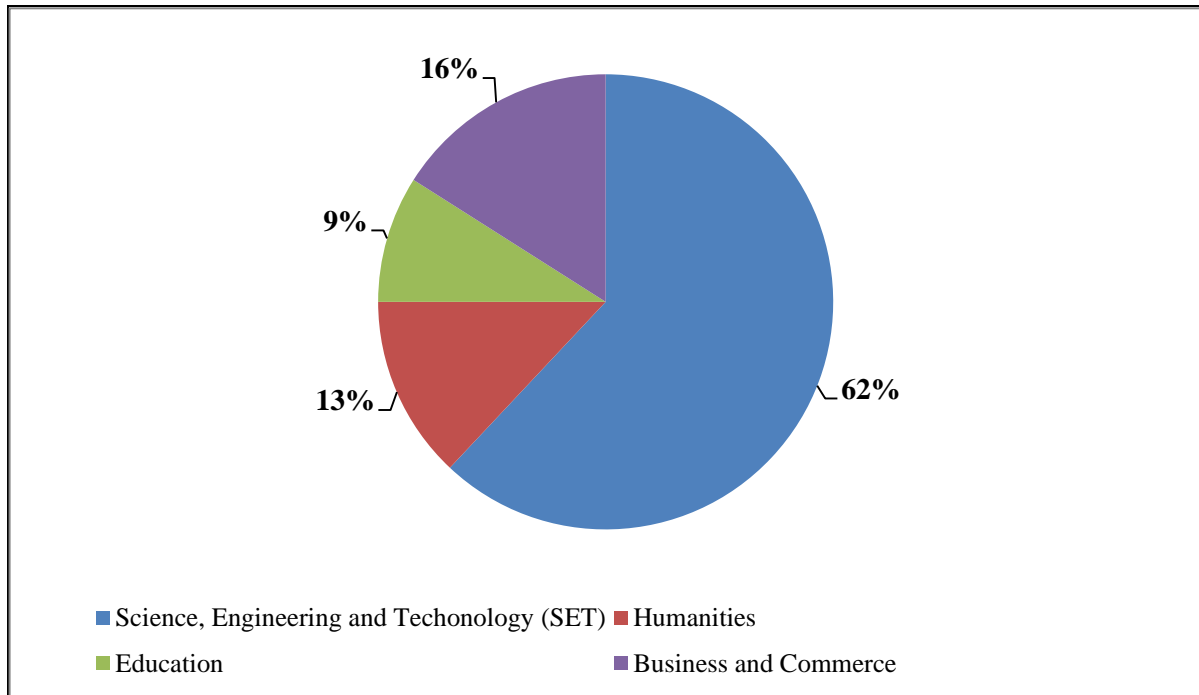
The majority of units for published conference proceedings were in Engineering at 37.2% (CESM 8); Computer & Information Sciences at 18.3% (CESM 6); and Business, Economics and Management Studies with 16.1% (CESM 4). Table 7 shows the number of units accrued to each CESM category and the percentage portion of each. CESM 1 (Agriculture, Agricultural Operations and Related Sciences) and CESM 19 (Public Management and Services) experienced vast improvements in 2013 with increases from just less than 3 units each in 2012 to just over 30 units each. 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 7: Conference Proceeding Output Units by CESM Category, 2013

CESM	2013		2012		% increase from 2012 to 2013
	Number of Units	% of total	Number of Units	% of total	
08: Engineering	458.95	37.2%	290.95	38.9%	58%
06: Computer and Information Sciences	226.60	18.3%	165.82	22.2%	37%
04: Business, Economics and Management Studies	198.84	16.1%	70.90	9.5%	180%
07: Education	110.72	8.9%	76.31	10.2%	45%
02: Architecture and Built Environment	53.15	4.3%	51.05	6.8%	4%
19: Public Management and Services	30.51	2.5%	1.45	0.2%	2004%
01: Agriculture, Agricultural Operations and Related Sciences	30.07	2.4%	2.70	0.4%	1014%
15: Mathematics and Statistics	19.61	1.6%	13.89	1.9%	41%
11: Languages, Linguistics and Literature	19.26	1.5%	10.15	1.4%	90%
14: Physical Sciences	18.88	1.5%	16.03	2.1%	18%
20: Social Sciences	17.10	1.4%	18.84	2.5%	-9%
17: Philosophy, Religion and Theology	13.00	1.0%	10.00	1.3%	30%
03: Visual and Performing Arts	9.50	0.8%	3.50	0.5%	171%
12: Law	8.25	0.7%	4.42	0.6%	87%
13: Life Sciences	6.45	0.5%	2.67	0.4%	142%
09: Health Professions and Related Clinical Sciences	5.15	0.4%	4.17	0.6%	24%
18: Psychology	4.42	0.3%	0.00	0.0%	0%
5: Communication, Journalism and Related Studies	3.66	0.3%	3.94	0.5%	-7%
16: Military Sciences	1.50	0.1%	0.50	0.1%	200%
10: Family Ecology and Consumer Sciences	1.30	0.1%	0.00	0.0%	0%
Total	1236.92	100%	747.29	100.0%	

As in previous years, the highest number of conference proceedings accrued to the SET field (62%), followed by Business and Commerce (16%); Humanities (13%), and Education at 9% (Figure 4). 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, 2013



In 2012, the Department introduced a list of accredited South African conferences. Following the advice of the ROE Panel, the Department has decided to re-look its process of accrediting conference proceedings, and has therefore decided to suspend the list of accredited conferences until such time that a more permanent process can be introduced. In order not to disadvantage those who have attended the listed conference during 2014, these conferences will be treated as “accredited” during the 2015 submissions (that is, 2014 conference proceedings). Therefore, the non-accreditation of conference proceedings becomes effective in 2016 (conference proceedings with a 2015 date will not be considered as accredited). The Department is currently looking at a more robust process of accrediting conference proceedings and the list, once developed, will include a list of international conference proceedings with quality being the major criterion as opposed to the current method which is based on frequency of approvals.

