



**Report on the evaluation of the NRF
programmes directed at research and
research capacity development at
historical black universities (HBUs)**

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ABBREVIATIONS AND ACRONYMS

CSD	Centre for Science Development
CSIR	Council for Scientific and Industrial Research
FRD	Foundation for Research Development
HBUs	Historically Black Universities
HSRC	Human Sciences Research Council
HWUs	Historically White Universities
IRDP	Institutional Research Development Programme
IT	Information Technology
MEDUNSA	Medical University of Southern Africa
NRF	National Research Foundation
RDP	Research Development Programme
SET	Science, Engineering and Technology
THRIP	Technology and Human Resources for Industry Programme
UDP	University Development Programme
UDW	University of Durban-Westville
UFH	University of Fort Hare
UNO	University of the North
UNOQ	University of the North (QwaQwa)
UNW	University of North-West
UT	University of Transkei
UVEN	University of Venda
UVIS	Vista University
UWC	University of the Western Cape
UZ	University of Zululand

1. **Executive Summary**

The evaluation was conducted to enable the National Research Foundation (NRF) to appreciate better the strengths and weaknesses and the impact of its Institutional Research Development Programme (IRDP), which operated between 1996 and 2000. It is also intended that the evaluation will assist the NRF to improve its operations as a national research support agency servicing, amongst others, Historically Black Universities (HBUs).

The historical development of the South African university system has resulted in two distinct types of institutions, namely the Historically White Universities (HWUs) and the Historically Black Universities (HBUs). The key differentiating feature of the institutions being that the former have been well-resourced and are well developed, whereas, to a large extent, the opposite exists in the latter. With the changing sociopolitical climate in South Africa it became an imperative that intervention programmes to address this imbalance are mounted so that the role these institutions can play in the social and economic development of the people is enhanced. The IRDP is one such programme, whose key goals and objectives, amongst others, is to establish a research culture, improve infrastructure and build research capacity (including participation of women) through increasing both staff qualifications and postgraduate training of black people at the HBUs.

The terms of reference for the evaluation are included in Chapter 3. They required the Panel to conduct the evaluation at two levels: Level 1 - Thrusts and Level 2 – Partnerships (Institutional and NRF context). Resource documents setting out the intention of the IRDP and describing and evaluating progress were provided. Programme staff were available to provide clarification when this was required. The Panel was briefed by senior personnel of the NRF and held interviews with senior government officials and with administrators, researchers and students at some HBUs. One HBU, Medunsa, was visited.

To provide the NRF with information on their return on investment, we attempted an estimate of added value for each thrust, based on financial investment, and capacity building and research output that had been achieved. We also reviewed the quality of the partnership between the NRF and each HBU. Some of the information on which we based our judgements was quantitative (degrees achieved by staff and students, papers published, conferences attended, students' subsequent careers in science). For the rest, we made qualitative judgement based on thrust leaders' reports and peer reviews. We graded value added as Excellent, Good, Adequate, Little, or Very Little.

Although we were impressed by the progress that has been achieved we appreciate the enormous task that lies ahead, and the scale of the additional resources that will be required.

The 11 HBUs were evidently at different levels of development, but variation between thrusts within institutions was also striking. Of the 11 institutions, no less than seven included thrusts graded as Excellent and a further three had at least one thrust graded Good. Some thrusts received substantial NRF funding, yet achieved relatively little; others with more modest funding were able to achieve excellent results. Nonetheless, there was a correlation between funds invested and added value achieved.

In general, we were impressed by the progress made in achieving academic qualifications of HBU staff, the development of postgraduate students and support for the contribution of women studying and employed at HBUs in Science, Engineering and Technology (SET). We were also impressed by the progress that has been made in identifying areas of

potentially excellent scientific output, and the creation of a research culture. On infrastructure, we could do no more than form a general impression that the situation has improved.

The strengths of the IRDP programme include success in starting to address the national goals of enhancing HBU participation in SET; support of good science with improved output and impact; and increased institutional awareness in promoting research. To a large extent these successes reflect the excellence and dedication of NRF staff.

There were, however, marked weaknesses in the programme. In general it was too ambitious, with inadequate ordering of priorities, weak articulation of the thrust concept, too much bureaucracy, and too little development of partnerships, and relationships with thrust leaders. There was a lack of attention to early warning signs and appropriate interventions.

In general the evaluation procedures set in place by the NRF were satisfactory. They included self-evaluation, peer reviews and independent Panel reviews. We were impressed by the NRF's openness to criticism and the diversity and richness of background material at our disposal. However, reports were of uneven quality and information was often incomplete or inconsistent. The performance of Advisory Panels and their perceived benefit to thrust research also appeared to be very uneven.

Based on this assessment we have made the following recommendations:

1. Increase investment in nurturing, servicing and auditing its partnerships with HBUs. Frequent personal contact at institutional, thrust/focus/niche and even student level is required to build relationships, and to achieve shared understanding of and commitment to servicing the national research agenda.
2. Work with HBUs to define roles and responsibilities in ways that increasingly develop their research support functions and thereby build greater self-reliance.
3. Improve networking within the tertiary education sector so that HBUs are enabled to stay current and optimise access to information and facilities.
4. Review its research management procedures with a view to increasing efficiency, improving performance assessment and reducing pressure on already over-committed researchers at HBUs.
5. Work with institutions and researchers to define key concepts and criteria for performance assessment at individual, project, thrust/niche and institutional levels.
6. Ensure, before investing in research, that effective leadership is in place, or is being introduced, and that provision is made for leadership succession.
7. Work with HBUs and industry to provide the start up conditions necessary to initiate partnerships in research, thereby enabling HBUs to access THRIP and other research support, and to promote self-reliance.
8. Work with HBUs to identify opportunities and provide support for patenting.
9. Actively promote, if necessary through dedicated funding, the establishment of IT systems in all HBUs.

10. Put increased emphasis on negotiating with researchers and institutions to achieve the balance of funding between bursaries, running and capital expenses that optimises return on investment for all parties.
11. Strive actively to increase the level of support for research in general and at HBUs in particular.

2. **Background**

Introduction

The public tertiary education system in South Africa is made up of two sectors, namely the university and the technikon sectors. Both of them are playing important and complementary roles in providing high level skills and human resources to meet the political, social and economic aspirations of the country. Apart from the public higher education sector, there is also the private tertiary education sector, which has shown phenomenal growth since 1994 and is making a significant contribution in certain focal areas within higher education.

The public university sector itself is not homogenous and can be differentiated in a number of ways. One commonly used classification of these institutions is based on historical developments in the country that led to a differentiation between Historically White Universities (HWUs) and Historically Black Universities (HBUs).

This Report reviews the five-year Institutional Research Development Programme (IRDP) introduced by the Foundation for Research and Development (FRD) – which has since become the NRF- to stimulate the establishment of a research culture at the HBUs.

The historical context of the historically black universities (HBUs)

In line with political philosophy of separate development promulgated by the apartheid government, higher education institutions (like all other social services) were developed to serve various racial groups in the country. Hence the HWUs which catered almost exclusively for White students, while HBUs provided the training of Coloured, Indians and Africans. Eleven universities, namely Fort Hare, Durban-Westville, Western Cape, North, North (Qwaqwa), Zululand, Medunsa, Venda, Vista, Transkei and North-West, make up the HBUs. It is obvious that in contrast with the HWUs (that were well resourced and well staffed to provide top-class training to the White population) the resources directed to HBUs were nominal. Their main remit and preoccupation was the teaching and training of Black students at undergraduate level. Postgraduate training and research was not developed.

It is also noteworthy that some of the HBUs were the primary sites for challenging and fighting the apartheid system in the intensive phase of the national struggle to end apartheid. This paralysed HBUs and to a large extent also eroded the learning culture in the institutions, especially in the long run.

The establishment of the new dispensation in 1994 came with radical changes in the system. Democratic values and norms such as equality, non-racialism, non-sexism and religious tolerance were incorporated into the policy and legislative frameworks of the Department of Education, which is responsible for overseeing higher education. These policies went further to address issues of access to, equity, redress, transparency and accountability within the

higher education sector. This prompted research support agencies (FRD and Human Sciences Research Council (HSRC)) to establish support programmes aimed at redress.

The Panel has taken full cognisance of the context of HBUs in designing and conducting this evaluation.

The Institutional Research Development Programme (IRDP)

The FRD, which was established in 1984 (as part of the CSIR), was charged with the responsibility for promoting research and developing research capacity in the country through identification of individuals with a potential to develop into future scientists. An evaluation process linked to a rating system was used to identify these individuals and the scientists obtaining the highest rating received substantial financial support. Obviously such an approach left most of the staff members at the HBUs at the periphery of the research endeavour.

Realising the serious deficiencies inherent in the existing system of allocating resources for research, the FRD introduced the Research Development Programme (RDP) tailored for the HBUs in 1986. This programme provided financial support to staff members who would not otherwise have met the rating requirements of the regular funding programme. Through this pro-active approach of the FRD, a major step was taken to stimulate and develop research at HBUs, for the first time.

The RDP was a forerunner to the University Development Programme (UDP), which was started in 1992. The UDP adopted an open research development approach that focussed on individual and team research development and support. Opportunities were made available through individual research projects, staff development and institutional research programmes grants. The latter placed emphasis on team development and approaches.

At a slightly later stage a similar process to that of the FRD, but focusing on the social sciences and humanities, was developed by the Centre for Science Development (CSD), a division of the HSRC. The programme addressed equity and redress issues through multifaceted strategies including training of individuals in research skills, support for strengthening research infrastructure, stimulating interest of and supporting women in research and promoting regional collaboration. The CSD has since become part of the NRF as a consolidated research support agency.

The experience gained from the RDP and UDP prompted the FRD to reconceptualise the programme and introduce the IRDP in 1995. The key distinguishing element of this Programme was that it was based on the FRD entering into partnerships with each of the HBUs in promoting a research culture within the respective institutions. To this effect the commitment of each partner was reflected through signing of a joint memorandum of understanding.

Furthermore, at the operational level, the institutions were requested to identify research focus areas, the nature of the research to be conducted, the links to be developed with other institutions as well the necessary infrastructure and staff and student development that would take place within the focus area. The different research areas were supposed to have been integrated into an institutional plan. In reality, an institutional plan served as a cover document detailing institutional plans for research development and support. The different thrusts were subjected to an evaluation process, which led to an identification of those thrusts worthy of funding. This was then followed by a process in which researchers developed project proposals - based on the thrusts that had been judged as successful by

thrust review panels. The project proposals were then reviewed by experts and thereafter in a process mediated by Advisory Panels recommendations on projects to be funded were made to the FRD/NRF. It was only at this stage that the FRD/NRF released funds to the institution. However, in certain cases, institutions independently developed their own institutional plans without reference to thrusts, although such plans were subjected to the same reviews. In subsequent years, funds were released upon evidence of satisfactory progress and invoicing of the NRF.

Another important feature of the programme was the constitution of the Advisory Panels for the HBUs. The function and role of these panels was crucial to the success of the programme as they were expected to provide intellectual support and mentoring to thrust leaders in the development and implementation of the programme.

The need for a review of the IRDP

Through the IRDP, the FRD/NRF set out to achieve the following goals and objectives:

- To improve the academic qualification of staff and facilitate the development of quality postgraduate students.
- To support the participation and contribution of women studying and employed at the HBUs in SET research activities.
- To promote the establishment of centres of excellence at HBUs
- To strengthen the available research infrastructure used for purposes of enhancing research and training in research.
- To promote and contribute to science awareness.

At the same time, the FRD entered into partnerships with the institutions and thereby set a specific objective to be achieved jointly at institutional level. Through the thrusts and projects, the researchers identified specific goals and set targets for themselves. A programme of this magnitude must be subjected to periodic reviews to determine how it has performed against its original objectives. A holistic and comprehensive review of such a multi-player and multi-component programme involving different organisations must include both self-assessment at different levels and peer review as well as an independent external review panel. This feedback is critical for all the players involved, and particularly for those activities that may continue outside the IRDP. For the NRF, which is a parastatal body investing public funds in various activities, a review is necessary for establishing whether public funds were effectively used and value was added. It also provides the basis for an informed decision on future plans and interventions.

3. The evaluation process

3.1 Terms of reference

The Vice-President of the National Research Foundation has requested a Panel of external specialists¹ to evaluate its programmes specifically directed at research and research capacity development at historically black universities as an input into planning appropriate partnership programmes with these institutions in future.

¹ Two Panels were appointed. This report emanates from the Panel appointed to evaluate programmes for Science, Engineering and Technology. A separate report is available for the social sciences.

