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**Review of the Science and Technology Policy Research  
Centre**

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# Review of the Science and Technology Policy Research Centre

## Terms of Reference, Approach and Structure of this Report

The following review of the Science and Technology Policy Research Centre was conducted at the request of the Centre for Science Development. The review was conducted in April 1998 by Professor Howard Rush of the Centre for Research in Innovation Management at the University of Brighton, UK. At the time of the review the STPRC was in its fourth year of existence.

Terms of reference (Appendix A) were provided by the CSD which specifically ask for comment on:

- the extent to which the objectives of the Centre have been attained
- the quality of the research
- the quantity of the research
- national and international networking
- graduate training

Furthermore, recommendations were requested on whether the Centre should continue receiving support from the CSD, the type of research it should be conducting, methodological approaches, the management of the Centre and dissemination of findings.

Evidence for the review was collected through interviews, internal documentation of the STPRC (minutes of meetings, budgets, etc.) the assessment of publications emanating from the Centre since its official inception in June 1995, and participant observation of research meetings held with collaborators and sponsors held during the reviewer's visit to South Africa. Data collection included face-to-face, telephone and email interviews with all members of the STPRC, the principal research collaborators, sponsors of the research and both academic and policy 'end-users' of the output. The majority of interviews were conducted in South Africa although a select sample of international experts were also canvassed as a means of seeking a broader assessment of the impact and quality of the Centre's work and standing in the field. All interviews were conducted under a condition of anonymity, although all of those involved are listed by category in Appendix B. A well tested questionnaire used in the evaluation of

designated research centres in the UK was adapted for use in the interviews and has also been included as Appendix C<sup>1</sup>.

In the course of the review, a profile of the work of the Centre was obtained through a variety of indicators of performance. These included:

- Research output indicators (e.g. publications such as papers, books and monographs; development of data bases);
- Dissemination indicators (e.g. meetings, conferences, workshops, University links, national networking);
- Training and educational indicators (e.g. graduate and post-graduate programmes, service teaching and training);
- Applicative, policy oriented 'influence' indicators (e.g. government requests, additional sponsored/commissioned work);
- Qualitative indicators (e.g. international reputation, peer review);
- Managerial and organisational indicators (e.g. organisational and managerial structure, committees, strategic plans, corporate plans).

For clarity of presentation the findings of this review are presented under each of the above headings (which cover all of the main criteria included in the terms of reference). The main findings and recommendations are included under each individual heading. A final section draws some broader conclusions and addresses some of the issues related to implementation.

## **Research output indicators**

### *projects*

In just over three years the STPRC has completed twelve research projects (either as prime contractors or significant collaborators). These are listed below by year, duration of the project and the subject focus. Initially the focal areas endorsed by the advisory committee included: a) national systems of innovation and b) small medium and mirco-sized enterprises. This was subsequently expanded to include information technology. Two-thirds of the completed projects fall within the three focal areas with the remainder falling into a broader overview of industrial policy and technological

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<sup>1</sup> I am grateful to Professor Tom Whiston who originally developed this methodology for the evaluation of research groups.

mapping and measuring. Five new projects are at various stages of development but all have either been agreed with the sponsors or have a high likelihood of being funded.

## **PROJECT, SPONSOR and DURATION**

### **YEAR 1**

- Science and Technology Green Paper - DACST - 1 month - (national policy focus)
- Manufacturing Technology Services - Business Development Services - 4 months (small business focus)
- Biotechnology, IPRS and Technology Transfer - African Centre for Technology Studies - 3 months (IPRS - general research on technology)

### **YEAR 2**

- Information Technology in South Africa - UNU-INTECH, Maastricht - 4 months (information technology)
- Industrial symbiosis view of SMEs - Chemical Engineering UCT - 3 year (Partners) (SMMEs focus)
- Small scale firms in the Electronics Industry - Friedrich Ebert Stiftung and DTI - 6 months (SMME focus)