6 Overall Research Publication Output Units

Overall, as shown above, there has been a healthy increase in all types of publication outputs in 2013, with more significant upsurge in book publications and conference proceedings. The total approved research outputs for 2013 amounted to 14 008.67 units. This is an increase of

1644.86 units from 2012 (13.3% growth). Journal articles increased from 11 035.72 in 2012 to 11 997.38 in 2013 (8.7% growth), while books increased from 580.8 to 774.37 (33.3% growth). Conference proceedings also showed a significant increase from 747.29 in 2012 to 1236.92 in 2013 (a 65.5% growth).

A list of all the institutions with their respective research publications outputs for 2013 is presented in Table 8. Institutions have been listed according to their volume of publications output units, from highest to lowest number of units.

Table 8: Publication Research Output Units per Institution, 2013

Institution	Book Units		Conference Proceedings Units		Journal Units		Overall Units in 2013	% Overall Sector Units
	Actual Units	% of total institutional outputs	Actual Units	% of total institutional outputs	Actual Units	% of total institutional outputs		
UKZN	79.09	4.9%	58.34	3.6%	1489.78	91.6%	1627.21	11.6%
UP	80.7	5.0%	119.64	7.4%	1415	87.6%	1615.34	11.5%
UCT*	111.61	7.2%	122.48	7.9%	1315.03	84.9%	1549.12	11.1%
SU*	105.41	7.1%	126.74	8.6%	1244.86	84.3%	1477.01	10.5%
WITS	109.45	8.4%	68.46	5.3%	1122.38	86.3%	1300.29	9.3%
NWU*	39.88	3.4%	119.98	10.3%	1009.68	86.3%	1169.54	8.3%
UNISA	38.21	3.7%	68.13	6.6%	923.7	89.7%	1030.04	7.4%
UJ	58.83	6.6%	182.5	20.3%	656.09	73.1%	897.42	6.4%
UFS	58.19	8.7%	33.02	4.9%	577.42	86.4%	668.63	4.8%
RU	20.17	4.4%	28.69	6.3%	405.49	89.2%	454.35	3.2%
UWC	29.62	7.3%	16.73	4.1%	360.02	88.6%	406.37	2.9%
NMMU	5.12	1.5%	84.16	24.6%	252.81	73.9%	342.09	2.4%
TUT	2.31	0.8%	65.37	23.5%	210.53	75.7%	278.21	2.0%
UFH	8.64	3.7%	11.26	4.8%	215.03	91.5%	234.93	1.7%
UL	0	0.0%	23.83	14.0%	146.19	86.0%	170.02	1.2%
UNIVEN	7.59	5.1%	9.15	6.2%	132.03	88.7%	148.77	1.1%
CPUT	2.54	1.7%	41.79	28.4%	102.98	69.9%	147.31	1.1%
DUT*	11.8	9.2%	17.37	13.6%	98.98	77.2%	128.15	0.9%
UNIZULU	0	0.0%	7.00	7.9%	82.08	92.1%	89.08	0.6%
VUT	0	0.0%	13.01	15.7%	69.88	84.3%	82.89	0.6%
CUT	0.44	0.6%	13.02	19.0%	55.02	80.3%	68.48	0.5%
SMU	0	0.0%	0	0.0%	57.00	100.0%	57.00	0.4%
WSU	4.31	8.9%	4.00	8.3%	40.1	82.8%	48.41	0.3%
MUT	0.46	2.6%	2.25	12.5%	15.3	85.0%	18.01	0.1%
TOTAL	774.37	6%	1236.92	9%	11997.38	85%	14008.67	100%

* = includes journal units owed from previous year. UCT = 3 units; SU = 3 units; NWU = 0.5 unit; and DUT = 2 units.

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 2009 and 2013, journal publication output units have increased by about 45%. During the same period (2008-2013), books and conference proceedings have also had a marginal increase.

