INSTITUTIONAL RESEARCH

DEVELOPMENT PROGRAMME

IRDP

PROGRAMME FRAMEWORK

(2007 - 2011)

March 2006

FOREWORD

The document serves as programme document to enable institutions and researchers participating within the IRDP guidance on how to access research funds for Institutional Research Capacity Development. It is based on several discussions and consultations held with all the relevant stakeholders at HEIs about the new IRDP envisioned by the NRF. It should be seen as a response to challenges facing South Africa's National System of Innovation (NSI) in particular the HEIs. The programme will kick start in 2007, while the year 2006 will be used as a phasing out year for the current IRDP programme

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ACRONYMS AND ABBREVIATIONS

CSD	:	Centre for Science Development
DoE	:	Department of Education
DST	:	Department of Science and Technology
FRD	:	Foundation for Research Development
GDP	:	Gross Domestic Product
HBU	:	Historically Black Universities
HDI	:	Historical Disadvantaged Institutions
HE	:	Higher Education
HEI	:	Higher Education Institution
HWU	:	Historically White Universities
ICD	:	Institutional Capacity Development
IRDP	:	Institutional Research Development Programme
NGO	:	Non Governmental Organization
NPHE	:	National Plan on Higher Education
NRF	:	National Research Foundation
NSI	:	National System of Innovation
OECD	:	Organisation for Economic Co-operation and Development
PhD	:	Philosophiae Doctor
PQM	:	Programme Qualification Mix
R&D	:	Research and Development
RCD	:	Research Capacity Development
RNA	:	Research Niche Area
S&T	:	Science and Technology
TDP	:	Technikon Development Programme
TRDP	:	Technikon Research Development Programme
UDP	:	University Development Programme
URDP	:	University Research Development Programme

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1. INTRODUCTION

The aim of this document is to provide the programme framework for the IRDP. The IRDP aims in partnership with the higher education institutions, to address the current challenges faced by South African institutions of higher learning in research, in order to position them to become world class universities and thereby contribute to their mandate of knowledge generation and human capital development. This document should be read in conjunction with the ICD framework document which has been posted on the NRF website.

2. HISTORICAL OVERVIEW

2.1 Overview of the NRF

The National Research Foundation Act, No 23 of 1998 provided for the consolidation of the Centre for Science Development (CSD) and the Foundation for Research Development (FRD) to form the National Research Foundation (NRF), a new organization that came into being on 1 April 1999. The objective of the NRF is to support and promote research through funding, human resource development and the provision of the necessary research facilities, in order to facilitate the creation of knowledge, innovation and development in all fields of science and technology, including indigenous knowledge and thereby contribute to the improvement of the quality of life for all.

2.2 IRDP: From Past to Present

Previous apartheid educational policies resulted in the underdevelopment of the research capacities at previously disadvantaged institutions, namely Historically Black Universities (HBUs), and Technikons.

In 1988 the FRD inaugurated the pilot phase of the Research Development Programme (RDP), with the primary intention of creating a research support framework for HBU staff members who did not meet the criteria set for the FRD's Core Programmes. The RDP provided ad hoc grants and extensive consultation, culminating into a fully-fledged development programme called the University Development Programme (UDP), formally launched in 1992.

After the dawn of the new democratic dispensation, the FRD underwent a comprehensive strategic planning exercise as part of the fundamental transformation. The outcome was the introduction of a new suite of programmes dedicated to research capacity development (RCD) that came into effect in 1996, viz the Technikon Development Programme (TDP) and the URDP. These two programmes were implemented until 1999 when the FRD was phased out.

The new TRDP and URDP were launched in July 2001 as the next phase of support under the new organisation, the NRF. These two programmes, implemented in 2002, were run as two single streams until 2004 when they were brought under single management – under the umbrella of the **Institutional Research Development Programme (IRDP)**.

This programme continues in 2007 and extends the institutional research support to all the South African higher education institutions in line with their missions of research excellence.

