



National Research Foundation **الهيئة الوطنية للبحث العلمي**

United Arab Emirates

Strategic Plan 2009-2011

June 2008

Message from the Minister



I am pleased to introduce the first Strategic Plan for the newly created National Research Foundation (NRF). NRF represents an important commitment by the government of UAE to increase and enhance the research and innovation activities in the country. We live in an ever-evolving world that constantly presents challenges, but also opportunities. By expanding research capacity and activity in the country we will be better able to meet those challenges and convert many into opportunities to benefit our country and its citizens.

NRF will play a key leadership role in fostering innovation and research activity that will lead to the economic and social development of UAE. As this Strategic Plan makes clear, NRF will be guided by the pursuit of excellence in research activity and will emphasize outcomes over process, in supporting research in the country's universities and colleges.

For UAE to continue to prosper and diversify its economy it must build a research capacity that has the potential to unleash innovation and entrepreneurship. NRF will therefore play a key role in ensuring that UAE has an innovation system that responds quickly and appropriately to changing priorities and opportunities as they emerge.

NRF is a unique organization in UAE. Via the Minister, it will provide advice to the government on research matters and policy. It will support basic research in a range of science and engineering disciplines, and it will support research in the humanities and social sciences. It will also support applied, strategic and mission oriented research, particularly where it involves cross-discipline approaches to solving real world problems. Research into entrepreneurship and innovation will also be supported. In addition, NRF will encourage the building of linkages between business enterprises and universities and colleges.

In practical terms this means that NRF will invest in hundreds of research projects involving individuals and teams, in many instances working with international collaborators. To emphasize its focused and flexible approach NRF will develop a range of funding schemes to suit the research needs of the country. The outcomes from these research projects will lead to direct benefits across many areas of UAE.

I wish NRF and the researchers it will support every success as they advance UAE and its citizens through innovation and research activities.

**His Excellency Sheikh Nahayan Mubarak Al Nahayan
Minister of Higher Education & Scientific Research
June 2008.**

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Foreword

It is a pleasure to introduce NRF's first strategic plan for the three year period 2009-2011. NRF is a new organization and to ensure that it fulfils the expectations of its stakeholders, it is important that it has a coherent and transparent blue print to follow. The strategic plan therefore represents both a guide to future directions, as well as a key accountability document.



The NRF began life on March 9th 2008 with a very small team. During 2008 this team will undertake the preparatory work needed to create the direction for the NRF and its processes and program plans. This Strategic Plan represents the work of this team, particularly the Director in consultation with the Minister of Higher Education & Scientific Research, H.E. Sheikh Nahayan Mubarak Al Nahayan, stakeholders from across the country, and a range of experts and advisors drawn from similar agencies around the world.

The strategic plan describes NRF's agenda for investment in research activity in UAE over its first three year period of operation. NRF aims to fulfill its mission by supporting research activities in the following seven areas:

- **Discovery:** develop and maintain a solid foundation of world-class research across a range of nationally relevant disciplines.
- **Linkage:** encourage and extend cooperative approaches to research between universities, government and industry.
- **Research Infrastructure:** increase the level and quality of research infrastructure in UAE.
- **Innovation and entrepreneurship:** contribute towards the building of an internationally competitive innovation system and culture of entrepreneurship in UAE.
- **Research education and training, and careers:** contribute to high-quality research education and training, and foster career opportunities for early career researchers, particularly UAE nationals.
- **Public engagement:** increase public and government awareness and understanding of the benefits of national research and the important results from NRF funded projects.
- **Good governance:** implement best-practice governance and organizational structures consistent with transparency and accountability.

As well as identifying the specific actions that NRF will undertake to achieve these seven objectives, the plan also specifies some performance indicators to assist in the measurement of its performance against its objectives.

As a start-up organization it is important that NRF adopts, at the outset, best-practice governance procedures, transparency practices and accountability systems to ensure that it builds trust and confidence with its stakeholders. To this end NRF has identified three international research funding agencies, in particular, that have systems and practices suitable for emulation in UAE context: the U.S. National Science Foundation (NSF); the Australian Research Council (ARC); and Science Foundation Ireland (SFI). With the guidance of these three agencies NRF will put in place an extensive international peer review system to determine projects for funding and a post-award financial management system to monitor expenditure and performance.

NRF will be a relatively small organization and will use international benchmarking to ensure that its operating budget stays within the international standard range for similar agencies.