### **YEAR 3**

- Electronics Industry - ICDJ (Japanese-European Technology Studies Centre) - 2 months (SMME focus)
- Canning Industry - provincial government - 4 months (industrial policy focus)
- Technopolis - High Tech Cluster - IDRC - 1 month (High-technology focus)
- Review of CSIR - DACST - DACST - 1 month (national science and technology policy)
- System wide review - DACST - 2 weeks (national science and technology policy)
- Innovation Survey - ISP - 6 months equivalent - (technology research)

### **CURRENT**

- IT education - IDRC - 13 months (information technology)
- Service Sector - Norwegian SSRC - 2 years (industrial policy)
- Evaluation of MACs - DTI (Denmark) - 8 months (SMMEs)
- Services Sector - DTI - 3 months (industrial policy)
- Migration of Highly Qualified Persons - ORSTON - 2 years (Brain Gain Strategy)
- EU funding for research for DTI, commencing in 1998 - DTI - 3 years (focus to be determined).

The portfolio of work represented by the above listing is, in itself, impressive. It would not normally be expected that a unit in the first stage of development would have achieved this level of productivity. Upon closer examination, however, it is clear that a large number of projects have been possible because many were short duration pieces of research or consultancy type projects (most were under six months) each with a specific focus and set of objectives required by the sponsoring agencies.

This can have both positive and negative repercussions. On the positive side the Centre has been able to develop a wide portfolio of work which can serve both as a testament to their abilities to be policy relevant and act as a foundation for future work. It also attests to the Centre's high degree of adaptability and flexibility. Much of this work was conducted in collaboration with other groups and comment was passed in several interviewees at how good the STPRC were at putting multi-disciplinary teams together. (Testament to this success is that nearly all collaborators expressed an interest in working with the STPRC again.) On the negative side, the taking on of a large number of short-term pieces of work makes it difficult for the Centre to establish itself in particular niches and does not seem to have been the result of any strategic plan and has probably been at the cost of more academic undertakings.

This is not to suggest that had such a strategic plan been developed, that the portfolio developed by the STPRC would not have been the route selected. Every policy-oriented research group, particularly those in the process of establishing themselves, has to be opportunistic. The desire of the Centre to make a contribution and to be in a position to do so, is in itself important. Having established roots in the policy community, however, it is equally important to develop the academic reputation which a University-based research group requires. Two aspects will be important in achieving this dual aim. More longer-term research projects in specifically selected areas would be valuable in helping to generate the in-depth empirical data upon which to base its policy analysis. Additionally, longer-term research can provide the time to reflect which is necessary in order to locate the work within and make a deeper contribution to the theoretical debates.

A number of the projects conducted thus far, to differing degrees, establish databases of information which can regularly be built upon. The Innovation Survey and the IT Survey are prime examples of important work which can be regularly up-dated and would be ideal for longitudinal analysis. There may also be similar potential in the 'Brain Gain' project which, while primarily focusing on the establishment of a working interactive database, has potential for use in conducting longitudinal and comparative research.

At least three of the projects which have either recently begun or are in formulation are between thirteen months and two-years in duration (IT Education, Service Sector Innovation and the Brain Gain project). The degree to which these projects fit the focus areas of the group should, however, be closely looked at within some strategic analysis of the directions the Centre wishes to take and areas in which it wants to be recognised.

## *publications*

Taking into consideration the lead-time between completion of a project and publication in journal articles, the Centre has a more than creditable level of output. STPRC has produced forty-one publication, of which eleven appeared in journals, five of which were in referred journal articles, three of which were for international publications. Not included in these figures are short pieces for newsletters, etc., and publications authored solely by project collaborators and visiting fellows. Given that for most of the period under review the STPRC has only consisted of two and a half research staff, the quantity of output is extremely high.

Although journal articles are the most frequently used measurement indicator for a traditional social science academic group, it is also important for policy-oriented groups to be able to disseminate their results to the user community more quickly than can be accomplished by journal publications. The spread amongst occasional papers, conference presentations, other reports, etc., has provided the Centre with a good number of research outputs which have been used for rapid dissemination.