In planning any further intervention for increased research capacity development, it was crucial to be guided by the successes and failures of past efforts. Significant lessons have been learned during the past ten years, and these are corroborated by experience of other agencies around the world that are involved in institutional research capacity development. These lessons include:

- Sustainable institutional research capacity cannot be built in only ten years; a long-term perspective is required.
- Research Niche Areas or research focus areas provide a framework for the rational utilisation of scarce resources while maintaining diversity. Focused approaches to research funding and support were perceived to have been successful across the HE sector.
- Each institution must take ownership of its own research endeavour. If the institution itself does not drive the research, it is unlikely to succeed.
- In order to create a sustainable research programme, a critical mass of no less than four active researchers working around a common theme is required. Focusing and consolidation is critical for accelerated growth.
- Staff development for degree qualification is a very important component of research capacity development; however, it should not become an end in itself, but must translate into further involvement in research, beyond the doctoral level.
- There must be sustained pressure to produce appropriate, quality research outputs.

Success was found to be associated with institutional commitment to research and supportive leadership. This was supplemented by the ability to attract a core of dedicated researchers and stable working conditions where research is recognised and rewarded.

Based on the previous lessons, the following are critical lessons for the future:

- Well-focused, goal oriented research
- Committed researchers with sound training
- Continuity of support, including mentorship
- An enabling environment that allows time to do serious research
- Infrastructure support, including space, communication facilities, and access to scientific literature
- Growing of a RNA field of focus.

3. POLICIES AND LEGISLATIVE CONTEXT:

The programme has been informed by and has taken into consideration various government policies and legislation. In particular, the document is aligned with the following policy documents;

- The National Plan on Higher education (2001)
- The National Research and Development Strategy of DST.
- Research Strategy of DoE

On the basis of national policies, there is general agreement that the HE system faces two main challenges:

- Redress of past inequalities and building a far more representative research community able to deliver on both national and continental needs.
- HEIs should keep up with emerging global development and the support of excellent research.

Unpacked further, these main challenges manifest in many different ways, ia:

- **Lack of articulation** between various elements of the research system, and between the research system and national needs.
- **Stark race and gender imbalances** in the demographic composition of researchers.
- **Skewed distribution of research capacity** as major research centres are concentrated in the Western Cape, Gauteng and Kwa-Zulu Natal. The rest of the country has limited research capacity.
- **Efficiency of the current HE system**: The number of students ultimately exiting the HE system is comparatively small. In 2004, of the 528 undergraduates enrolled at universities, only 1 student exits the HE sector with a doctoral degree. This demonstrates a high degree of inefficiency.
- **Qualification of staff**: In 2003, of the 15 000 staff in the HE sector an estimated 70% did not have doctoral qualifications. The lack of the highest qualification affects the quality of post-graduate student training as well as research output.
- **Lack of research critical mass**: Of the 15 000 staff in the HE sector, only 10% are considered to be active participants in research. There is thus a large pool of potential researchers who can be assisted to participate in research
- **Turf phenomenon**: Lack of cooperation across the different organizations of the National System of Innovation (NSI).

- **Appropriate funding for the NSI** Current (2005) South African total (public and private sector) expenditure on R&D is approximately 0.81% of GDP whereas the average OECD country expenditure is 2.15% of GDP. There is a great need to increase the level of R&D spend in order to make the NSI vibrant and functional.
- **Human resources.** Human resources in S&T are not being adequately developed and renewed; there is an ageing and shrinking scientific population.
- **Declining research and development in the private sector**. R&D undertaken by large South African companies has shown a significant, measurable decline despite global indications that technology-driven economic development is sustained by high level research and innovation by the indigenous private sector (firms of all sizes).

In response to the various challenges the HE sector has undergone fundamental transformational changes. These changes have brought about a new shape and size of the sector, and new funding instruments. Through mergers of institutions, the new HE landscape is constituted of fewer but more complex types of institutions. Unlike in the recent past when the South African HE landscape was easily differentiated into Historically White (or Advantaged) and Historically Black (or Disadvantaged) institutions, or Universities and Technikons, new forms of institutions have emerged. These are:

i. Universities
ii. Universities of Technologies
iii. Comprehensives

The HEI sector continues to grapple with the practical translation of these 'new' kinds of institutions. It is hoped that these new institutional forms will improve the contribution of the HE sector to skills development. Furthermore, within these categories of HE institutions, there are added challenges related to funding, governance and new missions that will take longer to be fully developed.

