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Prioritizing Development Policy Research in Egypt

AN INNOVATIVE APPROACH TO INFORM
IFPRI'S EGYPT STRATEGY SUPPORT PROGRAM

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EXECUTIVE SUMMARY

This paper presents an innovative approach to prioritizing development policy research in Egypt with the specific objective of informing the research agenda of the Egypt Strategy Support Program of the International Food Policy Research Institute.¹ The key steps in this process were:

- 1) a review of relevant priority setting methods and existing government strategies,
- 2) pre-selection of research themes,
- 3) selection of national and international experts,
- 4) design and conduct priority setting workshop; and
- 5) priority matrix construction and paper writing.

The paper suggests key research priorities for Egypt, which are both highly relevant to Egypt's current and future development policy agenda and consistent with IFPRI's own comparative advantage and strategy. It identifies research areas and topics under four main themes, namely:

- 1) Economic transformation and rural development,
- 2) Social inclusion and institutions,
- 3) Food supply and natural resources, and
- 4) Public health and nutrition.

Tackling the priority research tasks identified in this paper for these four themes is expected to help reduce poverty and improve food and nutrition security in Egypt. However, strengthening the links between policy research and decision-making will be crucial to ensure that evidence-based solutions are relevant and have a positive impact on people's lives.

¹ The paper and its findings may also be of interest for those looking for priority setting methods to apply in other countries or regions or for other policy research topics in Egypt. It is also important to note that the number and selection of topics that IFPRI will be working on in Egypt in the future will depend on the availability of funding.

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The International Food Policy Research Institute's (IFPRI) Egypt Strategy Support Program (Egypt SSP) is a policy research, capacity strengthening and communication program that has as its main objectives the reduction of poverty and the improvement of food and nutrition security in Egypt. Launched in March 2016, the program will work closely with national and international partners, using funding primarily from the United States Agency for International Development (USAID). IFPRI's mission is to provide research-based policy solutions that sustainably reduce poverty and end hunger and malnutrition. In line with IFPRI's mandate and mission, Egypt SSP aims to support development policy and project design and to strengthen the capacity of Egyptian institutions in the areas of impact evaluation and monitoring.

This paper is based on a research priority setting workshop organized by IFPRI and funded by USAID on March 2, 2016 (<http://egyptssp.ifpri.info/2016/03/22/egypt-ssp-research-priority-setting-workshop/>). It also constitutes the first paper in the new IFPRI Egypt Working Paper Series and was prepared under the leadership of Clemens Breisinger and Olivier Ecker. Authors of the different sections are listed as follows:

Economic Transformation and Rural Development: Xiaobo Zhang (Global Perspective); Perrihan Al-Riffai and Hagar Eldidi (National Perspective); Paul Dorosh and Perrihan Al-Riffai (Development and Opportunities); David Spielman and Laila Kenawy (Relevant Organizations and Areas of Work); Xiaobo Zhang and Hagar Eldidi (Knowledge Gaps and Research Demands).

Social Inclusion and Institutions: Jose Luis Figueroa (Global Perspective); Jean-Francois Trinh Tan and Laila Kenawy (National Perspective); Nicholas Minot and Hoda El-Enbavy (Development and Opportunities); Jef L Leroy and Fatma Abdelaziz (Relevant Organizations and Areas of Work); Jose Luis Figueroa and Jean-Francois Trinh Tan (Knowledge Gaps and Research Demands).

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Public Health and Nutrition: Jef L Leroy (Global Perspective); Laila Kenawy and Jean-Francois Trinh Tan (National Perspective); Jose Luis Figueroa and Jean Francois Trinh Tan (Development and Opportunities); Xiaobo Zhang and Hoda El-Enbavy (Relevant Organizations and Areas of Work); Jef L Leroy and Fatma Abdelaziz (Knowledge Gaps and Research Demands).

The authors thank all presenters from Egypt for providing during the seminar national perspective on the different themes. The four national perspective sections presented in the paper rely heavily on their presentations. The presenters on each section were as follows: Economic Transformation and Rural Development: Abla Abdel Latif, Egyptian Center for Economic Studies and Advisor to the President; Institutions and Social Inclusion: Nivine El-Kabbag, Ministry of Social Solidarity; Food Supply and Natural Resources: Tarek Tawfik, Cairo Poultry Group; and Public Health and Nutrition: Maha Rabbat, Middle East and North Africa Health Policy Forum.

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The information provided in this paper is not official U.S. Government information and does not represent the views or positions of the U.S. Agency for International Development or the U.S. Government.

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1. INTRODUCTION

The science of economics is based on the notion of scarcity. Limited resources and unlimited wants and needs force individuals, governments, and organizations to allocate their resources in a manner that maximizes the utility or benefit of the use of these resources. The same applies for individuals, governments, and organizations when it comes to setting research priorities. Given the limited resources of any institutions, setting priorities is of critical importance. It is essential to focus on research that has a high potential benefit in addressing economic and social problems and that is likely to lead to outputs that can be adopted, while utilizing available (or developing new) tools, techniques, and skills (Ghodake 2001). This requires a systematic approach to identify the relevant development objectives, analyze constraints, evaluate past research, define research objectives, identify projects, and choose the priorities among those projects, while identifying gaps and recommending conditions and measures needed for the success of these projects (Janssen and Kissi 1997). In light of these focal points, different institutions have implemented numerous ways for setting research priorities. Some of the systematic forms for setting research priorities are conducting workshops, carrying out round-table discussions, or gathering information based on interviews or questionnaires. Several methodological approaches and targets for good practice in research prioritizations exercises can be drawn from the literature on health research, which has a rich literature on priority setting methods (Viergever et al. 2010, Ghaffar et al. 2009, Okello et al. 2000, Sibbald et al. 2009, Nuyens 2007, COHRED 2000). For instance, experiences from the World Health Organization show that it is essential for research to be embedded at all stages of policy; which makes the collaboration between policy makers and researchers a necessity in both the research and policy-making processes. Additionally, for research to be relevant to policy-making, it needs to be demand driven. Generating policy-relevant research requires establishing a participatory approach to identify research needs and gaps that is based on evidence from a wide range of stakeholders. Furthermore, efforts are needed to create a repository of knowledge by synthesizing relevant evidence from the different relevant organizations and stakeholders (WHO 2012).

There have been a few studies on setting research priorities for economic and social issues, several of which were conducted by IFPRI. The priority setting exercise that IFPRI organized for its new Egypt Strategy Support Program (SSP) is informed by this literature and builds on IFPRI's previous experiences in research priority setting in regional and country-specific contexts. For example, in 1999, IFPRI and the Tashkent State Agrarian University jointly organized a regional workshop entitled "Food, Agriculture, and Natural Resource Policy Research: Setting the Priorities," to involve the local policy research community in Central Asian countries to identify issues and challenges in alleviating poverty, reducing food insecurity, and managing natural resources sustainably in the region; to identify information gaps for policy reform; to set policy research priorities under these themes; and, finally, to implement joint research studies (Babu and Tashmatov 2000). In this workshop, IFPRI gave the floor to representatives of Central Asian countries to present their country-specific evidence and to introduce their own perspectives on the policy research priorities of their own country cases. The presentations were followed by small group discussions out of which the results were presented during plenary sessions. A similar approach was followed by IFPRI at country-level in Malawi in 1996. First, informal interviews were conducted with different stakeholder in order to understand the policy research needs of the country. Second, based on the policy research needs identified, a thorough review of existing information was undertaken and further informal discussions with different stakeholders and potential collaborators were conducted. Based on these first two steps, five broad areas of research were identified. These areas were then discussed in a national workshop to refine the research issues and identify specific research studies (Babu and Khaila 1996).

Taking into account these and similar policy research priority setting experiences, as well as the specific context of the IFPRI's team in Egypt, the Egypt SSP team opted for an "enhanced" version of a priority setting workshop. The context-specific reasons behind this decision are as follows. First, IFPRI has been working on agricultural development, food security, and nutrition policy issues in Egypt for several years, and thus has a well-established network among relevant stakeholders in Egypt, giving it a priori information on broad research needs. Additionally, since Egypt set its own longer-term sustainable development strategy, Egypt's Vision 2030, in 2015 (GoE 2015b), it was an obvious choice to draw on this country-led document to identify the vision and define the objectives for the IFPRI's Egypt SSP, as well as key targets for the country at the national and sector levels. Second, unlike surveys, workshops allow for interaction between the workshop participants to allow for a cross-fertilization of ideas, which opens the chance for people to learn from each other, while taking advantage of their combined expertise. In the context of the Egypt SSP, it was essential to combine the perspectives of national experts with those of IFPRI's researchers to fully exploit the local knowledge of the former and the research and global experience of the latter. In order to identify priorities that are also policy relevant, IFPRI involved a carefully selected and limited number of key players from academia, policy, civil society, the private sector and representatives from international development organizations based in Egypt. Finally, the priority setting workshop that IFPRI organized for its new Egypt SSP employed several innovative elements, including a so-called Carousel approach. This approach was previously employed by CGIAR and IFPRI in the "Workshop on developing a theory based framework to support the monitoring and evaluation of value chains for nutrition" in March 2014 (Gelli et al. 2015).

The remainder of this paper describes the research priority setting process used by IFPRI's new Egypt SSP, with particular focus on the findings obtained from a research priority setting workshop held in Cairo on March 2, 2016. The outcomes of this process provide the basis for IFPRI's research work under the Egypt SSP over the period 2016 to 2020. Moreover, the methodology used and findings obtained from this priority setting process may prove to be useful for other policy researchers and research institutions as they seek to establish the priorities for their own work. The next section explains the workshop concept and methods. The third section presents the workshop findings, while the fourth summarizes the main findings and conclusions of the paper.

2. APPROACH: THEME PRE-SELECTION, WORKSHOP APPROACH, AND PROCEDURES

The goal of a research priority setting workshop is to identify strategic research areas and topics. These research areas and topics should be highly relevant to a country's current and future development policy agenda and consistent with the institution's own comparative advantage and strategy. In our case of IFPRI's new Egypt SSP, the discussions of the workshop built upon recent strategic documents of the Government of Egypt (GoE) and, through discussion between national and international experts, crystalized and prioritized concrete areas and topics for actionable research. Specifically, the policy research themes were defined based on the longer-term *Egypt's Vision 2030* sustainable development strategy of 2015 and the country's Five-Year Economic Development Strategy (2014/15-2018/19), while also being consistent with IFPRI's Strategy 2013-2018. The following sections describe the pre-selection, workshop approach, and procedures in more detail.

Theme Pre-Selection

Egypt's Development Strategy

The *Egypt's Vision 2030* Sustainable Development Strategy (SDS) document provided a first-cut framework for defining the four broad workshop themes. The main goals of the SDS are economic development, citizens' happiness, human development, and market competitiveness (GoE 2015b: 2). The document states:

"According to Egypt's vision, the government is committed to continue supporting a market, competitive, diversified, knowledge-based, and private-sector led economy, characterized by a stable macroeconomic environment, sustainable inclusive growth, maximizing value added, and generating adequate and productive job opportunities. (GoE 2015b: 3)

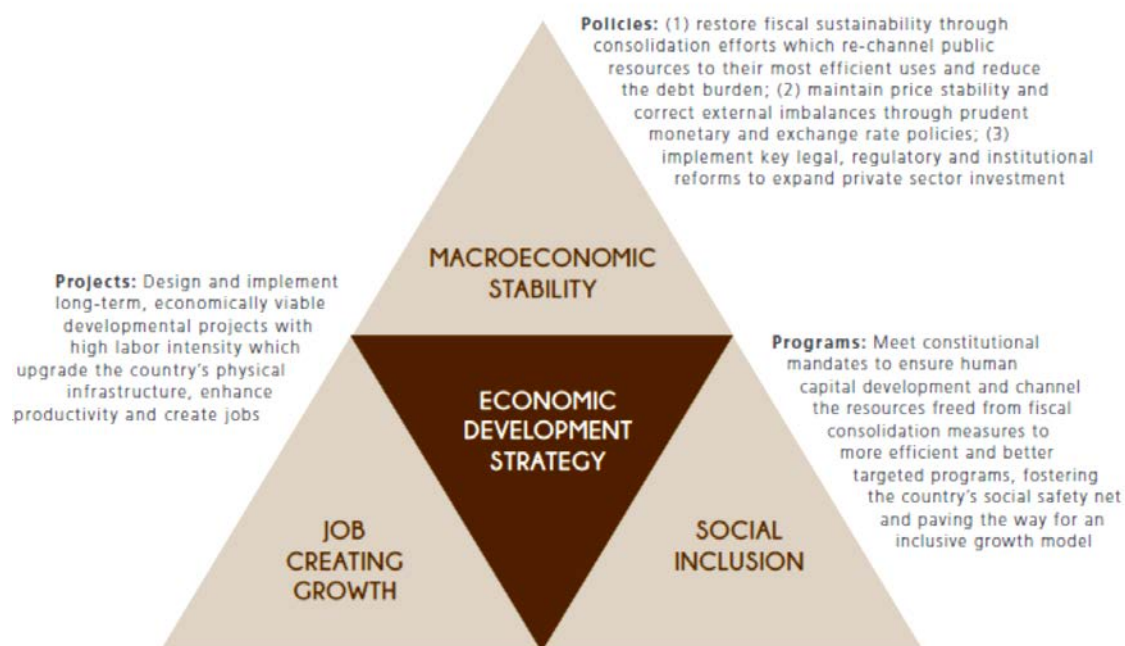
"The SDS deals with the main challenges that affect sustainable development, namely related to physical resources; energy, land, water, and environment, human development resources; population, health, and education, inadequate governance system, and disincentivized innovation. (GoE 2015b: 3)

"[The] SDS [...] promotes sustained improvement of the quality of life for the present generations to raise awareness about protecting the environment and reducing the climate impact change in order to provide a clean, safe environment for future generations. (GoE 2015b: 3)

"[The] SDS aims at promoting human development resources through two main pillars, education and health. ... By 2030, all Egyptians are to enjoy a healthy and safe life through the application of an integrated, accessible, high quality, and non-discriminatory health system that is capable of improving the health indicators through a comprehensive health coverage for all citizens." (GoE 2015b: 4)

Meanwhile, the SDS' "Socio-economic Outlook in the Medium Term" is concerned with three main challenges: the growth and investment nexus, decent jobs for the youth, and social justice programs (GoE 2015b: 6ff). Consistently, Egypt's Economic Development Strategy rests on three building blocks: macroeconomic stability, job-creating growth, and social inclusion (Figure 1).