The key areas for evaluation were to:

- Provide an analysis of the redress and the development of human resources facilitated through the programmes and initiatives directed at research and research capacity development
- Provide an audit and analysis of the research outputs and outcomes of the research supported by the programmes and initiatives aimed at developing an institutional research culture
- Provide an analysis of the progress made with research capacity development by the institutions supported by these programmes and initiatives
- Stimulate discussions and inform decisions with regard to the future of these programmes

The Panel was requested to conduct the evaluation at two levels:

- Level 1 – Thrusts²
 - Determine the extent to which each thrust developed and made progress toward and achieved its goals with regard to research by focussing on research outputs and outcomes (e.g. publications and linkages)
 - Determine the extent to which each thrust developed and made progress toward and achieved its goals with regard to research capacity development (e.g. student and staff development)
 - Relate the input to the output for each thrust i.e. comment on value added³
- Level 2 – Partnership (Institutional and NRF context)

Participating Institutions

- Ascertain which strategies had been implemented at an institutional and/or thrust level
- Analyse the financial commitment made by the institution to the partnership in general and at thrust level
- Interrogate the commitment to sustainability and impact
- Identify weaknesses and strengths in the institutional management and comment on factors that facilitated or impeded progress
- Explore the impact of intended and unintended consequences

² Although the Terms of Reference also specify project and activity level, it was agreed at a briefing with the Director, Dr P Nevhutalu, and support staff that the evaluation would focus at thrust level only.

³ The Terms of Reference refer to cost-benefit issues. It was agreed that this would be expressed as 'value added' since insufficient information was available to assess cost-benefit.

- Explore the relevance of the programme and the extent to which objectives have been met

National Research Foundation

- Comment on implementation strategies and assess the return on investment, effectiveness, efficiency, management, resource utilisation, administration, evaluation, monitoring, marketing, etc.
- Comment on the performance and relate to performance of similar development programmes implemented locally and in other countries⁴
- Analyse the financial commitment made by the NRF
- Relate input to output
- Identify weaknesses and strengths in NRF management and comment on factors that facilitated or impeded progress
- Assess the current capacity of the thrusts to contribute towards existing and future needs in the area of research capacity development

The Panel was required to make recommendations and provide advice by:

- Commenting on the focus and scope of the thrusts
- Listing efficient ways to reach objectives and improve performance
- Outlining lessons for the future and strategies to be followed

3.2 Resource documents

The assessment was based on the following resource documents and interactions:

- A copy of the report on the *Evaluation of the programmes and activities of the former Centre for Science Development (CSD) and the Foundation for Research Development (FRD)*
- Report by the managers and management advisory structures for the thrusts
- Self-evaluation reports submitted by the research leaders of each research thrust
- Reports submitted by the respective research offices of the participating South African universities, mainly covering issues regarding institutional commitment, investment and strategies
- Postal reports by peers in the relevant field of specialisation, assessing the quality of research outputs (i.e. articles, dissertations, reports, policy inputs, etc.) of each project.

⁴ Since no information was available for similar programmes, this was not addressed by the Panel.

- A copy of the report: *Evaluation of Planning and Block Grants Awarded to Historically Black Universities by the former CSD between 1997 and 1999*. (See Appendix 5 or a copy is available from the Evaluation Centre on request.)
- The *in situ* and tele-conference evaluation by the review panel. This will include discussions with officials at the participating institutions, selected project leaders/supervisors, students, etc.
- Additional resource documents as may be requested by the Panel.

3.3 Evaluation process

The Review Panel considered the relevant documents and reports and held formal interviews with –

- Dr M Qhobela, Chief Director: Higher Education, Department of Education
- Professor P van Eldik and Dr A Muller who contributed to the report: *Evaluation of Planning and Block Grants Awarded to Historically Black Universities* by the former CSD between 1997 and 1999
- Dr R Adam, Director General, and Mr I Saloogee, Deputy Director, Department of Arts, Culture, Science and Technology
- Professor PE Ngoepe, member of a HBU on the Research Committee of the South African Universities Vice-Chancellor's Association

A site visit was made to the Medical University of South Africa where discussions were held with the Vice-Chancellor, Prof RA Mogotlane, the Deputy Vice-Chancellor (Research), Prof MD Bomela, thrust leaders and postgraduate students. Telephonic interviews were held with the Dean of Research at the University of the Western Cape, Prof R Christie; with the Deputy Vice-Chancellor (Academic and Research) of the University of Durban-Westville, Prof TZ Mthembu and his administration staff and some thrust leaders; and with the Deputy Vice-Chancellor of the University of Zululand, Prof T Dube and the Dean of the Faculty of Science and Agriculture.

The Review Panel held ongoing discussions amongst each other on key issues and worked together in all aspects of the review in order to achieve shared understanding, and to formulate recommendations.

The Panel considers that in the time given and with the material presented, on which findings and recommendations are based, there may be some areas that were not fully considered.

4. Assessment

Explanation

The brief evaluations presented in this chapter and in Appendix 1 represent our best efforts at providing the NRF with some indication of the return on investment yielded by the IRDP, based on the limited information that was available to us. Our analysis was carried out at thrust level, not at project level, and was based on the NRF financial statements,

self-evaluation reports by the Universities, self-evaluation reports by thrust leaders, and peer reviews of thrust leaders' self-evaluation reports (several for each thrust).

For each thrust, the upper figure in the "NRF support: Funding" column in the table (Appendix 1), is the total sum that the NRF records having given to the thrust under the IRDP. The lower figure, in parentheses, is the total sum that the thrust leader's report records as having been received under the IRDP. The upper figure in the "Institutional support: Funding" column in the table is the total sum that the University's report records having given to the thrust during the IRDP period. The lower figure, in parentheses, is the total sum that the thrust leader's report records as having been received from the University during the IRDP period. Sometimes the figures were not available. Sometimes there is a considerable discrepancy between the upper and the lower figures: there are many possible reasons for these discrepancies, and in certain cases we have requested that they be clarified.

Our qualitative assessment of the adequacy of "Other NRF support" (column 3 in the table) and "Institutional support", in terms of both "Management" and "Facilities" (columns 5 and 6) were gleaned from statements in the thrust leader's report. Inevitably these judgements ("Weak", "Adequate", "Good", "Excellent") are exceedingly crude: in particular the "Other NRF support" represents an attempt to form a consensus of the thrust leader's views on NRF staff (usually "friendly", "helpful", "efficient", sometimes "wonderful"), NRF management style, and the thrust's Advisory Panel (views were very diverse, almost bimodal). These assessments should not be taken too seriously.

For team building, staff development and student development (including student subsequent employment or conversion to further research experience), we were on somewhat firmer ground, since the thrust leaders' reports in theory gave detailed information on the composition of the team, the numbers of staff and students who had either been awarded or were working towards higher degrees, and the present occupations of students who had left the thrust. In practice, of course, this information was by no means always complete, but we did our best to make a fair judgement.

For "Research output: amount" (column 11 in the table) and "Dissemination/Outreach" (column 14), we relied on the lists of publications and conference proceedings which were supposed to be included in the thrust leaders' report. The attempt to assess research by counting the number of publications has obvious flaws and has been much criticised, but alternatives are hard to come by. "Research output: quality" is even more problematic, since we had neither the time nor the inclination to read all the papers published, nor did we (in most cases) have the expertise to assess the brief descriptions of the research given in the report. We therefore relied mostly on the views of the peer reviewers. If they were consistent and sounded as though they knew what they were talking about, we were satisfied. Sometimes their views were very heterogeneous, and in the absence of other clues (e.g. journal titles), we entered "Indeterminate".

To interpret our entries in the column headed "Conformity with thrust", we refer readers to our identification of the problems experienced in defining a thrust, in section 5.3.2.

The "Assessment" (column 16), which attempts to pull together the information and subjective judgements in the previous columns, is repeated below, in the body of this chapter, while the last column represents the bottom line, as the NRF required of us.

There were some thrusts which appeared to have been part of the programme, yet the panel did not receive any documentation on them. We could therefore not pass any judgement about these thrusts.

Although not individually noted below, the great majority of the postgraduate students in IRDP thrusts are black and many are women (Appendix 2).

Assessments of HBUs

1. *University of Durban-Westville*

The partnership between the NRF and the University of Durban-Westville (UDW) worked fairly well. UDW provided good facilities for research in general and adequate research management. Discrepancies between allocation of funding claimed by the University and by thrust leaders suggest some lapses in financial management. The fact that 19 % of the student intake is at the postgraduate level suggests that UDW has a real commitment to research.

1.1 *Biotechnology*

The research output of this thrust was excellent, of good quality and well disseminated. Student development, including recruitment into further research and employment, was also excellent.

1.2 *Energy for Rural Development*

In spite of the team's acknowledgement that institutional support was good, this thrust did not come up to expectations on capacity building. The thrust leader's report mentioned that there were some publications, but they were not listed so research output could not be assessed.

1.3 *Environmental Studies*

This is a well established research programme, which has been well supported by the NRF. Research output was good, with many good conference presentations. Staff and student development was excellent, giving prospects for further study and employment. 80 % of the graduates were female.

1.4 *Reaction Dynamics*

This is a relatively small team, but it produces good research and published widely. It attracts a lot of students, who continue in postgraduate research, some up to PhD and either continue in research or get jobs.

2. *Medical University of Southern Africa*

The partnership between the Medical University of Southern Africa (MEDUNSA) and the NRF was good, but institutional facilities were weak and management was patchy, with some curious disparities in reports of the NRF as well as Institutional funding.

2.1 *Bio-organic and Natural Products*

This team has worked well together and has produced excellent results for staff and student development, with good research output and dissemination.

2.2 ***Diarrhoeal Diseases***

This thrust has been very successful, both in capacity building and placing their students in further research or in employment, and also in producing high quality research.

2.3 ***Endothelial and Dietary Factors in Cardiovascular Function***

This thrust has only been going for two years so it is too early to judge their progress, but it is already clear that staff development needs their urgent attention.

2.4 ***Radiation Dosimetry***

This thrust is achieving excellent staff development, with extensive team collaboration, but it appears to have little or no student participation and little research output.

2.5 ***Sexually Transmitted Diseases***

This team has produced excellent results in terms of staff and student development, with good student prospects for further research or employment. Its research output, however, is modest.

3. ***University of Fort Hare***

The University of Fort Hare has received a large amount of funding and excellent NRF support, accompanied by a massive increase in postgraduate students. At the start of the IRDP period, institutional support and hence partnership was very weak, but after University restructuring it has improved markedly.

3.1 ***Aquatic Ecosystems as Water Quality Maintenance System***

From a very weak starting point, this thrust has made excellent progress, particularly with student development, participation in the team and continuation in research. Research output is still weak, but includes many conference presentations and shows promise.

3.2 ***Environmental Resource Management***

This is a good team which has achieved good student development and promising staff development, but research output is poor.

3.3 ***Essential Oils***

High turnover of both senior staff and postgraduate students is a problem here, but nonetheless the team works well together. Student development is good, staff development is promising, and thrust-related research output weak. Some outreach work is carried on in local schools.

4. ***University of the North***

Partnership with the NRF worked well, with good institutional support on the management side, and facilities that varied among thrusts from excellent to weak. IT support was exceptionally poor and little support was available for filing patents. Discrepancies are evident in the NRF funding.

4.1 ***Agriculture and Food Security***

This team increased greatly in number during the funding period, but collaboration was modest and little staff development took place. Student development and participation was good, and thanks to one individual member of the team, research output scored well.

4.2 ***Aquaculture***

The team worked well together, and though they did not achieve much staff development, they collaborated on research output. Publications were not of high quality, but there were many conference presentations. Student development was good and training was provided for unemployed people and school children.

4.3 ***Biotechnology***

A high level of NRF funding supported excellent student development, including continuation in research, but in other respects the thrust's performance was disappointingly weak.

4.4 ***Materials Science***

Excellent student and good staff development has led to strong staff and student involvement in good quality publications. There are some contacts with industry.

4.5 ***The Ecology, Biology and Sustainable Utilisation of Colophospermum mopane***

Apart from student development and employment or conversion, the results from this thrust were weak.

5. ***University of the North – QwaQwa***

Partnership here was excellent, with good NRF support and good institutional support, both for management and in general for facilities. The University commits 5 % of its government funding to research.

5.1 ***Environmental Thrust***

This thrust has been funded for less than two years, but they have made a promising start, with good staff and student development

5.2 ***Ethnobotany***

Only modest progress has been made by the thrust.

5.3 ***Parasitology***

A remarkably successful thrust, with excellent results throughout, both for capacity building and for research output. They even produce their own bulletin.

5.4 ***Polymers***

Good progress has been made in staff and student development. Research output might improve if the thrust collaborated with other institutions to strengthen polymer expertise.