Undoubtedly, these changes in the South African HE landscape affect the manner in which the NRF conducts its business. To achieve its mission of research promotion and support with minimal interruption, the NRF will have to continue to work in partnership with HE institutions and other research organizations. The challenges facing the HE sector in skills development as well as research capacity development will require strategic interventions from the NRF to help institutions meet their national mandate. Since institutions face unique and specific challenges peculiar to their particular environments, NRF interventions will be tailor-made for the challenges unique to the various institutions.

4. FACING THE CHALLENGE

4.1 The Key driver

Responding to challenges facing the South African National System of Innovation (NSI) the NRF identified a key driver for all its programmes, **"the production of *large numbers* of *high quality* PhDs that are required to provide the bedrock for an innovative and entrepreneurial knowledge society".**

Inherent in the understanding of *PhD as a driver*, is that the entire education system must be effective, from pre-school to primary, through senior phase and eventually at tertiary level. Efforts to de-link the different parts of the chain will render the implementation of any strategies less effective and unsustainable in the longer term. While proposed interventions are concentrated at postgraduate level, the NRF will continue to advocate at policy level for an effective education system and will also work alongside other stakeholders in advocating for an effective and efficient education system in its entirety.

NRF programmes (IRDP included) should be placed within the broader context of initiatives within the country that are aimed at developing skills and capacity for accelerated and sustainable economic growth. Putting PhD as a driver would enable the NRF to contribute significantly to the achievement of skills and economic development programmes such as Accelerated and Shared Growth Initiative of South Africa (ASGISA).

5. THE PROGRAMME

The Programme will be referred to as the **Institutional Research Development Programme (IRDP)** in line with the proposed aim and objectives.

5.1 Aim

The Institutional Research Development Programme (IRDP) seeks to partner the higher education institutions in the development and enhancement of their research culture, environment, ethos and practice to become world class African universities in order to deliver in numbers and quality the skills required by the national system of innovation.

5.2 Programme Objectives

The medium- to long-term objectives of the IRDP are:

- Increase the quantity and quality of PhDs (key driver) and other research outputs such as journal articles, books, technological innovations etc, from supported niche areas
- Increase substantially the number of rated researchers
- Promotion of staff development
- Facilitation of institutional partnerships within and beyond South Africa's borders.
- Support for a thriving research environment that will enable South African Institutions to increase their world rankings

The table below illustrates the intended objectives of the IRDP per annum with specific targets. It should be noted however that the projected targets takes into consideration the current state of affairs and aims to improve on it.

Table: Projected Medium to Long Term Objectives

Current status per annum	**Projected Medium-long term objectives per annum**
1000 PhDs	3000 PhDs
Post Graduate Throughput rates: Masters: 20% (28, 344 out of 139, 649) PhDs: 13% (1, 052 out of 8, 379)	Postgraduate Throughput rates: Masters: 30% PhDs: 23%
Rated researchers: 61	Rated researchers: Increase substantially
Staff development grants: 84	Staff development grants : 168
World rankings of HEIs: 4 in top 500	World rankings of HEIs: 10 in top 500 and at least 5 in top 100
Fewer Partnerships/Collaborations	Encourage and increase institutional partnerships/collaborations locally and abroad

5.3 Principles

The following are principles that should inform the IRDP:

- ⇨ All programme activities will be based on quality outcome
- ⇨ The proposed activities must result in the desired transformation of the research landscape in terms of participating institutions, individuals and groups and areas of research to be more representative of South Africa in terms of gender and race.
- ⇨ There must be continuous monitoring and review of initiatives to further refine interventions
- ⇨ To ensure sustainability, the strategy must be based on a principle of partnership between the NRF and the participating institutions, to be captured in a formal agreement. The participating institutions will contribute at least 40% of the total budget required for the activities.
- ⇨ Interventions should be based on needs analysis and assessment of the environment

(IRDP highly recommends partnership and collaboration between institutions that are pursuing related RNA)

5.4 Strategies

In order to deliver on the identified programme objectives, the following critical success factors have to be addressed:

- **Development of Institutional Research Strategy and Institutional Business Plan for implementation**
- **Effective research management system**
- **Increase of graduate student enrolment and increase throughput rate**
- **An effective post-graduate supervision system**
- **Recruitment of quality staff members and the development of existing staff members.**
- **Increase funding to provide support for research infrastructure, research costs and student support.**
- **Focused support to selected research niche areas**

