

Despite the gravity of agricultural issues, attempts to tackle them on a national scale have been few, a main reason being lack of cooperation between effective research and policy making

Reviving Agricultural Research and Development in Egypt

Mohamed Sholkamy – Nov 2015

Egypt Network for Integrated Development

Policy Brief 032

Introduction

Rural Egypt: A Brief Background

More than half of Egypt's estimated 89 million citizens currently live in rural areas, 44% of whom reside in Upper Egypt. With low access to basic services, poor public infrastructure, and chronic food insecurity, it is not surprising that an estimated 56% of the country's population are the rural poor. Rural women and youth are particularly vulnerable to unemployment and poverty given the lack of economic opportunities in rural areas. Although more than 40%¹ of total rural household income in Egypt is generated through non-farm activities, the availability of which is limited, agriculture still plays a key role in the livelihoods of Egypt's rural population and is considered to be a sector of high growth potential.

It is important to note that the current rates of agricultural productivity do not allow for sustainable food and income generation for rural households. This is especially true for smallholders, who are often amongst the poorest of farmers and who lack proper access to irrigation water, financing, and other basic services.

Despite this being a known reality for many years, little has been done on the national level to address these disparities. This article explores one of the factors contributing to rural privation by focusing on the role of research in the Egyptian agriculture sector in raising agricultural productivity and incomes and the conditions impeding the process of bridging the gap between policy and research.

The following section provides a brief overview of the agriculture sector in Egypt.

The Agriculture Sector in Egypt

Despite its decreasing productivity in recent years, Egypt's agriculture sector still accounts for a 14-15% of the country's gross domestic product (GDP)². It provides 30% of employment and is the main source of livelihood for more than half of the Egyptian population (IFAD, 2014). Agriculture is also a crucial source of food for a large segment of the Egyptian population, especially for people living in rural areas. The sector's multi-faceted role within the Egyptian

¹ IFAD report, "Investing in rural people in Egypt, November 2014

² World Bank

society and its capacity for social and economic development make it a pivotal engine for growth (SIT 2010).

However, Egypt's agriculture sector has long suffered from issues relating to water scarcity and misuse, as well as the low availability and mismanagement of agricultural lands (SIT 2010). The issue of water scarcity is of particular importance given that Egypt's agriculture sector is almost entirely dependent on Nile water for irrigation. Egypt has long been receiving a fixed share of 55.5 billion cubic meters per year, as per the 1959 Nile Waters Agreement. However, the country's current yearly water consumption stands at 83 billion cubic meters, with agriculture taking the largest share of water (nearly 85%). Moreover, water transportation and field irrigation systems are largely inefficient; with more than 30% of Nile water being lost on its way to the fields and out-dated irrigation systems, the efficiency of which is estimated at only 50%³. These issues, in addition to others related to agricultural land availability and food security, are compounded by Egypt's rapidly increasing population.

Despite the gravity of these issues, attempts to tackle them on a national scale have been few and far between. One of the main reasons used to account for this negligence is related to the accessibility of knowledge, or lack thereof.

Challenges Facing Agricultural R & D

This section focuses on agricultural education, public expenditure on agricultural R & D, and agricultural extension services to shed light on some of the challenges facing the agriculture sector in Egypt.

Agricultural Education

Egypt is notorious for the low quality of its education system. Notwithstanding the very recent (2014) increases in public expenditure on education, the effects of which have yet to materialize, the primary education system in Egypt has been largely ineffectual, resulting in a