6. ***University of the North-West***

In spite of the appointment of a Research Manager, institutional management was weak and facilities not good. The very large discrepancy evident in thrust 1, between the amount reported by the NRF as paid to the institution, and the amount reported to have been received by the thrust, requires explanation.

6.1 ***Mathematical Modelling and Group Analysis of Differential Equations***

Staff and student development was modest, but Honours students were successful in getting academic posts. The number of papers published was small, but the quality of the research output could not be assessed.

6.2 ***Applied Radiation Science***

This strong industry-related MSc programme has been very successful. The graduates find ready employment in industry. More attempt should be made to publish some of the results emanating from dissertations.

7. ***University of Transkei***

No real partnership existed. The Research Office disintegrated, the institution provided no funding, little in the way of management, and poor facilities. The NRF should have picked up early warning signs and put in place intervention programmes.

7.1 ***Nanomechanical Properties of Materials Research***

The team lost senior members. Little in the way of capacity building and research output has been achieved.

7.2 ***Natural Resources***

Here there is some evidence of teamwork, though students are seldom involved. Staff development has made a promising start, and student development is good. Students move to other universities, both nationally and internationally, to pursue further studies. Research output is weak.

7.3 ***Postgraduate Research and Development Programme in Nonlinear Analysis and its Application***

The research output of this thrust is effectively confined to the work of Prof Mishra and his overseas colleagues. There is little sign of staff or student development.

8. ***University of the Western Cape***

The partnership between the NRF and the University of the Western Cape (UWC) has been good. NRF funding has enabled UWC to leverage considerable external financial support, which in part has compensated for the otherwise inadequate facilities provided by the University. In general, the University has provided good management support, giving some stability even through periods of upheaval. Good IT support has been helpful to research. Discrepancies in reports of the NRF funding need clarification.

8.1 ***Catalysis***

This thrust has built an excellent foundation for high quality research. There has been a big increase in postgraduate student numbers and involvement in research and conferences. Research output, including dissemination and outreach, has also been excellent, though quality appears to be still modest.

8.2 ***Natural Products***

In spite of substantial funding for major equipment, the large and well-qualified team's research output is weak. Student development is excellent, with good opportunities for employment or further research.

8.3 ***Experimental Ecophysiology***

This thrust shows good staff and student participation, but weak research output with little student participation.

8.4 ***Materials Development and Characterisation***

Excellent staff development here, but student development is less impressive, with good retention in the postgraduate programme but little student participation. Papers published are few in number but of good quality, in international journals. The technology developments show promise for future research.

8.5 ***Mathematical Sciences***

This thrust shows little evidence of progress.

8.6 ***Molecular Biology and Biotechnology***

This strong interinstitutional team has achieved excellent staff and student development, with strong team involvement. Five students from the thrust obtained overseas scholarships, and in general the data on future careers of Honours students are very impressive. Research output is good and well disseminated.

8.7 ***National Centre for Bioinformatics and Genomics***

Good leadership characterises this thrust, which has been a remarkable success. IRDP provided equipment and students, and all-important leverage for overseas funding. Student development and continuation in research is excellent, and research output is good.

8.8 ***Sustainable water usage***

Student development and conversion is good, but staff development and research output is weak.

8.9 ***The Assessment, Conservation and Sustainable Use of Biodiversity***

Student development and further progression in research or employment is excellent. Research output is also excellent, of good quality and very well disseminated, but staff development appears weak.

9. ***University of Venda***

This university commits 10 % of its government budget to research and has put in a considerable amount of funding to the IRDP, especially to thrust 3. However, institutional management was not strong, nor were the facilities.

9.1 ***Integrated Environmental Management Research***

A promising start has been made on student development, but in other areas progress has been weak. Since 1999 when funding began, the team has been unstable.

9.2 ***Integrated use of Resources in Plant and Animal Management***

The team in this thrust is weak and has achieved little other than some student development.

9.3 ***Multidisciplinary Natural Products Research***

From a zero-base level of support, this thrust has made substantial progress. The team works well and student development is good, both in terms of postgraduate training, participation in research and attendance at conferences. Some members of the team are producing good research.

9.4 ***Solar Energy***

Starting from scratch, this thrust has made some progress, especially in student development.

10. ***Vista University***

This university is different from the other institutions, as it has a number of campuses. Only one thrust attempted to integrate across more than one campus: in this context, NRF funding appears to have been inadequate. The appointment of a Dean of Research led to a marked improvement in institutional management. Institutional facilities were good.

10.1 ***Synthetic and Pharmaceutical Chemistry***

This thrust has only been funded for two years, but shows great promise. An excellent, highly collaborative small team has achieved excellent staff development, and good student development and participation. Research output is promising and may yield patents in the future.

10.2 ***Materials Science***

In its two years of funding, this young thrust has made a promising start on staff and student development and has produced a little, good quality research output.

10.3 ***Mathematical Modelling***

A weak team, with little evidence of capacity building. The NRF must resolve the conflicting views of the peer reviewers before the quality of the research output can be assessed.

10.4 ***Renewable Energy***

Little evidence of progress is evident as yet. More cognizance should be taken of other research findings.

10.5 ***Science Education and Computer Technology***

This thrust lacks leadership: there is little progress on staff and student development and research output is weak.

10.6 ***Urban Environmental Impact***

This large, disseminated and weak thrust lacks leadership. Some progress has been made in student development, but little in staff development or in research output.

11. ***University of Zululand***

The partnership between the NRF and this university has been good. The university has provided a reasonable level of management and satisfactory facilities. Additional NRF funding for undergraduate support might make it easier to attract students to the University of Zululand.

11.1 ***Chemistry***

Although the thrust was launched in 1996, it has really only been active since 1999. It has made a promising start but this is not yet been reflected in publications based on research conducted in this institution. Staff development is satisfactory, but student involvement in team research is limited.

11.2 ***Environmental Management and Natural Resources Development***

Staff and student development are both excellent. Research output and dissemination is promising, with evidence of local impact.

11.3 **Materials Science**

This well qualified team shows evidence of strong collaboration and good quality research output in an important area. Student development is weak.

11.4 **Mathematical Sciences**

In spite of significant staff turnover, this thrust is producing some cutting edge research, with good high quality output and strong collaborations, both nationally and internationally. Capacity building is also good.

11.5 **Low External Sustainable Agriculture**

There has been an absence of leadership in this thrust and very little progress has been made.

5. **Conclusions and recommendations**

5.1 **Fulfillment of initial IRDP objectives**

Objective 1: To improve the academic qualifications of staff at HBUs.

Conclusion: Substantial progress has been made in fulfilling this objective (Appendix 3)

- Masters: 13 black male 8 black female; 8 white female
- PhD: 11 black male 1 black female; 7 white male

Remarks: Attainment of this objective is confounded by staff movement to HWUs.

Objective 2: To facilitate the development of quality postgraduate students.

Conclusion: Good progress has been made in fulfilling this objective (Appendix 3)
IRDP for registered students

- Hons: 401 black male 319 female
- Masters: 245 black male 195 female; 4 white male; 5 female
- PhD: 33 black male 17 female; 2 white male; 3 female

No information on graduated students.

Remarks: Progress towards this objective is limited by availability and size of bursaries. Attainment of this objective is confounded by student movement to HWUs and into employment.

Objective 3: To support the participation and contribution of women studying and employed at HBUs in SET research activities.

Conclusion: Excellent progress towards meeting this objective (Appendix 3. Refer also to Objectives 1 and 2 above.)

Male: female ratio	Hons	Masters	PhD
1997	10:15	10:6	4:6
2000	138:110	90:82	8:5

(Information on women studying from 1997 – 2000. For information on women employed see data for conclusion 1.)

Objective 4: To promote the establishment of centres of excellence at HBUs.

Conclusion: Promising progress towards meeting this objective (Appendix 1 and 2)
Of 11 institutions evaluated, seven had at least one thrust for which we rated value added excellent. Three of the remainder had at least one good. Only one failed to have a thrust rated at level good or excellent.

Remarks: Attainment of this objective is confounded by movement of senior staff to HWUs.

Objective 5: To strengthen the available infrastructure use for the purpose of enhancing research and training in research.

Conclusion: Nine institutions received major equipment (>R100 000) and $\pm 20\%$ of the total budget was used towards equipment acquisition. A general impression is that there has been a meaningful improvement (Appendix 4).

Remarks: Redress is still urgently required if this objective is to be attained.

Objective 6: To promote and contribute to science awareness.

Conclusion: Good progress with creating awareness of research endeavour. Some thrusts have published popular articles, bulletins etc., and participated in science education in schools. A general impression is that there has been very little progress with public awareness.

5.2 ***Strengths, Weaknesses and Lessons***

5.2.1 ***Institutional and Programme Level***

Strengths

1. A major strength of the Programme has been NRF success in at least partly fulfilling the initial objectives for redress, capacity development and establishment of research culture and infrastructure (see section 5.1)
2. The Programme has also shown strength in the following areas:
 - (a) Supported the development of good science with improved outputs and impact, which otherwise might not have been done.
 - (b) Promoted harnessing of indigenous knowledge.
 - (c) Increased awareness of institutional responsibility for promoting research.
 - (d) Strengthened partnerships locally, nationally and internationally.
3. The excellent and dedicated services provided by the NRF staff played a large part in achieving the above.

Weaknesses

The programme was:

- (a) overly ambitious with weak articulation and ordering of priorities.
- (b) too bureaucratic, reports too frequent and not coordinated with proposals.
- (c) lacking in effective early warning and response systems.
- (d) lacking in coordination and synergy between government, NRF, industry and HBUs.
- (e) lacking in sufficient encouragement and promotion of institutional linkages and partnerships.
- (f) lacking in sufficient provision (financial and planning) for long-term goals defined in the programme, thrusts and projects.
- (g) insufficiently cognisant of the relationships between HBUs and their local communities.
- (h) somewhat remiss in developing its relationships with HBU and thrust leaders through exchanges and visits.

Lessons

1. Partnerships are the foundation for the IRDP and they require continual nurturing, servicing and auditing.
2. Leadership is crucial and this is required at all levels and investment in it is important.

5.2.2 Thrust level

Strengths

The Programme:

- (a) helped to create research focus which was shared at researcher and institutional levels.
- (b) established a relationship between the researchers, their institution and the NRF that was conducive for research.
- (c) created opportunities for collaborative research at various levels, achievement of mutual support and for sharing of facilities.
- (d) developed self-confidence in researchers, with spin off benefits for teaching, research and mentoring, and envisioning the possibility of attaining excellence.
- (e) contributed to strengthening of research infrastructure.

- (f) developed awareness of and enthusiasm for research among black students, thereby promoting a culture of research.
- (g) created opportunities for students, funded through bursaries, to study for higher degrees and feel part of recognised research teams.
- (h) improved the image of research at HBUs.
- (i) prepared HBUs to respond to the national plan that requires research focus and attention to national priorities.
- (j) enabled leverage of research support from other sectors.

Weaknesses

- (a) The concept of a thrust was poorly defined and consequently there was little shared understanding of the intentions, and objectives were not adequately defined.
- (b) Little provision was made for thrust development and management. The emphasis on project management made the thrust relevant in name only.
- (c) The advisory and scientific support system was not always constructive.
- (d) The process leading to thrust acceptance was cumbersome and sometimes unhelpful.
- (e) The contribution that social sciences should have made in some thrusts was not appreciated and explored.
- (f) There was not enough commitment to negotiate and reach agreement (NRF, institution and thrust) on the allocation of funds to optimise return on investment measured against objectives.
- (g) Funding on some thrusts was insufficient to realise a meaningful return on investment.
- (h) Some thrusts that received support lacked the leadership and/or competence to be successful.
- (i) The absence of a strategy for staff and student retention and for succession made thrusts vulnerable.

Lessons

1. If the intention is to direct research towards strategic objectives it is essential that the funding agency builds a shared appreciation for, and understanding of the objectives and how they are to be achieved and how progress is to be measured.
2. If the intention of research thrusts/focus areas/niches is to promote integrated, collaborative research, then provision must be made for managing integration and collaboration.

3. It is necessary to establish a clear strategy for funding research at HBUs that reflects an appropriate balance between opportunities for students and developing and sustaining the research endeavour.

5.3 ***Panel evaluation process***

Strengths

The process:

- (a) made provision for comprehensive, multidimensional, multifactoral evaluation.
- (b) provided access to diverse, comprehensive background information and source documents.
- (c) provided for a consultative process.
- (d) demonstrated willingness of the NRF to engage in self-examination and openness to criticism.
- (e) demonstrated willingness of peers to contribute to evaluation of thrusts.
- (f) benefited from the varied experience of Panel.