Figure 1—Concept of Egypt’s economic development strategy



Source: GoE (2015c).

The Economic Development Strategy includes six sections that outline the strategic plan for Egypt’s economic development over a period of five years (GoE 2015a):

I. The vision: Transforming Egypt’s Economic Platform

“Restore macroeconomic imbalances, address social inclusion priorities, and achieve high, sustainable and well-diversified growth.” (GoE 2015a: 1)

II. Egypt’s Medium-Term Strategy and Outlook

“While the reforms [in 2004-2008] helped Egypt to withstand the impact of the 2008-2009 global financial crisis better than most countries, with growth hovering around 5 percent (rather than the average of 7 percent during the boom years), this did not alleviate rising social and political pressures primarily due to the lack of tailored programs to protect the people’s quality of life. ... Lessons learned from that experience are now shaping the government’s new reform agenda that combines pro-growth and pro-private sector policies with social protection and jobs-focused priorities.” (GoE 2015a: 4)

III. Restoring Macroeconomic Sustainability and Supporting Growth

“Fiscal consolidation will narrow the deficit and reduce debt while creating room to shift spending to better serve public needs and to foster productive investment. The fiscal consolidation program is geared toward narrowing the deficit while improving the structure of spending and putting government debt on a firm downward path. The plan aims to create sustainable fiscal room to shift spending to education, health and R&D in line with the new constitutional mandate to increase outlays on these three areas up to 10 percent of GDP by Fiscal Year 2016/17 as part of achieving inclusive growth.” (GoE 2015a: 10)

IV. Egypt’s Social Policy Framework; Programs to Foster Social Justice

“The government is expanding social safety nets as part of its mandate to foster inclusive growth, with a new approach geared to reaching the most vulnerable segments of the population through better targeting mechanisms. Early success has been achieved with the successful roll-out of a new food subsidy system that has reduced leakages while improving the quality of products provided to beneficiaries. ... Against the backdrop of persistently high poverty rates and widening income gaps, the overall objective of the government’s social policy framework has been gradually shifting to addressing the structural underpinnings of inter-generational development challenges. ... The design of social welfare programs will shift strategically away from targeting programs or goods to targeting the most deserving households,

thereby reflecting a stronger orientation towards increased citizen agency and empowerment. ... In the spirit of inclusive and equitable growth, the policy focus has shifted to the least developed geographic areas – such as the southern part of the country, which has previously been neglected.” (GoE 2015a: 27)

V. Sectoral Growth Prospects and Projects

Agriculture ranks among the nine sectors with the highest growth potential. The key items of the agriculture strategy are:

- *“Increase production per unit of land by improving water management systems and irrigation networks*
- *“Expand reclaimable land through heavy investment in land preparation and water resources development from aquifers*
- *“Minimize waste through strategically located modern storage facilities*
- *“Develop the food processing industry in efficiently located agroindustrial parks*
- *“Restructure Principal Bank for Development and Agricultural Credit (PBDAC)” (GoE 2015a: 33)*

Another strategic sector for economic development is manufacturing and small and medium-size enterprises (SME). The key items of the sectoral strategy for SMEs are:

- *“Achieve structural transformation of the manufacturing sector by prioritizing industries that maximize value added and job creation*
- *“Promote the sector’s export potential by fostering export-oriented investment*
- *“Support the development of a healthy SME ecosystem with strong linkages to large corporate players” (GoE 2015a: 34)*

VI. Public Private Partnerships (PPP)

“The PPP is an effective mechanism to narrow the infrastructure gap between Egypt’s needs and the government’s ability to finance an adequate supply, while capitalizing on the private sector’s efficiency in managing projects and delivering good quality services to the public.” (GoE 2015a: 35)

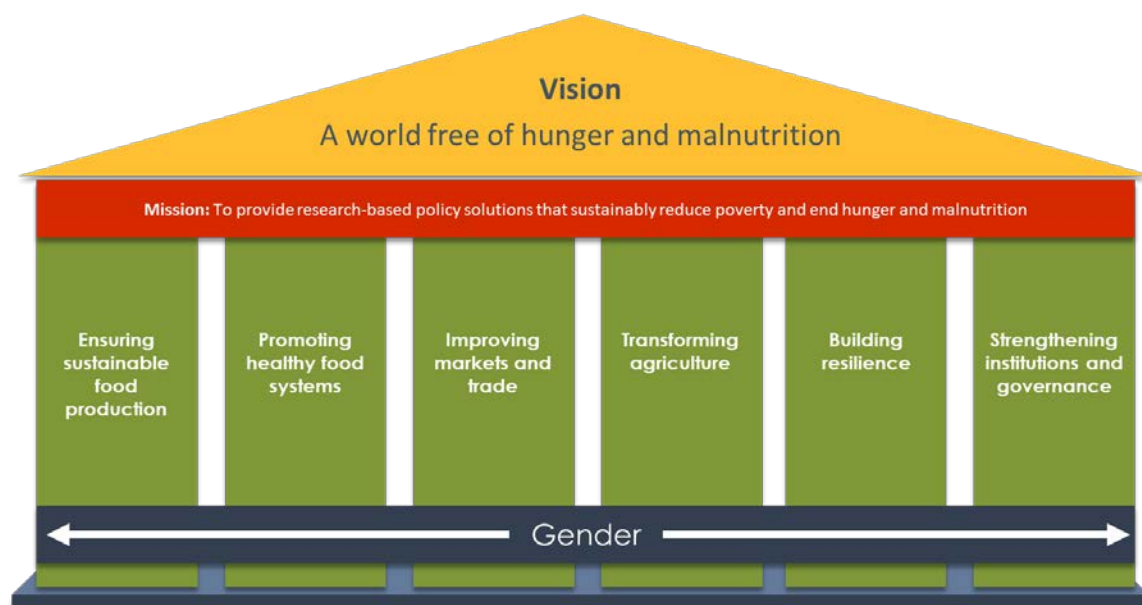
IFPRI’s Strategy

These strategic development objectives of the government of Egypt have large overlaps with IFPRI’s own strategy (IFPRI 2013). To implement its mission, IFPRI engages in six strategic research areas (Figure 2):

- Ensuring Sustainable Food Production
- Promoting Healthy Food Systems
- Improving Markets and Trade
- Transforming Agriculture
- Building Resilience
- Strengthening Institutions and Governance

Gender is a theme cutting across all of the six strategic research areas (Figure 2).

Figure 2—Strategic framework of the International Food Policy Research Institute



Source: Adapted from IFPRI (2013).

Workshop Themes

Based on the main elements of Egypt's Vision 2030 and IFPRI's Strategy 2013-2018, highlighted in the previous sub-sections, as well as IFPRI's experience locally in Egypt and internationally, IFPRI's team in Egypt identified four major broad priority themes for Egypt:

- 1) Economic transformation and rural development,
- 2) Institutions and social inclusion,
- 3) Food supply and natural resources, and
- 4) Public health and nutrition.

The next sections will describe which methods were used and how the workshop was organized in order to identify specific knowledge gaps and research demands within each of the four themes.

Workshop Methodology and Organization

Guiding Questions

Once the broad priority themes for policy research had been selected, the guiding questions underlying the conceptualization of the priority setting workshop were:

- 1) What are the main knowledge gaps within these four themes?
- 2) Specifically, how can IFPRI contribute to help addressing knowledge gaps within these themes that fall within the Institute's areas of work and expertise and add unique value to Egyptian policy processes – that is, avoiding duplication of research?

To answer these questions accurately, breaking them up into parts with sub-questions was expedient. Hence, discussions at the Egypt SSP priority setting workshop were structured around three subjects with three specific questions for each of the four themes. The three subjects and specific questions were formulated identically in order to achieve comparability and consistency in the workshop's findings across the four themes.

A. Development Challenges and Opportunities

- 1) What are Egypt's main development challenges within [this theme] in (a) the short-term and (b) the long-term?
- 2) Rank the short-term and the long-term development challenges according to their relative importance, providing reasons for your rankings.
- 3) What are Egypt's main development opportunities and possible solutions to address Egypt's development challenges?

B. *Relevant Organization and Areas of Work*

- 1) What are the main (a) *governmental*; (b) *non-governmental organizations*; and (c) *research institutions* working in areas of [this theme] in Egypt?
- 2) Which of these organizations or institutions are most important as *potential collaboration partners* for IFPRI, considering IFPRI's mission and the aims of the Egypt SSP? Provide reasons for your recommendations.
- 3) Who are the *focal points* in these organizations or institutions (contact details), and what is their area(s) of expertise or interest?

C. *Knowledge Gaps and Research Demands*

- 1) What are (a) the *main knowledge gaps* within [this theme] in Egypt, and (b) the *specific research questions* within the top-three knowledge gaps?
- 2) Rank the knowledge gaps and research questions according to their relative importance and provide reasons for your rankings.
- 3) Which *data* are needed to address these research questions, and *from where* are they available?

These questions served to (a) learn about Egypt's main development challenges and opportunities directly from national experts participating in the workshop, (b) understand which organizations and research institutions engage in which themes and are concerned with which issues, and (c) identify existing knowledge gaps and IFPRI's potential contributions across the four themes.

Selection of Participants: Blending National and International Expertise and Experience

To ensure a broad representation of expertise relevant to the pre-selected themes, the choice of participants is critical. Therefore, the organizing team for the Egypt SSP priority setting workshop made a systematic effort to identify and to invite key stakeholders and outstanding national experts in the fields of the four selected themes. The participants of the workshop included representatives from government and non-government organizations, academia, private sector, and international development agencies, in addition to two representatives from USAID/ Egypt as observers. Among others, the invited national experts included an advisor to the President and two former Ministers (Appendix Table A1). To bring in international experience, the organizing team also invited to the workshop senior researchers from IFPRI with expertise in the four themes of the workshop (Appendix Table A2). Last, the team aimed at a gender balance across all workshop participants. The workshop was attended by 33 national experts—21 women and 12 men—and 17 IFPRI staff (including one IFPRI collaborator)—seven women and 10 men.

Given differences in expertise and to ensure efficient and effective communication among the workshop participants, discussions among the participants were organized in breakout groups. Two breakout group discussions took place in parallel, with each group discussion dealing with one of the pre-selected themes.

The morning sessions and the afternoon sessions of the workshop were structured identically. Two themes were discussed in the morning, and two in the afternoon. Theme 1—*economic transformation and rural development*—and Theme 2—*institutions and social inclusion*—were addressed in the morning sessions, given their overall economic and social perspective, respectively. Theme 3—*food supply and natural resources*—and Theme 4—*public health and nutrition*—have a stronger sector focus, namely, agriculture and health (in the broad sense), and were therefore addressed in the afternoon sessions.