During the next three years NRF will introduce a range of funding initiatives that fall neatly into three areas:

- Research Excellence Centers;
- Strategic Initiatives;
- Competitive Awards & Grants

In the first instance the Research Excellence Centers (RECs) will be located in the three federal institutions: United Arab Emirates University; Higher Colleges of Technology; and Zayed University. The selection of RECs will be based upon advice from international review panels. Strategic Initiative Grants will be made to unleash potential research capacity that is currently latent or invest in some important infrastructure that may lead to immediate expansion of research activity. In addition support will be provided to recruit some international research talent to bring to UAE for purposes of knowledge transfer and research leadership. Competitive Awards & Grants will be made to researchers in any university or college in UAE if their proposal satisfies an international peer review competition.

NRF Strategic Plan for 2009-2011 has been approved by the Minister of Higher Education & Scientific Research, H.E. Sheikh Nahayan and is available on NRF web site.

Dr Kenneth Wilson
Director
National Research Foundation
June 2008.

1.0 Introduction

On Friday 7 March 2008, H.E. Sheikh Nahayan Mubarak Al Nahayan, Minister of Higher Education & Scientific Research, United Arab Emirates (UAE), signed a decree creating the National Research Foundation (NRF). NRF is a funding agency modeled on similar agencies such as the U.S. National Science Foundation (NSF), the Australian Research Council (ARC) and Science Foundation Ireland (SFI). These three agencies provide guidance and advice to NRF to ensure that the projects funded, and the methods used by NRF, to make research investment decisions, follow international standards of best-practice. NRF invests in research projects, research programs and research centers in UAE that produce outcomes that benefit the economic and social development of UAE and its citizens.

2.0 Vision

The vision of NRF is:

"To support world-class research activities, and create an internationally competitive research environment and innovation system in the United Arab Emirates"

The outcomes of these research activities will enable UAE to become a source of intellectual property, ideas and knowledge, enable the businesses of UAE to be more competitive and enhance the lives of the citizens of UAE.

3.0 Mission

The mission of NRF is:

"To build an internationally competitive research capacity for the economic and social development of the United Arab Emirates"

4.0 Functions

The functions of NRF will be to:

- provide research leadership in the country;
- advise the Minister of Higher Education & Scientific Research on all research matters;
- recommend the funding of centers, programs, institutions and individuals;
- provide regular oversight and monitoring of awards to ensure that they achieve their goals.

5.0 Guiding Principles

NRF guiding principles are fundamental core values that influence everyone in the organization and support its mission. The guiding principles of NRF are:

- Excellence: support high-quality and innovative research that is locally relevant and internationally recognized.
- Strategic direction: support research in areas of national priority that delivers the greatest social and economic benefits to UAE.
- Accountability: use transparent processes consistent with international best-practice.
- Partnership: Encourage partnerships among universities, research institutes and centers, government, and industry at the local, national, and international level.

6.0 Objectives

NRF's objectives are essential to advancing NRF's vision and the mission and they are:

- **Discovery:** develop and maintain a solid foundation of world-class research across a range of nationally relevant disciplines.
- **Linkage:** encourage and extend cooperative approaches to research between universities, government and industry.
- **Research Infrastructure:** increase the level and quality of research infrastructure in UAE.
- **Innovation and entrepreneurship:** contribute towards the building of an internationally competitive innovation system and culture of entrepreneurship in UAE.
- **Research education and training, and careers:** contribute to high-quality research education and training, and foster career opportunities for early career researchers, particularly UAE nationals.
- **Public engagement:** increase public and government awareness and understanding of the benefits of national research and the important results from NRF funded projects.
- **Good governance:** implement best-practice governance and organizational structures consistent with transparency and accountability.

7.0 The Plan

The following sections of the Plan describe the strategies and actions underpinning NRF's seven objectives. To simplify presentation, actions are allocated to a single objective. They will, however, often contribute to the achievement of multiple objectives.

The plan deals with each objective in turn and uses the following structure. Under the heading 'Objective' is a description of the Objective and selected priorities for 2009. This is followed by a heading 'Key Investment Strategies' which describes the broad statement of how the objective is to

be achieved. Next is a section 'Actions' which describes the specific initiatives that will be undertaken in pursuit of an objective. Finally is the 'Outcome' section which describes the results expected from implementing the key investment strategies. Throughout this Plan wherever reference is made to international partners, it refers to either NSF, ARC or SFI, unless other wise stated.

7.1 Objective 1: Discovery

NRF will develop and maintain a solid foundation of world-class research across a range of nationally relevant disciplines. Such research will be identified by open competition using peer review. Excellent research outcomes leading to social and economic benefits may be generated by small discreet research projects undertaken by individual researchers, or by teams of researchers, or by research networks, or by Research Excellence Centers (RECs).