Weaknesses

- (a) Quality of reports was uneven and information was incomplete in some of them.
- (b) There were inconsistencies in some of the information, and assessments thereof, e.g.
 - discrepancies in financial information provided by NRF, institution and thrust;
 - conflicting interpretation and therefore evaluations by reviewers;
 - reviewers not sufficiently briefed on context, expectations and assessment.
- (c) The NRF did not adequately audit reports to ensure consistency of reporting and accuracy of information.
- (d) Reporting specifications were not entirely congruent with objectives of IRDP, e.g.
 - insufficient disaggregation of race, gender, etc;
 - costing of institutional investment, NRF investment and leveraged support;
 - separation of value added by IRDP from that accruing from other support.
- (e) There was inadequate explanation of how to weight the different goals of the IRDP and to incorporate time horizons reflecting programme, thrust and project goals.
- (f) There was uncertainty over how to accommodate, measure and acknowledge community work within the programme and thrusts.
- (g) Terms of Reference of the Review Panel were overly complex and not entirely consistent.

Lessons

1. When goals and assessment criteria for evaluation are not clear, objective and fair evaluation cannot be assured.
2. When the information is incomplete it jeopardises objective and fair evaluation by the Panel.
3. A Panel provides for more consistent evaluation than can be achieved through independent reviewers, and an independent Panel provides more objective evaluation than can be achieved 'in house.'

5.4 Comparison of IRDP and CSD evaluations

There are a number of important differences and similarities in the findings of the IRDP Review Panel and those of the panel that evaluated the Planning and Block Grants awarded to HBUs by the former CSD between 1997 and 1999 (cf Appendix 5).

Key differences include the following:

- The IRDP appears to have achieved far more success in terms of its initial objectives than what is reported for the Planning and Block Grants of the former CSD.

Similarities, mainly in the criticisms and recommendations include:

- NRF's weaknesses as a grant-maker – such as their tendency to take the signature of Deputy Vice-Chancellors as a measure of institutional commitment; weaknesses in the Memoranda of Understanding; unstable conditions in HBUs, weak infrastructure and research management capacity at HBUs; and other internal weaknesses that hindered effective use of NRF grants.
- The CSD report also agrees with the IRDP Review Panel on the need to commit more resources in order to secure the desired impact, the NRF to continuously engage in inter-institutional dialogue with and to provide guidance to HBUs in the programme period, and to set realistic time frames.

5.5 Recommendations

Accepting the roles and responsibilities accorded to the NRF as a national research support agency and outlined in the 1999/2000 Annual Report, and acknowledging the success of the IRDP, it is recommended that the NRF should:

- Increase investment in nurturing, servicing and auditing its partnerships with HBUs. Frequent personal contact at institutional, thrust/focus/niche and even student level is required to build relationships, and to achieve shared understanding of and commitment to servicing the national research agenda.
- Work with HBUs to define roles and responsibilities in ways that increasingly develop their research support functions and thereby build greater self-reliance.
- Improve networking within the tertiary education sector so that HBUs are enabled to stay current and optimise access to information and facilities.

- Review its research management procedures with a view to increasing efficiency, improving performance assessment and reducing pressure on already over-committed researchers at HBUs.
- Work with institutions and researchers to define key concepts and criteria for performance assessment at individual, project, thrust/niche and institutional levels.
- Ensure, before investing in research, that effective leadership is in place, or is being introduced, and that provision is made for leadership succession.
- Work with HBUs and industry to provide the start up conditions necessary to initiate partnerships in research, thereby enabling HBUs to access THRIP and other research support, and to promote self-reliance.
- Work with HBUs to identify opportunities and provide support for patenting.
- Actively promote, if necessary through dedicated funding, the establishment of IT systems in all HBUs.
- Put increased emphasis on negotiating with researchers and institutions to achieve the balance of funding between bursaries running and capital expenses that optimises return on investment for all parties.
- Strive actively to increase the level of support for research in general and at HBUs in particular.

Appendix 1:

Detailed evaluation of Universities and Thrusts

- Column 1: Thrusts, listed for each University, plus the year in which funding for the thrust began.
- Column 2: For each University, the total amount of NRF funding under the IRDP is given. For each thrust, the upper figure is the total sum that the NRF records having given to the thrust under the IRDP. The lower figure, in parentheses, is the total sum that the thrust leader records as received from the NRF under the IRDP.
- Column 4: The upper figure for each thrust is the total sum that the University records having given to the thrust during the IRDP period. The lower figure, in parentheses, is the total sum that the thrust leader records as received from the University during the IRDP period.
- Columns 3, 5 & 6: For a comment on how these qualitative comments were arrived at, see Chapter 4, Explanation, page 8.
- Column 7: The assessment of the level of partnership between the NRF and the University under the IRDP was based on the institutional (also sometimes the thrust) perception of how the partnership worked.
- Column 8: Assessment of team building is based on evidence of teamwork and involvement of students in thrust activities. The number of staff members in the team initially (“Start”) and at present (“Now”). The assessment of the research platform initially and at present is based on: (1) staff expertise (qualifications), (2) ability to produce research outputs (research experience), (3) available infrastructure, (4) institutional support.
- Columns 9 & 10: Staff and student development: figures taken from thrust leader’s report.
- Columns 11, 12 & 14: Research output: quantity, quality, dissemination (dissemination of research results to peers and stakeholders).
- Column 13: Thrust conformity: whether research output conformed with description of thrust, and reflected integrated research.
- Column 15: Student employment, or conversion to further study.
- Columns 16 & 17: See Chapter 4, Explanation, page 8.

University of Durban-Westville						
Thrusts	NRF support		Institutional support			
	Funding	Other NRF support	Funding	Management	Facilities	Partnership
Institution	R6 048 274*					Adequate
1. Biotechnology 1997	R1 605 758 (R1 496 346)	Weak	R845 221 (R 20 000)	Weak	Adequate	
2. Energy for Rural Development 1998	R 548 183 (R1 475 000)	Adequate	R331 393 (R0000)	Good	Good	
3. Drives & Automation	R13 000 (NA)	-	NA	-	-	
4. Environmental Studies	R968 997 (R753 000)	Excellent	R1 302 762 (R 172 000)	Adequate	Good	
5. Reactional Dynamics 1996	R811 727 (R718 000)	Good	R337 666 (R 30 500)	Adequate	Weak	
*This amount includes Institutional Grant of R715 415						

University of Durban-Westville (continued)				
Return on investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
1. Adequate but must do more Start: 7 Platform: adequate Now: 7 Platform: adequate	Adequate: 1 PhD completed; 1 PhD current	Excellent: 10 PhD, 30 MSc, 112 Hons completed; 4 PhD, 13 MSc, 41 Hons current	Excellent	Good
2. Weak: individually driven Start: 10 Platform: adequate Now: 11 Platform: adequate	Adequate: 1 PhD current	Adequate: 5 MSc current	Indeterminate	Indeterminate
3. -		-	-	-
4. Weak: volatile numbers, weak team research Start: 10 Platform: good Now: 12 Platform: good	Excellent: 3 PhD, 2 MSc, 23 Hons completed; 1 PhD, 1 MSc current	Excellent: 1 PhD, 12 MSc, 5 Hons current	Good	Adequate
5. Weak: weak team work Start: 4 Platform: weak Now: 5 Platform: weak	Weak: 1 MSc completed; 1 MSc current	Good: 11 Hons completed; 8 MSc, 3 PhD, 3 Hons current	Good: but reflects the work of one individual	Good

University of Durban-Westville (continued)				
Return on investment				
Conformity with thrust	Dissemination/ Outreach	Employment/ conversion	Assessment	Value added
1. Weak	Excellent	Good	Research output excellent, of good quality and well disseminated. Student development, including recruitment into further research and employment, excellent.	Excellent value added. Could benefit from improved team building.
2. Indeterminate	Indeterminate	Indeterminate	In spite of the team acknowledgement that institutional support was good, this thrust did not come up to expectations. It attracted a few postgraduate students at MSc level.	Little value added.
3. -	-	-	-	-
4. Weak	Good	Good: conversion and employment	A good platform existed for this research, with excellent NRF support. Research output and dissemination was good. Staff and student development excellent, with good further prospects for study and employment.	Excellent value added, but more attention should be paid to stabilising the team.
5. -	-	Good	Relatively small team, has produced good research output and dissemination, and good research capacity building, with good prospects for employment and research conversion.	Good value added, but research output largely reflects the work of one individual and teamwork is rather weak.

University of Durban-Westville (continued)						
Thrusts	NRF support		Institutional support			
	Funding	Other NRF support	Funding	Management	Facilities	Partnership
6. Water & Environmental Management	R1 093 727 (NA)	-	R416 339 (NA)	-	-	
7. Engineering Materials	R220 168 (R260 200)	Good	R163 568 (R 55 340)	Good	Good (combined)	
8. Numerical Methods & Applications	R71 309 (NA)	-	R228 265 (NA)	-	-	

University of Durban-Westville (continued)				
Return on investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
6. -	-	-	-	-
7. - Start: 3 Platform: weak Now: - Platform: weak	-	-	-	-
8. -	-	-	-	-

University of Durban-Westville (continued)				
Return on investment				
Conformity with thrust	Dissemination/ outreach	Employment/ conversion	Assessment	Added value
6. -	-	-	-	-
7. -	-	-	Discontinued	-
8, -	-	-	-	--
<p>Institution: In general, the University of Durban-Westville provided good facilities for research, and adequate research management. Discrepancies between allocation of funding claimed by the University and by thrust leaders suggest some lapses. Of eight thrusts initially funded, one was discontinued, and the Panel was only provided with information on four of the remaining thrusts</p>				

Medical University of Southern Africa						
Thrusts	NRF support		Institutional support			
	Funding	Other NRF support	Funding	Management	Facilities	Partnership
Institution	R3 136 929*					Good
1. Bio-organic and Natural Products 1998	R538 707 (R722 000)	Excellent	R 56 660 (R100 500)	Weak	Weak	
2. Diarrhoeal Diseases 1998	R414 554 (R722 000)	Weak	R36 000 (R35 000)	Weak	Weak	
3. Endothelial & Dietary Factors in Cardiovascular Function 1999	R 79 891 (R116 100)	Adequate	R 7 234 (R37 234)	Good	Weak	
4. Radiation Dosimetry 1998	R472 989 (R700 000)	Good	R34 012 (NA)	Excellent	Adequate	
5. Sexually Transmitted Diseases 1998	R1 092 463 (R1 100 181)	Good	R 50 538 (R279 451)	Good	Adequate	
*Institutional Grant of R196 018 is included						

Medical University of Southern Africa (continued)				
Return on investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
1. Excellent: good growth in numbers; good team work Start: 1 Platform: weak Now: 10 Platform: adequate	Excellent: 6 Hons, 3 MSc, 2 PhD current	Excellent: 6 Hons completed; 4 MSc and 11 Hons current	Good	Adequate
2. Good Start: 4 Platform: adequate Now: 9 Platform: adequate	Excellent: 2 MSc completed; 2 MSc and 6 PhD current	Good: 4 PhD current	Good	Good
3. Indeterminate. Only recently established Start: 4 Platform: adequate Now: 4 Platform: adequate	Weak	Adequate: 1MSc completed; 1MSc current; non-NRF PhD	-	-
4. Excellent: Extensive team collaboration Start: 5 Platform: weak Now: 8 Platform: weak	Excellent: 1 MSc completed; 6 MSc and 2 PhD current	None	Weak	Weak
5. Adequate Start: 7 Platform: weak Now: 8 Platform: adequate	Excellent: 1 Hons, 2 MSc, 1 PhD completed; 2 Hons, 6 MSc current	Excellent: 5 Hons, 1 MSc, 4 PhD completed; 9 Hons, 13 MSc, 3 PhD current	Adequate	Adequate

Medical University of Southern Africa (continued)				
Return on investment				
Conformity with thrust	Dissemination/ outreach	Employment/ conversion	Assessment	Added value
1. Good	Good	Indeterminate (Too early to tell)	This good team has produced excellent results for staff and student development, with good research output and dissemination	Excellent
2. Good	Good	Excellent	This thrust has been very successful, with good capacity building, excellent conversion or employment, and good output of high quality research	Good
3. -	-	-	Too early to judge, but staff development needs urgent attention	Little yet
4. -	Adequate: student work poorly exposed	-	Excellent team work and staff development. Research output and student development and participation was weak	Little yet
5. Good	Adequate	Good	This team has produced excellent results in terms of staff and student development and good employment or conversion. However, its research output is modest.	Good