To spark the discussions, 'rapid-fire presentations' of five minutes preceded the breakout group discussions (see Workshop Agenda at <http://egyptssp.ifpri.info/2016/03/22/egypt-ssp-research-priority-setting-workshop/>). For each theme, an IFPRI researcher provided a global research perspective and presented examples of IFPRI research relevant to Egypt, while a national expert provided an Egyptian perspective. These rapid-fire presentations were held in the plenary session before breaking up into the small group discussions. Plenary sessions also followed the breakout group discussions so that facilitators of the breakout group discussions reported back on the content of those discussions to all workshop participants. The plenary sessions included further moderated discussions on each breakout group theme in order to collect contributions from workshop participants who had not attended the breakout group on the theme.

Cross-Cutting Themes and Other Issues

More importantly, the plenary sessions served to discuss potential cross-thematic issues. Cross-cutting themes were anticipated to occur especially between Themes 1 and 2, and between Themes 3 and 4, respectively. The participants of the workshop were encouraged to have discussions guided by the following questions during plenary sessions:

- 1) What are Egypt's main development challenges in (a) the *short-term* and (b) the *long-term*, which are at the intersection of [this theme] and [that theme]?

- 2) What are (a) the main knowledge gaps at the intersection of [this theme] and [that theme] in Egypt and (b) the specific research questions within the top-three knowledge gaps?
- 3) Which other issues—not belonging to one of the four themes—should be considered as research priorities for the Egypt SSP?

The Carousel Approach to Strategic Planning

An ambitious discussion agenda as well as experiences from numerous previous workshops and the literature (see Introduction) motivated the organizing team to come up with an effective and time-efficient approach that would allow for comprehensive and in-depth discussions, drawing upon fully the different expertise and interests of the participants. Therefore, the organizing team decided to break up the discussion into several parallel and focused discussions and divide all participants into small break-out groups accordingly.

Yet, experience from previous workshops suggested that parallel breakout group discussions often yield similar findings and duplications to a large extent, when the discussion agenda for the various breakout groups is identical. The organizing team, however, also recognized that a breadth of different contributions—from more than one group—is likely to improve the comprehensiveness and quality of the workshop findings. To solve this dilemma, the organizing committee adopted an innovative structured approach for the break out group discussions—the *Carousel approach*.

A priori, the participants of the workshop were first divided into two groups according to their expertise related to Theme 1 and Theme 2—for the breakout group discussions in the morning—and related to Theme 3 and Theme 4—for the breakout group discussions in the afternoon. Then, those workshop participants assigned to a particular theme were subdivided into three subgroups of (about) equal numbers. Each of these subgroups was requested to discuss the three subjects discussed above consecutively.

To implement this Carousel approach, the three subgroups rotated between three tables, while one subgroup followed up on the discussion of the previous group and complemented it (Figure 3). Hence, after one round, all three subgroups for a theme contributed to all three subjects under the one theme. The discussions among the subgroups were facilitated by an IFPRI senior researcher, who noted down the main discussion points on a flip chart. In addition, a note taker—an IFPRI research assistant—took more detailed notes of the discussions. During the workshop, the facilitators were responsible for keeping the discussions focused on the subject questions—presented above—and for extracting the information to present on the breakout group discussion’s findings later in the plenary session. Later, the facilitators and note takers summarized the findings for inclusion in the following section of this workshop paper. For consistency across themes and subgroup discussions and to minimize potential moderator effects, all facilitators and note takers received guidelines for how to conduct the discussions as part of a preparatory briefing before the workshop.

Figure 3—Carousel approach to strategic planning with multiple groups, e.g., Theme 1 on Economic Transformation and Rural Development

Breakout Group Discussion: Nile III

Theme 1: Economic transformation and rural development



The grouping of the workshop participants was decided upon before the workshop. The themes and subgroups to which each participant was assigned was shown on his or her name badge (see Workshop Procedures presentation slides at <http://www.slideshare.net/ifpri/ifpri-egypt-strategy-support-program-workshop-goal-objectives-and-procedures>). Each participant joined one breakout group discussion in the morning and one breakout group discussion in the afternoon. The allocation of the individual participants to the different themes was done based on their expertise, and to the different subgroups within that theme based on their institutional affiliation. The guiding principle for the formation of the subgroups was heterogeneity, meaning that people from the same organization or institution or working in similar areas were split into different groups. The rationale was to bring together experts from different backgrounds working on the same theme in order to enrich the discussions and—at best—to reach consensus on research priorities among the participants in a subgroup.

The national experts who gave one of the two rapid-fire presentations for a particular theme were assigned to the subgroup dealing with the subject of relevant organizations and areas of work in the first rotation by default. Here, the rationale was to ensure that these experts did not over-influence the subgroup discussions on development challenges and opportunities and knowledge gaps and research demands, since they may have influenced the content of the breakout group discussions already through their rapid-fire presentation.

IFPRI senior researchers who gave rapid-fire presentations were assigned to facilitate the discussions on knowledge gaps and research demands. The rationale was this was so that they could learn about the main knowledge gaps and research demands in Egypt in order to better inform how they possibly might pursue future research in the respective theme.

3. WORKSHOP FINDINGS: TOP RESEARCH PRIORITIES

The structure of this section follows the structure of the workshop sessions; whereby each sub-section summarizes the theme's rapid fire presentations on the global and local perspectives, followed by a review of the content of the breakout group discussions on the theme.

Theme 1: Economic Transformation and Rural Development

Setting the Stage

This sub-section summarizes the two rapid-fire presentations on economic transformation and rural development. The global perspective offered by a senior IFPRI researcher used cluster-based development as an example of how private sector-led economic growth might be jump-started—particularly in the agro-processing and manufacturing sectors (see presentation slides at <http://egyptssp.ifpri.info/2016/03/22/egypt-ssp-research-priority-setting-workshop/>). The rapid-fire presentation from a national perspective pointed out three main research areas of high policy relevance related to economic transformation and rural development.

Global Perspective

Economic development can be seen as a process of economic transformation through which resources are better used. There are many dimensions to economic transformations, including changes in the structure of production—from agricultural to nonfarm production; in agricultural land use—from staple food to cash crops; in migrations from lagging regions to richer regions and countries and resultant remittance flows; in capital flows—from developed countries or regions to less developed areas; in technology transfers—from developed to less developed countries; and in demographic transition—from high to low fertility. Economic transformations bring about more job opportunities for the poor and improve their livelihoods. The question is how to jump start and sustain the process of economic transformation.

The conventional thinking is to provide developing countries with what they lack, such as financial resources and sound institutions. However, it can be a daunting task to establish well-functioning financial system and institutions. A more viable approach often is to enhance existing strengths embedded in rural areas. One noted approach is the cluster-based development model. People generally have strong social trust within a community. The cluster-based model makes use of this strong social capital to overcome the weakness of financial constraints. Within clusters, producers rely heavily on trade credits, which are largely supported by social trust. Another defining feature of developing countries is abundant labor—especially in rural areas—but limited capital resources. A cluster development approach fits well to these endowments. Within clusters, an integrated production process is divided into incremental steps, greatly lowering the capital entry barriers and enabling otherwise more financially constrained entrepreneurs to set up their businesses. The new businesses in turn generate a great number of employment opportunities.

However, cluster development is not an automatic process. Because of lower entry barriers, clusters often grow quickly in the initial stage before running into new bottlenecks. Local governments can play a facilitating role by providing necessary basic

public goods and service in order to remove those bottlenecks. There always are new emerging challenges facing cluster development, so it is hard for an outsider to prescribe solutions to all the problems. Hence, it is crucial to empower local governments and institutions and place them in the driver's seat in promoting a cluster-based model, because they have informational advantage. If they have embedded incentives, they are more likely to work hard to figure out the best local solutions to roadblocks.

The rapid economic transformation in China offers a good example of cluster-based industrialization. Most agricultural and industrial production in China is cluster-based. There are more than 2,000 clusters in China with each specializing in one major product. Despite the lack of a well-developed financial market and sound institutions in the first place, China has become a world factory in three decades. The cluster-based model played a key part in this rapid growth.

Although clusters are ubiquitous, they are largely off the official radar screen in most developing countries. As an exception, cluster-based industrialization has been listed as a key pillar of Egypt's economic development strategy. The government now faces several challenges, including how to promote (agro-) industrial clusters at the local level, and how to make use of existing strengths to overcome challenges facing economic transformation?

National Perspective

Over the past fifty years, Egypt has witnessed a declining role of the agricultural sector in its economy in favor of other sectors, such as the manufacturing and services sectors.² This declining role of agriculture is part of the economic development process and, to a large extent, can be explained by the fact that non-agricultural sectors grow faster than agriculture. In addition, several factors have challenged and continue to challenge agricultural growth and employment in Egypt. Rampant urban encroachment, declining soil quality, and a lack of interest in farming by the youth are threatening the supply and efficiency of "old" farmlands as well as the farm hands necessary to farm. In response to the growing land constraint, Egypt since the 1950s has been reclaiming "new" desert land to increase its agricultural space. The results have often been modest, fraught with high costs, and there is a sense that not enough lessons have been learnt from the experience of these past decades.

To address these and other challenges, the Government of Egypt is currently implementing or planning to implement three related national projects – land reclamation of desert areas, agro-waste recycling, and cluster development in rural areas.

The first project foreseen by the Government is the reclamation a total of 4 million feddans in desert areas, starting with 1.5 million feddans during the first phase of the project.³ The project is based on the government's vision of erecting and strengthening complete value chains with strong backward and forward linkages to the agricultural sector. A new publicly-owned private company, the New Countryside Development Company (REEF), has been established to undertake the 1.5 million feddans project. REEF's vision is to build new communities with sustainable high quality of life, while promoting agriculture and cluster-based development. The objective is to create and sustain new communities in select desert areas, starting with 10 locations around the country, creating agro-based clusters and, thereby, increasing value addition, while efficiently using scarce water resources. Yet, there are specific questions that shall require answers through evidence based research. For instance, should short staple cotton be grown in the desert? Short-staple cotton is in high demand on the international market, and to date, Egypt is not growing this crop, potentially missing out on a potential high value export crop. By growing short-staple cotton, Egypt may be able to establish an integrated value chain, potentially reviving the ailing textile industry. Currently, Egypt imports short-staple cotton to cover its domestic demand. So, producing short-staple cotton might have high potential since industrial facilities can be built around it. Overall, it will be crucial to rely on evidence-based research to assess the potential impact of the new land project and to evaluate options to create and sustain new communities in currently barren desert areas that lack basic public service utilities and to support comfortable family life.

A second project aims at developing an agro-waste recycling system in the country. The project contemplates an agricultural and waste processing center to use organic waste from across a range of sub-sectors and recycle it to produce fertilizer as an input for agriculture. Such a recycling system would not only avoid costs related to garbage dumps, but also make sure that the rich nutrients contained in organic waste are re-used. As such this upcycled fertilizer would help growing agricultural crops, including on the 1.5 million feddans to be reclaimed.

The third project, named by the GoE as "*your job next to your home*", centers on cluster-based development. The aim of this project is to generate employment amongst the youth by building factories that would be rented out to eligible youth to operate. An additional objective is to reduce the carbon footprint on the surrounding environment. In general, factories producing intermediate and final goods would be erected close to rural communities, linking those communities to industrial clusters, e.g., garment factories, throughout the nation. The basis of this model is to guarantee the marketing of products before the actual establishment

² Agriculture value added fell from 28 percent of GDP in 1965 to about 14 percent in 2014 (World Bank; 2015).

³ 1 feddan = 1.038 acre = 0.42 hectare.

for these factories, while providing numerous employment opportunities. However, knowledge about how to develop and build these clusters in rural areas is still missing in the country. In that sense, studies are needed to learn lessons from other countries as to how to foster cluster-based development and to identify which agricultural products would be most suitable for agro-processing factories, especially those which can be processed with minimal pollution, as they would be based in already inhabited rural areas. Also, evidence-based research will be crucial to inform the design and implementation of these projects. Some work is already on the way, for example by the Egyptian Center for Economic Studies (ECES), acting as a national advisory body. Other actors like IFPRI could engage and collaborate with ECES in this area.

Breakout Group Discussions

This sub-section summarizes the findings of the breakout group discussions related to the development challenges and opportunities within the theme of economic transformation and rural development, the governmental and non-governmental organizations and research institutions working on issues related to this theme, and the existing knowledge gaps and research demands within the theme.