6 OPERATIONAL MODEL

There is a need to focus support on a limited number of focus areas in order to maximise on the limited capacity of good researchers and limited financial resources. IRDP has thus adopted Research Niche Areas as its key operational model. The RNA mode would provide a broad scope for multidisciplinary and synergizing research projects. Support for RNA would be contingent on whether they fulfil certain requirements. Prominent among those is the alignment of the RNA with the long-term institutional strategy and a DoE-approved PQM as addressed in the three year institutional plans. Where appropriate, the RNAs supported should be aligned to national research priority areas.

The operation of this programme will be in collaboration with other NRF programmes. As a developmental programme, it would operate also as a feeder and contributor (but not a competitor) to other NRF programmes such as the Focus Area programme, Centres of Excellence and Chairs programme.

The programme would be tailor-made for each specific institution's needs and will help developed and developing RNAs with the objective of transforming them to world class status. The RNA model is in two tiers in order to recognise the different levels of research capacity within an institution and across institutions. However, a developing RNA will be expected to graduate within 5 years to become a developed RNA.

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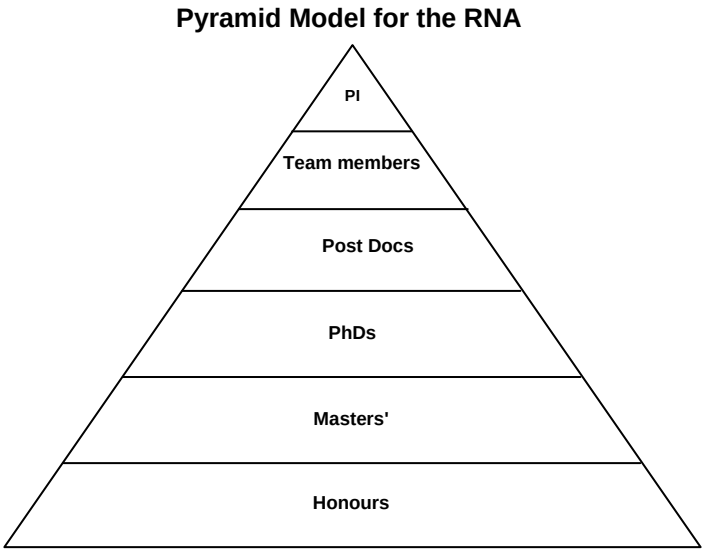
The minimum criteria outlined below provide a hierarchical support mechanism for RCD at HEIs

TABLE: IRDP Hierarchy of Research Niche Areas - Minimum Criteria		
	Developing RNA	**Developed RNA**
Focus/ Niche	▪ A clear focus which is part of the institutional plan of the university ▪ Identified Research Niche Area must be aligned with an NRF Focus Area ▪ The focus of the Research Niche Area must have scientific and technical merit ▪ The RNA should be in line with the approved PQM by the department of education. (DoE)	▪ A clear focus which is part of the institutional plan of the university ▪ Identified research area must be aligned with an NRF Focus Area ▪ The focus of the Research Niche Area must have scientific and technical merit ▪ The RNA should be in line with the approved PQM by the department of education. (DoE)
Plans & Resourcing	▪ University approved business plan with a five-year horizon which includes budget with contributing sources ▪ The Research Niche Area must strive towards obtaining at least 20% of its total research budget from sources of funding other than the university and the NRF IRDP ▪ In terms of NRF funded projects, the university must contribute at least 40% towards the total costs of each project	▪ University approved business plan with a five-year horizon which includes budget with contributing sources ▪ The Research Niche Area must strive towards obtaining at least 50% of its total research budget from sources of funding other than the university and the NRF IRDP ▪ In terms of NRF funded projects, the university must contribute at least 40% towards the total costs of each project
Leadership	▪ A champion/leader who has a doctoral qualification and research track record. ▪ Assistant leader and succession planning must be in place.	▪ A champion/leader who is an established rated researcher and who should have recognition and standing in the university – preferably at professor or director level ▪ Assistant leader and succession planning must be in place where necessary ▪ Assistant leader (must be in possession of PhD)
Team members	▪ At least 3 to 5 active team members conducting their own individual research projects within the theme of the Research Activity ▪ Postgraduate students (masters and doctoral) must be trained in the Research Niche Area (15 per RNA) ▪ There must be clear plans to improve student throughput (PhDs) and to address redress and equity in terms of both staff and student participation in the Research Niche Area. Participation levels must be at least as follows: ▪ Staff: 40% black; 40% Women ▪ Postgraduate students: 60% Black; 40% Women. 80% of the total students should be South Africans	▪ 6 to 10 active team members conducting their own individual research projects within the theme of the Research Activity ▪ Postgraduate students must be trained in the Research Niche Area (25 per RNA including post docs) ▪ There must be clear plans to address redress and equity in terms of both staff and student participation in the Research Niche Area. Participation levels must be at least as follows: ▪ Staff: 40% Black; 40% Women ▪ Postgraduate students: % 60Black; 40% Women

