Research policy in Arab countries

International cooperation, competitive calls, and career incentives

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1 Context

Arab countries have underinvested in science and technology, and as a consequence have scientific communities and institutions that underperform in terms of scientific production and broader societal application. Against this historical backdrop, there have been recent reforms across the region in the creation of new research-funding agencies and how they fund research. This paper seeks to understand the scope of these policy changes, their causes, and consequences.

In recent years, Arab countries have modified their policy frameworks. From Morocco to Qatar, countries have identified national research priorities, with more or less dedication, and introduced some important changes in how public funding for research is allocated. An important driver of these changes has been the growing European influence in promoting scientific collaboration. In the development of funding various Arab-European funding schemes, Arab countries have had to prioritize scientific domains, and adopt new principles for how research is funded and conducted.

Whereas Arab research-funding agencies had relied on block funding to universities and public research organizations to support research, the newly created agencies introduced new processes. Instead of transfers to research institutions, a significant percentage of the new funding was targeted through open competitions, assessed by peer review, and meritorious proposals funded individual research grants led by identified researchers. The transparency of the process and the identification of researchers

and topics was a significant departure from prevailing practices and widely welcomed by researchers.

Within this general trend, there are distinctions between Maghreb and Mashreq countries, owing in part to the legacy of French and Anglo-American approaches to research governance.

2 Empirical Approach and Main Findings

This work draws on an investigation of the policy framework and research institutions in Qatar, Jordan, Lebanon, Egypt, Tunisia, and Morocco. This research was conducted in 2015 by a team of ten specialists in science-policy analysis, coordinated by the authors. It involved field visits, interviews, and desk-based research. The details from this work are situated in the broader trends across the Arab region published in a recent book by the authors entitled *Arab Research and Knowledge Society.*

To appreciate the significance of the recent changes in the Middle East and North Africa, it is important to establish the context. In the recent past, government agencies and researchers in most Arab countries have pleaded for substantial public investment in scientific research. Broadly speaking, the research community seeks recognition, longer term political commitment, support, and stability. Government arguments stress the need to transition toward a knowledge economy, where investments in science and technology provide some of the impetus. International support to governments in the region are largely supportive of these arguments. Where support for economic and social reforms occur, foreign donors have promoted ICT infrastructure and applied liberal and competitive institutional frameworks to economic institutions, including research programs. Although research is part of this knowledge economy, it is not at all certain that the new mandate will effectively benefit researchers in the region.

That said, the funding context in Arab countries is changing very quickly. One expression of this change is the emergence of new funding agencies and programs in recent years. With the exception of Lebanon that has had a permanent funding program since 1963 managed by the National Council for Scientific Research (CNRS), all other countries in our investigation have created new full-fledged public funding bodies supporting research. These organizations are the funding program of the Académie des Sciences Hassan II (Morocco), the Science and Technology Development Fund (STDF, in Egypt), the Scientific Research Support Fund (Jordan), and the research program of the Qatar Foundation. Paralleling these changes, several existing national agencies launched new funding programs. Prominent examples include the *Fond national de la recherche scientifique et du développement technologique (FNRSDT)* managed by the CNRST in Morocco, and the RDI fund managed by the Ministry for Higher Education and Research in Egypt.

These new agencies and programs were established in a context of relatively flat growth in gross expenditure on research and development (GERD), which is still the main source for research across Arab countries. GERD has been low for almost four decades ranging from a meagre 0.1% to a high of 1.2% of GDP across the region. By contrast, OECD countries devote about 2.2% of GDP to research and develop-

ment. There are signs of change, however. Egypt's GERD hovered around 0.2% before the Arab Spring when the government announced it had planned to raise it to 1% over 5 years. Although the revolution interrupted this investment, it seems that this new impetus supporting science and technology will be maintained. Tunisia has also increased investments in GERD since 2000. By 2007, it was the leading Arab state for research and development intensity, exceeding 1.0% of GDP. Qatar had figures of 0.33% of GDP, although apparently increasing (figures are unclear, published information is inconsistent, and sources diverge ; and our intent to obtain more precise data was inconclusive).

Interestingly, the apparent differences between the Maghreb (rather centralized) and Mashreq (rather decentralized) modes of organization, hide a profound similarity in terms of science policy being largely determined by the political decisions of central state authorities. Despite the market orientation of the Gulf countries compared to the Maghreb, we find the same authoritarian approach to policy development and a clear orientation toward more commercial application across the region. Where differences exist, they lie in the size of the research systems and their dynamism, a feature that depends on the accumulated capabilities in research and the historical trajectories of the institutions as well as the political willingness to support research, even in the absence of immediate economic benefits.