Development Challenges and Opportunities

Challenge 1: *Agriculture's potential for inclusive economic transformation has not been fully leveraged.* Despite significant economic growth and structural change in Egypt over the past decades, poverty, unemployment, and malnutrition remain high, especially in rural areas and Upper Egypt. Despite that agriculture's share in the economy is still about 15 percent, agriculture employs about a quarter of the workforce, and agriculture-related processing, marketing, and input supplies account for a further substantial share of GDP and employment, the sector still has considerable potential to support a more inclusive transformation going forward. Specifically, there are big gains to be expected from improving agricultural productivity and markets, especially in lagging regions like Upper Egypt, plus huge untapped local (and potentially international) demand for processed food and agro-processing in general. However, reshaping agriculture and agro-processing's role for development in Egypt faces several challenges. The business climate is often not conducive for entrepreneurs and hinders domestic and international investments in agriculture and agro-processing. Availability and access to inputs can be a problem in many parts of Egypt (see below). And the growing youth unemployment problem combined with a lack of interest of many young people in farming raises the question on how to make agricultural and related employment more attractive.

Challenge 2: *Water and land availability constrain agricultural production and agro-processing.* The scarcity of agricultural land and water resources are on top of the challenges facing the Egyptian agriculture sector. The agricultural land reform instigated in the 1960s, coupled with population growth has led to severe land fragmentation. On the old lands, rapidly encroaching urbanization—especially dispersion of housing into fertile agricultural land—as well as desertification, only make a bad situation worse. In addition to a supply constraint, land that is currently under production faces falling quality. Nearly a century of unresolved drainage problems, as well as rising salinity as a result, coupled with the ever increasing use of fertilizers, has greatly compromised the quality of the soil in production. In the new lands, harsh conditions, remoteness, inefficient management, and water constraints have raised questions about the sustainability of this approach. Water scarcity, population growth, and inefficient water management policies have compounded the adverse effects of falling acreage and quality of agricultural land. Possible solutions include improvements in land and water policies and management practices that encourage water use efficiency, increasing the sector's reliance on treated wastewater and revisiting the issue of water pricing.

Challenge 3: *Volatile energy availability impedes the expansion of businesses.* Discontinuous energy availability poses a challenge for the Egyptian economy. Agriculture, agro-processing, and other industries and services rely on fuel energy and electricity to operate the machinery used in the production process. The economic downturn that Egypt has faced since 2011 has severely impacted its foreign exchange earning capabilities and, thus, energy trade. Fuel shortages nationwide have become common and small farmers, already strapped for finances, suffer even further trying to access expensive fuel. The electricity supply that is crucial for running businesses in many parts of Egypt has become unstable. One option for improving domestic energy production and availability may be renewable energy technology. However, although encouraged by GoE, renewable energy is not playing a significant role in Egypt's energy mix or in the agricultural and agro-processing sectors.

Challenge 4: *Education and slow adoption of new technologies.* The current education system does not prepare graduates for the labor market very well. It will be critical to better match education with actual market demand, including updating curricula to keep pace with new technologies. Whilst reform of the education system needs to start immediately, the benefits of such reform will only be reaped in the medium to long term. Regarding agricultural training, one area of improvement could be educating farmers about more efficient agricultural practices. These can include, but are not limited to, adopting newer crop varieties, more efficient water use, and using greener farming practices. Another impediment facing the economic transformation process, in general, and agricultural transformation, in particular, is the lack of access to new technologies. Oftentimes, technological advancements may be the

solution to many system constraints, as such technologies can provide short-term solutions to existing challenges. For instance, water as a resource is crucial to development, and its shortage, which is expected to continue well into the long run, can be tackled by using drought and salt resistant crop varieties and more efficient water management systems. Technology may also provide a solution to address energy shortages in agriculture, for example through promoting biogas production. However, for technology adoption to work, a conducive policy and institutional environment is critical.

Relevant Organizations and Areas of Work

Table 1 lists the governmental and non-governmental organizations and research institutions that now contribute to promoting Egypt’s economic transformation and rural development. Organizations and institutions are loosely listed in descending order of relevance as indicated by the discussion participants. Yet, this ordering is subjective and should be interpreted cautiously.

Table 1—Organizations and institutions concerned with economic transformation and rural development

Governmental organizations	Private or non-governmental associations and organizations	Research institutions
<p>Ministries:</p> <p>Ministry of Agriculture and Land Reclamation (MoALR), esp. Economic Section</p> <p>Ministry of Planning (MoP)</p> <p>Ministry of Finance (MoF)</p> <p>Ministry of Trade and Industry (MTI)</p> <p>Ministry of Investment</p> <p>Ministry of Electricity and Renewable Energy (MoEE)</p> <p>Ministry of Water Resources and Irrigation (MWIR), esp. National Water Research Center (NWRC)</p> <p>Ministry of Supply and Internal Trade (MSIT)</p> <p>Ministry of Social Solidarity (MoSS)</p> <p>Ministry of Environment</p> <p>Ministry of Education and Technical Education (MoE)</p> <p>Ministry of Local Development (MLD)</p> <p>National centers and institutes:</p> <p>Information and Decision Support Center (IDSC)</p> <p>Central Agency for Public Mobilization and Statistics (CAPMAS)</p> <p>Desert Development Center (DDC)</p> <p>Social Fund for Development (SFD)</p> <p>National Council for Women (NCW)</p> <p>Consumer Protection Agency (CPA)</p> <p>Governors/Governorate administrations</p>	<p>Farmers, processors, and exporters associations:</p> <p>Horticulture Export Improvement Association (HEAI)</p> <p>Union of Producers and Exporters of Horticultural Crops (UPEHC)</p> <p>Agriculture Export Council (AEC)</p> <p>Food Export Council (FEC)</p> <p>Cotton Exporters Association (CEA)</p> <p>Business organizations</p> <p>Chambers of commerce and industry</p> <p>Upper Egypt Development and Investment Company</p> <p>Assiut Businessmen’s Association</p> <p>Domestic NGOs:</p> <p>Caritas - Egypt</p> <p>Sanabel</p> <p>Knowledge Economy Foundation</p> <p>Coptic Evangelical Organization for Social Services (CEOSS)</p> <p>International NGOs:</p> <p>CARE</p> <p>Oxfam</p>	<p>Research centers and institutes:</p> <p>Institute of National Planning (INP)</p> <p>Egyptian Center for Economic Studies (ECES)</p> <p>Economic Research Forum (ERF)</p> <p>National Research Center (NCR)</p> <p>Agriculture Research Center (ARC)</p> <p>Agricultural Economics Centers</p> <p>Universities:</p> <p>American University of Cairo (AUC), esp. School of Business (Department of Economics)</p> <p>School of Global Affairs and Public Policy</p> <p>Research Institute for a Sustainable Environment (RISE)</p> <p>Cairo University, esp. Faculty of Economics and Political Science</p> <p>Ain Shams University, especially Departments of Rural Sociology, Agricultural Economics, and Food Science</p> <p>Nile University, especially the Technology Innovation Commercialization Office (TICO)</p>

Source: Own representation.

Knowledge Gaps and Research Demands

The expert participants identified several critical knowledge gaps that impede the design and implementation of sound and inclusive rural development strategies in Egypt:

Priority 1: *Identify specific actions so that Egypt’s economic transformation can be made more inclusive.* Having a clear vision and strategy is crucial for the government to direct limited resources for different sectors, infrastructure, and services. For example, a renewed debate on the new roles that agricultural development can play in economic transformation would be very helpful, since the sector may have multiple and changing objectives. Is the objective of agricultural development mainly for food security, export earnings, and job creation? Or can the sector also contribute to other development objectives, like youth employment, gender equity, and nutrition? How can linkages be fostered between different sectors, such as between agriculture, agro-processing and related services? How can the economic linkages between different regions, especially between Upper Egypt and the rest of Egypt be strengthened? Such a debate on the new role of agriculture and regional development in the transformation process will help policy makers to clearly identify the trade-offs among the different objectives. In addition, even if the objective is clear and the expected

contribution of agriculture defined, policy and public spending priorities need to be set in a manner that most efficiently reaches the targets. Specifically, research should:

- Assess alternative transformation and public spending options in terms of their social outcomes based on Egypt's Vision 2030.
- Provide policy options as to how the agricultural sector can be reshaped to help better achieve Egypt's sustainability goals.
- Identify specific suggestions as to how public spending, especially on agriculture and regional or rural development can be prioritized for achieving Egypt's development goals.

Priority 2: *Provide a roadmap for how cluster-based development can be encouraged in rural areas.* Informal cluster-based thinking and practices already exist in Egypt, providing a ready opportunity for development. Both government and the private sector can play a key role in overcoming existing constraints to the expansion of agricultural, agro-processing, and other clusters. For instance, small communities of rural women raise and sell poultry in rural markets and exchange poultry to allow for mating. Yet, lack of marketing opportunities and market information hinders their expansion. One key advantage of cluster-based model is the proximity of production to the market. Once the production scale is large enough, input dealers tend to move in to provide necessary supplies, while output traders come to place orders. By synchronizing production with others in the same area, one can save marketing and purchasing costs. In addition, farmers often organize themselves in clusters in order to take collective action. For example, by joining producer associations, farmers can gain better bargaining power when dealing with input suppliers, extension agents, and traders. Finally, technological spillover is faster in clusters than outside clusters, because a farmer can easily observe and imitate the best practices of other farmers. Research should focus on the following tasks:

- Provide an inventory of existing clusters in Egypt and identify their existing strengths and constraints.
- Examine best practices from other countries and identify lessons that Egypt can learn from such experiences.
- Develop options for developing specific clusters, especially in agriculture and agro-processing sectors.

Priority 3: *Close the data gap and promote institutional collaboration.* Lack of reliable and publicly available data is problematic for evidence-based policy. For example, several sources of published agricultural statistics yield contradicting patterns on food production and consumption in Egypt. Although many institutions have accumulated useful data and information, it is rarely shared with other relevant institutions or end users, which results in highly fragmented information and duplicated, yet scattered, efforts. Several proposals have been suggested to address this problem. First, it would be useful to set up a platform to encourage data and information sharing among different stakeholders, including government agencies, universities, think tanks, and civil society. Doing so would also serve the purpose of creating an ideas market to link and capitalize the often fragmented, yet extremely valuable indigenous knowledge. Second, increasingly available "big data" provides an alternative way to obtain useful information. For example, satellite imagery can be used to analyze cropping patterns, urbanization, and land fragmentation. Also, scanner data from supermarkets may be used to gauge food prices. Third, conducting primary surveys and subsequently disseminating publicly the results can greatly aid evidence-based policy planning.

Priority 4: *Study key drivers of land encroachment and provide possible solutions.* Land encroachment is a big issue in Egypt, with serious socio-economic consequences. One observation in this regards is that there are many unfinished big houses all over Egypt. Given the rather limited arable land, this patterns not only poses questions in terms of efficient use of financial resources, but also directly undermines Egypt's food security. In addition, there are several other negative externalities. First, there is evidence from other countries that when people build bigger homes, they end up with little savings and may have to sacrifice their families' nutritional intakes, including their children. Many of the second and third floors in new houses are empty and unoccupied (even without windows). This appears to be a social waste. Second, as people build houses on farmland without prior planning, land becomes increasingly fragmented, making mechanization much more difficult. Third, the unfinished houses with steel bars create a very unpleasant visual image for visitors and tourists. Several questions will be important to better understand this issue:

- What is the spatial and temporal pattern of land encroachment?
- What is the impact of land encroachment on food supply?
- What are the driving forces behind the observed patterns – status competition, laws or other regulations, family reasons, etc.?

Theme 2: Institutions and Social Inclusion

Setting the Stage

This sub-section summarizes the two rapid-fire presentations on key issues related to institutions and social inclusion. The global perspective presentation focused on social protection as one policy approach to achieve social inclusion, using examples of one of

the worldwide most notable conditional cash transfer programs—Mexico’s *Oportunidades* (see also the presentation slides at <http://www.slideshare.net/ifpri/egypt-strategy-support-program-institutions-and-social-inclusion>). The national perspective presentation provided an overview of planned reforms to Egypt’s social safety net programs and highlighted key principles of the planned Ministry of Social Solidarity programs.

Global Perspective

Economic growth alone is insufficient to eradicate poverty and to protect those at risk of becoming poor. Along with economic growth, poverty alleviation requires implementing policies to meet the needs of the poor, as well as to develop institutions to support those policies. Well-designed, targeted policies, for example, can distribute wealth and eventually break the cycle of poverty into which millions are still trapped. Policies can also protect highly vulnerable groups from falling into poverty due to risks of diverse shocks; such as environmental calamities and armed conflicts. In contrast, the lack of mechanisms to protect the poor increases inequality and leads to a lack of opportunities for the poor. Inclusive policies and institutions, thus, are key for poverty reduction and for translating economic growth into sustainable development in the long-run.