Figure 5: Total Research Output by type of publication, 2008-2013

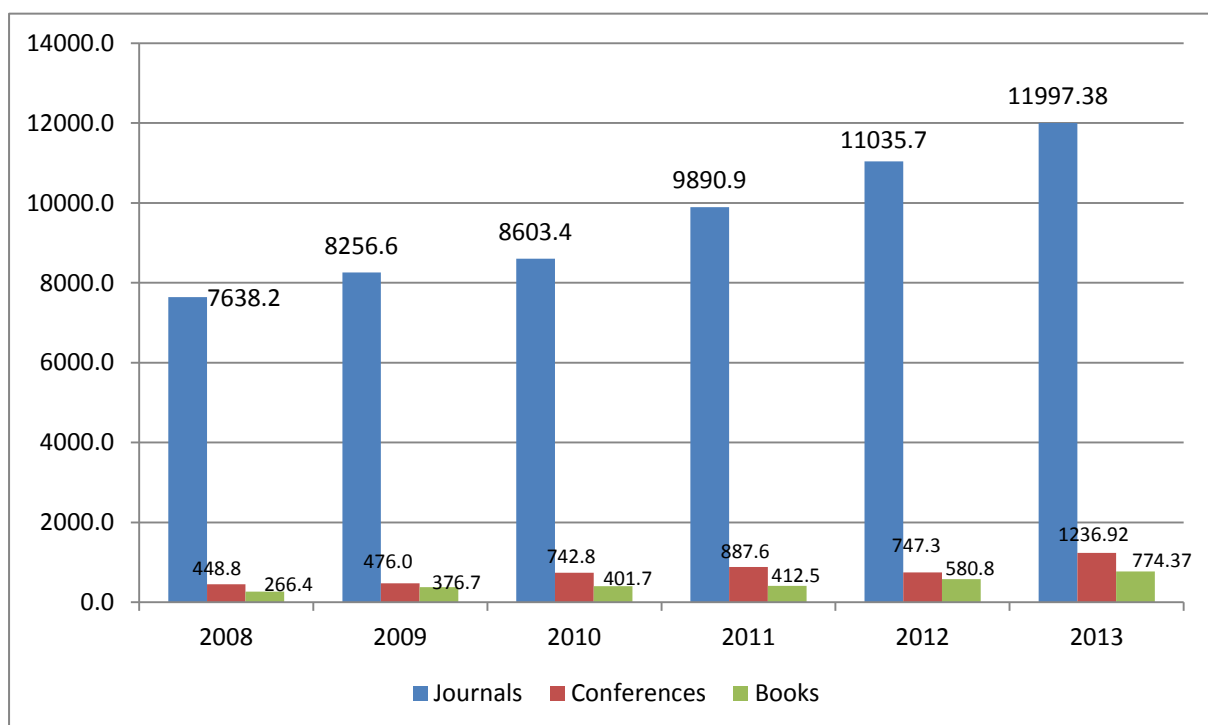
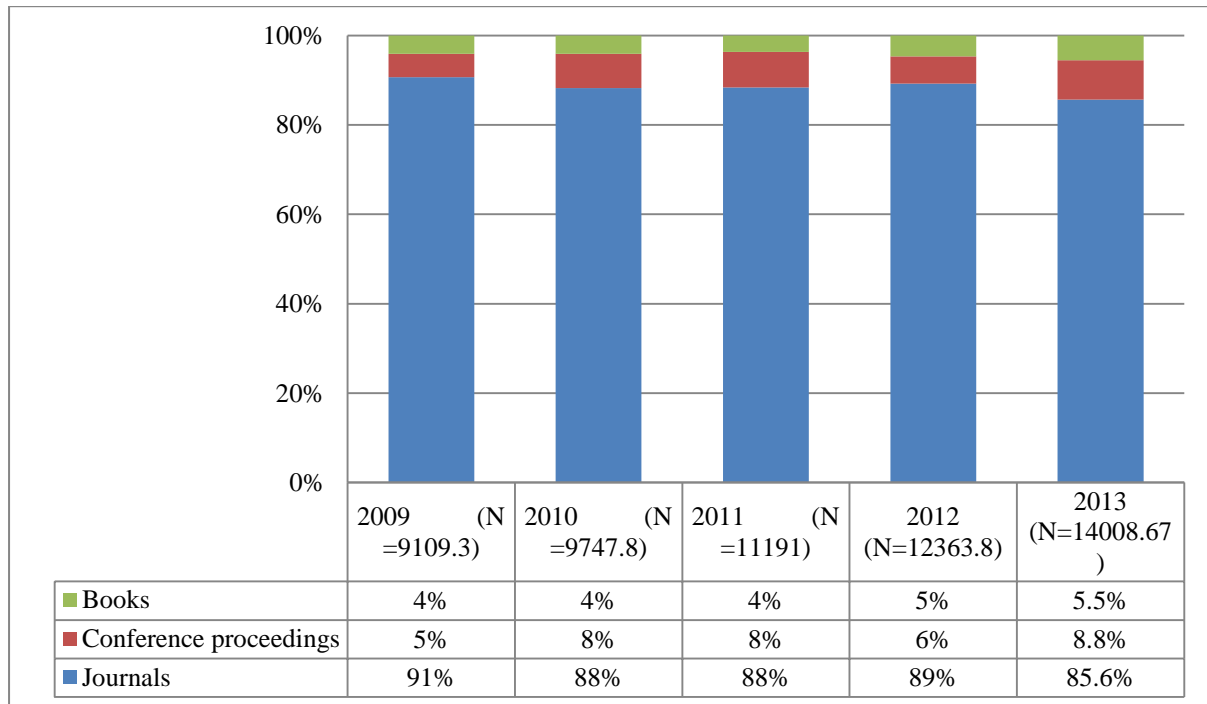


Figure 6 shows the proportional contribution of each publication type over the past five years. As in previous years, journal publications were the largest contributor to the overall output, contributing 85% of the overall units, followed by conference proceedings at 9% and 6% for book publications.

The proportional contribution of books in the overall publication output units has increased by 1.5%, from 4% in 2009 to 5.5% in 2013. However, the rejection rate for books in 2013 was significantly lower at 15.8%, than in 2012 where it was 43%. This can be attributed to the fact that this year, books were reviewed by subject-specialists who are able to decide on

the scholarliness of the books. The 2003 Policy is currently under review, with a strong focus on increasing scholarly book publications.