### **PUBLICATIONS**

<b>Journal Articles</b>	
Refereed	
Local	
International	3
Not refereed	
Local	5
International	1
<b>Monographs</b>	1
<b>Occasional papers</b>	4
<b>Books</b>	
<b>Chapters in Books</b>	8
<b>Research Reports</b>	8
<b>Conference Papers</b>	
Local	5
International	4

However, the output of the portfolio tends to re-enforce the previous observation made about the number and type of projects undertaken. While the wide range of types of publication has undoubtedly been to the benefit of the Centre in establishing itself as an

important contributor to the science and technology policy debates and formulation in South Africa, the academic output, while consistently good, has not been placed in those journals recognised as the top in the field internationally. As was the case with project selection, journal placement does not appear to have been the subject of strategic review.

A higher proportion of longer-term research will also have the knock-on effect of producing in-depth analysis, allowing the Centre to submit publications to the top level of international journals, both in the field of development and in science and technology policy research. As noted above, this is important for the Centre in establishing its' academic reputation as well as in getting feedback from top quality referees and in developing an understanding of the quality standards applied in the field.

#### *recommendations*

- *review focal areas*
- *continue collaborative approach to research*
- *decide balance between long-term academic research and shorter-term commissioned work*
- *further development and exploitation of database/survey work*
- *submit publications to higher quality journals in both the development and the science policy fields*

#### **Dissemination Indicators**

Dissemination activities can take many forms. Comment has already been made above concerning the dissemination of research results via refereed journal publications. Academic journals, however, typically have long lead times and are not, in of themselves, necessarily the most appropriate means by which to disseminate policy-oriented research.

Frequent and regular meetings have been held with members of the policy-making community and at least two workshops held with users of the research. Network building as a means of dissemination also has been satisfactory at the national level and, to some extent, at the international level as well. Within the University of Cape Town there have now been collaborative projects with the Business School and Engineering Faculty, and strong links appear to be developing with the Education Research Unit, University of the Western Cape (research collaboration) and Stellenbosch University

(teaching). Internationally academics links appear primarily to have been with groups in Europe such as the Institute of Development Studies (Sussex University), the Centre for Japanese-European Technology Studies (Edinburgh University) and the United Nations University (Maastricht), which have all resulted in joint or sponsored research. Such links have provided a useful 'listening post' to learn about new ideas and research methods. The Centre has also recently developed links with Jawharlal Nehru University in India but the potential for networking with the rest of Africa appears to have been somewhat neglected.

In those interviews which explored the question of dissemination, there was the occasional suggestion that the Centre had perhaps been too "low-key" or had "not blown their own trumpet enough". While it is true that the group is modest about "talking-up" their achieves, it is not clear what more the Centre could be expected to do. The STPRC has a website and has been actively promoting its work at a variety of conferences where nine papers have been presented (four in South Africa and five abroad). There appear to have made good use of the national press, with at least ten newspaper articles resulting from the press releases issued by the Centre, and are regular contributors to the Joint Trade and Industrial Policy Secretariat (TIPS) and Development Policy Research Unit (DPRU) Trade and Industry Monitor, a high quality newsletter which is widely circulated. One imaginative dissemination techniques has been used to generate interest in the work of one project currently underway (the 'Brain Gain' project) with project information having been sent to over the alumni of the University of Cape Town.

#### *recommendations*

- *re-enforce successful networks*
- *development of more links within Africa*

#### **Training and Educational Indicators**

This category of indicators can be divided into external and internal training (the latter of which might also be described as staff development), and educational activities which while including academic publications also encompasses teaching and supervision.



### *external training*

Contributions to external training have primarily been in the form of custom designed workshops and short courses. Two of these of particular note have been held for government officials. One was conducted for new Foreign Trade Representatives and another for the DTI's Directors and staff in its Industrial Policy Division. Such courses make a direct practical contribution and should be further encouraged.

### *staff development*

Internal training or staff development has largely focused on the needs of clerical and administrative staff. Courses have been taken on a variety of computer packages and staff have been encouraged to identify their own needs and are aware that the Centre is more than willing to meet their needs. As for research staff the only example of training identified in this review was the encouragement and facilitation provided to one researcher to attend a course on technology transfer which was held at Michigan State University in the United States. One researcher also described having felt the requirements of the project being undertaken required skills and a knowledge base different from which he/she had. Although there was plenty of informal internal support, some form of training programme might have been appropriate.