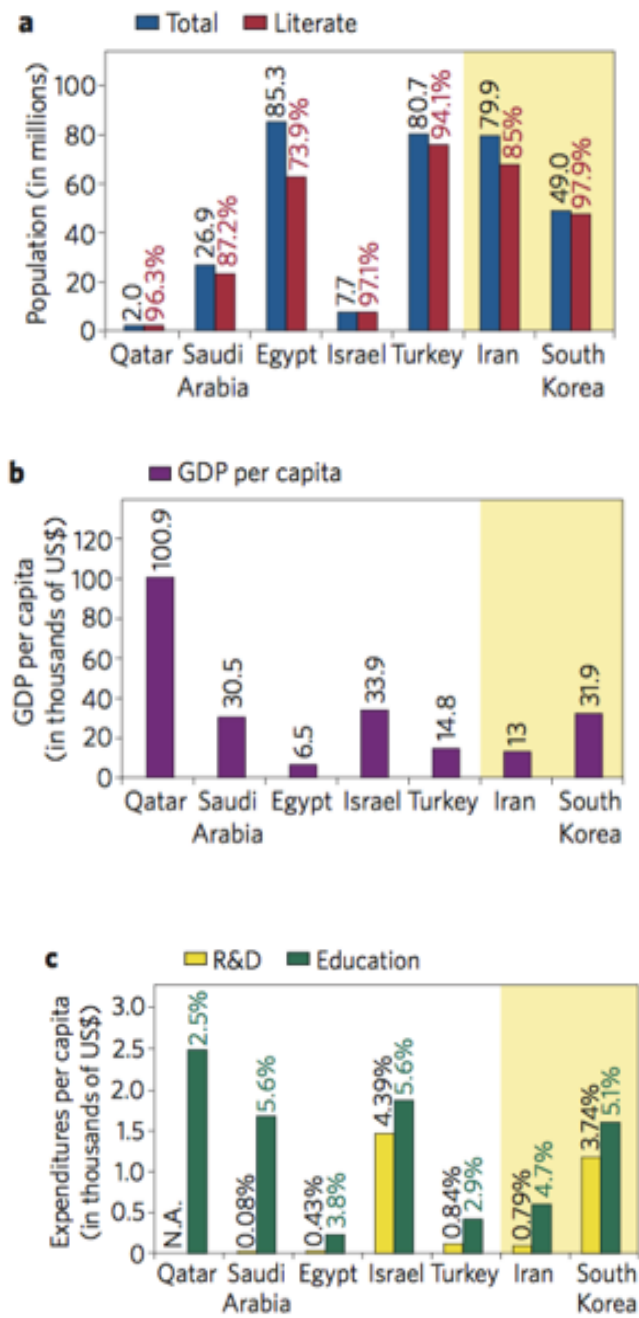
³Zaghloul, S. (2013). CONSIDERATION OF THE AGRICULTURAL PROBLEMS AS A BASE OF WATER RESOURCE MANAGEMENT IN EGYPT. Seventeenth International Water Technology Conference, IWTC17. [online] Istanbul, pp.1-12. Available at: <http://iwtc.info/wp-content/uploads/2013/11/167.pdf> [Accessed 9 Aug. 2015].

“significant percentage” of illiterate primary school graduates (Nasser and Fouad, 2015). The rapid growth of Egypt’s school-age population has only worked to aggravate the situation, resulting in overcrowded classrooms (reaching over 100 students per classroom) and high student-teacher ratios. Universities and schools for Technical and Vocational Education and Training (TVET) do not fare any better, with curricula that are often considered to be out-dated and ill-suited for labour market needs (SIT 2010; Nasser and Fouad 2015).

In a report assessing the role of the Higher Education Enhancement Project Fund (HEEPF) in Egypt, Abdellah, Taher, and Ismail (n.d.)⁴, point out how colleges providing agricultural education face an additional - distinctive - challenge, where there has been a rapid decrease in the number of students enrolled in agriculture colleges due to the lack of job opportunities after graduation. However, there has also been an increase in the number of female students (ibid), which, on the surface, might seem positive, but is actually not very useful seeing as the “job market ... is not very receptive to hiring females to work in farming” (p.1). The authors reiterate the concern that curricula in agricultural education programs will need to be reformed to tackle relevant issues in Egypt and around the world such as food security, nutrition, resource sustainability, and environmental protection.

⁴ Abdellah, G., Taher, S. and Ismail, E. (n.d.). Enhancing Agricultural Education in Egypt Through Competitive Mechanism. [online] Available at: <http://www.heepf.org/eg/pdf/Enhancing%20Agricultural%20Education%20in%20Egypt%20Through%20Competitive.pdf> [Accessed 9 Sep. 2015].

Public Expenditure on R & D



The above figures were taken from an article written by Egyptian scientist Ahmed Zewail,⁵ exploring the state of scientific research in Egypt following the 2011 uprising and comparing it to

⁵ (Zewail 2014, p.318)

other -mainly Middle Eastern- countries. In the article, Zewail juxtaposes public expenditure on education and scientific research in countries like Israel and South Korea to that of Egypt:

“...whereas the expenditure in research and development (R&D) of South Korea and Israel reaches 4% of the GDP and both countries spend 5% of their similar GDP (US\$30,000 per capita) in education, Egypt’s R&D expenditure is 0.4% at a GDP of US\$6,500 per capita.” (Zewail 2014, p.318)

The consequences of low R & D expenditure are manifold, affecting both the quality and quantity of research produced. The insufficient funding of scientific research disincentivizes researchers and inhibits their capacity to produce high-quality field research. Going back to agriculture, and in more practical terms, if researchers are unable to acquire agricultural technology for testing or fund agricultural experimentation, this can either hinder their ability to produce any research at all or diminish the validity/scientific value of their work.