Figure 6: Proportion of research outputs units by type of publication, 2009 – 2013



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 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 waiting publication period for some publications, especially journals and books. This categorisation should be regarded as an indicator rather than to 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.

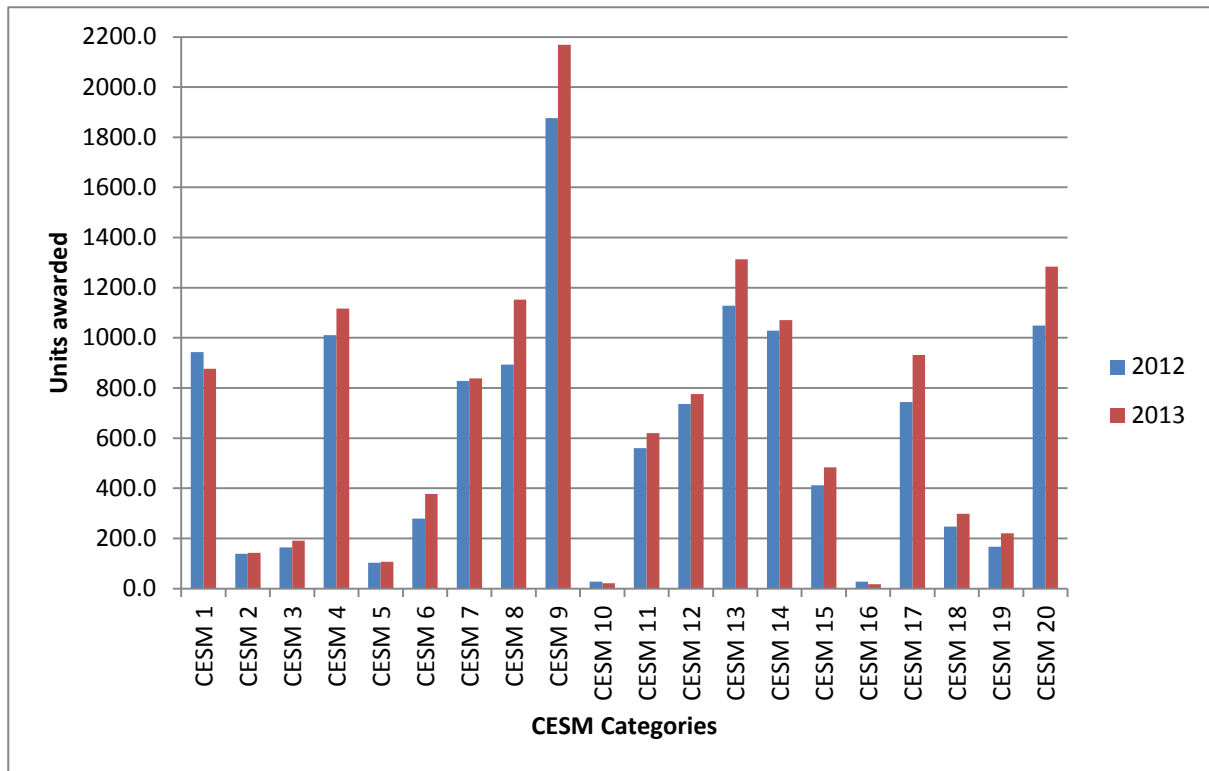
The purpose of the categorisation is not necessarily to compare CESM categories as there may be differences in the number of academics; the development and resourcing of the relevant fields by institutions and other factors. Instead, it should be used to identify potential

for possible policy improvement and resource allocation at institutional level. The total publication output units by CESM categories for 2012 and 2013 are shown in Table 9, while Figure 7 presents a graphical representation of the CESM trend in 2012 and 2013.

Table 9: Total Research Output Units by CESM Categories, 2013 and 2012

CESM Category	2013		2012		% increase from 2012 to 2013
	No. of units	% of total	No. of units	% of total	
09: Health Professions and Related Clinical Sciences	2168.54	15.5%	1876.3	14.8%	15.6%
13: Life Sciences	1313.33	9.4%	1128.0	8.9%	16.4%
20: Social Sciences	1284.02	9.2%	1049.5	8.3%	22.3%
04: Business, Economics and Management Sciences	1117.14	8.0%	1011.2	8.0%	10.5%
08: Engineering	1152.82	8.2%	893.6	7.1%	29.0%
14: Physical Sciences	1071.1	7.6%	1028.2	8.1%	4.2%
17: Philosophy, Religion and Theology	931.29	6.6%	743.8	5.9%	25.2%
07: Education	838.41	6.0%	828.4	6.6%	1.2%
01: Agriculture, Agricultural Operations and Related Sciences	877.24	6.3%	943.6	7.5%	-7.0%
12: Law	775.42	5.5%	735.8	5.8%	5.4%
11: Languages, Linguistics and Literature	619.54	4.4%	559.6	4.4%	10.7%
15: Mathematics and Statistics	482.9	3.4%	412.5	3.3%	17.1%
06: Computer & Information Sciences	377.47	2.7%	279.1	2.2%	35.3%
18: Psychology	298.85	2.1%	247.0	2.0%	21.0%
19: Public Management and Sciences	220.27	1.6%	166.4	1.3%	32.4%
03: Visual Arts and Performing Arts	191.24	1.4%	164.3	1.3%	16.4%
02: Architecture and Built Environment	142.65	1.0%	138.4	1.1%	3.1%
05: Communication, Journalism and Related Studies	107	0.8%	102.5	0.8%	4.4%
10: Family Ecology and Consumer Sciences	21.35	0.2%	28.4	0.2%	-24.7%
16: Military Sciences	17.81	0.1%	27.4	0.2%	-35.0%
Total	14008.67		12636.8		