- Non Rated Researchers will be funded for 2 years renewable up to a maximum of 6 years.
- Rated researchers will be funded for 5 years.

It is recommended that the nature of the configuration of the RNA must be aligned to the pyramid model from Honours to PI as indicated below to ensure sustainability and successful succession planning.

Figure 1: Pyramid Model for RNAs



The pyramid model should enable the delivery of large numbers of students in a Research Niche Area. It is proposed that, ideally, an RNA should be led by a Principal Investigator (PI) with a number of team members. Each team member should be able to attract at least 2 post-doctoral students, who will in turn each provides supervisory support for at least doctoral and masters students. This group should ensure that sufficient numbers of honours students are also supported as they form the feeder stock of masters and doctoral students in the future. This team should be supported by appropriate technical and administrative support.

By proposing this basket of interventions, it is hoped that a number of South African institutions will take advantage of NRF support and position themselves to become world class institutions.

RNAs will be evaluated against a set of criteria and classified accordingly into developing or developed categories. RNAs will then be monitored continuously to meet the program objectives.

7 KIND OF SUPPORT

Over and above the funding of Research Niche Areas, IRDP also provides research support in the following forms:

I. Local Travel

This form of funding is aimed at providing mobility support for researchers to travel around while pursuing their research. Request for local travel support should be directly related to the requirements of the research and must be specified and justified. This could entail support for field trips during data collections and site visits.

II. Temporary support

This support can be used for short term lecture replacement, technical assistance and ad hoc student assistance. It is made available to enable grant holders to hire post graduate students as temporary lectures, hire technical expertise for project related activities, and ad hoc assistance from students.

III. Research equipments

This support caters for the purchase of small, dedicated research equipment needed specifically for the planned work.

IV. Conferences (local and abroad)

Through this support researchers can attend reputable local and or international conferences. It is aimed at enabling researchers to disseminate their research, share ideas and interact with colleagues in their respective fields at local and international level. The grant is however given to applicant who will be presenting a paper and that the paper should be a direct product of the research being undertaken.

V. Sabbatical and study visits

This is aimed at giving researchers opportunities to advance their knowledge and expertise by spending time in a well developed research environment/institutions. This may include training visits that would help to enhance expertise in critical aspects/areas related to the projects undertaken.

VI. Visiting scientists

Here researchers have a chance to invite experienced and highly reputable scientists to their institutions and projects to provide mentorship and build capacity within the project undertaken (RNA). Visiting scientists could be based locally or from abroad.

VII. Staff development grants

This grant is aimed to contribute towards the capacity development of staff members participating in the NRF funded project but they are not necessarily grant holders. Their participation in the project should be leading towards the achievement of a senior degree. A staff may apply for another member of his institution to be given this kind of support. These grants could be used to contribute towards

operating costs for research as well as cost for travel and accommodation of staff members needing to visit their supervisors.

VIII. Research development packages

These are value adding activities that are specifically intended to tackle issues that may hinder students' and researchers' success. Prior to requesting this support, the grant holder will be expected to conduct a needs assessment or skills audit for the students that are involved in the RNA. The NRF-IRDP will therefore provide support based on the findings of the skills audit. This package is aimed at enhancing skills development with a view to accelerate student completion rates and researchers progress. Areas of support may include but not limited to the following:

- Research methods
- Statistical analysis
- Project/Programme management
- Research report and article writing skills
- Mentorship

IX. New Training Programmes

In addition to conventional degree programmes, IRDP will also provide support to new training programmes that are introduced in institutions. These programmes should be geared towards addressing the challenges of scarce skills currently experienced in South Africa, for example, entrepreneurial skills.

