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TECHNICAL REPORT

Design of the Qatar National Research Fund

An Overview of the Study Approach and Key Recommendations

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Summary

Qatar is a nation with ambitious aspirations of stimulating local and regional development while taking a prominent place on the world stage as a leader in research and scholarship. As a critical first step toward realizing these ambitions, Qatar has resolved to establish a national funding vehicle to support research. The Qatar National Research Fund (QNRF) is the leading institution in Qatar dedicated to funding research in the national interest. It addresses priority economic and social needs and pursues opportunities to attract internationally recognized researchers to study topics of regional and global importance.

QNRF is a project of the Qatar Foundation for Education, Science and Community Development, a nonprofit organization dedicated to cultivating the full potential of the Qatari people through a network of progressive research and educational centers. To lay the groundwork for the fund, the Qatar Foundation asked the RAND-Qatar Policy Institute (RQPI) to recommend a design for QNRF and draft accompanying business and implementation plans.

The RQPI team presented a design that took the best practices of internationally recognized research and academic institutions and tailored them to both the Qatar Foundation's vision for the fund and the nation's unique needs, challenges, and opportunities. Three strategic goals form the backbone of the design. These goals build on each other, with each taking increasing prominence as QNRF becomes established over time.

The design included a structure for QNRF and laid out the tasks necessary to build the fund, to be undertaken during three stages of implementation. A start-up phase would be followed by the launch of operations and programs, which would be followed, in turn, by initiatives to deepen and broaden the research agenda. The design also proposed a set of operating principles that would enable the fund to meet its strategic goals and perform in accordance with internationally recognized standards for awarding grants and overseeing grantees' performance.

Qatar's Vision of Becoming an International Research Center

Qatar recognizes the vital role that research and development play in giving a country a competitive edge in the global arena. It views excellence in scholarship, innovation, and creativity as a means of distinguishing itself among nations—economically, strategically, and socially.

But Qatar's vision of international prominence starts at home. At the heart of its aspirations is the desire to see world-class research taking place in Qatari facilities, with service to the national interest as the primary goal. In its view, research brings multiple national benefits. It will build the country's intellectual resources. It will expand and diversify the national

economy. It will enhance the education of Qatar’s citizens and the training of its workforce. And it will foster improvements in the health, well being, environment, and security of Qatar’s people and those of the region.

When attractive opportunities are available to conduct research of this caliber in Qatar, the belief is that an international reputation will soon follow. Research done in Qatar will achieve increasing visibility around the world. Qatar will build a name as a unique venue for particular research areas. Internationally recognized researchers will be drawn to the country to initiate or join projects.

Currently, no other institution fills this role. QNRF’s mission is to advance knowledge and education by supporting original, competitively selected research in the physical, life, and social sciences; engineering and technology; the arts; and the humanities. It will also fund workshops, conferences, partnerships, and a national research survey. From students to professionals, researchers working in the academic, private, and public sectors will be eligible for funding opportunities.

RAND-Qatar Policy Institute’s Approach to Developing a Design for the Qatar National Research Fund

To develop the QNRF design and business and implementation plans, the RQPI team first worked with the Qatar Foundation to articulate the vision, mission, goals, and operating principles for the fund. The team proposed refinements to these elements as the study progressed. RQPI also launched a comparative analysis of established research funding organizations and intellectual property right (IPR) regimes that could serve as possible models for QNRF. However, it recognized the need to design an organization that would work well in Qatar’s unique circumstances.

Qatari Research Environment

To learn about the research environment, the RQPI team consulted numerous individuals in Qatar and abroad. These consultants came from academia, the business world, government, and nongovernmental organizations. They provided their views on the current status of research in the country, the nation’s research needs, opportunities to be pursued, and the likely constraints and challenges.

Model Institutions

The RQPI team compared internationally recognized public and private institutions and foundations in the United States, Canada, Europe, New Zealand, and the Arabian Gulf¹ region. Each is dedicated to the support of research. Most share one or more commonalities with the proposed QNRF—mission and goals, size, age, or financing mechanisms.

Points of comparison included organizational structure, principles of governance, award processes, funding mechanisms, monitoring and evaluation processes, and approaches to planning and growth. By gaining deeper insight into the various operational methods of successful institutions, the RQPI team could develop recommendations based on the best of proven approaches.

¹ *Arabian Gulf* is the name used here for the body of water that some readers may call the *Persian Gulf*.

Models for Intellectual Property Rights

The RQPI team did a second comparative analysis to provide a set of candidate models for managing QNRF's IPRs. The study focused on the key trade-offs involved in various IPR regimes. The team then examined those trade-offs through the lens of policy concerns relevant to Qatar and proposed potentially suitable models.