Medical University of Southern Africa (continued)						
Thrusts	NRF support		Institutional support			
	Funding	Other NRF support	Funding	Management	Facilities	Partnership
6. Semi-conducting Materials	R13 995 (NA)	-	R2 104 (-)	-	-	
7. Toxicology of Traditional Materials	R328 312 (NA)	-	-	-	-	
8. HBV Diagnosis ^a (Dr MJ Mphahlele)	-	-	R40 909 (-)	-	-	
9. Influence of Environment on Mineral Tissues ^a (Prof EJ Raubenheimer)	-	-	R11 888 (-)	-	-	
10. Organic Waste Bio-Conversion ^a (Dr JH van Wyk)	-	-	R 10 182 (-)	-	-	
^a It became evident after the draft report had been submitted that thrusts 8, 9 and 10 were not separate thrusts. 'HBV Diagnosis' was incorporated into thrust 5; 'Influence of Environment on Mineral Tissues' was discontinued; and 'Organic Waste Bioconversion' was incorporated into thrust 1.						
Institution: Institutional facilities were weak and management patchy, with curious disparities in claims of institutional as well as NRF funding. The institution listed ten active thrusts in contrast to the seven NRF funded – only five thrusts had reports and evaluation Partnership was good						

Medical University of Southern Africa (continued)				
Return on investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
1. -	-	-	-	-
2. -	-	-	-	-
3. -	-	-	-	-
4. -	-	-	-	-
5. -	-	-	-	-

Medical University of Southern Africa (continued)				
Return on investment				
Conformity with thrust	Dissemination/ outreach	Employment/ conversion	Assessment	Added value
1. -	-	-	-	-
2. -	-	-	-	-
3. -	-	-	-	-
4 -	-	-	-	-
5. -	-	-	-	-

University of Fort Hare						
Thrusts	NRF support		Institutional support			
	Funding	Other NRF support	Funding	Management	Facilities	Partnership
Institution	R5 328 246*					Weak
1. Aquatic Ecosystems as Water Quality Maintenance System 1997	R1 072 154 (R1 691 500)	Excellent	R000	Weak	Weak	
2. Environmental Resource Management 1997	R1 320 627 (R1 560 000)	Excellent	R000	Weak	Weak	
3. Essential Oils 1997	R1 943 506 (R1 593 690)	Excellent	R000	Weak	Weak	
4. The Science of Free Ranging Animals	R372 747 (NA)	-	-	-	-	
5. Feed Resources for Sustainable Livestock	R208 405 (NA)	-	-	-	-	
*This amount includes R376 807 as an Institutional Grant						

University of Fort Hare (continued)				
Return on investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
1. Excellent: strong evidence of staff/student collaboration Start: 12 Platform: weak Now: 16 Platform: adequate	Weak: only 1 PhD completed	Excellent: 41 Hons, 9 MSc completed; 5 Hons, 8 MSc current	Weak but promising	Adequate but promising
2. Good Start: 8 Platform: weak Now: 15 Platform: weak	Adequate: 4 PhD current	Good: 22 Hons, 8 MSc completed; 11 MSc and 1 Hons current	Weak	Indeterminate
3. Good Start: 6 Platform: weak Now: 9 Platform: adequate	Adequate: 3 MSc, 3 PhD current	Good: 25 Hons, 1 MSc completed; 3 PhD, 3 MSc, 2 Hons current	Adequate	Weak
4. -	-	-	-	-
5. -	-	-	-	-

University of Fort Hare (continued)				
Return on investment				
Conformity with thrust	Dissemination outreach	Employment/ conversion	Assessment	Added value
1. Weak	Excellent	Good: students continuing studies or working within science or research	From a very weak starting point, this thrust has made excellent progress, particularly with student development, participation in the team and continuation in research. Research output is weak but promising.	Good
2. -	Adequate: mainly local	Adequate	This is a good team which has achieved good student development, but research output is weak. Staff development is promising.	Adequate
3. Weak: Thrust definition lacks cohesion	Adequate	Indeterminate	This is a good team, but there is a problem with high turnover of senior staff and postgraduate students. Despite this, student development is good, but thrust-related research is weak. Staff development is promising.	Adequate
4. -	-	-	-	-
5. -	-	-	-	-

University of Fort Hare (continued)						
Thrusts	NRF support		Institutional support			
	Funding	Other NRF support	Funding	Management	Facilities	Partnership
6. Renewable Energy	R34 000 (NA)	-	-	-	-	
Institution: Fort Hare has received a large amount of funding and excellent NRF support. Institutional support was initially very weak, contributing to weak partnership, but improved markedly after restructuring. Of six thrusts initially funded, the Panel only received information on three						

University of Fort Hare (continued)				
Return on investment				
Team building	Staff development	Student development	Research output: amount	Research quality: amount
-	-	-	-	-

University of Fort Hare (continued)

Return on investment				
Conformity with thrust	Dissemination/ outreach	Employment/ conversion	Assessment	Added value
-	-	-	-	-

University of the North						
Thrusts	NRF support		Institutional support			
	Funding	Other NRF support	Funding	Management	Facilities	Partnership
Institution	R9 313 761*					Good
1. Agriculture and Food Security 1997	R1 769 414 (NA)	Good	R103 000 (R103 000)	Good	Weak	
2. Aquaculture 1996	R228 651 (R502 850)	Excellent	R105 306 (R105 306)	Good	Excellent	
3. Biotechnology 1997	R3 438 069 (R3 545 000)	Weak	R1 797 500 (R1 797 500)	Weak	Adequate	
4. Materials Science 1997	R1 704 574 (R 802 500)	Good	R45 000 (R45 000)	Good	Good	
5. The Ecology, Biology & Sustainable Utilisation of Colophospermum Mopane 1996	R582 042 (R507 800)	Adequate	R161 000 (R161 000)	Good	Weak	
*This amount includes R1 234 429 as an Institutional Grant						

University of the North (continued)				
Return on investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
1. Adequate: good number, only modest team collaboration Start: 3 Platform: adequate Now: 19 Platform: adequate	Weak: 1 MSc, 1 PhD current	Excellent: 42 Hons, 1 MSc completed; 25 MSc current	Good but largely produced by one person	Adequate
2. Good: impressive number of joint staff publications Start: 4 Platform: good Now: 8 Platform: good	Weak: 1 MSc current	Good: 10 Hons, 1 MSc, completed; 6 Hons, 6 MSc current	Adequate	Weak
3. Adequate Start: 6 Platform: adequate Now: 4 Platform: adequate	Weak: 1 PhD completed; 1 PhD current	Excellent: 41 Hons, 11 MSc completed; 4 Hons, 13 MSc 3 PhD current	Weak	Weak: publications not peer reviewed
4. Excellent: strong junior staff involvement in publications* Start: 13 Platform: adequate Now: - Platform: good	Good: 2 MSc, 1 PhD completed; 2 MSc, 2 PhD current	Excellent: 39 Hons, 5 MSc completed; 12 Hons, 7 MSc current	Good	Good
5. Weak Start: 4 Platform: adequate Now: 8 Platform: adequate	Weak: 1 MSc, 1 PhD current	Good: 14 Hons, 2 MSc completed; 2 PhD, 10 MSc current	Weak	Adequate
* Only one thrust theme seems to be highly productive				

University of the North (continued)				
Return on investment				
Conformity with thrust	Dissemination/ outreach	Employment/ conversion	Assessment	Added value
1. Weak	Good: especially in terms of student involvement	Good	This team increased greatly in number during the funding period but achieved little staff development and only modest collaboration. Student participation and development was good. Research output was good but stemmed largely from one individual.	Good
2. Adequate	Adequate	Good	Good team, showing evidence of collaborative staff research output, but quality weak and weak on staff development. Student development and conversion good.	Weak, considering strength of starting platform
3. Adequate: weak integration of projects	Adequate	Good	This thrust has achieved excellent student development and conversion, but in other respects weak (especially in view of high level of NRF funding).	Weak
4. Excellent	Excellent	Good	Good staff development, with strong staff and student involvement in good quality publications. Excellent student development.	Excellent
5. Good but there seems to be confusion in thrust definition	Adequate	Good	This thrust has produced good results in terms of student development and employment/conversion. Otherwise its results are weak.	Adequate

University of the North (continued)						
	NRF support		Institutional support			
Thrusts	Funding	Other NRF support	Funding	Management	Facilities	Partnership
6. Natural Sciences	R356 582 (NA)	-	(NA)	-	-	
<p>Institution: Partnership was good, and institutional support was good on the management side and good in general on facilities. However, IT provision was exceptionally weak and little support was available for filing patents. Six thrusts were funded by NRF, of which the Panel was given information on five. Discrepancies are evident in the funding allocated by NRF.</p>						

University of the North (continued)				
Return on investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
-	-	-	-	-

University of the North (continued)

Return on investment				
Conformity with thrust	Dissemination/ outreach	Employment/ conversion	Assessment	Added value
-	-	-	-	-

University of the North - QwaQwa						
	NRF support		Institutional support			
Thrusts	Funding	Other NRF support	Funding	Management	Facilities	Partnership
Institution	R2 251 254*					Excellent
1. Environmental 2000	R186 500 (R158 000)	Good	R90 000 (R40 000)	Good	Adequate	
2. Ethnobotany 1998	R685 600 (R735 700)	Excellent	R285 250 (R397 300)	Good	Adequate	
3. Parasitology 1998	R573 011 (R554 500)	Excellent	R454 250 (R454 250)	Good	Excellent	
4. Polymers 1998	R806 143 (R928 807)	Good	R469 725 (R469 725)	Good	Weak	
*No institutional grant provided						
Institution: Partnership was excellent, with good NRF support and good institutional support, both for management and in general for facilities						

University of the North – QwaQwa (continued)				
Return on investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
1. Weak Start: 10 Platform: adequate Now: 10 Platform: adequate	Good: 1 Masters completed; 1 Masters and 2 PhD current	Excellent: 5 Hons completed; 3 Hons, 9 MA current	Weak but understandable given recent start of thrust	Weak but understandable
2. Good: small but appears to be stable Start: 3 Platform: weak Now: 3 Platform: weak	Adequate: 1 MSc, 2 PhD current	Weak	Weak	Weak
3. Excellent: good collaboration on research and joint publication Start: 3 Platform: weak Now: 4 Platform: good	Good: 2 MSc completed; 1 PhD current	Excellent: 1 MSc, 13 Hons completed; 2 Hons, 5 MSc, 1 PhD current	Excellent	Excellent
4. Good, but stability uncertain Start: 5 Platform: adequate Now: 6 Platform: good	Good: 2 MSc, 1 PhD current	Good: 9 Hons, 1 MSc completed; 6 Hons, 4 MSc current	Adequate	Adequate

University of the North – QwaQwa (continued)				
Return on investment				
Conformity with thrust	Dissemination/ outreach	Employment/ conversion	Assessment	Added value
1. Weak: lacking in focus	Adequate	Good	This thrust is relatively new (approximately 2 years), but it has made a promising start, with good staff and student development and good student employment/conversion.	Good
2. Weak	Weak	Insignificant	This thrust has only modest progress to report.	Little so far
3. Excellent	Excellent, especially in terms of student outreach	Good	This thrust has been a remarkable success, with excellent results throughout, both for capacity building and for research output.	Excellent
4. Good	Good	Indeterminate	This thrust has made good progress in staff and student development, but research output might be stronger if it collaborated with other institutions to strengthen polymer expertise.	Good

University of North-West						
	NRF support		Institutional support			
Thrusts	Funding	Other NRF support	Funding	Management	Facilities	Partnership
Institution	R4 760 135*					Adequate
1. Mathematical Modelling and Group Analysis of Differential Equations 1998	R3 000 424 (R 635 600)	Good	NA (R805 584)	Weak	Good	
2. Applied Radiation Science 1998	R 952, 536 (R1 092 200)	NA	NA (R805 584)	Weak	Weak	
3. Medicinal Plants of the North-West Province	R293 921 NA	-	NA	-	-	
*This amount includes R513 254 as an Institutional Grant						
Institution: The University of North-West appointed a Research Manager, but nonetheless institutional management was weak, and facilities not good. The very large discrepancy evident in the allocation of funds by NRF and the amount received by thrust 1 requires explanation. No information was provided for progress on thrust 3.						