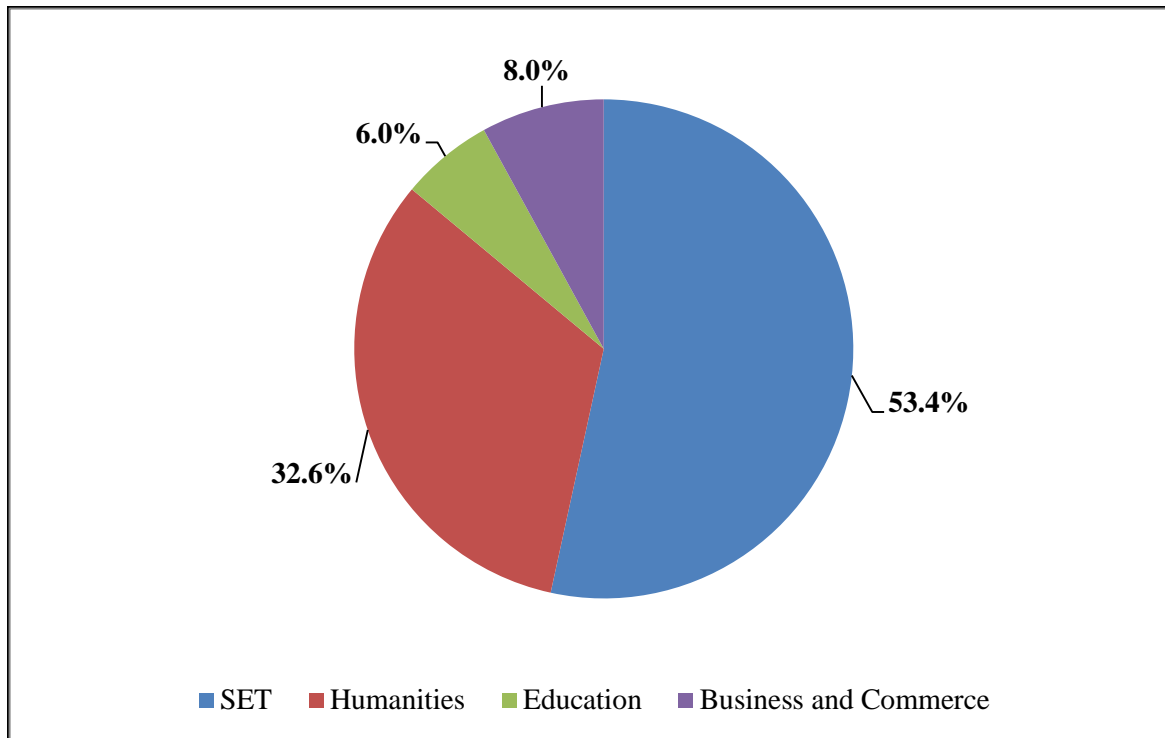
Figure 7: Total output by Classification of Education Subject Matter (CESM) Category



7.2 Overall Publication Output Units by Broad Field of Study

Analysis of the 2013 output units by broad scientific field of study shows that more than half (53.4%) of all output units are produced by researchers in the Science, Engineering and Technology (SET) fields, followed by Humanities (32.6%), Business and Commerce (8%), and Education 6% (Figure 8).

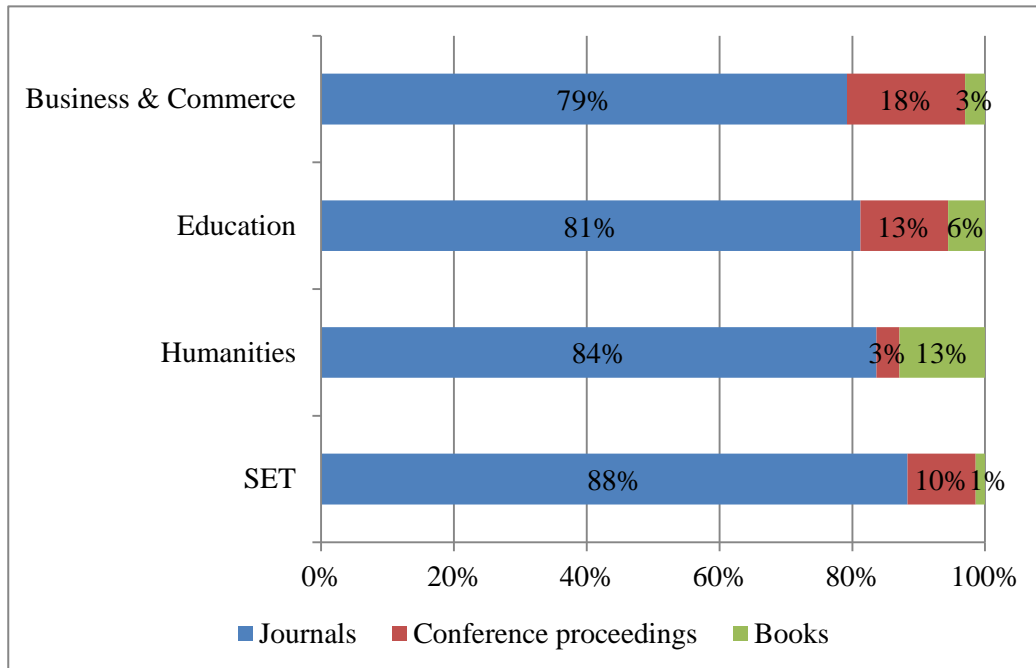
Figure 8: Total publication output units by broad field¹ (2013)



¹ The CESM categories in each broad field are:
Science, Engineering and Technology = CESM 1, 6, 8, 9, 10, 13, 14, 15 and 16;
Humanities = CESM 2, 3, 5, 11, 12, 17, 18, 19, and 2;
Education = CESM 7;
Business and Commerce = CESM 4.