Qatar National Research Fund Work Will Meet National Needs While Building an International Profile

Research focused on meeting Qatar's national needs will be QNRF's top funding priority. The RQPI team's discussions with Qatari leaders and members of the Qatar Foundation board revealed several of the country's most pressing concerns:

- improving the quality of education in Qatar to give citizens the high-level skills required to compete in the 21st-century economy
- diversifying the Qatari economy to lessen its dependence on the energy sector
- drawing more women into the Qatari workforce
- improving water management.

Qatar also offers numerous research opportunities—lines of inquiry to which the country is particularly well suited. Many of these are in line with national needs. They include studies of marine biology in highly saline waters; social transformation, particularly the changing role of women; and genomics. Research opportunities would attract researchers from abroad and raise Qatar's profile beyond its borders.

Qatar National Research Fund Strategy: Pursue Overlapping Research Goals Over Time

The RQPI team looked at QNRF's vision and mission, the research environment in Qatar, the nation's most pressing needs, and its most promising opportunities. On this basis, it proposed three overarching strategic goals for QNRF. These goals also demarcate three strategic phases of development for the fund.

During the first strategic phase, QNRF will focus primarily on *building human capital*. Funding and activities will be aimed at

- educating and training Qatar-based graduates and medical students in world-class, basic and applied research methods
- enabling researchers to undertake multiyear projects and produce high-quality research results relevant to Qatar's needs and interests
- increasing collaboration among researchers based in Qatar
- facilitating contacts and collaborations between Qatari researchers and the international research community.

This initial phase will be followed by a second in which QNRF will concentrate on *meeting other national needs* while continuing to build human capital. Programs are designed to

- enable more Qatari men and women to assume leadership positions in Qatar’s businesses, universities, and research institutes
- increase the participation of Qatari women in the workforce
- diversify Qatar’s economy and improve its performance
- improve the quality of the environment and management of natural resources
- enhance the health and life spans of Qataris.

In a third, current strategic phase, QNRF will maintain its commitment to the first two goals but turn its attention primarily to *raising Qatar’s international profile*. Efforts will be devoted to building the country’s regional and international reputation for excellence in several research areas and encouraging private-sector sources to assume an increasing share of research funding.

Qatar National Research Fund Operations: Complete Key Tasks in Three Stages of Implementation

The timing of QNRF operations derives from the three strategic phases. The QNRF design specifies three stages of implementation: start-up, launch operations and programs, and deepen and broaden the research agenda. The Qatar Foundation will perform the majority of the designated operational tasks in the earliest stage. Once the QNRF staff is in place, it will assume a greater responsibility.

Start-Up

During the start-up stage, the Qatar Foundation will establish the business, legal, and financial basis for QNRF. It will also appoint the fund’s staff and other key stakeholders. Key decisions to be made include a choice of operating principles, financial structure, and a policy on IPRs.

Organizational Structure. The RQPI team proposed the basic, board-led governance model similar to that of the National Science Foundation (NSF) in the United States. A governing board of six members will establish the fund’s overall direction, set policy, and provide oversight. A director will run the daily operations and report to the board. Other stakeholders include QNRF staff and members of an advisory council comprised of Qatari academic and business leaders.

Operating Principles. QNRF’s operating principles will be established during the start-up stage. For example, *QNRF should provide service to Qatar. QNRF-funded research should have the potential to produce identifiable national benefits. Research grants must be based on merit. QNRF should actively publish and promote research results and activities.* These and other operating principles reflect the values of the Qatar Foundation. They will enable QNRF to achieve its goals and meet the challenges of the research environment in Qatar.

Financing. An endowment scheme—in which charitable donations over the years supplement a large initial grant—offers significant advantages for establishing QNRF’s long-term orientation. In contrast, a mechanism to accept pay-as-you-go funding from an annual govern-

ment appropriation has near-term advantages. Consequently, the RQPI team recommended that both approaches be adopted.

Intellectual Property Rights. The RQPI team concluded that either the prevailing international model or the Canadian model would strike an acceptable balance for QNRF. In the former, grantees would retain intellectual property and licensing rights, and QNRF would have to demonstrate the basis for any decision to claim an exception. In the latter, QNRF would formally retain the rights but would adopt a stated policy that assigns rights to grantees in most cases. Should QNRF declare an exception, the grantee would bear the onus of demonstrating that its decision was arbitrary.