University of North West (continued)				
Return on investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
1. Adequate: high turnover Start: 2 Platform: weak Now: 3 Platform: weak	Adequate: 1 MSc completed; 1 MSc, 1 PhD student	Adequate: 6 Hons completed; 6 Hons, 4 MSc current	Weak	Indeterminate
2. Good: especially in terms of academic/industry collaboration Start: 3 Platform: adequate Now: 4 Platform: adequate	Weak: 1 MSc current	Good: 11 MSc completed; 33 Hons current	Weak	Indeterminate
3. -	-	-	-	-

University of North West (continued)				
Return on investment				
Conformity with thrust	Dissemination/ outreach	Employment/ conversion	Assessment	Added value
1. Good	Good	Adequate	Staff and student development was modest, and research output was weak.	Very little
2. Good	Excellent: Linkages with industry	Excellent, but poor conversion to PhD	This strong industry-related MSc programme has been very successful. The graduates find ready employment in industry. More attempt should be made to publish some of the results emanating from dissertations.	Good
3. -	-	-	..-	

University of Transkei						
Thrusts	NRF support		Institutional support			
	Funding	Other NRF support	Funding	Management	Facilities	Partnership
Institution	R3 035 038*					Nil
1. Dependable Distributed Multimedia Application 1999	R229 085 (NA)	-	-	-	-	
2. Nanomechanical Properties of Materials Research 1996	R107 075 (NA)	Good	-	Nil	Adequate	
3. Natural Resources 1997	R2 021 546 (R2 151 505)	Good	(R000)	Weak	Weak	
4. Postgraduate Research and Development Programme in Nonlinear Analysis and its Application 1998	R450 212 (R591 340)	Good	(R000)	Weak	Weak	
*The total amount included in Institutional Grants of R227 120						

University of Transkei (continued)				
Return of investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
1. -	-	-	-	-
2. Team has collapsed Start: 3 Platform: adequate Now: 1 Platform: weak	Weak: 1 PhD completed	Weak: 2 MSc, 2 Hons completed; 1 MSc current	Weak	Weak
3. Adequate: team number static but some evidence of team work Start: 16 Platform: adequate Now: 14 Platform: adequate	Adequate: 1 MSc completed; 2 MSc, 2 PhD current	Good: 29 Hons, 11 MSc completed; 5 MSc current	Weak	Adequate
4. Weak Start: 3 Platform: adequate Now: 3 Platform: adequate	Weak: 2 MSc, 1 PhD current	Weak: 6 Hons completed; 1 MSc current	Weak for the team. Adequate for Prof Mishra	Weak for the team. Adequate for Prof Mishra

University of Transkei (continued)				
Return of investment				
Conformity with thrust	Dissemination/ outreach	Employment/ Conversion	Assessment	Added value
1. -	-	-	-	
2. Adequate	Adequate	Indeterminate	The team has lost senior members. Little in the way of capacity building and research output has been achieved.	Very little
3. Weak	Good but weak on student involvement	Good: Many UNITRA students doing further studies nationally and internationally	This thrust shows some evidence of teamwork though students are seldom involved. They have made a promising start on staff development, but research output is weak. Student development is good, with strong entry to further studies nationally and internationally.	Adequate
4. Good but limited to the work of Prof Mishra	Adequate	Weak: graduates finding jobs but not continuing with studies or research	The research output of this thrust is effectively confined to the work of Prof Mishra and his overseas colleagues. Little staff or student development.	Little
<p>Institution: Effectively no partnership. The Research Office dissolved. The institution provided no funding, little in the way of management, and poor facilities. The NRF should have picked up early warning signs and put in place intervention programmes.</p>				

University of the Western Cape						
Thrusts	NRF support		Institutional support			
	Funding	Other NRF support	Funding	Management	Facilities	Partnership
Institution	R13 674 894*					Good
1. Catalysis 1998 (1996)	R1 032 004 (R 446 000)	Adequate	NA ^a (R100 000)	Adequate	Adequate	
2. Natural Products 1998	R553 987 (NA)	Weak	NA (R30 000)	Adequate	Adequate ^b	
3. Experimental Ecophysiology 1996	R1 419 493 (R1 576 500)	Good	NA (R128 060)	Good	Adequate	
4. Materials Development and Charac- terisation 1996	R 906 244 (R1 924 972)	Good	NA (R125 306)	Adequate	Weak	
5. Mathematical Sciences 1997	R264 025 (R230 000)	NA	NA (NA)	Weak	Weak	
^a The institution apologises that its accounts are not kept in the appropriate format, and the accountants have not been able to produce the information in the time available. As elsewhere, the individual thrust leaders' estimates are presented in parentheses.						
^b Equipment is available but not the technical staff to operate and maintain it.						

University of the Western Cape (continued)				
Return of investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
1. Good: good list with collaborative publications with student involvement Start: 6 Platform: adequate Now: 4 Platform: good	Good, especially through sabbaticals	Excellent: 8 Hons, 8 MSc completed; 3 Hons, 12 MSc, 8 PhD current	Excellent	Adequate, given high level of staff qualifications and support
2. Adequate: large team but weak evidence of collaborative work Start: 4 Platform: adequate Now: 6 Platform: good	Not applicable: staff all developed!	Excellent: 13 Hons, 1 MSc, 1 PhD completed; 1 Hons, 10 MSc, 2 PhD current	Weak	Adequate
3. Adequate, but there seem to be three separate sub-teams within this thrust Start: 5 Platform: adequate Now: 3 Platform: adequate	Good: 1 MSc, 1 PhD completed; 1 MSc current	Good: but no Honours students currently registered. 16 Hons, 4 MSc completed; 11 MSc, 3 PhD current	Weak	Adequate
4. Adequate: good staff collaboration but weak student participation Start: 6 Platform: good Now: 4 Platform: good	Excellent: 3 PhD completed; 1 MSc and 1 PhD current	Adequate: 3 MSc completed; 2 Hons, 3 MSc and 3 PhD current	Adequate	Good
5. Weak: no evidence of team at all Start: 1 Platform: weak Now: 1 Platform: weak	None	Good: 3 Hons, 1 MSc completed; 2 MSc current	Weak	Weak

University of the Western Cape (continued)				
Return of investment				
Conformity of thrust	Dissemination/ outreach	Employment/ conversion	Assessment	Added value
1. Adequate, but needs thrust focus	Excellent	Good	This thrust has built an excellent foundation for high quality research. It has achieved excellent results in student development and involvement. Research output has also been excellent, dissemination and outreach excellent, quality adequate.	Excellent
2. Good	Weak, especially in terms of exposing student research output	Good	In spite of substantial funding for major equipment, the large and well qualified team's research output is weak. Student development is excellent, with good employment or conversion.	Good
3. Good but too many projects to manage effectively	Weak: few conferences, little student participation	Adequate, in terms of employment, good conversion rate	This thrust shows good staff and student development, but weak research output with little student participation.	Adequate
4. Good	Weak	Good, for retention in the postgraduate programme	Excellent staff development, but student development only adequate, with good retention in the postgraduate programme but poor student participation. Papers published are few in number but of good quality. The technology developments show promise for future research.	Good
5. Weak	Weak	Adequate	Little evidence of progress.	Very little

University of the Western Cape (continued)						
Thrusts	NRF support		Institutional support			
	Funding	Other NRF support	Funding	Management	Facilities	Partnership
6. Molecular Biology and Biotechnology 1997	R2 926 841 (R2 321 000)	Good	NA (R2 200 000) ^c	Excellent	Good	
7. National Centre for Bioinformatics & Genomics 1997	R 482 310 (R1 032 340)	Excellent	NA (NA)	Weak	Weak ^d	
8. Sustainable Water Usage 1997	R1 311 950 (R1 868 772)	Good	NA (R10 000)	Excellent	Good	
9. The Assessment, Conservation & Sustainable use of Biodiversity 1996	R1 443 419 (R2 012 412)	Adequate	NA (R88 000)	Good	Weak	
^c This estimate includes funding for equipment, conference support, research running costs, some postgraduate support, for five years.						
^d But excellent equipment from other sources						

University of the Western Cape (continued)				
Return on investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
6. Excellent: strong inter-Institutional team and strong student involvement Start: 7 Platform: adequate Now: 11 Platform: excellent	Excellent: 1 MSc, 2 PhD completed; 2 PhD current	Excellent: 10 MSc, 63 Hons and 3 PhD completed; 12 Hons 23 MSc, 3 PhD current	Adequate in view of large team size	Good
7. Adequate: largely driven by one enthusiastic individual Start: 1 Platform: weak Now: 4 Platform: good	No staff	Excellent: 1 PhD, 2 Hons, completed; 2 Hons 2 MSc, 4 PhD, 4 Postdocs current	Good	Good
8. Adequate: projects poorly integrated within thrust Start: 1 Platform: adequate Now: 15 Platform: adequate	Weak: 1 MSc, 1 PhD current	Good: 12 Hons, 2 MSc completed; 20 MSc, 2 PhD current	Weak	Weak
9. Adequate: tendency for project leaders to work in isolation Start: 4 Platform: adequate Now: 9 Platform: excellent	Weak: 1 Hons, 1 MSc completed; 1 MSc, 1 PhD current	Excellent: 36 Hons, 16 MSc, 2 PhD completed; 9 Hons, 26 MSc, 6 PhD current	Excellent	Good

University of the Western Cape (continued)				
Return on investment				
Conformity with thrust	Dissemination/ outreach	Employment/ conversion	Assessment	Added value
6 Good	Good	Excellent	Excellent interinstitutional team and staff development. Excellent student development with strong team involvement. Five students within this thrust obtained overseas scholarships. Research output good and well disseminated.	Excellent
7. Excellent	Excellent	Indeterminate	This thrust is characterised by good leadership and has been a remarkable success. Student development and conversion is excellent and research output is good.	Excellent
8. Weak: publications poorly related to thrust	Adequate	Good	Student development and conversion is good, but staff development and research output is weak.	Adequate
9. Weak: there seems to be inconsistencies between output and thrust description	Excellent	Excellent	Student development and employment/conversion is excellent and research output is also excellent, of good quality and very well disseminated, but staff development appears weak.	Excellent
<p>Institution: Partnership between the NRF and the University of the Western Cape (UWC) was good. The NRF funding enabled UWC to leverage considerable external financial support, which in part compensated for the inadequate facilities provided by the institution. In general, the institution provided good management support, giving some stability even through periods of upheaval. Good IT support has been helpful. Discrepancies in reports of the NRF funding need clarification.</p>				

University of Venda						
Thrusts	NRF support		Institutional support			
	Funding	Other NRF support	Funding	Management	Facilities	Partnership
Institution	R3 180 653*					Adequate
1. Integrated ^a Environmental Management Research 1999	R421 995 (R706 600)	Weak	NA (NA)	Weak	Weak	
2. Integrated Use of Resources in Plant and Animal Production 1997	R 796 722 (R1 308 000)	Good	NA (R362 000)	Adequate	Adequate	
3. Multi- disciplinary Natural Products Research 1998	R1 452 913 (NA)	Good	NA (R2 120 000) ^b	Adequate	Weak	
4. Solar Energy 1998	R475 338 (R530 000)	Good	NA (R185 620)	Adequate	Adequate	
*This amount includes an Institutional Grant of R33 685						
^a This evaluation is based only on the report of the thrust by Prof Ree & PH Omara-Ojungu. It excludes the second report by Prof Omara-Ojungu						
^b It was not possible to validate this allocation.						

University of Venda (continued)				
Return on Investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
1. Weak: potentially very unstable Start: 3 Platform: adequate Now: 6 Platform: adequate	Weak: 1 PhD current	Weak: 3 Hons completed; 3 Hons, 2 MSc, 1 PhD current	Weak	Weak
2. Weak Start: 5 Platform: weak Now: 5 Platform: weak	Adequate: 1 PhD current (other staff already have PhDs)	Adequate: 2 Hons completed; 10 MSc, 1 PhD current	Weak	Weak
3. Good: strong staff and student participation Start: 25 Platform: weak Now: 27 Platform: weak	Indeterminate: 2 MSc current	Good: 14 Hons, 2 MSc completed; 2 Hons, 12 MSc current	Good: but reflects output of a few team members only	Good
4. Adequate Start: 5 Platform: weak Now: 4 Platform: adequate	Adequate: 1 PhD current	Adequate: 4 Hons completed; 2 Hons current	Weak	Indeterminate

University of Venda (continued)				
Return on Investment				
Conformity of thrust	Dissemination/ outreach	Employment/ conversion	Assessment	Added value
1. Adequate but thrust definition very broad	Indeterminate	Indeterminate	This thrust has made a promising start on student development, but in other areas progress has been weak. The team has been unstable.	Little so far
2. Good	Weak	Indeterminate	The team in this thrust is weak, and has achieved little other than some student development.	Very little
3. Good	Good: notable student participation in conferences	Good, especially in terms of conversion to research and further studies	This thrust developed from zero-base level of support, and has made considerable progress. They have a good team, with good student development both in terms of postgraduate training, participation in research and conferences, and conversion. Good research from some of the team.	Good
4. Good	Weak	Adequate: conversion for research. Employment: indeterminate	Thrust started from scratch and has made some progress, especially in student development.	Little
Institution: The University of Venda has put in a considerable amount of research funding, especially to thrust 3. However, institutional management was not strong, nor were the facilities.				