Among the selected priorities for 2009 will be the establishment of RECs and the introduction of a system of Competitive Awards and Grants.

7.1.1 Key Investment Strategies

7.1.1.1 Strategy 1: Research Excellence Centers within UAE.

During 2008 NRF will develop Guidelines, and Funding Rules and Requirements for RECs. Proposals for RECs will be subject to international peer review during the second half of 2008. The first competition for RECs will conclude at the end of 2008 and funding for the first RECs will commence in January 2009. It is expected that up to six RECs will be funded in the first round with more to follow in subsequent competitions.

RECs will:

- be consistent with national research priorities.
- include international and local partners or 'nodes'.
- be headed by an internationally renowned scholar.
- generate significant added value i.e. produce outcomes and outputs greater than the sum of the individual project outputs had they been funded individually.
- be guided by a board of international experts and advisors.
- publish an annual report of performance outcomes against objectives.
- be funded for 5 years in the first instance with the potential for renewal for a further 5 years, depending upon performance.

7.1.1.2 Strategy 2: Competitive Awards & Grants

Funding for Competitive Awards & Grants will commence in 2009 after the development of the methods and processes needed for the allocation of funds to such research projects. Awards &

Grants will be made using international peer review methods based on best-practice competitive standards.

7.1.1.3 Strategy 3: Flexible and responsive schemes

NRF will introduce a range of schemes such as Research Fellowship Grants and Early Career Researcher Grants to help increase research activity and enhance research capacity and leadership in strategically important disciplines.

7.1.1.4 Strategy 4: Research conferences and workshops.

One way to increase research activity and to generate interest in research activity and outcomes is to support conferences and workshops. Funding will be provided from 2009 to support important national and international workshops and conferences.

7.1.2 Actions

- Appoint international experts to help plan and oversee the building of the RECs.
- Introduce an international peer review process with the assistance of international partners.
- Introduce a range of flexible funding schemes to accelerate research activity.
- Introduce a scheme for Early Career researchers.
- At least two national workshops and one international conference will be supported during 2009.

7.1.3 Outcome

The expansion of knowledge leading to new discoveries, better ways of doing things, and innovations enhanced by the rapid dissemination of these research outcomes.

7.2 Objective 2: Linkage

NRF will encourage and extend cooperative approaches to research between universities, government and industry. Linkage projects aim to build collaborations and partnerships between businesses, and researchers in universities and colleges. Such collaborations may involve researchers from industry working with researchers from universities and colleges, or business decision makers working with university and college researchers. Linkage projects also aim to expand research networks between researchers in UAE and internationally.

Selected priorities for 2009 include the introduction of funding schemes to increase cooperative research between researchers from industry working with researchers from universities and colleges, plus partnerships between business decision makers and university and college researchers.

7.2.1 Key Investment Strategies

7.2.1.1 *Strategy 5: Industry linkage Grants*

Develop funding schemes that support linkage between universities, colleges and industry partners that enable various types of research collaborations.

7.2.1.2 *Strategy 6: Research Network Grants*

Develop funding schemes that enable the development of research networks within UAE and internationally.

7.2.2 Actions

- Introduce and adopt, suitably modified industry linkage grant schemes that have proven successful in other countries.
- Appoint international experts to help plan and oversee the building of research networks.
- Adopt grant programs that encourage linkages between universities and colleges, and business and industry partners.

7.2.3 Outcome

Stronger connections, partnerships, and inter-relationships among research groups at universities, and between university researchers and business enterprises that enhance industrial productivity.

7.3 Objective 3: Research Infrastructure

Access to world-class equipment and facilities is essential if UAE-based researchers are to be internationally competitive and able to produce research outcomes that generate benefits. NRF will aim to support leading-edge infrastructure that contributes to research excellence, particularly where infrastructure is shared.

Selected priorities for 2009 include an identification of the infrastructure needs of the three federal institutions, plus the expansion of high speed broad band internet access.

7.3.1 Key investment strategies

7.3.1.1 *Strategy 7: Infrastructure Grants*

Introduce funding schemes that increase access to leading-edge research infrastructure and are responsive to the needs of industry, government and the wider community.

7.3.1.2 Strategy 8: Internet2 (Ankabut) Connectivity Grants

Provide grants to United Arab Emirates University, Zayed University and the Higher Colleges of Technology that enable access to Internet2 (Ankabut), thereby dramatically expanding band width for data transfer and research collaboration.