Figure 9 illustrates the total publication output units in each field of study by publication type. Within each broad field of study, the highest proportion of publication output (average of 80%) comes from journal articles.

Figure 9: Total output by broad field, by type of publication (2013)



7.3 Overall Publication Output Units by Institution

The proportion of the total output units awarded to each institution, expressed as a percentage, is shown in Table 10. University of KwaZulu-Natal contributed the highest proportion of the total output units awarded, by volume (i.e. un-weighted number of publications units), with 11.6%, followed very closely by University of Pretoria at 11.5%. The percentage share of overall output units by the first five institutions in Table 10 is 54%, thus accounting for more than half of the overall publication output units produced. The next seven institutions accounted for 35.5%, while the last eleven produced 10.5% of the total units. In 2012 the top five universities produced 54% of the output units, and 54.2% in 2011. Therefore the proportion for the “top five” has remained much the same over the past three years.

Table 10: Percentage of total output units produced by each institution (2009-2013), listed in descending order by volume of output units in 2013

	Institution	2013	2012	2011	2010	2009
1	UKZN	11.6%	11.5%	11.2%	11.8%	12.2%
2	UP	11.5%	11.5%	11.7%	12.2%	13.0%
3	UCT	11.1%	11.2%	11.7%	12.9%	13.0%
4	SU	10.5%	10.7%	10.3%	10.6%	11.5%
5	WITS	9.3%	9.0%	9.3%	9.6%	10.1%
6	NWU	8.3%	7.0%	6.6%	6.0%	4.9%
7	UNISA	7.4%	7.2%	7.1%	7.5%	6.9%
8	UJ	6.4%	7.1%	6.9%	6.3%	5.1%
9	UFS	4.8%	5.2%	5.1%	5.1%	5.6%
10	RU	3.2%	3.3%	3.2%	3.3%	3.9%
11	UWC	2.9%	3.0%	3.1%	2.7%	3.1%
12	NMMU	2.4%	2.5%	3.1%	2.6%	2.5%
13	TUT	2.0%	1.9%	2.2%	1.9%	1.4%
14	UFH	1.7%	1.7%	1.6%	1.5%	1.5%
15	UL	1.6%	1.8%	1.3%	1.0%	0.8%
16	CPUT	1.1%	1.4%	1.3%	1.6%	1.4%
17	UNIVEN	1.1%	1.0%	1.2%	0.8%	0.6%
18	DUT	0.9%	0.7%	0.8%	0.5%	0.5%
19	VUT	0.6%	0.6%	0.7%	0.5%	0.4%
20	UNIZULU	0.6%	0.6%	0.6%	0.7%	0.8%
21	CUT	0.5%	0.5%	0.4%	0.4%	0.4%
22	WSU	0.3%	0.5%	0.4%	0.5%	0.3%
23	MUT	0.1%	0.1%	0.2%	0.1%	0.0%

Table 11 below shows the publication output units per permanent academic staff member. The average publication output units per permanent academic staff member (or per capita output) for all institutions for 2013 was 0.66 units, a slight increase from 0.60 units in 2012, and 0.57 units in 2011. Generally, the per capita output across institutions has been on the increase since 2008. This is a good sign and reflects an improved research publication productivity rate across the system.

Stellenbosch University (SU) had the highest per capita output of publication output units in 2013 (1.47 units per permanently employed academic), followed by UCT with 1.42 units. Six universities (SU, UCT, RU, UP, Wits and UKZN) produced more than 1 publication output unit per permanently employed staff member. This same group of institutions showed the same trend with 2012 publications.

Table 11: Per capita research publication output units, 2009 -2013; listed in descending order by 2013 per capita output units.

Institution	2013	2012	2011	2010	2009	Average 2009-2013
SU	1.47	1.36	1.22	1.13	1.20	1.28
UCT	1.42	1.29	1.25	1.28	1.23	1.29
RU	1.29	1.22	1.12	1.01	1.09	1.15
UP	1.24	1.11	1.03	0.71	0.73	0.96
WITS	1.19	1.04	0.99	0.94	0.94	1.02
UKZN	1.18	1.02	0.85	0.82	0.76	0.93
NWU	0.91	0.70	0.61	0.54	0.45	0.64
UJ	0.88	0.87	0.89	0.69	0.55	0.78
UFH	0.72	0.66	0.62	0.49	0.39	0.58
UWC	0.71	0.66	0.65	0.52	0.53	0.61
UFS	0.70	0.68	0.67	0.62	0.66	0.67
UNISA	0.63	0.56	0.53	0.52	0.45	0.54
NMMU	0.56	0.52	0.61	0.45	0.40	0.51
UV	0.44	0.39	0.40	0.24	0.19	0.33
VUT	0.23	0.22	0.22	0.14	0.12	0.19
TUT	0.30	0.27	0.29	0.23	0.16	0.25
UNIZULU	0.30	0.24	0.26	0.12	0.30	0.24
UL	0.26	0.27	0.18	0.12	0.10	0.19
CUT	0.24	0.22	0.18	0.15	0.14	0.19
DUT	0.22	0.13	0.15	0.08	0.09	0.13
CPUT	0.19	0.22	0.19	0.21	0.18	0.20
MUT	0.09	0.09	0.13	0.05	0.03	0.08
WSU	0.08	0.10	0.07	0.09	0.04	0.08
Average	0.66	0.60	0.57	0.48	0.47	0.56