The prevailing international model is advantageous in that grantees around the world are likely to know and understand it better than the Canadian model, whereas the Canadian model would make it much easier for QNRF to exercise its rights when clearly in the national interest.

Launch Operations and Programs

During this second stage, the primary goal will be to set research priorities and get programs up and running. QNRF cannot implement all of its planned programs at full funding in the first year; some ramp-up time will be required.

The National Priorities Research Program (NPRP) and the Undergraduate Research Experience Program (UREP) are the first priorities. The NPRP will be QNRF's largest funding activity, supporting multiyear projects of multiple investigators. Awards will go to studies that pertain to national needs or aspirations or that are related to some unique attribute of the country that will bring world-class researchers to Qatar. It will be the primary means by which QNRF addresses the nation's most pressing concerns and pursues research opportunities for which Qatar may have a comparative advantage.

The UREP will stimulate undergraduate research opportunities in Education City and Qatar University through individual and group projects led by faculty and other researchers.

Several other programs will follow these two programs:

- **Workshops, conferences, and short courses** in Qatar will bring domestic and international participants together, helping to connect researchers in Qatar with their colleagues abroad.
- **Joint ventures in innovative enterprises** will support applied research in a particularly promising area, with a goal of commercialization. Each project requires at least one Qatari partner.
- **Distinguished fellowships** will support internationally known researchers and individuals to reside in Qatar for several months to a year, so that they may share their expertise and talent with the Qatar community.
- The **Biennial National Research Survey** will summarize, every other year, all research conducted in Qatar.

Award processes will be established and implemented as soon as the initial programs begin operating. These include procedures for soliciting proposals, choosing among funding mechanisms, reviewing proposals, and awarding grants.

The RQPI design advises QNRF to take a two-pronged approach to developing requests for proposals: first by consulting with experts in a given field, and second by drawing from its

own staff and advisors, whose priority is QNRF's mission and goals. It recommends keeping a list of funding mechanisms that provide flexible tools for supporting different types of projects. And the design strongly advocates a peer-review process for selections and awards, as this would be essential to establishing QNRF's institutional credibility within the international research community.

Another critical task during this second stage will be to implement monitoring and evaluation processes for both institutional- and project-level performance. Measures will be needed to cover not only effects but planning and operations. For example, regular assessment of how QNRF is distributing funding across its portfolio is a key part of institutional monitoring. At the institutional level, evaluation should always strive to determine how well the fund is meeting its goals and advancing its mission. Formally incorporating outside views is vital to ensuring quality and transparency.

At the project and program levels, effectiveness is the fundamental measure. Indicators may include publications, reports, and patents, as well as how funds are used. While different types of programs—a research versus a workshop grant, for instance—may demand that QNRF tailor reporting requirements, certain basic requirements should apply uniformly. Annual and final progress reports would fall into this category.

Deepen and Broaden the Research Agenda

As QNRF builds its expertise and organizational capabilities, it can begin to consider expanding its program slate and initiating new priority research areas. Before embarking on this stage—approximately three to five years into the fund's lifespan—QNRF management should conduct a rigorous review of its programs and operations. Concurrently, it should approach key stakeholders for their views on the fund's long-term growth strategy. The information gathered will suggest when and how QNRF should expand. Success will depend on a clear plan of action that demonstrates how the proposed strategy will meet QNRF's needs and achieve its goals.

Overcoming Challenges Will Be a Long-Term Process

QNRF will face a number of challenges related to Qatar's current research environment, such as the following:

- The initial cohort of local students who might take part in research will come from undergraduate degree programs. This will make it harder to create and sustain competitive research programs in science and engineering.
- University faculty and private-sector research staff turn over at a fairly high rate. This will make it challenging to maintain long-term research programs and ensure that grantees are consistently aware of Qatar's national and private-sector needs.
- Qatar is currently isolated from the world's research centers. This separation will need to be reduced for Qatar's visibility to increase and for cross-border collaboration to become more frequent.
- Both within the Qatari public and private sectors and among Qataris in general, awareness of the benefits of research is low. People will need to better understand and value the contributions that research can make to Qatar.

The Qatar Foundation has already begun to address some of these constraints by investing in Education City—a community of educational institutions with campuses in Doha—and the Science and Technology Park, home to international and Qatari businesses involved in technology development. But most of these challenges are longer-term. QNRF must keep them in mind and manage them as it evolves.

QNRF will facilitate the growth of Qatar’s human capital and help build a national infrastructure that promotes cutting-edge, collaborative research. The RQPI team’s recommendations are carefully designed to enable Qatar to meet national needs, benefit its citizens, and take its place among the best of the international centers of research springing up around the world in the global era.