7.3.2 Actions

- Identify the research infrastructure gaps and shortfalls in the three federal institutions. Publish widely the extent of this Gap analysis.
- Provide funding for Internet2 (Ankabut) connectivity Grants.
- Provide funding for federal institutions to access on-line data bases that include the primary academic journals.
- Introduce, and adopt, suitably modified, funding schemes that have proven successful in other countries in providing access to state-of-the-art infrastructure.

7.3.3 Outcome

The quantity and quality of UAE research infrastructure is enhanced and links to international research centers expanded.

7.4 Objective 4: Innovation and Entrepreneurship

In order for UAE to become a knowledge-based economy and society it must build and develop a national innovation system and link it to innovation systems internationally. An innovation system recognizes that the flow of technology and information among researchers, business leaders, business enterprises, universities and colleges, and government is the key to innovation. A national innovation system will make it possible to turn an idea generated in UAE into a process, product or service that may then be offered on the local or international market. The development of a national innovation system will make it possible for ideas and inventions created in UAE to be taken to market by local entrepreneurs.

In order for UAE to become a diversified economy no longer dependent upon hydrocarbons it must develop a broad base of industrial sectors, including service sectors that will require business leaders and entrepreneurs. Moreover, employment for nationals will increasingly move away from

the public sector to the private industrial sector. Therefore there will be need for nationals to know more about business risk and business opportunity that comes from entrepreneurship.

Selected priorities for 2009 will include building a national innovation system that makes it possible to translate ideas and inventions out from the universities and colleges in UAE. In addition, an identification of the exact nature of how entrepreneurship activity may be expanded, particularly amongst young male and female nationals will also be fostered.

7.4.1 Key investment Strategies

7.4.1.1 Strategy 9: UAE innovation model

Build a world class UAE innovation system by facilitating the introduction of appropriate legislation and institutions aimed at encouraging domestic Intellectual Property (IP) creation and its commercialization. Enable the domestic innovation system to link with international innovation systems.

7.4.1.2 Strategy 10: Entrepreneurship Research Grants

Funding for research into entrepreneurship will commence in 2009, thereby increasing understanding of the relationship between economic activity and entrepreneurship and how to increase and accelerate entrepreneurship in UAE, including entrepreneurship activity related to outputs from the national innovation system.

7.4.2 Actions

- Undertake a comprehensive audit and assessment of what is needed to build UAE's innovation system and how it may be linked to innovation systems internationally.
- Assist in the development and introduction of appropriate legislation, where necessary, that enables IP protection and assists the development of a UAE innovation model.
- Undertake an audit and assessment of the extent and quality of entrepreneurship education and training in the country.
- Introduce a range of research grants and schemes aimed at increasing understanding of entrepreneurship and the spread of entrepreneurial activity in UAE.
- Appoint international experts to link UAE entrepreneurship with UAE innovation system.

7.4.3 Outcome

The ability of UAE to innovate is enhanced to an international standard, and increased entrepreneurial activity in UAE occurs.

7.5 Objective 5: Research Education and Training, and Careers

Fostering research training and career opportunities for bright young nationals will ensure that nationals will be able to contribute to high-quality research in their own country and empower them to become research leaders in the future.

Selected priorities for 2009 include an assessment of the best methods to develop young nationals into researchers.

7.5.1 Key Investment Strategies

7.5.1.1 *Strategy 11: Research training scholarships*

To ensure that talented young nationals are encouraged to undertake research education and training, a range of scholarships and internships will be introduced. Research education and training will be encouraged and assisted with programs in UAE and outside the country.

7.5.2 Actions

- Undertake a comprehensive audit of the numbers of young nationals undertaking research degrees and other research education and training activities both in the country and outside UAE.
- Undertake an assessment of what universities and colleges in the country do to encourage young nationals into research careers.
- Introduce programs that increase the numbers of young nationals in research education and training programs and research degree programs.
- Introduce programs that expand research career opportunities for young nationals.

7.5.3 Outcome

Rewarding research career positions in research centers, universities and colleges in UAE filled by well qualified national researchers.

7.6 Objective 6: Public Engagement

NRF's communication strategy will improve public understanding of the benefits of research and the contribution that research outcomes make to a better society and economy in UAE. In particular it will promote the relevance of research to better decision making and innovation. NRF will also encourage recipients of grants and awards to engage with the public and stakeholders regarding their research work and its importance.

Selected priorities in 2009 include the development of a user friendly web-site, the introduction of a range of informative material such as newsletters and brochures, and the sponsoring of a number of workshops, conferences and media events.