Table 12 shows the weighted research output units per capita (i.e. output units per permanently employed academic per annum, including publications, Research Masters and PhD graduates). SU achieved the highest per capita output with 2.97 units, followed by UCT with 2.57 units. UP had the most total weighted research output units at 3119.34 and produced the highest number of doctoral graduates, totalling 242 (thus 726 units for doctoral graduates). SU produced the most graduates at Masters' level in 2013, with a total of 840 graduates for this qualification.

Table 12: Weighted Research Per Capita Output According to the Norms , 2013

Institution	Headcount of permanently employed academics (a)	Research Publications in Units (1)	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
SU	1006	1477.01	840.00	675	2992.01	2.97
UCT	1093	1549.12	642.00	615	2806.12	2.57
RU	351	454.35	210.00	210	874.35	2.49
UP	1300	1615.34	778.00	726	3119.34	2.40
WITS	1093	1300.29	569.00	663	2532.29	2.32
UKZN	1376	1627.21	614.00	621	2862.21	2.08
UWC	574	406.37	267.00	333	1006.37	1.75
NWU	1288	1169.54	507.00	504	2180.54	1.69
UJ	1024	897.42	336.00	234	1467.42	1.43
NMMU	606	342.09	276.00	222	840.09	1.39
UFH	327	234.93	125.00	90	449.93	1.38
UFS	962	668.63	278.00	273	1219.63	1.27
UNISA	1631	1030.04	314.00	603	1947.04	1.19
TUT	917	278.21	152.00	96.00	526.21	0.57
UV	337	148.77	36.00	9	193.77	0.57
UL*	884	227.02	210.00	42	479.02	0.54
UZ	299	89.08	28.00	42	159.08	0.53
CUT	291	68.48	37.00	36.00	141.48	0.49
CPUT	768	147.31	100.00	84.00	331.31	0.43
DUT	579	128.15	48.00	54.00	230.15	0.40
VUT	361	82.89	32.00	12.00	126.89	0.35
WSU	576	48.41	12.00	9	69.41	0.12
MUT	195	18.01	0.00	0.00	18.01	0.09
OVERALL TOTALS	17838	14008.67	6411.00	6153.00	26572.67	1.26

* Includes 57 journal units for Medunsa campus of UL, which will accrue to SMU

Table 13 shows permanently employed research staff with either a Masters or PhD as highest qualification in 2012 and 2013. UCT has the highest proportion (66%) of academics with a doctorate (taken as a proportion of its permanently employed staff), followed by SU at 61%, and WITS at 58%. The sector's overall number of academics with a PhD qualification increased slightly to 41% in 2013, from 38.5% in 2012. This certainly is a positive development. 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.

Table 13: Permanently employed academics by qualification, 2013 and 2012

	Permanently Employed Academics by qualifications									
	2013				2012				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			
	Headcount	% total staff	Headcount	% of total staff	Headcount	% of total staff	Headcount	% of total staff	2013	2012
UKZN	445	32%	688	50%	443	31.7%	663	47.4%	1133	1106
UNISA	489	30%	629	39%	452	28.5%	612	38.5%	1118	1064
UP	382	29%	663	51%	378	29.5%	627	48.9%	1045	1005
NWU	393	31%	640	50%	381	30.5%	628	50.3%	1033	1009
UCT	295	27%	725	66%	305	28.3%	699	65.0%	1020	1004
WITS	327	30%	639	58%	326	30.4%	595	55.4%	966	921
UJ	413	40%	451	44%	325	32.2%	294	29.1%	864	619
UFS	441	46%	400	42%	445	46.9%	380	40.0%	841	825
SU	195	19%	616	61%	252	25.9%	518	53.2%	811	770
TUT	320	35%	194	21%	306	35.8%	178	20.8%	514	484
UWC	180	31%	301	52%	196	35.1%	290	51.9%	481	486
CPUT	340	44%	131	17%	341	44.6%	124	16.2%	471	465
UL	332	38%	139	16%	299	36.2%	132	16.0%	471	431
NMMU	194	32%	263	43%	214	35.9%	242	40.6%	457	456
DUT	277	48%	97	17%	279	46.6%	88	14.7%	374	367
RU	109	31%	198	56%	103	30.7%	171	50.9%	307	274
UV	157	47%	116	34%	160	48.8%	103	31.4%	273	263
WSU	184	32%	80	14%	165	28.3%	70	12.0%	264	235
UFH	133	41%	124	38%	121	38.4%	119	37.8%	257	240
UNIZULU	128	43%	92	31%	119	39.9%	79	26.5%	220	198
CUT	112	38%	88	30%	114	41.6%	72	26.3%	200	186
VUT	137	38%	47	13%	150	43.9%	44	12.9%	184	194
MUT	97	50%	18	9%	79	44.1%	16	8.9%	115	95
Overall totals	6080	35%	7339	41%	5953	35.2%	6744	38.5%	13419	12697

Table 14 shows the per capita output by percentage of staff with PhD. Not surprisingly, institutions with a higher number of staff with PhDs are more research active and generally show a higher weighted per capita output.