With such a small group it has not been seen as necessary to introduce a systematic process by which staff development needs and opportunities can be identified. If the Centre is going to grow it may now be the appropriate time to give this more consideration. One procedure which the Centre might wish to introduce is an annual staff development review (SDR) in which each researcher meets with the Director and identifies their main research objectives in the coming year and actions are identified (regarding training) which would assist the researcher in achieving these goals. Consideration should also be given at such reviews to the longer time professional objectives of the researcher. Each subsequent year the SDR might begin with an analysis of whether or not the previous year's objectives and actions had been successful.

A more formalised system of staff development will also become more important as the Centre takes on more younger or inexperienced researchers. The Centre has the opportunity to provide an example to other research units of what could be done as it has been successful in attracting two interns to the Centre who will be working on the Brain Gain project (financed by the Research Capacity Development Programme). The opportunity for these interns to acquire new information science skills has been

recognised with responsibility for this primarily resting with the project's manager. At a meeting with the intern programme sponsor (during the time that this review was being undertaken) discussions included the possibility of a wider programme which networked other interns in the programme and included workshops on generic skills (e.g. presentations, etc.)

### *education activities*

Members of the Centre have been involved in the supervision of three research students with the Economics Faculty of the Cape Town University and discussions have been underway on providing supervision on some projects in the engineering faculty.

The occasional special lectures have been provided on courses within the UCT Graduate School of Business. More substantial is the twelve seminar Masters course on the Economics of Technological Change for the UCT Economics Faculty and teaching input into the science and technology policy programme to be offered by Stellenbosch this year.

There were also examples of research outputs being turned into teaching material (e.g. the work on telecommunications regulation has been written up as a textbook by one of the collaborators.)

It is tempting to say that more of all of these activities should be encouraged. They are not, however, under the direct control of the Centre as, to a certain extent, they must rely on their being research students who are interested in science and technology policy and academics in other faculties recognising the value that such an input would make to the education of their students. However, interviews with a number of academics in the University indicated that closer links would be valued and noted that the physical geographical split, with the Centre being located off the main University campus, was somewhat of a barrier to closer joint educational activities.

### *recommendations*

- *continue development of short courses/workshops to policy-makers*
- *introduce systematic reviews for staff development*
- *consider means of intensifying links with economics, business and engineering departments*

## **Applicative/Policy-oriented indicators**

It has already been observed that the majority of project undertaken by the STPRC have been relatively short-term, highly focused projects which were sponsored by government agencies. The fact that they were commissioned by government departments is indicative of fact that the STPRC is recognised as being capable of undertaking this work and/or the fact that there are very few other people who currently have the necessary expertise in South Africa.

In most policy-oriented research there is, necessarily, a time lag between research and implementation. It is, therefore, difficult to assess the applicability of this work, given the early stages of development of the Centre. Nevertheless, there are a number of examples which support the case that the Centre is having a direct input into the policy-making process. Prime examples of this have been their input into the consultative documents and White Papers on Science and Technology Policy, Telecommunications and the review of the CISR. Further to these examples, are statements, such as those made by interviewees from the policy community, which respectively described Centre members as being “pivotal to a number of groups within the policy system”... “having an excellent mind for policy analysis” ... of... “being in a strong position in matters of IT, telecommunications policy and general industrial policy”...and “having produced work which is still referred to although it is out of date by now”. The applicability of their work has clearly been one of the strengths of the STPRC.

### *recommendations*

- *maintain a portfolio of practical policy-related output but continually review the proportion of the project portfolio which is dedicated to such work*

## **Qualitative indicators**

For the purposes of this review, the quality and value of the work of the STPRC has largely been determined through interviews with peers, feedback from sponsors and user organisations. Attempts were made to gauge the reputation of the Centre at both the international and the local level. Interviewees were questioned both about the academic quality of the output as well as its utility. In some of the subject areas in which the Centre has published which are outside the direct areas of expertise of this reviewer, specific pieces of work were sent to international experts for comment - their

views, as well as those interviewed and the reviewer's own comments are integrated in this section.