Many countries already have policies in place to protect the poor. Globally, however, only half of the population receives some kind of social protection assistance. In the Middle East and North Africa (MENA), only 26 percent of the population receive social protection of any kind (Fiszbein et al. 2014). On the other hand, mechanisms currently implemented in many countries are deficient, as they are often not cost-effective and not adequately targeted. An example of the latter are universal price subsidies which have little effects on poverty reduction and introduce distortions in the economy. The case of Egypt is illustrative in this sense: After decades of generous subsidies to gasoline and food, and in spite of experiencing positive growth rates until recently, the effects of these programs on poverty, which have been justified on a social protection basis, are limited (Ecker et al. 2016). Other countries, in contrast, have adopted policies expressly designed to meet the needs of the disadvantaged with much better results in terms of poverty reduction.

An example of effective policies in favor of the poor are conditional cash transfer programs. Evidence from a number of developing countries suggests that these kinds of interventions are effective in reaching the poor and vulnerable, while decreasing immediate and long-term poverty (World Bank 2015). IFPRI’s evaluations of the Mexican *Progresa* and *Oportunidades* programs, for example, show that after two years of implementation, the program reduced the number of people with income levels below the poverty line by 10 percent (Skoufias and McClafferty 2001). During that period, the program also improved nutrition and education of children from poor families enrolled in the program. In terms of education, simulation analyses suggest that the program may have increased children’s average years of schooling after completing formal education by 0.66 years –0.72 for girls and 0.64 for boys– (Schultz 2000; Schultz 2004). Also, participant children are found to be healthier, as the program reduced the probability of stunting and increased the average yearly growth rate of *Progresa-Oportunidades* children by 16 percent (Behrman and Hoddinott 2000; Gertler 2004). These results suggest that interventions that combine health, education, and nutrition components, while transferring cash to the poor are cost-effective strategies to break the cycle of poverty.

A more recent example of IFPRI’s impact evaluation of conditional cash transfer programs compares the relative effect of implementing different modalities. For instance, a study by Hoddinott et al. (2014) compared the effect of cash versus food transfers on the nutritional status of participants. Results show that, in general, cash transfers are better at improving food security at significantly lower costs, whereas, food transfers often lead to larger increases in the participants’ calorie consumption. However, the authors find that these effects are context-specific. In Ecuador, for example, the effect of cash on food security was larger than the effect of food transfers (between 5.75-9.04 points in the value of the Food Security Score versus 4.95), while cash transfers increased the amount of calories consumed by participants by a lower rate (between 6 and 11 percent increase versus 16 percent). In contrast, in Uganda the results show different patterns as the effect on calorie-intake is larger when participants receive cash (19.6 percent) in comparison with the effect when they receive food transfers (17.0 percent).

However, in spite of the mounting evidence suggesting that targeted interventions, like cash and in-kind transfer programs, can decrease poverty and improve health, nutrition, and education, significant knowledge gaps about the implementation of these policies remain. For instance, how to move from universal subsidies (like in Egypt) into targeted mechanisms is not clear. There is also a lack of public support for pro-poor and pro-rural reforms and a lack of information for targeting the most needy parts of the population. Additionally, more evidence is needed from the MENA region and from Egypt, in particular. Generally, three issues related to the design of such programs need further investigation: 1) which country-specific policy designs are most adequate to meet the needs of the poor and vulnerable; 2) the cost and benefits of different policies and modalities for different groups (urban versus rural inhabitants, youth, women, and children); and 3) potential synergies of different components, e.g., how nutrition and education interventions interact and contribute to improve food security.

National Perspective

Egypt's economic growth in the past decades has not been inclusive. As a result of inefficient targeting, social welfare programs and interventions have often benefited the wealthy rather than the poor. Public expenditures on fuel subsidies, which usually tend to benefit the rich, are greater than those for health and education combined. Diverse forms of social exclusion, such as unemployment, low incomes, poor housing conditions, disability, and family formation, can be linked to geographical, gender, and social disparities. The current social safety net reforms aim to mitigate these gaps by integrating and linking several social protection measures and streamlining the eligibility of beneficiaries for all measures.

Piloted in eight governorates in Upper Egypt and in selected urban areas, the social safety net reforms have linked conditional cash transfers to health care and school attendance. Meanwhile, fourteen ministries, working under the leadership of the Ministry of Social Solidarity (MoSS), aim to develop an integrated system for reaching three million households through policy reforms that link multiple interventions. This involves linking transfers to access to health care, education, nutrition, food rations, income security for the elderly, and economic empowerment; with a special emphasis on targeting women. For this purpose, a national registry is being created to keep a record of all programs from which each beneficiary is benefiting.

Additionally, a policy framework to secure food for the poor is capitalizing on the priority of the current government to expand social safety nets with extensive coverage of the poor. The program will focus on children's first 1,000 days of life, a critical time window during which adequate nutrition can have tremendous positive impacts on children's future physical and cognitive development. School feeding remains high on the national priority list, as well. While governance of the program is institutionalized under many organizations, responsibilities, rules, and ownership remain unclear, revealing that there is a need for a comprehensive vision for a food security policy. From a financial perspective, partial funds have been secured for school feeding. It is expected that further collaboration with private sector, civil society, and international organizations promise great potential for meeting the resource needs of these programs.

Generally, budgeting, cost-benefit, and return-on-investment analyses for social safety net strategies and policies have yet to be done. In school feeding program implementation, linkages between local agricultural producers and processors and local programs are still missing, and community support and readiness need to be strengthened. The social safety net strategy developed by MoSS also aims to provide additional emphasis on building capacity at the national and local levels, and on raising awareness on nutrition issues. Lastly, MoSS is working on developing a good governance monitoring system to assure accountability, through community involvement in the monitoring mechanisms of the social safety net programs being implemented.

Breakout Group Discussions

This sub-section summarizes the findings of the breakout group discussions related to the development challenges and opportunities within the theme of institutions and social inclusion, the governmental and non-governmental organizations and research institutions working on issues related to this theme, and the existing knowledge gaps and research demands within the theme.

Development Challenges and Opportunities

Challenge 1: *The recent slowdown in economic growth has increased unemployment, poverty, and food insecurity for a large share of Egypt's population.* In urban areas, poverty is manifested as unemployment and underemployment, particularly among youth and women. In rural areas, poverty is often the result of low agricultural productivity and lack of access to productive resources. In order to address these problems, Egypt maintains a wide range of social protection programs. A number of key consumer goods such as bread, rice, sugar, cooking oil, electricity, and fuel are sold at below-market prices through consumer subsidy programs. Also, a school feeding program provides subsidized meals to school children. Other programs provide low-cost health care, conditional cash transfers, employment programs for youth, and pension support to the elderly. Over the past few years, there have been significant efforts to improve targeting and modernize these social programs, including the introduction of smart cards with a chip containing information about the beneficiary family. Nonetheless, there remains widespread concern about the costs and effectiveness of these social programs.

Reducing the incidence of poverty and food insecurity will require a multi-pronged approach. In the long run, the creation of productive, well-paid jobs is the highest priority. Inclusive economic growth and job creation will reduce the need for social protection programs as well as increase the ability of Government to fund these programs. The education system needs to focus more on producing school-leavers and graduates with the skills that are needed by the job market. In addition, training programs should be provided to bridge the gap between supply and demand in specific skills. Finally, training and job creation activities should focus particularly on groups that experience high unemployment rates, such as women and youth.

Challenge 2: *Egypt lacks a comprehensive and cost-effective social protection program that assists Egyptian households suffering from food insecurity, limited access to health care, or inability to invest in education for their children.* Economic growth will not

eliminate the need for assistance for households who are poor due to disability, limited access to productive resources, unemployment, unexpected expenses, or other reasons. The social protection program must thus improve food security and access to basic services in a cost-effective manner. This means improving the targeting of benefits and reducing the administrative costs associated with delivering them. A good starting point is the Vision 2030 development strategy, launched in March 2015, which includes targets for infant and maternal mortality, early education, and literacy. The United Nations Sustainable Development Goals (SDGs) provide another scale with which to measure progress. Although more funding is needed for social protection, improving the cost-effectiveness of existing programs would help build support for greater funding.

Challenge 3: There is high fragmentation and a clear lack of coordination in the implementation of social protection programs. Responsibility for social protection is scattered across numerous ministries and government agencies. This results in a duplication of effort, higher administrative costs, differences in eligibility criteria, and additional work for households applying for benefits. One option is to create a national council on social protection to coordinate the work of different ministries and non-governmental organizations. Such a council would need to have high-level support and a national policy framework to be effective. Coordinating bodies located within a ministry generally find it difficult to influence programs outside the ministry, so the council would be more effective if it reported directly to the President or Prime Minister. Even without the council, however, more can be done to harmonize eligibility criteria, improve targeting, streamline the application process, and reduce administrative costs and waste.

Challenge 4: The quality and availability of data regarding the economic conditions and social needs of Egyptian households is insufficient. Egypt has a relatively strong system of national statistics, but data collection efforts are fragmented and access to data is sometimes limited. In many cases, integrating data from different sources into databases that allow them to be compared would have a high payoff. For example, the Egypt Household Income, Expenditure, and Consumption Survey (HIECS) collects data on roughly 25,000 households, which makes it a valuable resource for understanding patterns in poverty, food security, livelihood patterns, and access to social services for the Egyptian households at national and regional levels. The sample size of the HIECS is too small to assist in geographic targeting of social protection programs, but by combining it with census data, it is possible to generate spatially-disaggregated maps of poverty which could be used for geographic targeting. Similarly, geographic information systems allow the integration of data from various sources.

Challenge 5: Information on the costs, benefits, operations, and beneficiaries of the various social protection programs is lacking, while such information is necessary for better design of a national social safety net. More information is needed on the costs and benefits of the different social protection programs, especially across different types of households. For example, little information is available about the impact of school feeding programs on school attendance, retention, food security, and nutrition. Information on the characteristics of program beneficiaries is available from the HIECS or from administratively collected data, but estimates of the impact of social programs on income, food security, and nutrition often requires rigorous impact evaluation studies using experimental and quasi-experimental methods. This information would allow the government to implement program-based planning and ensure more sustainable funding of cost-effective interventions.

Finally, there is a strong need for capacity development in data collection, econometrics, nutrition, and impact evaluation methods, among other topics. This is particularly important in light of on-going efforts to decentralize public services toward the local level. In order to ensure consistent implementation of social protection programs, local officials and analysts will need stronger capacity to design, implement, and evaluate social programs.

Relevant Organizations and Areas of Work

Table 2 below presents a list of governmental and non-governmental organizations and research institutions that are concerned with institutional development and issues of social inclusion in Egypt. Organizations and institutions are loosely listed in descending order of relevance as indicated by the discussion participants. Yet, this ordering is subjective and should be interpreted cautiously.

Table 2—Organizations and institutions concerned with institutions and social inclusion

Governmental organizations	Private or non-governmental associations and organizations	Research institutions
<p>Main: Ministry of Supply and Internal Trade (MSIT) Ministry of Social Solidarity (MoSS) Ministry of Health and Population (MoHP), Ministry of Manpower and Immigration Ministry of Education (MoE) National Population Council (NPC) Central Agency for Public Mobilization and Statistics (CAPMAS) Social Fund for Development (SFD)</p> <p>Other: Ministry of Trade and Industry (MTI), Industrial Modernization Centre (IMC) Ministry of Planning (MoP) Ministry of Finance (MoF) Ministry of Investment Ministry of Local Development (MLD) National Council for Women (NCW) National Council for Childhood and Motherhood (NCCM) Information and Decision Support Centre (IDSC) Egyptian Corporate Responsibility Center (ECRC)</p>	<p><u>International development agencies and NGOs</u></p> <p>Main: United Nations Development Programme (UNDP) United Nations Industrial Development Organization (UNIDO) International Labor Organization (ILO) Caritas - Egypt</p> <p>Other: United Nations (UN) United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) United Nations Children Fund (UNICEF) German Society for International Cooperation (GIZ) World Health Organization (WHO) United Nations World Food Programme (WFP) Food and Agriculture Organization of the United Nations (FAO) International Fund for Agricultural Development (IFAD) World Bank (WB) Save the Children Cooperative for Assistance and Relief Everywhere (CARE) - Egypt</p> <p><u>Domestic NGOs</u></p> <p>Main: Association of Upper Egypt For Education and Development (AUEED) Coptic Evangelical Organization for Social Services (CEOSS) INJAZ Egypt Knowledge Economy Foundation (KEF) Terous Misr Foundation for Development Takween Integrated Community Development</p> <p>Others: Egyptian Food Bank Misr El Kheir Foundation Orman Charity Association Resala Charity Association Egyptian House for Zakat and Sadakat</p>	<p>Main: American University in Cairo (AUC) The Egyptian Center for Public Opinion Research (Baseera) Cairo University - Faculty of Economics and Political Science (FEPS) Egypt Network for Integrated Development (ENID) Institute of National Planning (INP) Egyptian Center for Economic Studies (ECES)</p> <p>Other: Middle East and North Africa Health Policy Forum (MENA HPF) Sawiris Foundation For Social Development Al Alfi Foundation National Center For Social & Criminological Research (NCSCR) Academy Of Scientific Research & Technology (ASRT) National Research Center (NRC) Economic Research Forum (ERF) Cairo University - Faculty of Medicine, Public Health Department</p>

Source: Own representation.