Despite recent -nominal- increases in government expenditure on scientific research, Egypt’s R & D sector is still facing major challenges with regards to the quantity and quality of the research produced. The links between scientific research and other, seemingly more pressing issues (such as economic development) are unclear, leading to a lack of concern about -and investment in- R & D by both the public and private sectors in Egypt. The country’s research centres, estimated to be 198 (Bond et al., n.d.), accommodate around 98,000 underpaid and underfunded researchers and scientists who are either unable to produce innovative/high-quality work due to insufficient funding or lacking the incentive to do so, given that much of their work does not feed into the policy circles. On the long run, this has also resulted in a researcher-to-population ratio that is very low in comparison to developed countries.

Technical and Administrative Drawbacks within Agricultural Research Centre

The following issues have been identified as some of the main factors affecting the functionality of agricultural research centres in Egypt:⁶

- The lack of clear-cut goals and a vision for agricultural researchers to work towards, leading to the production of research that is neither accessible/relevant to policymakers

⁶ Common knowledge within the agricultural research community.

and others working in the field of agriculture, nor in line with the national development priorities.

- The lack of criteria for the selection and promotion of researchers not only eliminates the incentive to work hard, but it also affects the productivity of research centres
- The lack of training opportunities for researchers
- Low pay of researchers

The consequences of these shortcomings go beyond the world of academia and affect policy-makers, agricultural extension workers, and, in turn, farmers, leading to the country's current failure to deal with major issues affecting the agriculture sector.

Recommendations

With regards to facilitating the dissemination of knowledge to inform agricultural policies and practices, the following is suggested:

- **Bridging the gap between research and policymaking circles.** This relationship should be mutually beneficial, allowing for the formation of well-informed, evidence-based policies and guiding research to serve national priorities.
- **Working on presenting knowledge in a way that is fit for consumption by the general public as well as decision makers;** both in terms of its accessibility and accuracy.
- **Reproduce research in various formats to ensure its accessibility to a diverse audience (e.g. Presentations, workshops, media)** A reliance on the traditional methods of academic research publication is likely to limit the spread of information to academic and policy circles.
- **Promoting the greater involvement of researchers in policymaking processes and in the field of development.** The UNDP backed Program “Egypt Network for Integrated Development” (ENID/EINidaa) serves as a good example of this, integrating development research with on-the-ground development interventions in Qena Governorate. Since its inception in 2012, ENID has worked with over 20 researchers on designing and implementing development projects in Upper Egypt and disseminating its field experience in the form of policy briefs, case studies, seminars and workshops.⁷
- **Cooperating with active local CSOs on knowledge dissemination and training**

⁷ See <www.enid.org.eg>

If agricultural researchers are unable to communicate with their target audience (i.e. people working in the agriculture sector), Local/grassroots governmental and nongovernmental organizations that work on agriculture can act as intermediaries, helping with the dissemination of knowledge and its implementation in the fields.

References

- Abdellah, G., Taher, S. and Ismail, E. (n.d.). *Enhancing Agricultural Education in Egypt Through Competitive Mechanism*. [online] Available at: <http://www.heepf.org.eg/pdf/Enhancing%20Agricultural%20Education%20in%20Egypt%20Through%20Competitive.pdf> [Accessed 9 Sep. 2015].
- Bond, M., Maram, H., Soliman, A. and Khattab, R. (n.d.). *Science and Innovation in Egypt*. [online] Creative Commons. Available at: https://royalsociety.org/~media/Royal_Society_Content/policy/projects/atlas-islamic-world/Atlas_Egypt.pdf [Accessed 13 Sep. 2015].
- International Fund for Agricultural Development (IFAD), (2014). *Investing in Rural People in Egypt*. [online] IFAD. Available at: http://www.ifad.org/operations/projects/regions/PN/factsheets/eg_e.pdf [Accessed 9 Aug. 2015].
- Nassar, H. and Fouad, J. (2015). *Family Planning in Egypt is a Financial Investment: Benefit- Cost Analysis of Egypt Family Planning Program, 2014- 2050*. [online] Cairo University, pp.11, 19-26. Available at: http://egypt.unfpa.org/Images/Publication/2015_04/99fe2139-fed0-4239-a81a-4dbcede71886.pdf [Accessed 5 Sep. 2015].
- Situation Analysis Taskforce (SIT), (2010). *Situation Analysis: Key Development Challenges Facing Egypt*. [online] pp.88-96. Available at: <http://www.un.org.eg/docs/101100%20SA%20Report%20final%20pdf%20version.pdf> [Accessed 10 Aug. 2015].
- Zewail, A. (2014). Dire Need for a Middle Eastern Science Spring. *Nature Materials*, [online] 13, pp.318-320. Available at: <http://www.zewail.caltech.edu/nmat3918.pdf> [Accessed 13 Aug. 2015].