There was a high degree of consensus amongst those interviewed that researchers in the STPRC were "serious" people. Their work was perceived as being consistently good and in some cases excellent. As mentioned above, the Centre scores particularly high in regard to the perceived utility of the output, with nearly all sponsors and users interviewed giving high marks on this dimension. Only one interviewee suggested that a particular piece of work might have been more useful but admitted that the Centre may well have been asked to undertake work for which it wasn't ideally suited and that the sponsoring agency wasn't particularly experienced in commissioning work at the time. He felt that both had gone through a necessary learning curve and held the Centre in high regard for their overall contributions.

Although it may be a function of the interview sample, specific pieces of work that were regularly singled out were the contributions to the review of science policy in South Africa, the work on telecommunications policy, the IT survey, the work on high-tech clusters (rated very highly by the international agency which sponsored this work), the Innovation Survey (described by one 'international' interviewee as "path-breaking for South Africa") and their contribution to the Industrial Strategy Project. In fact, nearly all of their projects received a favourable mention by at least one interviewee.

However, several academics interviewed suggested that, although the work was of a very high quality, that more might have been achieved in terms of the analysis of empirical data collected. The Centre was not perceived as having made an methodological 'breakthroughs' in the study of science and technology policy, nor as having made much of a direct contribution to theory building or testing. Given the short duration of most of the projects and the small number of researchers available, it is not surprising that the perception of the Centre (even within the research group itself) is that they are adaptors of existing methods rather than innovators. An exception to this has been the work on National Systems of Innovation. Reference was also made to the various audit/survey pieces of work as applying 'state of the art' methods in South Africa. Another interviewee felt that they were doing important "ground-breaking work for South Africa".

Although held in high regard, it should be noted that none of the interviewees were able to identify the three focal areas chosen by the STPRC - indicative of a lack of depth in any single area. One academic interviewee thought that the STPRC should tighten its

focus and build upon the excellent work of the Innovation Survey. Alternatively some policy-users of the work argued for the need to remain flexible.

#### *recommendations*

- *consider tightening of focus*
- *select areas for more in-depth academic work*

### **Managerial and organisational indicators**

#### *managerial approach*

Thus far the STPRC has adopted an informal style of management which has suited its purposes. Overly formalised procedures in such a small group would not have been appropriate. The fact that the management style has been informal does not imply that it has not been of a high level. Attendance by this reviewer at meetings with sponsors and research collaborators provided sufficient evidence as to the attention to detail and ability to handle important project management issues.

If, however, the Centre is to grow, consideration should now be given to procedures in a number of areas. Several of these have been mentioned above including staff development, balance of academic/consultancy type projects, and project/focal area selection criteria. The Centre has alternative routes which it could follow and the Director has to take a lead in considering future directions. A consultative exercise as part of a strategic review would now be timely. This is an activity which probably should be discussed with and involve the advisory board of the Centre - and should include the future role of this board. To date, it appears as if the role of the advisory board has been to review and approve the annual report of the Centre. Consideration should be given as to whether there would be value in the board playing a more dynamic role, the criteria for selection and tenure on the board, etc.

#### *organisational structure*

Until such time as the Centre grows there is little need to formalise or consider alternative internal organisational structures. However, one important organisational issue is the close physical and intellectual proximity to the Development Policy Research Unit. There is clear mutual benefit for the two groups in being closely connected. The overlap between their respective areas of work and the complementarity

in their competencies allows them to collaborate on projects. There are economies of scale which have benefited both groups - such as the use of the Trade and Industry Monitor and seminar series as dissemination and discussion vehicles. Most important, given the small size of the STPRC is that the close proximity of the two groups creates a research 'climate' or culture which otherwise would take a long time to evolve in isolation.

Similarly, the 'networked' or collaborative approach to research which the STPRC has adopted thus far has proved to be highly successful. Although the Centre certainly has a need to increase the number of full time research staff, it has been possible to undertake projects in which the STPRC does not have all the necessary expertise by collaborating with a wide range of individuals and groups. In addition to the DPRU, collaborations have occurred with members of the Business School, the Engineering Faculty, visiting fellows, and institutes such as the Education Policy Unit, the Foundation for Research Development, ORSTOM, etc. To some extent this has allowed the Centre to overcome some of the problems of being under-strength while at the same time addressing the needs of a multi-disciplinary field.