Knowledge Gaps and Research Demands

Implementation of policies to promote social inclusion requires filling a number of significant knowledge gaps in Egypt. These gaps range from the need for better information on existing vulnerable groups and current programs to more action-oriented demands for better policies and strategies. This section explores the main knowledge gaps and research demands - relating to institutions and social inclusion highlighted by the workshop participants.

Priority 1: Identify vulnerable groups and their specific situations and needs. The specific needs and the social and economic situation under which some population groups live remained largely unknown in some geographic areas in Egypt. Further, often these groups have extremely limited access to social assistance. An example is people living with disability. Reliable statistics about the number of disabled people in the country are missing, as well as information on the extent and severity of the types of disabilities existing in the population. Another group is the elderly. Despite the fact that new government programs, such as *Takaful* and *Karama*, are providing social protection to the elderly and the disabled, needs surpass the financial assistance available. There is generally a lack of information on the needs, health and nutrition status, and vulnerability to shocks in general of the disabled and

elderly. Therefore, there is an urgent need for a comprehensive assessment (e.g., analysis of existing data sources, collecting new data when needed, and generating relevant information) on which groups require social assistance as well as a full description of the type of policies that will result in more adequate protection in each case. Poverty is often concentrated among vulnerable population groups. Therefore, efforts to reduce it should include targeted interventions to better assist and protect these distinctive groups.

Priority 2: Establish better policies and strategies to incorporate youth into the labor force, including in agriculture. As mentioned previously, youth unemployment is one of the most pressing social challenges in the country. However, few large-scale programs address this problem at national level. Knowledge gaps in this area consist in identifying the best strategies to reach the youth and incorporate them into the labor market in a sustainable manner. A number of small-scale programs are already in place, but, so far, few of them have been scaled up, partly because of the lack of knowledge on how to do so. Therefore, another gap in this area consists in analyzing and identifying successful experiences implemented in Egypt and in other countries; specifically on how to scale-up successful programs to incorporate youth into the labor force, as well as on how to design programs with sustainable results over the long-run.

Priority 3: Study activities and objectives of existing social protection program, thoroughly. Different sectors and actors intervene in the implementation of existing programs at different levels (national, regional, and local), but without a clear idea on how each intervention fits in Egypt's Sustainable Development Strategy nor on how the different interventions fit together. Meanwhile, the objectives of some of the programs are too broad, which often causes an overlap and duplication with other programs and a waste in public resources. On the one hand, having knowledge on the activities of the different programs implies creating an opportunity for synergizing the current programs. On the other hand, being better informed would also prevent duplication of activities. A comprehensive mapping of social programs in the country, possibly by creating a national registry, would help to better align the activities of programs more effectively. Also, such mapping can contribute to the first knowledge gap described above, since the information generated could help to identify missing needs and potential areas of intervention in favor of specific groups.

Priority 4: Create sustainable strategies to graduate participants out of social protection programs. Participants of social protection programs, e.g., cash and in-kind transfer programs, often remain dependent on the programs for long periods, if not permanently. Egypt is currently in the process of expanding a number of programs to cover more than 3 million families in the coming years. This includes expanding the *Takaful* and *Karama* program. Since the success of these programs largely depends on the number of participants that move out of poverty and, therefore, that have no need of further assistance, dependency on the program's benefits in the long-run indicates a sustainability failure. There exists little awareness about incorporating sustainability in the design of social protection programs and in considering graduation from the program as an objective in itself, where relevant. For example, graduation is probably less relevant for programs that target the elderly in comparison with programs where youth are targeted. Specifically, research is needed on: 1) how to define graduation in the context of each program, and 2) how to design programs and strategies that make graduation sustainable – that is, to prevent former participants from falling again into poverty and thus to again require social assistance.

Theme 3: Food Supply and Natural Resources

Setting the Stage

This sub-section summarizes the two rapid-fire presentations on key issues related to food supply and natural resources in Egypt. The global perspective presentation emphasizes the importance of research and technological advances for agricultural development and sustainable use of scarce resources, using examples from Pakistan, India, and Colombia (see also the presentation slides at <http://www.slideshare.net/ifpri/egypt-strategy-support-program-food-supply-and-natural-resources>). The national perspective presentation focused on wastage along agricultural value chains and means of potential improvement.

Global Perspective

There are many complex challenges facing global efforts to produce more food, feed, fiber, and fuel and to conserve natural resources. The challenge for government is to design public policies and steer public investments toward more equitable and sustainable agriculture systems that address multiple objectives under increasingly uncertain conditions. These uncertain conditions include greater weather volatility, extreme climate events, and long-term climate change; competition for natural resources among farmers, consumers, and energy producers, and environmental concerns; degradation of land, water soils, and biodiversity from over-exploitation, pollution and other negative externalities; and the demographic pressures driven by rapid population growth, aging populations, and emerging disease burdens. In a world of increasingly scarce natural resources, both technological and institutional solutions are needed to keep food and agricultural systems on track towards greater productivity and greater sustainability in the face of many complex challenges.

Decision-making around these solutions requires governments to navigate through a complex set of opportunities and tradeoffs. For example, a simple technology developed by Egypt's Agricultural Research Center (ARC) to combat heat stress in wheat, cotton, sugarcane, or citrus is more than the introduction of a simple change in the variety that farmers cultivate in their fields. It is a complex solution to several simultaneous problems: an improvement in yield performance under different climatic scenarios, a driver of change in land use decisions, a potential source of reductions in greenhouse gas emissions, and a new pathway for greater profitability in small-scale farming. But does the country's agricultural innovation system have the capacity to develop and deliver the technology?

Ultimately, an innovation system's capacity is built around the recognition that no solution is perfect, and that there will be tradeoffs across the technology's profile with respect to productivity, resilience, profitability, and environmental footprint. Science and technology have the ability to make some of these tradeoffs more tractable, provided that the enabling environment—public policies, regulatory regimes, markets, organizational cultures, and socioeconomic norms—encourages cooperation and innovation. This requires that policymakers be cognizant of the opportunities, challenges, and tradeoffs among the policy and investment decisions that relate to sustainable agriculture, which they must make on a daily basis. Without this cognizance, the contested narratives around food, science, and society only deepen the challenge of ensuring global food and nutritional security.

Often, the building blocks of an agricultural innovation system is its public research system. Understanding innovation capacity means asking questions such as whether the country is investing sufficient public resources on agricultural research and development (R&D); whether its public research system is appropriately structured, governed, managed, and financed to promote innovation; and whether there are sensible policies in place to encourage private investment in R&D. This also means asking questions about whether that same innovation system addresses the needs of heterogeneous farmers, has the capacity to reach out diverse types of farmers, and can do so in an economically efficient, effective, and timely manner?

Consider, for example, the role of the Agriculture Research Center (ARC) and the agricultural research system in Egypt more generally. With more than 8,400 full-time equivalent researchers, Egypt's agricultural R&D system is among the world's largest in terms of human resource capacity (Stads et al. 2015). Its agricultural R&D spending on per-researcher and per-farmer basis, and as a share of agricultural GDP, exceeds rates found in most other countries in the region. Moreover, agricultural R&D spending growth during the period 2009-12 grew by nearly a quarter, driven primarily by salary-related expenses at ARC, which accounts for 75 percent of researchers employed in agricultural R&D. Yet, despite these strong indicators, there is significant scope for structural, management, and financial reforms to further harmonize Egypt's public research agenda and increase its efficiency. Figuring out the precise combination of priority research areas, organizational arrangements, and funding possibilities will be critical to the future of agricultural science in Egypt.

But a research system is only as effective as the markets and institutions that put research into use by farmers. To illustrate this, consider recent work conducted by IFPRI and partners on regulations and the market for genetically modified, insect-resistant (Bt) cotton seed in Pakistan. As in Egypt, cotton is an important source of income, foreign exchange earnings, and inputs to the textile manufacturing sector in Pakistan. During the past decade, the Government of Pakistan has sought to increase its control over a poorly regulated seed market to protect farmers from sales of sub-standard seeds and traits, while also encouraging private sector investment in new seeds and traits. IFPRI has helped demonstrate the economic costs of weak regulation and the tradeoffs involved in more stringent regulation. Its work provides policy recommendations to improve varietal registration procedures, seed certification systems, implementation capacity for biosafety regulation, and intellectual property rights protections (Spielman et al. 2015).

Yet, even with effective regulation of the market for seeds and traits, Pakistan still struggles with its greatest challenge – that of improving water-use efficiency across the massive Indus River basin irrigation system. As the Government of Pakistan explores options to increase water-use efficiency in irrigation in its semi-arid and arid areas, renewed interest in local water management institutions has emerged in recent years. Recent studies by IFPRI and partners show that the existence of a local water user association increases agricultural productivity by 10 percent for farmers at the tail of the watercourse, and 8 percent for those farmers who rely only on groundwater. This highlights the significant potential for supporting informal ground and surface water markets and the potential for reducing variability from upstream dams (Mekonnen et al. 2015; Yang et al. 2016).

In neighboring India, a different type of innovation—laser land leveling (LLL)—is being promoted by the government to address similar concerns about water-use efficiency, particularly in areas characterized by high rates of groundwater extraction. At present, local governments use blanket subsidies to accelerate the purchase of water- and energy-saving LLL machinery and to generate popular support from farmers. Recent studies by IFPRI demonstrate that, while LLL reduces the costs of groundwater extraction by 25 percent, there are more effective ways of allocating subsidies to increase farmer use of LLLs, expand areas under leveling, and encourage a viable private market in LLL service provision (Lybbert et al. 2013; Bhargava et al. 2015).

Further away in Colombia, the government is exploring an entirely different set of solutions for similar problems at national level. In 2015, the Government of Colombia requested IFPRI to evaluate the potential contribution of the Agriculture Forest and Other Land Uses (AFOLU) sector to the country's plans to reduce greenhouse gas emissions. IFPRI and partners built an analytical framework to evaluate the economic viability of strategies aimed at reducing emissions with an approach that identifies returns in terms of net revenues, emissions, and trade-offs. The results of this work provided several critical recommendations, particularly with respect to the role of Colombia's livestock sector in its Low Emission Development Strategies (LEDS) for agriculture. These recommendations were used to support the country's commitments made at the Conference of Parties (COP21) meetings in Paris in 2015.

These examples illustrate just a few of the many urgent and actionable topics that require additional data and analysis to inform policy and investment decisions to advance sustainable agriculture. Other researchable topics include work that (1) demonstrates the returns to public expenditure on agricultural research, expenditure that is necessary to preempt future threats to food and nutrition security; (2) refines public policies for land management, property rights, water resource allocation, and energy production; (3) generates evidence on the economic value of novel advances in the biological and material sciences for application to agriculture sector growth; and (4) designs policies that increase the participation of smallholders and small-scale rural entrepreneurs in agricultural value chains.

Ultimately, policymaking around these types of issues requires governments to navigate through complex data, information, and analysis, making the communication of evidence-based policy recommendations critical. For example, understanding how a simple crop technology might perform under different climatic scenarios quickly becomes a complicated question when issues of competing land use, water and energy requirements, market dynamics, and technology regulations come into play. The challenge expands as decision-makers seek answers to questions about the profitability of the crop technology to different types of farmers, its broader social and economic impacts, and the capacity of a country's agricultural innovation system to develop and deliver the technology.

This means that decision-makers must become increasingly familiar with the fact that no solution is perfect: tradeoffs often exist among productivity growth, environmental sustainability, and socioeconomic welfare. It also means that researchers must communicate evidence in a manner that provides policymakers with a keen understanding of impact pathways, costs and benefits, and unintended consequences of complex scenarios. But decision-making based on well-articulated and robust evidence is critical to navigating the winding road to sustainable agriculture systems that ultimately contribute to productivity growth, welfare improvement, and environmental health.

For Egypt, this means continued research and analysis on Egypt's policy and investment options around several topics. First, what are the options for encouraging a long-term strategy for sustainable agriculture in a world of scarcity and degradation of surface and ground water, soil fertility, and biodiversity? Second, what might a climate-smart, low emissions growth strategy look like if priorities are focused on promoting efficient water, energy and land use? Third, how can Egypt continue to develop a dynamic and responsive innovation system in agriculture that relies on both public and private contributions to science and technology? And finally, what are the costs, benefits, risks, and tradeoffs of alternative technology solutions for sustainable agriculture—new seeds and traits, new farming practices, and new approaches to natural resource management?