Kindly note that details pertaining to the level of support, the procedures and conditions for approval will be explicitly spelt out in the IRDP manual.

8 IMPLEMENTATION STRATEGY

8.1 Selection of participating institutions and RNAs

All higher education institutions will be invited to submit an application form to seek approval of RNAs to the Institutional Research Development Programme (IRDP). While the programme would encourage all institutions to participate, only institutions with potential and a track record of contributing to the delivery of PhD as a driver will be legible to participate in the programme.

Submissions will be assessed according to the following criteria:

- Track record of previous support from NRF programmes, especially IRDP programmes
- Institutional track record and capacity to produce large numbers of high quality PhDs
- Research management capacity
- Research policy
- Annual research output
- Priority research areas/niche area identified and supported by Universities
- Post graduate student policy and practice
- Level of investment on the RNA
- The students incentives
- Throughput record of honours, masters and PhD students of the previous five years
- The supervisory capacity

8.2 Institutional audit

Assessment of RNAs will also consider institutional audit results. However, NRF will not carryout independent audit, rather would consider the current audit results from the National Department of Education. This assessment will only apply to those institutions that have already undergone the audit process and those that are yet to be audited the institutional plans as outlined above in 8.3 will suffice.

8.3 Institutional plans

Those institutions selected to participate will submit institutional plans outlining further details of research management, research support and identification of research niche areas on which it proposes to concentrate its activities.

8.4 Assessment of RNAs

Research Niche Areas will be assessed according to a process determined by the NRF to the stage of final approval.

The development of multi-disciplinary RNAs will be strongly encouraged. This programme provides the opportunity for current areas of relative strength to be extended to include other disciplines.

Joint RNAs may be developed and proposed with other HE institutions, industry, government laboratories and science councils. The management of such joint RNAs will be on a joint basis between the institutions concerned and the NRF.

8.5 Research project proposals

Project proposals within finally approved Research Niche Areas will be submitted and considered for 5 year funding with annual monitoring of progress.

8.6 Advisory Committee

Each approved RNA will be expected to establish an advisory committee consisting of members of external members such as industry and other HEIs. The advisory committee will meet at least once a year and make recommendations on the progress of the RNA in terms of management of RNA, scientific outputs and student training.

9 CONDITIONS FOR SUPPORT

- The participating institution should be ready to contribute at least 40% to the total direct cost associated with the RNA. The distribution of this amount will be subject to negotiation with the NRF.
- Performance Data from the participating institution will be critical in the monitoring of the performance of the RNA. The participating institution will be required to collect institutional statistics annually which will be used to monitor progress.
- The participating researchers must commit to submit for NRF rating after 5 years of NRF support.

Addenda

The following table illustrates the implementation plan.

Table: Implementation plan

Main Activities	**Timeline**	**Responsible person/unit**
Finalisation of programme framework	25 Feb 2006	IRDP/ Manager
Testing of the implementation plans with HEIs	14 Feb 2006	IRDP/Manager
Programme Launch	03-15 March 2006	IRDP, CGA & ICDG
Opening of calls for new RNAs	23 March – 23 May 2006	CGA & ICDG
Submission of institutional plans and new RNAs	23 March –23 May 2006	CGA & ICDG
Panel Reviews	23 May-30 June 2006	IRDP & Evaluation Centre
Communication of assessment outcomes-RNAs	02 July -28 July 2006	IRDP & Evaluation Centre
Call for submission of project proposals	01 May- 30 June	ICDG & IRDP
Processing of applications	01 July to 30 July 2006	ICDG & IRDP
Reviews process (Postal)	01 August- 15 September 2006	ICDG & IRDP
Panel reviews (In-house and onsite reviews)	15 September- 30 October 2006	IRDP & ICDG
Funding decision	30 November	ICGD & IRDP
Communication of Funding decisions	01-15 December 2006	IRDP & CGA
Implementation of approved project proposals	January to December 2007	HEIs
Ongoing interventions, M&E	January-December 2007	IRDP