Vista University						
	NRF support		Institutional support			
Thrusts	Funding	Other NRF support	Funding	Management	Facilities	Partnership
Institution	R1 319 424*					Adequate
1. Synthetic and Pharmaceutical Chemistry 1999	R343 736 (R381 000)	Good	R34 000 (R34 400)	Good	Good	
2. Materials Science 1999	R337 895 (NA)	Excellent	R361 505 (R361 505)	Adequate	Good	
3. Mathematical Modelling 1999	R 80 769 (R120 000)	Adequate	R94 900 (R94 900)	Good	Good	
4. Renewable Energy 1999	R 97 480 (R171 000)	Good	R10 000 (R10 000)	None	Weak	
5. Science Education & Computer Technology 1999	R98 994 (R73 000)	Weak	NA (R38 025)	NA	NA	
*This amount includes an Institutional Grant of R88 937						

Vista University (continued)				
Return on investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
1. Excellent: small but highly collaborative, strong student participation Start: 4 Platform: adequate Now: 4 Platform: adequate	Excellent: 1 MSc completed; 3 PhD current	Good: 6 Hons, 1 MSc completed; 2 MSc, 4 Hons current	Adequate for the 2 years since inception	Indeterminate: awaiting acceptance
2. Adequate: lacking in integration so far Start: 8 Platform: adequate Now: 5 Platform: adequate	Adequate: no graduates 1 Hons, 1 PhD current	Weak: 2 Hons completed; 2 Hons, 1 MSc current	Weak	Good
3. Weak: vulnerable Start: 11 Platform: weak Now: 12 Platform: adequate	Weak: 1 PhD current; but overseas university	Weak: 1 Hons, 1 MSc current	Weak	Indeterminate: conflicting, report
4. Weak Start: 1 Platform: adequate Now: 9 Platform: adequate	Indeterminate: 1 PhD current	Weak: 4 Hons completed; No current	Weak	Indeterminate
5. Indeterminate Start: 13 Platform: weak Now: ? Platform: weak	Indeterminate: 1 MSc completed; 1 MSc current	Weak: 1 Hons current	Weak	Weak

Vista University (continued)				
Return on investment				
Conformity with thrust	Dissemination/ outreach	Employment/ conversion	Assessment	Added value
1. Good	Good: Given context of being a new programme, patentable output.	Indeterminate	Thrust only 2 years old, but shows great promise. An excellent, highly collaborative small team, with excellent staff development. Student development and participation is good. Research output shows promise, and may yield patents in the future.	Excellent
2. Good: but too broad within thrust	Indeterminate	None	This young thrust has made a promising start on staff and student development, and has produced a little, good quality, research output.	Adequate
3. Indeterminate: NRF must review this	Indeterminate	Indeterminate	A weak team, with little evidence of staff and student development. The NRF must resolve the conflicting views on the research before the research output can be assessed.	Very little? (? Research output)
4. Indeterminate	Indeterminate	Indeterminate	Little evidence of progress so far. More cognizance should be taken of other research findings.	Very little so far
5. Adequate	Adequate	Indeterminate	This thrust lacks leadership and had made little progress on staff and student development so far. Research output is weak.	Very little so far

Vista University (continued)						
Thrusts	NRF support		Institutional support			
	Funding	Other NRF support	Funding	Management	Facilities	Partnership
6. Urban Environmental Impact 1999	R271 613 (R235 000)	Adequate	R0000 (R0000)	Weak	NA	

Vista University (continued)				
Return on investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
6. Weak: large and disseminated. Over 4 campuses Start: 9 Platform: adequate Now: 5 Platform: adequate	Weak: 1 MSc, 1 PhD current	Adequate: 2 Hons, 2 MSc current	Weak	Indeterminate

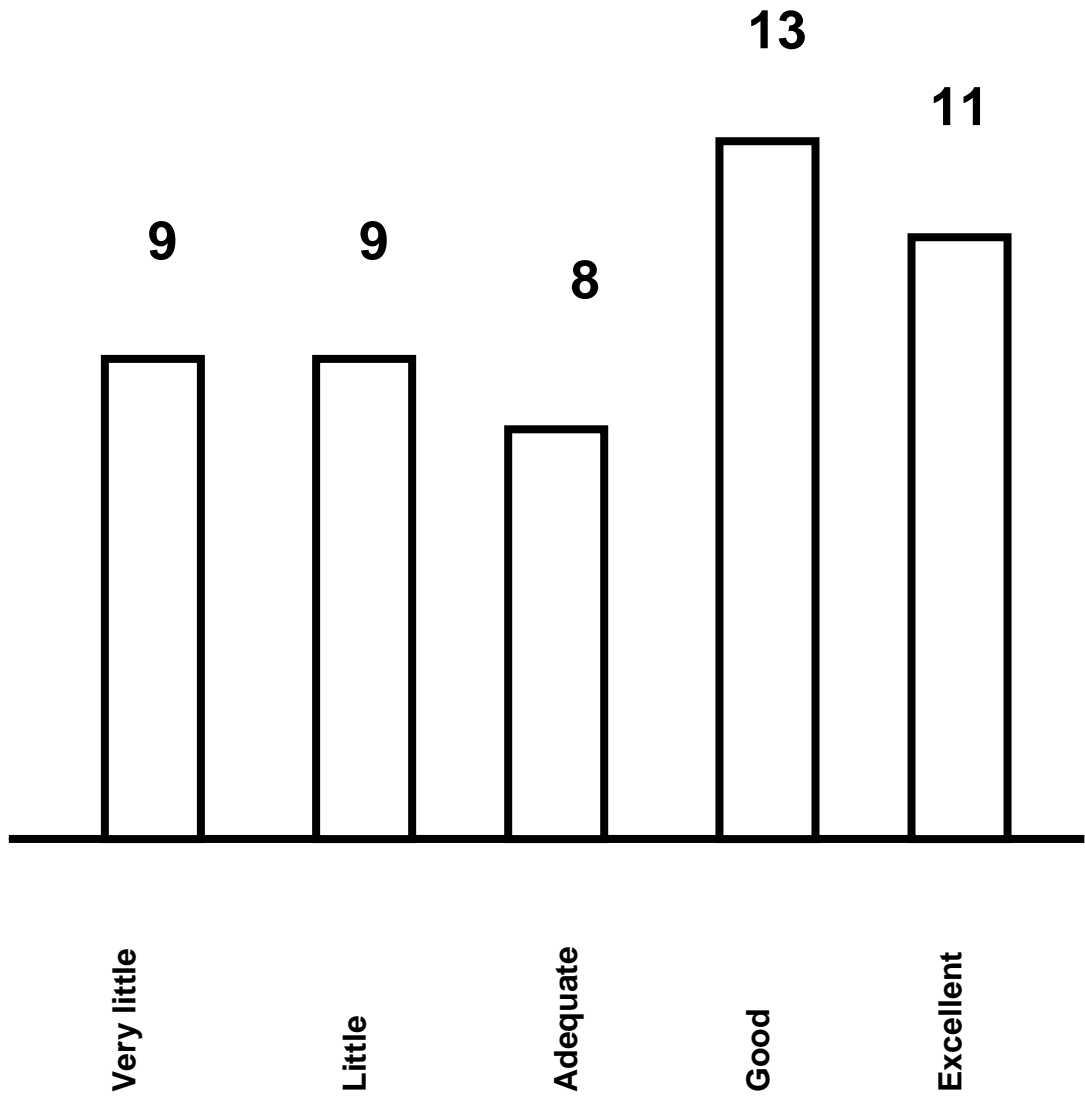
Vista University (continued)				
Return on investment				
Conformity with thrust	Dissemination/ outreach	Employment/ conversion	Assessment	Added value
6. Weak: unfocussed	Indeterminate	Indeterminate	This large, disseminated and weak thrust lacks leadership. Some progress has been made in student development, but little in staff development and research output.	Very little so far
Institution: Vista University is different from the other institutions, as it has a number of campuses. Only one thrust attempted to integrate across more than one campus: in this case, NRF funding appears inadequate. The appointment of a Dean of Research led to good institutional management on the whole. Institutional facilities were also good.				

University of Zululand						
	NRF support		Institutional support			
Thrusts	Funding	Other NRF support	Funding	Management	Facilities	Partnership
Institution	R6 617 065*					Good
1. Chemistry 1996	R660 451 (R663 400)	Weak	R64 196 (R39 703)	Adequate	Good	
2. Environmental Management and Natural Resources Development 1997	R2 264 139 (R2 495 684)	Weak	R929 325 (R 4 032)	Weak	Adequate	
3. Materials Science 1997	R784 357 (R743 000)	Adequate	R185 367 (R 25 000)	Good	Good	
4. Mathematical Sciences 1997	R635 648 (R591 645)	Good	R 98 900 (R297 074)	Excellent	NA	
5. Low External Sustainable Agriculture 1999	R268 934 (NA)	Weak	NA (NA)	Good	NA	
*This amount includes Institutional Grants of R2 003 536						

University of Zululand (continued)				
Return on investment				
Team building	Staff development	Student development	Research output: amount	Research output: quality
1. Weak: weak team work, limited student involvement Start: 2 Platform: weak Now: 7 Platform: adequate	Good: 1 PhD, 1 MSc completed; 2 MSc current	Adequate: 1 MSc completed; 1 Hons, 2 MSc, 1 PhD current	Adequate: output largely reflects work of one individual	Adequate
2. Adequate: some evidence of staff collaboration and student participation Start: 11 Platform: adequate Now: 19 Platform: good	Excellent: 3 MSc, 1 PhD completed; 1 MSc, 3 PhD current	Excellent: 31 Hons, 1 MSc completed; 3 Hons, 9 MSc, 2 PhD current	Adequate	Adequate
3. Adequate: strong collaboration between 2 team members Start: 5 Platform: adequate Now: 5 Platform: adequate	1 PhD current (other staff qualified)	Weak: 1 MSc completed; 1 MSc current	Good	Good
4. Adequate: significant staff losses Start: 2 Platform: adequate Now: 4 Platform: adequate	Good: 1 MSc completed; 1 PhD, 1 MSc current	Good: 1 Hons, 2 MSc completed; 2 PhD current	Good	Good
5. Weak: extremely vulnerable team, number reduced from 13 to 3 within thrust period Start: 13 Platform: adequate Now: 3 Platform: weak	Weak	None: no students registered at Hons or above	Weak	Weak

University of Zululand (continued)				
Return on investment				
Conformity with thrust	Dissemination/ outreach	Employment/ conversion	Assessment	Added value
1. Good	Adequate	Adequate for conversion, indeterminate for employment	Although thrust was launched in 1996, it has really only been active since 1999. It has made a promising start but this is not yet reflected in publications based on research conducted in UZUL. Staff development is good, but student involvement in team work is limited.	Adequate
2. Much of output is outside of the thrust, therefore conformity weak	Good	Good conversion for research, indeterminate for conversion	Staff and student development are both excellent, and research output and dissemination is promising, with evidence of local impact.	Good
3. Excellent: focussed	Adequate	Indeterminate	This good well-qualified team shows evidence of strong collaboration and active good quality research output in an important area. Student development is weak.	Good, except in student development
4. Good	Adequate	Indeterminate	In spite of significant staff turnover, this thrust appears to be producing some cutting edge work, with good, high-quality research output. Staff and student development are both good. Strong collaborations, both nationally and internationally.	Excellent
5. Weak	Adequate	Indeterminate	This thrust has made very little progress on all counts. There has been an absence of leadership.	Very little
Institution: Partnership: good. Institutional support both in terms of management and facilities has in general been good. The difficulty in attracting students to the University of Zululand might be ameliorated if more NRF funding was devoted to undergraduate support.				