7.6.1 Key Investment Strategies

7.6.1.1 Strategy 11: Publications

To ensure that research investment activities and the benefits from that research investment become well known to stakeholders, NRF will introduce a range of electronic and hard copy informative material, which will be disseminated widely via electronic and print media.

7.6.2 Actions

- Build a fully operational web-site by early 2009 that contains electronic copies of all important informative material.
- Publish a range of informative material from early 2009 that introduces the benefits of research and research outcomes to stakeholders.
- Publish an Annual Report and post it on the NRF web-site by April 9th each year.
- Develop a media and communication plan for the dissemination of research outcomes which involves conducting media briefing sessions on a regular basis.
- Convene stakeholder workshops on a regular basis.

7.6.3 Outcome

Increased public awareness of and support for the investment in research undertaken by NRF and its benefits to UAE economy and society.

7.7 Objective 7: Good Governance

Accountability and transparency of NRF's investment in research decisions is guaranteed by the adoption of best-practice governance and management practices. NRF is investing in research activity aimed at improving the economic and social well being of UAE and therefore must do so in a transparent and accountable manner using professional and well trained staff.

Selected priorities for 2009 include the adoption of a coherent organizational structure, the employment of a team of Ph. D qualified professionals supported by competent administrators, and the adoption of international best-practice policies and processes, including a suitable and inclusive committee structure, and a Board of Advisors drawn from the international community of scholars.

7.7.1 Key Investment Strategies

7.7.1.1 Strategy 13: International best-practice governance systems

Complete a comprehensive assessment of international best practice governance methods, and adopt the most appropriate for UAE with suitable modification where necessary.

7.7.2 Actions

- Appoint a Board of Advisors comprised of internationally recognized scholars and research leaders.
- Appoint a team of Ph. D qualified program officers with skills and experience to manage international merit review processes and design innovative programs.
- Appoint a team of suitably qualified administrative and technical support staff.
- Develop and implement a range of best-practice governance standards and practices.
- Undertake an international benchmarking exercise to evaluate the efficiency of NRF in terms of its investment in research activity compared to its operating budget.

7.7.3 Outcome

Effective and efficient use of the resources that improves stakeholder comfort and support and leads to greater investment in research activity.

8.0 Measuring Performance

The performance of NRF will be assessed annually and reported to the Minister of Higher Education & Scientific Research in its Annual Report. A series of effectiveness indicators and key performance indicators will be used to assess the extent to which NRF achieves its mission.

Outcome Effectiveness Indicator: Cultural, economic, environmental and social benefits delivered to UAE community through the adoption of outcomes of NRF-funded research. A range of measurement methods for this indicator will be used including: health improvements; social and cultural enhancements; economic development and diversification indicators.

Key Performance Indicator 1: NRF-funded research centers, programs and projects produce high-quality academic outputs. This will be measured by reporting the numbers of academic outputs including books, journal articles, refereed conference papers, research monographs, patents and licenses, etc.

Key Performance Indicator 2: Development, attraction and retention of high-quality researchers across disciplines, able to pursue careers within universities, industry, government and other sectors of UAE economy. This will be measured by reporting the numbers of both national and non-national researchers supported via NRF-funded projects, the numbers of students supported and/or graduated by NRF awards.

Key Performance Indicator 3: A high incidence of collaboration between NRF-funded researchers and those within other sectors of the national and international innovation system including innovative companies. This will be measured by reporting the number of partner organizations and the nature

of their partnerships including industry, community and government partners, joint university-industry publications, industry cost-share on research projects, revenue generated from IP resulting from joint NRF-industry research activities.

Key Performance Indicator 4: Contribution of NRF-funded research to the development of research strengths and applications in areas of national need and priority. This will be measured by calculating the percentage of NRF budget that is awarded competitively to such priority area initiatives.

Key Performance Indicator 5: Enhanced stakeholder awareness of the outcomes of NRF-funded research. For convenience stakeholders may be separated into two groups: the broader UAE community; and the individuals and groups that interact with NRF; that is the clients of NRF. For the first group, stakeholder awareness will be measured by in a range of ways including the extent of media coverage for NRF activities, the level and extent of contact with stakeholders, and levels of awareness of NRF and NRF-funded research. This is to some extent a measure of NRF visibility at home and abroad. For the clients of NRF, stakeholder awareness will be measured by the amount of direct contact with NRF and participation in competitions for funding.

Key Performance Indicator 6: Client satisfaction with the flexibility, responsiveness and governance of NRF and its processes. This will be measured by conducting focus groups and feedback sessions with stakeholders. In addition international reviewers and panel members will be surveyed concerning the fairness and accuracy of the processes used.