#### *recommendations*

- *conduct consultative exercise with principal users about long-term policy needs to feed into strategic review of research directions*
- *review membership and role of advisory board*
- *retain close links with DPRU*

#### **Recommendations**

The terms of reference for this review asks the reviewer to comment upon whether or not the Centre has fulfilled its original objectives. Initially, the Centre proposed a bounded number of research directions, which were concentrated into the original two focal areas selected by the Centre in consultation with the advisory board. Broadly speaking the Centre can be seen to have attained the objectives to develop policy-oriented research in its selected areas.

However, the Centre is clearly viewed as working in the general field of science and technology and the wide range of projects undertaken have diluted attempts to be perceived as being involved in two or three sub-areas. (The Centre is also perceived as being biased towards technology policy - which was one of its original intentions.)

The initial aim to concentrate work in a limited number of select areas seem to have been based upon the expectation that a network of other groups working on different aspects of science and technology policy would be established and together they would each specialise in particular niches. As there has been little movement in the establishment of additional new centres and the subsequent creation of a network, the time is right to reassess the specific areas and the number of areas which the Centre should be working in.

This should be part of a strategic review and should take into consideration the existing expertise of the members of the Centre, the likely future needs of the sponsors and end-users, and, perhaps most importantly, the size of the group. Currently the group is below 'critical mass'. If it stays at the same size than a choice needs to be made between dramatically reducing the number of areas in which it is prepared to work - in order to develop the selected areas in more depth. Alternative, it can continue to be opportunistic in its response to the policy-makers. While the latter might well be in the short-term interests of the policy community, it is unlikely to provide the time (per project) or cumulative effects on knowledge generation to fulfil more academic expectations or more long-term policy needs. It is only if the Centre finds the means to expand that it would be in a position to find some sort of balance between these two alternatives.

The earlier sections of this report cover the issues of quality, utility, and quantity of research. The quality of the work was judged as being good, and in some cases excellent. There is a strong consensus amongst sponsors and users of the work that the STPRC is well networked into the South African policy community and produces work whose recommendations are highly valued. Nevertheless, the short-duration of many of the projects, in addition to blurring the focus of the Centre, has also restricted the amount of time and effort that could be spent on producing more analytical and theoretical outputs. Again it comes down to strategically reviewing the balance of activities (which in addition to the research also includes teaching, supervision and providing representation on a number of committees) and finding the resources to free up the time to balance their more direct and practical policy contributions while building an academic foundation to their work.

Several routes for generating such resources might be explored. Intense competition in the international research funding market means that it is difficult to generate long-term core funding. This should not, however, be written-off as impossible and should be explored with the usual range of foundations and agencies (e.g. Rockefeller, Ford, European Union, World Bank, IDRC, etc.)

The Centre has been approached by a number of international agencies/foundations with ideas for a several longer-term projects. While these might provide the necessary resources to expand they need to be judged in the light of some criteria for project selection which takes into consideration the strategic decisions on areas of work which was referred to above. It is likely that some, but not all, will make an important contribution to the Centre's portfolio. The STPRC should be more proactive in proposing long-term projects to international foundations and agencies on topics of their own choosing.

The Centre should also enter into discussions with two of its existing sponsors - the CSD and the University of Cape Town. Both the Universities and the governmental research funding agencies are currently going through a period of transition in South Africa. This might provide an opportunity to raise the issue of appropriateness of different funding mechanisms. In comparison to areas such as engineering and science, social sciences research is relatively young and under-developed in South Africa. Yet there appears to be no differentiation made by funding bodies between those disciplines which have a fairly well developed institutional base and those which need nurturing. Funding from the CSD has certain restrictions attached to it which can act as an inhibitors to new social science groups such as the STPRC. The main constraint is that the grant cannot be used for academic staff salaries. This follows a traditional (Eurocentric) model of funding in which there is an expectation that research will be conducted on a part-time basis by academic staff whose primary role is in teaching. It can be argued that such a model is not the most appropriate in policy-oriented multi-disciplinary groups. Much of the actual running costs of a Centre (capital equipment, stationary, travel, secretarial, etc.) can probably be covered by short-term grants or commissioned projects. Consideration should be given by the CSD for core grants to be under the discretionary use of the Centre and allowed to pay for research positions. Furthermore, planning of the Centre's activities should be facilitated if the budget was agreed for a multi-year period, rather than on a year-to-year basis.