Number of Thrusts falling into different "Added Value" categories:



**Distribution by Institution of thrusts evaluated as “Excellent”
or “Good” for “Added Value”**

Institution	Thrusts	
	Good	Excellent
UDW	1	2
MEDUNSA	2	1
UFH	1	0
UNO	1	1
QWAQWA	2	1
UNW	1	0
UWC	2	4
UVEN	1	0
VISTA	0	1
UNIZUL	2	1
TOTAL	13	11

NRF investment in thrusts, and return estimated as “Added Value”.
 (Figures show number of thrusts in each category)

Total NRF investment in thrust during IRDP funding period (R'000)	Very little	Little	Adequate	Good	Excellent
>R1 100	1	1	5	4	4
R700 – R1 099	1			7	2
R300 – R699		6	3	1	5
<R300	7	2		1	

Appendix 3

Postgraduate degrees awarded to thrust staff 1996 – 2000								
	<i>MSc</i>				PhD			
Institution	Black		White		Black		White	
	M	F	M	F	M	F	M	F
MEDUNSA	1	1	0	2	1	0	0	0
UDW	0	0	0	1	1	1	2	0
UFH	1	2	0	0	0	0	0	0
UNO	3	1	0	0	2	0	1	0
UNOQ	2	0	0	1	0	0	0	0
UNW	1	0	0	0	0	0	0	0
UNITRA	2	0	0	0	1	0	0	0
UVEN	0	0	0	0	1	0	0	0
UVIS	0	2	0	0	0	0	0	0
UWC	2	0	0	2	4	0	3	0
UZUL	1	2	0	2	1	0	1	0
TOTAL	13	8	0	8	11	1	7	0

IRDP: Bursaries allocation amongst different categories												
Year of first registration	<i>Honours</i>				<i>MSc</i>				PhD			
	Black		White		Black		White		Black		White	
	M	F	M	F	M	F	M	F	M	F	M	F
1997	30	15	0	0	10	6	0	0	4	6	0	0
1998	84	77	0	0	76	44	2	1	9	2	1	1
1999	149	117	0	0	80	63	1	4	12	5	2	1
2000	138	110	0	0	89	82	1	0	8	4	0	1
TOTAL	401	319	0	0	255	195	4	5	33	17	3	3

Appendix 4

Placement of major equipment at HBUs, from HBU Self Evaluation Report, 2001

University	Equipment item
Medical University of Southern Africa (MEDUNSA)	<ul style="list-style-type: none"> • HPLC (R300 000). Old HPLC was completely outdated, no longer cost-effective and when it packed up and it was impossible to replace the broken parts the IRDP heeded the recommendation made by the advisory panel and made funds available. The research project serves an essential service to the local and SA community in that, e.g. the compilation of a database of toxic remedies will help to save lives. The information is available to, and shared with, hospitals and traditional healers. • Computer workstation (R160 000). In view of research that was taking place, using Monte Carlo simulations to estimate absorbed radiation dose to patients from various radiation sources, a tremendous amount of computer storage capacity was needed. Several staff members and post-graduate students are engaged in a variety of Monte Carlo simulation applications.
University of Durban-Westville (UDW)	<ul style="list-style-type: none"> • Stop Flow Apparatus (R360 000). The advisory panel advised that equipment is a total must to develop UDW Chemistry Department as a Centre of excellence in kinetic studies. Inter-departmental, inter-faculty and inter-institutional collaborative projects are envisaged.
University of Fort Hare (UFH)	<ul style="list-style-type: none"> • GCMS (R350 000) was funded at UFH in view of the need for multi-user research equipment as the first step towards rationalisation of instruments. Researchers (IRDP grantholders) in the departments of Agronomy, Botany and Chemistry all struggled with old and outdated equipment all needed a GCMS to sustain their research.
University of the North (UNO)	<ul style="list-style-type: none"> • Silicon Graphics Computer (R200 000) and Silicon Graphics server (R100 000). The Computer Modelling Group at UNO joined the Electronic, Optic and Magnetic (EOM) Materials Project of the Biosym Company based in the USA and through the consortium acquired a Silicon Graphics Power Challenge XL Server to the value of R2 030 000, while the IRDP made funds available as listed above.
University of Qwa-Qwa	<ul style="list-style-type: none"> • Greenhouse (R100 000). Department of Botany, the research project could not be continued without greenhouse to grow plants for research material during the harsh local winter conditions. The Greenhouse is also used by researchers from the Zoology Department.
University of Transkei (UT)	<ul style="list-style-type: none"> ▪ FT-IR (R188 000) Excellent research in the Photodynamic Therapy Research project. Project leader member of consortium formed with Professors G Jackson and P Meisner from UCT.
University of Venda (UVEN)	<ul style="list-style-type: none"> ▪ Solar Devices (R200 000). Basic instrumentation for indoor and outdoor solar research site. Once research site was established a further acquisition of solar devices was received from Industry to the value of R100 000.
University of The Western Cape (UWC)	<ul style="list-style-type: none"> • Equipment for electrical characterisation laboratory (R180 000). Equipment vital for corrosion studies and metalisation projects, co-operation Programme with Arizona State University, University Missouri and University Utrecht. • 750 MHz NMR system. The project leader is a recipient of Royal Society / NRF grant. Direct interaction between the Oxford NMR group and UWC, allows analysis of data generated in Oxford to be performed at UWC.

Appendix 4 continued

University of Zululand (UZ)	<ul style="list-style-type: none"> • Varian AA Spectrophotometer (R285 000). Recipient of Royal Society / NRF grant. Equipment was required for undertaking the collaborative research.
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Funds allocated by the programme for the acquisition of equipment by grantholders (1996 – 2000).

University	1996	1997	1998	1999	2000	TOTAL
MEDUNSA	-	-	R644 852	R196 100	R21 000	R1 050 952
UNW	-	-	R468 000	R185 000	R29 000	R682 000
UDW	R42 544	R46 036	R745 000	R308 300	R45 000	R1 186 880
UFH	-	R311 000	R405 000	R235 200	R111 266	R1 062 466
UNO	R12 000	R205 000	930 300	R237 000	R198 400	R1 582 700
UNOQ	-	R174 000	R181 000	R269 000	R40 000	R664 000
UT	R24 800	R249 000	R373 100	R85 000	-	R731 900
UVEN	-	R780 000	R110 000	R23 000	R81 000	R994 000
UVIS	-	-	-	R10 000	R40 000	R50 000
UWC	R207 000	R742 500	R1053488	R746 722	R113 000	R286 2710
UZ	R60 000	R983 140	R105 000	R386 000	R292 326	R1 826 466
TOTAL	R366 344⁵	R3 493 676⁶	R5 015 740	R2 681 322	R1 159 992	R12 717 074

Close to R13-million was granted to institutions in the provision of equipment. Apart from Vista University, the grants ranged from just over R600 000 to close on R3-million. The granting of equipment contributed significantly to improving the productivity of grantholders, as it obviated the need for them to travel to other institutions to gain access to basic equipment.

⁵ Includes R20 000 allocated to the MRC.

⁶ Includes R3 000 allocated to the University of Pretoria.

FINAL REPORT

EVALUATION OF PLANNING AND BLOCK GRANTS AWARDED TO HISTORICALLY BLACK UNIVERSITIES BY THE FORMER CSD BETWEEN 1998 AND 1999

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August 2001

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REPORT - PLANNING AND BLOCK GRANTS EVALUATION

1 Summary

1.1 General impressions of the planning grants strategy

The CSD recognised the need for research stimulation at the Historically Black Universities (HBUs). The existing channels for research funding were not reaching the HBUs. This need was addressed through sponsoring the development of a Research Strategic Plan at each HBU. The envisaged process that the institutions were expected to follow can be depicted as follows:

Receive Grants → Release senior academic → Action → Strategic plan

The process entailed the release of a senior academic to champion the process of producing a Research Strategic Plan once the grants had been awarded to the institution.

The sub-objectives of the process were to:

- Stimulate dialogue through meetings, consultations, seminars etc.
- Monitor the state of existing research projects
- Explore avenues for research capacity building
- Solicit the assistance of research administration offices to develop new communication channels
- Encourage the establishment of faculty research committees
- Investigate postgraduate program productivity
- Submit a research plan to the university and establish accountability for its implementation.

To attain these objectives, the CSD, as a grant maker defined itself within the following key process steps:

- Create a grants category
- Stipulate terms of the grant
- Promote the grant
- Assess applications for the grant
- Allocate grants
- Review progress

The stipulations for the planning grants were listed as follows:

- The first report should contain information including statistics on research activities i.e. student numbers, staff numbers, disciplines, projects etc.
- A second report detailing areas of research where the institution would like to build national excellence
- A report on the value of the exercise to the institution
- The ultimate deliverable should be a Master Plan/Research Strategic Plan for the development of research and research capacity at each institution.

The process emphasised institutional development and the stipulated outcomes were the identified focus areas and a research strategic plan for developing research and research capacity.

1.2 Problems with the CSD approach

The CSD, in its endeavour to assist, did not account for the functioning and complexities within these participating institutions. It seemed as if these issues were treated as non-problematic. The assumption was that funding alone was enough to make research happen. When the initial

invitation for participation was not taken up by the institutions, the CSD assumed that this was due to lack of information on the part of the institutions. The CSD's response to this was to intensively promote this granting mechanism in order to solicit a response. This resulted in seven successful applications for the strategic planning grants.

The Deputy Vice-Chancellor's signature on the agreement forms was taken to mean institutional support, ignoring the overall management problems that plagued many of these institutions during the period the grants were made available. The amounts given could not address lack of infrastructure or resources. Furthermore the CSD assumed that there were people at the institutions capable of delivering the required deliverables, therefore the conditions set out by the CSD assumed institutional capacity and commitment.

The CSD demonstrated an institutional weakness as a grant maker. It seemed as if the CSD was content at just being a passive partner. The adopted approach of the CSD was tantamount to "throwing" money at the problem of building research capacity at the HBUs. The CSD did not keep in touch with development or structural changes at those institutions and in the Higher Education environment and hence was easily overtaken by events. The monitoring of grants was poor, the reporting mechanisms or set reporting standards for the participating institutions was not proactively managed by the CSD but rather accepted what was offered as a report even if the quality was below par. There was an absence of academic research oversight in the form of advisory committees and also evidence of a shift in focus from strategic plan to niche area support by the CSD. Unspent funds were not claimed by the CSD.

1.3 Results of the CSD approach at participating institutions

"Apartheid was a black whole sucking up all research and literature. Now the situation of a woman can be explored from the beginning as it were, from the original source" – University of Western Cape

Many of the HBU Planning and Block Grant applications and reports provided to the panel were poorly written and never addressed themselves to the ultimate deliverable.

No strategic plans were delivered. However some institutions made progress by beginning one or more of the following:

- Determining themes/focus/niche areas
- Developing leadership
- Recognising the need for research as an institutional requirement
- Support structure development
- Staff development
- Postgraduate programmes
- Research projects – Block grants generated.

The documentation revealed the participating institution's poor or no management capacity, lack of commitment, experience and support in order to deliver. There was evidence of discontinuous leadership as some people who were involved with the strategic planning exercise had since left those institutions. The situation in most of the participating institutions was unstable i.e. staff turnover, student unrest, poor information management, etc. These institutions were/are poorly resourced in respect of IT facilities and libraries, amongst others. The mechanism of the development of a strategic plan itself was not sufficient to overcome the problems experienced by these institutions. It was difficult to address the issue of research capacity building in isolation from all the other problems facing these institutions.

Though the problems facing the participating institutions were to a certain extent similar, the University of the Western Cape was an exception to most of the other institutions.

Overall, very little inter-institutional dialogue took place. Where engagement with external people took place, it acted as a catalyst and provided a perspective on the “bigger picture”. The sustainability of this programme was uncertain, especially if a holistic approach was not adopted as a basis for intervention. The research culture was not yet institutionally embedded. The sustainability of intervention programmes was affected mostly by:

- Policy uncertainties/changes
- A lack of infrastructure and resources.

1.4 Block grants

The impression of the panel was that the Block Grants mechanism faced the same capacity and institutional problems as the Planning Grant mechanism. The CSD approach was once again insufficient. The Block Grants mechanism did not address the need for strategic planning. There was no link between the Block Grants and the Planning Grants hence the same problems faced on a strategic level were also prevalent in the implementation of the Block Grants. The impression of the panel was that the Block Grants mechanism as a granting category had not been successful judged by the fact that only a few (3) grants were made.

1.5 Overall recommendations

Engagement that consisted of little more than throwing money at the problem without further support, was insufficient. There needed to be a critical review of the underlying assumptions particularly those pertaining to the institutional capacity and collaborative research. The CSD could not have thought of themselves as just grant makers that “sit back”.

They needed to be involved at institutional level. There needs to be an understanding of a research process and its complexities. Any programmes introduced need to be market intelligence driven. The size of the grants has to be appropriate to the objectives of the grant. The review procedures and associated costs has to be realistic and in proportion to the amount involved. Any intervention mechanism needs to be done within a larger regional context.

What was probably needed in this context was a process that incorporated the following:

- Critical engagement in research culture – Definition of what was meant by a research culture and innovative methods of stimulating research in the context of each institution.
- More hands-on involvement – Knowing the management and contextual situation at each institution.
- Joint responsibility – The CSD should have taken joint responsibility for the development of a strategic plan.
- Resource accessing – The CSD should have committed more resources for this exercise to succeed.
- Continuous guidance – The CSD should have provided constant guidance.
- Critical review of timing of grant – The CSD should have treated each institution separately and tailored its intervention within each institutional context. This would have informed the CSD of the proper time for intervention in the light of problems facing the institutions.
- Technical guidance on the development of strategic plan and academic oversight, particularly to identify promising niche/focus areas.
- Realistic time frames.