Table 14: Per capita output by percentage of staff with PhD

Institution	Headcount of permanently employed academics	Headcount of Academics with PhD as Highest Qualifications	% of total staff with PhD	Weighted per capita output	Total weighted research outputs
SU	1006	616	61%	2.97	2992.01
UCT	1093	725	66%	2.57	2806.12
RU	351	198	56%	2.49	874.35
UP	1300	663	51%	2.40	3119.34
WITS	1093	639	58%	2.32	2532.29
UKZN	1376	688	50%	2.08	2862.21
UWC	574	301	50%	1.75	1006.37
NWU	1288	640	52%	1.69	2180.54
UJ	1024	451	44%	1.43	1467.42
NMMU	327	163	38%	1.39	840.09
UFH	606	124	43%	1.38	449.93
UFS	962	400	42%	1.27	1219.63
UNISA	1631	629	39%	1.19	1947.04
TUT	917	116	34%	0.57	526.21
UV	337	139	16%	0.57	193.77
UL*	884	194	21%	0.54	479.02
UZ	299	92	31%	0.53	159.08
CUT	291	47	13%	0.49	141.48
CPUT	768	88	30%	0.43	331.31
DUT	579	131	17%	0.40	230.15
VUT	361	97	17%	0.35	126.89
WSU	576	80	14%	0.12	69.41
MUT	195	18	9%	0.09	18.01
OVERALL TOTALS/AVERAGE	17838	7239	37%	1.26	26572.67

8 General Observations and Conclusions

8.1 Quality assurance

The *2003 Policy and procedures for measurement of research output of public higher education institutions* makes it clear that its purpose “is to encourage research productivity by rewarding **quality research** outputs at public higher education institutions”. Data clearly shows that research productivity has significantly increased, across all institutions, over the past few years, particularly publications in journals. The continued increase in productivity could be attributed to a number of factors including an increase in 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 the Department in the form of research output subsidy.

However, evidence suggests that there are many unintended consequences, and therefore threats to the sector, within the system as a result of incentivising research outputs through the research output subsidy mechanism. There seems to be an increased focus, for example, on quantity and less on quality. Furthermore, there is an increase of what has been called Salami publishing, where authors publish more than one paper from work that should have resulted in only one paper, resulting in high quality, in depth scholarly work being less popular.

A more recent threat to the quality of research publication in our system is predatory publishing. Over the past few months, the Department received numerous complaints about predatory journals. These are journals that exist mostly for financial gain, without any focus or concern for good scholarly practices. An example is the Mediterranean Journal of Social Sciences (MJSS), which was listed on the International Bibliography of Social Science (IBSS). It was brought to the Department’s attention that the MJSS accepts manuscripts without following a rigorous peer-review process. ProQuest, the custodians of the IBSS list, subsequently investigated the claim and decided to remove MJSS, and other journals by the same publisher, namely the Mediterranean Center of Social and Education Research, from all their databases from the list. The Department encourages the sector to continue reporting such journals so that they can be removed from the lists, and further urges authors to consult the various lists of predatory journals and do some due diligence before publishing any of

their work in a journal listed as predatory. Authors/researchers should not submit their journal output/s for subsidy claims if they have published in a journal that does not adhere to the research output policy, as that constitutes a fraudulent activity. Institutions should put mechanisms in place to ensure that such practices do not occur. Institutions are also reminded that the subsidy is part of the block grant, which is meant for the institution and not for individual authors. The Department is aware of perverse incentives given by individual institutions that encourage academics to engage in unethical practices.

The Department is also considering instituting other ways of determining the quality of publications, i.e. proxies for quality, such as the use of bibliometric indicators etc. and will continue to engage with relevant stakeholders within the sector, such as the Academy of Science of South Africa (ASSAf), the Centre of Excellence in Scientometrics and Science, Technology and Innovation Policy (SciSTIP), the Centre for Research on Evaluation, Science and Technology (CREST) *etc.*

8.2 Concluding remarks

The Department urges institutions to follow strict research ethical practices, particularly with regard to claiming outputs by individuals who are clearly not employed by the claiming institution, or claiming publications of visiting scholars who spend very little time at the claiming institution. The Department is aware that some institutions are appointing individuals, who are based elsewhere as honorary employees, so that they can, in turn, claim subsidy for the publications produced by these individuals. Institutions are urged to regulate such unacceptable practices, failing which the Department will be forced to develop its own regulations and sanctions. Moreover, such practices skew 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.

It was encouraging to note the significantly lower rejection rate for books. While this decrease is attributed to the fact that books were evaluated by subject specialists, it could also be attributed to better quality books. Institutions are urged to continue to apply stricter measures to scrutinise all publications before they are submitted to the Department. The non-approval of claimed book publication units due to technical requirements should be completely eliminated.

Lastly, the Department would like to remind institutions and researchers that the *Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions (2003)*, governs the awarding of research output subsidy to institutions and supersedes the list of accredited journal titles that the department sends to institutions annually. The three approved list of journals serves to support the implementation of the research output policy. Researchers should ensure that they publish in journals that adhere to the criteria as defined in the Policy. If a journal on the list does not adhere to the policy, researchers should inform their institution and the department. 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.