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Symposium Policy Note 2

Digitalization of agricultural services and policy analysis in Egypt

This policy note is one in a series of four notes that summarize key findings and recommendations from 32 seminars organized by IFPRI between 2016 and 2020 under the Evaluating Impact and Building Capacity Project funded by the United States Agency for International Development (USAID) and from related research done in collaboration with national and international partners in Egypt. The briefs have been prepared on the basis of a joint symposium and are intended to give policymakers and program designers in the areas of social protection, nutrition, agricultural policy, and the digitalization of agriculture a quick overview of research-based recommendations on key policy issues that will better enable Egypt to achieve several of the goals outlined in the Sustainable Development Strategy 2030.

This policy note highlights how digital tools can help improve monitoring, evaluation, and extension services in Egypt's agriculture sector and how policy analysis can be institutionalized to guide transformation of the food system and rural economies. Four recommendations are discussed:

- Building on ongoing efforts, continue to digitize agricultural information systems, build and link agricultural databases, and exploit new sources of data.
- Build on ongoing projects that develop mobile telephone applications for farmers and learn from international experiences to revitalize and digitalize agricultural extension in Egypt.
- Build the capacity of agricultural policy analysts within the Ministry of Agriculture and Land Reclamation and universities, using both conventional and new digital tools to provide high-quality, research-based policy advice.
- Promote further digitalization to improve the resilience of food systems in view of shocks, such as the COVID-19 pandemic.

Egypt's agriculture sector and its food system face unprecedented challenges. The growing and increasingly urbanized population will demand more and higher quality food; climate change threatens local and global food supplies; volatile global markets require new approaches to trade and storage systems; growing competition for water calls for new water sources and improved water use efficiency; and the growing double burden of malnutrition (both overnutrition and undernutrition) calls for more nutrition-sensitive food policies. At the same time, reconsidering several agricultural and food policies now in place and improving extension services will have to be an important part of the transformation of the food system and rural economies in Egypt.

In order to identify sensible approaches to reform, policymakers now, perhaps more than ever, need sound decision-making tools and new approaches to data processing and analysis. Data-based analyses and digital innovations are already transforming food systems globally. Significant changes are consequently occurring in how food is produced, processed, transported, and delivered to consumers. Data-driven policy analysis and digital analytical tools also hold great potential to transform food and agricultural policymaking. The COVID-19 pandemic is a strong reminder of the potential of digital tools and digitalization to build resilient and sustainable food systems. Recent studies show that global demand for digital tools is evolving and has significantly increased during the pandemic, including in Egypt.[1] Indeed, those sectors that are sufficiently digitalized are less affected by the crisis.

This policy note highlights several examples of how digital tools can be used to improve monitoring and evaluation efforts and the provision of agricultural extension services. Consideration is also given to how evidence-based decision-support systems for policy formulation can be institutionalized in Egypt.

Digital monitoring systems for agricultural development projects can improve coordination and harness synergies

Monitoring the progress of agricultural projects is key for effective policy design and decision-making. Answers are needed to:

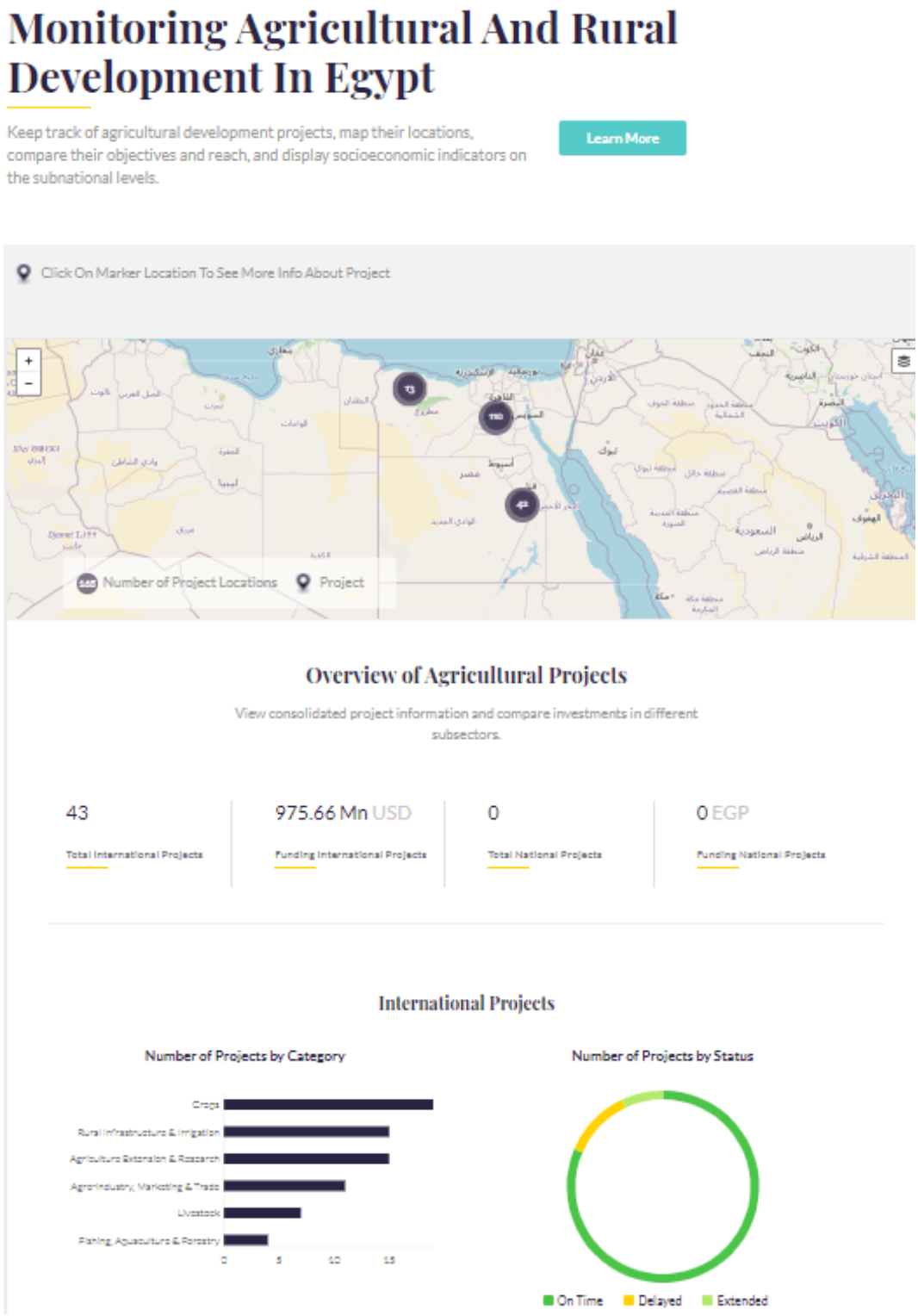
- What types of agricultural projects are currently underway in Egypt?
- Where are they?
- Who is funding them?
- How many people are benefiting?
- Are the projects targeted at poorer areas or areas closer to markets?
- Is there potential for collaboration among national and international project implementers?

To provide answers to these and other questions in real time, digital tools can help greatly in assembling, searching, and analyzing project databases. Together with the Ministry of Agriculture and Land Reclamation and the software development firms Development Seed and CartoLogic, IFPRI has built the Mapping Agricultural Progress in Egypt (MAP Egypt) tool. At the request of the Ministry of Agriculture and Land Reclamation, MAP Egypt is hosted on a cloud server located in Egypt (http://mapegypt.org/). Funded by the United States Agency for International Development

[1] Abay, K.A., and H. Ibrahim. 2020. *Winners and losers from COVID-19: Evidence from Google search data for Egypt*. IFPRI MENA Regional Program Policy Note 08. Cairo: International Food Policy Research Institute https://ebrary.ifpri.org/digital/collection/p15738coll2/id/133776

(USAID), this online tool aims to improve planning, coordination, and the effectiveness of agricultural projects as well as the evaluation of future proposals in the sector (Figure 1).[2]

Figure 1: Mapping Agricultural Progress in Egypt – a digital tool for monitoring agricultural projects in Egypt



Source: MAP Egypt (http://mapegypt.org/). Ministry of Agriculture and Land Reclamation, Government of Egypt.

[2] ElDidi, H.; J.L. Figueroa, and M. Raouf. "Special event: Showcasing MAP Egypt." 2017. https://egyptssp.ifpri.info/2017/03/14/special-event-showcasing-map-egypt/

But tools are only as good as the underlying data – availability of and access to high-quality data is critical

The Central Agency for Public Mobilization and Statistics (CAPMAS) has made a number of important technical improvements in its data systems over the past several years, including introducing tablets for collecting population census and household survey data to produce higher quality data. In addition, through an improved web presence and the use of social media, the agency has improved its public dissemination of tabulations and analytical reports based on that data.