National Perspective

Agricultural production and food supply are critical issues for the development strategy of Egypt. Agriculture still makes up about 15 percent of gross domestic product (GDP) and more than half the population lives in rural areas and derives their livelihood from agriculture. For them, raising agricultural productivity and improving markets are keys to reducing poverty and food insecurity. In addition, the purchasing power of urban households, particularly the poor, depends on the affordability of food, which is linked to agricultural productivity and functioning domestic and international agricultural markets. Moreover, protection of natural resources, particularly water and soil, is necessary to ensure that today's prosperity is not achieved at the cost of future generations.

Even though the sector's contribution to GDP has declined over the past decades, the agricultural sector in Egypt is still an important sector, not only because it provides employment to almost one third of those employed, but because it remains an important source for domestic food supply. With a predominantly arid climate, Egypt largely depends on the Nile and the surrounding fertile strip of land to feed an increasing population. Although agricultural yields have increased and significant portions of desert lands have been reclaimed to boost food production, three challenges stand out when addressing food supply and the agricultural sector issues in the country: Firstly, the high level of waste occurring along the agricultural supply chain; secondly, agricultural policies that oftentimes are not tailored towards the new opportunities and challenges facing the sector (e.g., new communication technologies, climate change etc.); and thirdly, the dearth and disconnect between agricultural research and agricultural policy.

In Egypt, there is significant waste along the agricultural value chain, be it pre- or post-harvest, which results in significant development challenges. On average, 30 percent of agricultural produce is lost along the agricultural supply chain post-harvest. There are numerous factors leading to this loss. Insufficient shelf space to accommodate the volume of agricultural produce is one. Another factor is the current setup of the agricultural retail sector. Most food retail outlets are small scale and so do not benefit from economies of scale. Furthermore, most of these outlets operate in the informal sector, a framework that does not guarantee consumer protection and oftentimes raises concerns about quality control. Pre-harvest waste reduces the efficiency along the supply chain even further. For instance, efficiency of water irrigation in the old lands is only at an estimated 50 percent. If we add to that a 30 percent waste in agricultural produce, the productivity of water, an already scarce resource, becomes alarmingly low. Achieving efficiency may be through adopting a cluster model that may help in scaling up storage capacity, or through addressing logistical flaws that spring up along the supply chain. In general, designing a policy framework that adopts efficient practices along the value chain can help set a benchmark for the use of resources.

Meanwhile, there are several inadequate or outdated policies that govern the rural sector to date. Current agricultural land policies apply only to the old lands and their development. However, almost a third of present-day agricultural land includes new land development in the desert. As a result, the sector needs a set of policies and legislations relevant to these new lands in order to guide the development process and to cater to the different environments and communal settings present in these land structures. In general, adopting policies that target value chains and their inter-sectoral linkages, rather than those that currently have a single-sector focus, can improve the policy process. Opportunities for export can be scaled up through such policy reforms. By some estimates, increased agricultural exports may raise agricultural GDP by between 2 and 3 percent per annum. This efficiency gain may be achieved through a reduction in agricultural produce waste and better developing and enhancing the food processing sector, all leading to a higher level of overall food supply.

Finally, there is a massive disconnect between agricultural research and agricultural policy. As mentioned above, Egypt's agricultural R&D system is among the world's largest in terms of human resource capacity, with numerous research centers producing agricultural related research. However, the research studies and outcomes are often not targeted at policy makers' needs, and findings are not promoted in a way to gather interest. Thus, an additional development challenge is the lack of harmonization between agricultural research and policy needs. On the other hand, the government's heavy presence in the sector as producer, procurer, and regulator may also complicate the uptake of applied agricultural research into policy.

Overall, a key to the success of such a policy reform process is for policy-makers to engage all stakeholders, and to focus on addressing the different interests of all producers involved – both large scale private sector firms and small-scale single farmer entities. Close to 80 percent of those engaged throughout the supply and value chains are private sector entities, most of which are small and medium scale enterprises. Thus, the inclusion of the private sector in the policy process and through partnerships can greatly contribute to successful reform efforts.

Breakout Group Discussions

This sub-section summarizes the findings of the breakout group discussions related to the development challenges and opportunities within the theme of food supply and natural resources, the governmental and non-governmental organizations and research institutions working on issues related to this theme, and the existing knowledge gaps and research demands within the theme.

Development Challenges and Opportunities

Challenge 1: *The greatest challenge to ensuring the supply of food and other agricultural products in Egypt is water. Few countries in the world are as dependent on irrigation, with about 99 percent of crop production being irrigated. Although Egyptian agriculture is less affected by weather-related shocks than most other countries, the annual volume of water it receives is fixed by international treaties governing the allocation of water from the Nile River. A key challenge for Egypt is adapting to the expected decline in per capita water availability over the coming decades, partly as a result of population growth and partly due to climate change. Addressing this challenge will require a combination of improved water management practices, shifting toward crops that use less water, more efficient irrigation technology, and greater use of recycled water. Family planning to reduce the population growth rate would reduce but not eliminate the need for adaptation to lower per-capita availability of water.*

A related challenge is water quality, which is threatened by salinization, agricultural chemical runoff, and bacterial contamination. Salinization has implications for agricultural productivity, while bacterial and chemical contamination can affect the health of farmers and consumers. Solutions to these challenges include improved irrigation methods, the development of salt-resistant crop varieties, better sanitation infrastructure, and more careful management of agricultural chemicals. Research is needed to explore the effectiveness of each of these approaches in order to guide public investments, agricultural research efforts, extension messages, and policy.

Challenge 2: *There is an urgent need to improve the existing systems for delivering inputs to farmers, including seed, fertilizer, and pesticides.* The development of improved varieties of the main cereals crops – wheat, maize, and rice – is essential for improving food-crop productivity, but it is not sufficient: An effective seed supply system is needed to deliver seeds to farmers, in addition to strong extension services to help farmers select among varieties. Seed quality is often an issue because it is difficult to distinguish between high- and low-quality seed. The Ministry of Agriculture and Land Reclamation is responsible for both seed certification and seed production, creating a potential conflict of interest. Because seed systems involve a mix of private seed companies and public agencies, coordination between public and private sectors is critical.

Fertilizer use is relatively high in Egypt, but the choice is limited to two types. Fertilizer subsidies have been a controversial topic in recent years, as the government has tried to reduce the fiscal burden of the subsidies without incurring adverse effects on farmers. Extension messages regarding fertilizer use need to be tailored to specific conditions on farms, taking into account soil type, crop rotation, and other factors. But to accomplish this, the extension service needs to be strengthened.

Pesticides require tighter regulations than fertilizer, because of the potential adverse effects on both farmers and consumers. Although regulations require a minimum waiting time between spraying and the sale of food crops, farmers sometimes ignore these rules, selling the produce too soon, in order to take advantage of favorable market conditions. The solution involves a combination of more effective extension services and better enforcement of food safety regulations. Currently, the responsibility for food safety is scattered across several ministries and agencies. Consolidating responsibility for food safety in one regulatory agency or at least clarifying the division of responsibilities among them would help address this problem.

Challenge 3: *The agricultural marketing systems ought to be more competitive and efficient.* Most farms in Egypt are very small, so farmers' efforts to market their crops are constrained by high costs, lack of market information, and potential collusion among traders, particularly wholesalers. Various solutions to these problems have been proposed. As already pointed out in other parts of the paper, farmers may be able to reduce their marketing costs and increase their bargaining power through the use of collective marketing. Although cooperatives are supposed to serve this function, some farmers have lost confidence in cooperatives because they are controlled by the government and often are seen as inefficient. Legislation to facilitate the formation of independent farmer organizations may address this problem. In addition, the extension service can play a role in helping farmers identify opportunities to reduce marketing costs with collective action. The lack of market information can be addressed through improved systems for delivering information to farmers. In some countries, automatically generated text messages deliver agricultural market information to farmers through their mobile phones. Another potential solution is to revive the commodity exchanges, as a way to make markets more competitive and more transparent. Before doing so, however, it would be useful to examine the reasons that the commodity exchanges have declined in importance. Finally, another potential solution to these challenges is contract farming, in which a processor or exporter contracts farmers to produce a given crop and sometimes guarantees a fixed buying price, if quality standards are met.

Agricultural marketing challenges are even more complex in the case of exports, particularly horticultural exports. Farmer diversification from lower-value cereal crops to high-value horticulture involves additional expenses and risks, but the payoff can be significant. The need for cold storage, tightly coordinated marketing channels, quality controls, and food safety regulations make this a complex and dynamic supply chain. Government action is needed to provide an enabling environment for processors and exporters, while ensuring that farmer interests are protected.

Challenge 4: *Availability of data and use of enhanced modeling techniques for policy analysis.* Particularly relevant topics include: land use allocation decisions within the irrigated Nile Valley; large-scale investments in land reclamation and ground water extraction for agricultural, industrial, and other purposes in desert areas; and livestock management systems including feed production and waste management. These types of analysis would likely hinge on modeling the economic consequences of policy, investment, and technology choices related to water use efficiency under various climate change scenarios.

Relevant Organizations and Areas of Work

Table 3 lists the governmental and non-governmental organizations and research institutions that are dealing with issues of food supply and natural resource use. Based on the participants' feedback, the organizations and institutions were divided into two sub-groups; those whose line of work is most relevant to IFPRI's work and so would classify as main organizations and institutions for collaboration, and those whose areas of work, while not directly related to IFPRI's work, may provide potential areas of collaboration or interest.

Table 3—Organizations and institutions concerned with food supply and natural resources

Governmental organizations	Private or non-governmental associations and organizations	Research institutions
<p>Main: Ministry of Agriculture and Land Reclamation (MoALR) Ministry of Water Resources and Irrigation (MWRI) Ministry of Supply and Internal Trade (MSIT) Ministry of Trade and Industry (MTI) Ministry of Planning (MoP) Central Agency for Public Mobilization and Statistics (CAPMAS)</p> <p>Other: Ministry of International Cooperation (MoIC) Ministry of Environment Ministry of Finance (MoF) Ministry of Social Solidarity (MoSS) Ministry of Local Development (MLD) Consumer Protection Agency (CPA) Organization of Fisheries Principal Bank for Development and Agricultural Credit (PBDAC) Remote Sensing Organization Organization for Nuclear Energy</p>	<p><u>NGOs and international organizations</u></p> <p>Main Gesellschaft für Internationale Zusammenarbeit (GIZ) The World Food Programme (WFP) The United Nations Development Program (UNDP) Food and Agriculture Organization of the United Nations (FAO) International Fund for Agricultural Development (IFAD) The World Health Organization (WHO)</p> <p>Other Other UN Rome Based agencies Egyptian Food Bank Misr El Kheir Orman Agency for Consumer Protection for Food and Water Caritas - Egypt Evangelical Church Missions</p> <p><u>Private sector</u></p> <p>Main: Horticultural Export Improvement Association (HEIA) Chamber of Food Industries Food Export Counsel Agricultural Export Council Federation of Industry: Chamber of Commerce Association of Poultry Producers</p> <p>Other: Dina Farms Egyptian Business Associations PICO Agriculture</p>	<p>Main Agricultural Research Center (ARC) Cairo University - Faculty of Economics and Political Science (FEPS); Faculty of Agriculture; Faculty of Veterinary Science Alexandria University - Faculty of Agriculture; Faculty of Veterinary Medicine Assiut University - Faculty of Agriculture; Faculty of Veterinary Medicine Zagazig University - Faculty of Agriculture; Faculty of Veterinary Medicine Ain Shams University Egyptian National Agricultural Library National Research Center (NRC) Egyptian Knowledge Bank Research Institute for Sustainable Agriculture (RISE) Banha University - Food Safety Program</p> <p>Other Other Faculties of Veterinary Sciences and Medicine nationwide Other Faculties of Agriculture nationwide Egypt Biotechnology Information Center The American University in Cairo - Desert Development Center Arid Land Institute Egypt Center for Economic Studies (ECES) National Planning Institute National Research Center</p>

Source: Own representation.