Another change to the research system is how Arab research-funding agencies support research. Past practices of block funding to research organizations and less than transparent tendering and selection processes are being replaced by open calls for proposals that are competitively selected. Closer collaboration with European countries through bilateral and multilateral cooperation agreements has been a driving force for this change. European countries and the European Union (EU) have established a network of contact points within the science ministries, research councils, and universities. Through negotiating joint funding programs, European agencies introduced new practices into the Arab research system. The EU framework programs, for example, encouraged researchers to form alliances and compete for funding. The scale of such programs and the principles they adhered to have had wide-ranging impacts on how Arab funding councils, research performing agencies, and Arab researchers now conduct and manage research grants.

As our historical analysis and interviews showed, this change would never have happened without the push from national researchers : the growth of the national academic population, its willingness to engage in serious research, and (in many cases) its active participation in international research programs regardless of public support, were the political basis of this very profound change. In other words, it would be unfair and false to attribute the changes to the sole policy interest of the EU. Rather, one could argue that the policy effort of the EU met a very attentive, open and willing academic population to engage in foreign collaborations in the Arab region.

Europe and the United States are the main partner regions for international research collaboration in the Arab region. Europe has shown increased commitment in recent years, and this is accompanied by a renewed emphasis in various domains such as environmental research, biotechnological research, biomedicine, and other less common

fields in the Arab region, which has privileged engineering and physical sciences. More recently, the Qatar Foundation has encouraged some bilateral research collaboration with neighbouring countries but, on the whole, overall national funding to research projects is usually limited to their nationals and activities within their country.

National-led efforts to understand and modify their national research systems overlapped with this period of increasing European influence. The Tunisian case is a noticeable example of introducing assessment methods to measure scientific performance and the impact of policy changes. Introduced in 1996, Tunisia started independently evaluating the production of research performing organizations, identifying research units inside the universities, and allocating funds based on performance indicators. This government-led change has had a profound positive impact on academic production in Tunisia over a short time. A fourfold increase of scholarly publications can be identified between 1998 and 2008, which is mirrored by a similar increase in the number of research units.

There is little evidence of bottom-up reforms, led by scientists or scientific communities. Where reforms have occurred, they have emerged from government initiatives. And the timing of such reforms does not seem to be caused by political upheavals or liberalization. Maghreb and Mashreq countries have been strengthening their scientific research and knowledge producing organizations by reforming their policy frameworks, including earmarked budgets dedicated to research (as opposed to the former situation where research was lumped together with teaching and other related activities).

3 Main messages for policy and practice

Universities, public research organizations, and sometimes even NGOs and public and private enterprises have participated in the growth of scientific activity across the Arab region. The diversifying institutional framework has been influenced through international scientific collaboration and domestic efforts to reform how government agencies organize and support R&D.

However, when science, technology and innovation policies are placed alongside other national priorities, pressure from researchers to invest in R&D has not shifted its overall prioritization in public funding. In the countries investigated, there is an emerging discourse on how research policy might support national development. This orientation has not produced uniform policy responses in these countries but there is widespread support from policy personnel who agree that research-funding levels are inadequate and should be increased. The urgent task of national development is a top-of-mind concern for governments, and research can be a driver of change : call it research for development, innovation, competitiveness, or the knowledge economy. Arguments for funding research, under various forms, are rarely contradicted (*if you think research is expensive, look at the cost of disease* were the words of a Secretary General of a research council we interviewed). Nevertheless, how this funding increase might be structured to support research-performing institutions is still very much under debate.

Over the last decade, there have been noticeable changes that have overhauled the organizational structure of research-funding agencies and how Arab researchers and their home organizations compete for, manage, and conduct research. Some countries in the region are adopting new assessment frameworks to understand the impacts of their reforms, but more concerted effort is required to fully understand the impact of these changes. With some exceptions like the Tunisian example, performance expectations for researchers have largely remained intact. Further work is needed to reorient career incentives, cultivate flourishing scientific communities, and engage researchers in mission-driven research to understand and potentially address issues raised by society, such as the demands given voice during the Arab uprisings.

Related Resources

Arvanitis, Rigas, and Hatem M'henni. 2010. Monitoring Research and Innovation Policies in the Mediterranean Region. *Science Technology and Society*, 15(2), 233–269.

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