The University of Cape Town has been a strong supporter of the STPRC to date, providing office space and some limited funding. Proposals currently under consideration by the Research Committee of the University would result in an overhead levy being charged for certain types of research. One possible use of the resulting revenue is likely to investment in start-up activities consistent with the University's aims and objectives. Another use of such resources might be for the provision of a number of fixed-term research staff which could be bid for by University research groups or departments. If successful in bidding for such a post the STPRC would be



in a position to increase the academic output from shorter-duration projects as well as increase their contribution to science and technology policy related teaching.

In conclusion, some deviation from the original aims of any research group is only natural in its formative years. Based upon a consultative exercise and strategic review, this reviewer would like to see a better balance between more academic long-term research and the shorter practical pieces of work which the Centre has concentrated on to date. While remaining policy relevant, this would provide a balance with more academic outputs. Such academic output that results should also be tested by submission to more of the leading journals in the field. As argued above, success in the second stage of the Centre's life is likely to be dependent upon the additional resources and/or more leeway to use the resources it receives in a flexible manner. Based upon both the quality and utility of the output which has been assessed as part of this review, I have no hesitation in recommending the continuation of funding from the Centre for Science Development.

## Appendix A

### GUIDELINES FOR THE EVALUATION OF CSD/UNIVERSITY RESEARCH UNITS

Please comment on the following:

- 1 The extent to which the objectives of the Unit have been attained.
- 2 The quality of the research:
  - relevance
  - international standard
  - substantive and methodological development
  - theory building
- 3 The quantity of the research:
  - publications and media dissemination
  - replication of research
- 4 National and international networking.
- 5 Graduate training.
- 6 Your recommendations with regard to:
  - continuation
  - type of research
  - methodological approach
  - management
  - dissemination of findings
- 7 Implementation

## **Appendix B**

### **THOSE INTERVIEWED**

#### **Members of STPRC/University of Cape Town and Collaborators**

Professor David Kaplin  
Dr Jean-Baptist Meyer, Researcher, STPRC/ORSTOM, Paris  
James Hodge, Research Fellow, STPRC  
Rosemary Wolson, Research Fellow STPRC  
Eleanor Neethling - Secretary/Admin  
Dave Lewis - Director, DPRU  
Dr J Millar - Graduate School of Business, UCT  
Dr R Braune - Electrical Engineering, UCT  
Dr S Badat - Director, Education Policy Unit, University of Western Cape (attended meeting)  
Paul Lundall and Leslie Powell, Education Policy Unit, University of Western Cape (attended meeting)  
William Blankley, Senior Policy Analyst, Foundation for Research Development  
Professor B S Kahn - HOD, Economics, UCT  
Professor John Martin, Deputy Vice Chancellor Research, UCT

#### **Sponsors and Users**

Sheila Tyeku - Director Research Capacity Development, CSD (attended meeting)  
Dr R Adam - Deputy Director General, Dept of Arts Culture, Science and Technology  
Dr R Naidoo - Advisory Board STPRC and Manager Capricorn Science Park  
Robin Bloch - Research Consultant, former Director for Research, Ntsika, Department of Trade and Industry  
Brent Herbert-Copley, Senior Program Specialist, International Development Research Centre (IDRC)

#### **International Academics**

Professor Rafe Kaplinsky, Institute of Development Studies, University of Sussex  
Professor Martin Fransman, Centre for Japanese-European Technology Studies, University of Edinburgh  
Professor Charles Cooper, United Nations University, INTECH, Maastricht  
Professor Geoff Oldam, Science Policy Research Unit, University of Sussex  
Professor Tom Whiston, Science Policy Research Unit, University of Sussex