However, in terms of agricultural data, such information remains scattered and out-of-date. For example, the last agricultural census was conducted more than 10 years ago. In most cases, rigorous impact evaluations of agricultural projects require that data be collected both before and after an intervention is put in place. However, such data are not readily available in many cases, especially for smallholders in remote parts of Egypt.

Digital tools can also help with the collection of high-frequency data on agricultural production and related activities that can be used for evaluating agricultural projects and interventions and can provide important insights into what works and why. Such tools can also reduce the cost of data collection, such as the cost of running and managing large household surveys, particularly in contexts like Egypt where mobile phone coverage and connectivity have improved significantly. Moreover, digital tools can be used to collect and to disseminate crucial information and data even when traditional methods fail. For example, as the COVID-19 pandemic continues to disrupt major data collection efforts and programs involving face-to-face interviews, many researchers and research agencies are collecting critical data using digital tools.

Digital tools can help revive and strengthen agricultural extension services in Egypt

Digital technologies in agriculture range from simple off-line digital videos that provide advice for farmers as they adopt more complex farming systems, such as precision agriculture, to other digital tools that require higher levels of internet connectivity. Using such information and communications technology (ICT) in agriculture will contribute to increased productivity, higher incomes, improved competitiveness, and better market access, as well as reduced information asymmetries among agricultural commodity value chain participants.

The potential for achieving higher productivity via digital technologies has been shown by IFPRI research in several African countries.[3] The use of videos to convey information to farmers about improved crop management practices has significantly increased crop yields. Videos are customizable, consistent, and potentially low-cost to produce and distribute, but the specific context is crucial in determining both content and outcomes.

Although ICTs are a powerful medium for agricultural development and rural economic growth, they are subject to the constraints of connectivity, content, and capacity. There are several initiatives now underway in Egypt to develop software applications for farmers. Now may be the right time for the Ministry to take decisive steps to revitalize and transform agricultural extension provision across the country using such digital tools.

[3] Abate, G.T., T. Bernard, B. van Campenhout, E. Lecoutere, S. Makhija, and D.J. Spielman. 18 July 2019. https://www.slideshare.net/ifpri/david-spielman-ifpri-2019-ifpri-egypt-wb-innovations-for-agricultural-development-in-egypt

Establishing evidence-based decision-support systems for policy formulation in Egypt

Actively and effectively using the full range of digital tools available to provide evidence-based policy advice within Egyptian ministries, universities, and research institutes is likely to greatly improve the future food security of Egyptians. The Ministry of Agriculture and Land Reclamation continually faces the important strategic question of how Egypt will feed itself in the future and is often under pressure to show the Ministries of Planning and Finance the impact of public agricultural spending. Demonstrating the benefits of agricultural investments for economic growth, trade balances, job creation, household incomes, poverty reduction, improved nutrition, and more broadly for the long-term sustainable development of Egypt will only become more important as both Egypt's population and economy continue to grow.

But the challenge for agricultural policymakers is that, when it is time to make decisions, they rarely have access to analyses of the costs and benefits of any alternative actions they may be considering. Overcoming this lack of evidence-based decision-support systems will require institutional changes. Key lessons from global experience suggest that institutionalizing policy analysis functions within the Ministry of Agriculture and Land Reclamation in Egypt requires that:[4]

- National decision-makers have a sense of ownership of and trust the quality and objectivity of the analyses.
- The working environment stresses analytical excellence and attracts and retains talented analysts.
- Working relationships with other line ministries and with parliamentary committees, trade associations, and other key partners and stakeholders allow for the exchange of data and information, helping to build trust among these stakeholders.

Moreover, other countries developing such analytical capacity for guiding agricultural sector policies and programs have frequently found it valuable to embed international experts in policy analysis units in the early years after their foundation in order to build institutional capacity and to quickly demonstrate competence.

Complementary to strengthening the capacity of analysts within ministries, it is also important to enhance university curricula with courses in agricultural economics and policy analysis. For example, European Union–funded research collaborations and projects being implemented under the USAID-funded Centers of Excellence that focus on universities could be two important channels to do so.

[4] Delgado, C., K. Brooks, C. Derlagen, S. Haggblade, and K. Lawyer. 2019. *Use of Evidence to Inform Agricultural Policy Decisions : What have We Learned from Experience in Africa?* Washington, DC: World Bank. https://openknowledge.worldbank.org/handle/10986/34337

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