Knowledge Gaps and Research Demands

Several significant knowledge gaps persist around Egypt’s long-standing efforts to design and implement public policies to enhance agricultural productivity growth and natural resource conservation—the pillars to national efforts aimed at achieving food, nutrition, and environmental security. In particular, knowledge gaps around policies designed to increase the efficiency of water management practices and, more broadly, conserve Egypt’s precious natural resource base, represent the single most important element that is common across the many articulations of research demand. Immediate priorities for research and associated tools and methods include the following:

Priority 1: Find win-win solutions that enhance water use efficiency and agricultural productivity. Water is, without a doubt, one of Egypt’s most central issues when it comes to designing and implementing policies to accelerate agricultural development, economic growth, and poverty reduction. Research interests include not only the diagnosis of current trends and patterns of surface and ground water availability and usage, but also the analysis of future scenarios in which new investments in infrastructure and technology may contribute to greater water-use efficiency in agriculture. An important aspect of this topic is understanding the associated drivers of innovation around water use efficiency and, more broadly, productivity enhancement and natural resource conservation. This means understanding the role of the Agriculture Research Center (ARC), the many university-based research programs, the public sector’s extension and advisory services, and other public entities mandated to develop or promote productivity-enhancing and resource-conserving scientific and technical solutions for Egyptian agriculture. In particular, it may be worth exploring

whether changes to the organization, management, and financing of the public research and extension systems can accelerate the movement of research into use, improve the system's performance against commonly accepted indicators, and increase the economic and social returns to its research and development.

Priority 2: Identify policies and investments for sustainable "climate smart" agriculture. Examples include drip irrigation, pivot irrigation, drought and salinity tolerant crops, and water-conserving cropping systems. This involves in-depth micro-level analysis—analysis at the level of individuals, households, and communities, and analysis that explores impacts on women, youth, landless laborers, migrants, and other socially vulnerable groups. Given that every technology, practice, or input developed to enhance sustainable agriculture in Egypt results in a broad and complex range of impacts, exploration of the heterogeneity of these impacts can help refine research investment priorities and related policies. This opens the door to the application of rigorous evaluation methods to evaluate what works and for whom—how novel crop cultivars, water management systems, or farming practices improve productivity, sustainability, and welfare, and what policies, investments, and regulations might enhance their uptake and adoption.

Priority 3: Identify options for building resilience to environmental and man-made risks and shocks; assess human and environmental risks associated with a range of technologies and inputs; and develop sensible regulatory systems to simultaneously manage those risks and provide new solutions for sustainable agriculture. For example, Egypt is highly dependent on food imports and measures need to be put in place to protect the country from global shocks to the food system, such as food price crises. An example for the importance of proper regulations are genetically modified crops, particularly insect-resistant (Bt) cotton, for which biosafety regulations and implementation capacity are needed if such technologies are to be leveraged for research and commercial purposes. Overall, there is considerable scope to examine the role of rapidly advancing science and technology in the future of Egyptian agriculture. Rules and regulations can be put in place with the requisite capacity for conducting human and environmental risk assessments. Institutional reforms could provide a place for evidence-based discourse on emerging scientific opportunities that could benefit Egyptian agriculture and the livelihood of the poor.

Priority 4: Provide options for improving the performance of Egypt's agricultural innovation system and its contribution to decision-making around these choices. Particular emphasis should be placed on (1) reorganization strategies to strengthen the role and efficacy of the ARC and its interface with the private sector through public-private partnerships, joint ventures, or other mechanisms; (2) regulatory changes to strengthen the timely delivery of quality seeds and traits to farmers; or (3) innovative reforms to strengthen the role of agricultural extension and advisory services in promoting innovation among farmers and farmer organizations. Commodity- and technology-specific case study analysis can also shape policies and investments that are appropriate for meeting the needs of Egypt's changing agricultural sector.

Theme 4: Public Health and Nutrition

Setting the Stage

This sub-section summarizes the two rapid-fire presentations on key issues of public health and nutrition. The global perspective presentation focuses on the double burden of malnutrition in developing countries and rapidly rising overnutrition in the course of income growth in particular (see also presentation slides at <http://www.slideshare.net/ifpri/egypt-strategy-support-program-public-health-and-nutrition>). The national perspective presentation provides an overview of the main nutritional challenges in Egypt and possible ways forward in addressing them.

Global Perspective

Both under- and overnutrition have high individual and societal costs and limit a country's development potential. Chronic undernutrition is associated with a series of undesirable short-term outcomes (e.g. delays in cognitive development), medium-term outcomes (e.g. lower school achievement), and long-term outcomes (e.g. lower earnings and a higher probability of non-communicable chronic diseases at adulthood). Overweight and obesity have been found to be significantly associated with higher all-cause mortality. Overnutrition increases the incidence of non-communicable diseases and disability, and leads to increased healthcare costs.

Economic growth and rising household incomes have contributed to a steady fall in the prevalence of chronic undernutrition. This positive trend, however, has been accompanied by a rapid rise in overweight and obesity (Stevens et al. 2012; Black et al. 2013). Globally, the rate at which maternal overweight and obesity increase with rising wealth is higher than the accompanying decline in the prevalence of stunting (Ruel and Alderman 2013). This has led to a new problem in many low- and middle-income countries (LMIC), that is, the double burden of malnutrition or the coexistence of overnutrition and undernutrition. This coexistence has been found in the same societies, the same households, and even within mother-child pairs (Garrett and Ruel 2005; Prentice 2006).

Based on the belief that undernutrition is caused by poverty, many interventions aimed at lowering undernutrition provide households with direct cash or in-kind transfers, which often are quite substantial. Social safety net programs aimed at improving

household income, including popular conditional cash transfer programs, have contributed considerably to reducing poverty (Leroy et al. 2009). The assumption underlying these programs is that households provided with cash or in-kind transfers will use the additional resources to make healthy food choices, improving the nutritional status of all family members. IFPRI's recent work in Mexico showed that cash and in-kind transfers significantly improved household dietary diversity, but also led to a substantial increase in household calorie consumption, even though the studied households were not calorie-deficient at baseline (Leroy et al. 2010). As a consequence of the increase in calorie consumption, the Mexico program increased the average annual weight gain of adult women by 222 g per year (52 percent) in the cash transfer group and by 291 g per year (68 percent) in the in-kind transfer group, who received a basket of different foods, on top of the already steep annual weight gain in the control group (425 g). The largest effect was recorded in adult women who were already obese before the program started – 354 g per year in the cash transfer group and 518 g per year in the in-kind transfer group (Leroy et al. 2013). Moreover, the impact on child growth of relieving household budget constraints through conditional cash transfer programs was found to be small across several studies, mainly because of insufficiently defined nutrition actions within these programs (Leroy et al. 2009). Another study from Mexico reveals that maternal education can mitigate the adverse effect of increasing income on maternal weight gain and enhance the positive effect of increasing income on child growth (Leroy et al. 2014). However, how education exerts its impact is not exactly known yet and calls for additional research.

The first international Sustainable Development Goal (SDG) relates to poverty eradication and specifically seeks to reduce by half the proportion of people living in poverty by 2030. Transfer programs or other programs that reduce household poverty are needed, but they need to be carefully designed to enable them to improve the nutrition, health, and wellbeing of poor people, without contributing to the problem of unhealthy weight gain.

National Perspective

In Egypt, malnutrition poses a serious threat to public health. Although child stunting rates appeared to have fallen between 2008 and 2014, levels still remain high at national level at 21 percent, while the prevalence of anemia among children aged under five years is at 27 percent. There are also large regional disparities in food insecurity. Data shows that 30 percent of the population in Upper Egypt suffered from caloric deprivation (WFP 2011: 19), and 50 percent had poor dietary diversity (WFP 2011: 23). While child undernutrition rates present an obvious challenge, more emphasis should be drawn to the issue of child overweight and obesity. Data from the 2014 DHS show that more than a third of children were overweight or obese. If not addressed, such high levels of child obesity will have large public health implications in terms of diet-related chronic diseases.

The burden of malnutrition carries significant human and economic costs. It is estimated that undernutrition accounts for 11 percent of all child mortality cases in Egypt, resulting in the reduction of Egypt's workforce by 1 percent. The annual costs associated with child undernutrition are estimated at 20.3 billion Egyptian pounds (US\$3.7 billion), which is equivalent to 1.9 percent of Egypt's gross domestic product (GDP). With 31 percent of Egypt's population under the age of 15, addressing child malnutrition is a necessary step for the future development of the country.

In the face of these challenges, the Egyptian government has made food security one of its top priorities, and has implemented various social protection initiatives which have been undertaken by different ministries. Despite these efforts, Egypt is not yet on track to fulfill the nutrition targets set by the World Health Assembly in 2012, to be achieved by 2025. The slow improvements in the public health sector has been identified as one of the contributing factors hampering the progress in reducing malnutrition. In addition, increased population pressure from Egypt's sustained high population growth rate have been nullifying the results achieved thus far.

Moving forward, concerted efforts across multiple sectors, such as health, agriculture, and education, will be needed for rapid reduction of undernutrition in line with global goals. However, it remains unclear how multi-sectoral initiatives could be designed and effectively implemented to achieve these goals. Meanwhile, community nutrition professionals will have to conduct needs assessments to define what are the most pressing nutrition-related problems and their contributing factors, and to identify opportunities for intervention. The complex nature of the challenges at hand will require evidence-based action at the policy, health system, and community levels.

Breakout Group Discussions

This sub-section summarizes the findings of the breakout group discussions related to the development challenges and opportunities within the theme of public health and nutrition, the governmental and non-governmental organizations and research institutions working on issues related to this theme, and the existing knowledge gaps and research demands within the theme.

Development Challenges and Opportunities

Challenge 1: *The dual burden of malnutrition among women and children.* The latest estimates from the DHS survey indicate that, while 21 percent of children under five years of age are stunted, 35 percent of children aged five to 19 years are considered either

overweight or obese (DHS 2014). At the same time, the prevalence of overweight or obese women reached 85 percent in 2014 (DHS 2014). Furthermore, the coexistence of obesity and malnutrition occurs often in the same family and even in the same individual, which aggravates the nutritional scenario and narrows the scope of possible solutions due to the complexity of the phenomenon. However, progress in this area can be rapidly made if nutrition-sensitive interventions are implemented at national and local levels. Specifically, social protection programs can include nutrition components, e.g., educational workshops for mothers and children at school, and, at the same time, facilitate consumption of healthy food. Also, opportunities for addressing malnutrition during the first 1,000 days of life are promising, as such interventions are cost-effective and have long-term positive effects.

Challenge 2: The financial burden for the public sector and the loss of productivity associated with noncommunicable diseases (NCD) are expected to increase and to have large negative consequences for the country. In the short-run, the amount of resources necessary for the treatment of NCDs, such as diabetes, is likely to increase. This implies that government will need more resources to provide medical attention and treatment. In the long-run, losses in human capital associated with malnutrition due to low productivity and poor cognitive capacity are expected to be high. However, in spite of these challenges, some policies could improve the nutritional status of Egypt's population and decrease the prevalence of NCDs in the country. For example, reforms to the food subsidy system could benefit consumers by two channels: (1) by redirecting resources that are currently allocated to non-poor populations, and (2) by eliminating subsidies that incentivize the consumption of calorie-rich, but micronutrient-poor foods. In addition, putting in place targeted programs to specifically address nutrition can reduce the problem while improving efficiency. Some transfer programs are already in place, and plans for scaling up these kinds of interventions promise to ameliorate the current situation while relieving the financial pressure of the health system.

Challenge 3: The quality of antenatal and neonatal care remains low in the country. Around 20 percent of all births in 2015 were not attended by skilled personnel. Antenatal care in 33 percent of pregnancies is deficient and often does not meet international standards, as many women still have less than four medical check-ups during their pregnancy. Breastfeeding practices in many cases do not comply with the international guidelines which stipulate exclusive breastfeeding for infants under six months of age – the rate of exclusive breastfeeding for infants was 40 percent in 2014. This rate is much lower than in previous years (53 percent in 2008), suggesting that breastfeeding practices are deteriorating. Therefore, targeting interventions to pregnant and lactating mothers, as well as the dissemination of information by medical personnel can increase awareness of mothers about the benefits of breastfeeding and appropriate nutritional care for their children.

Challenge 4: Inappropriate waste management represents potential health risks for the population. In Egypt, public services of waste collection are often deficient or non-existent. Estimates for Cairo, for example, suggest that the city produces around 15,000 tons of solid waste daily with no formal means for treatment and recycling. The potential effects of waste exposure is of social concern, since hazardous substances contained in waste affect health in different ways. Waste disposal into rivers and canals can cause infections due to water contamination. It has been argued that higher incidence of low birthweight is associated with mothers living near garbage dumps and with the occurrence of various congenital malformations. Therefore, Egypt needs to develop actions to set in place an efficient and comprehensive system of waste management and disposal.

Relevant Organizations and Areas of Work

Table 4 shows the governmental and non-governmental organizations and research institutions that are concerned with public health and nutrition. Organizations and institutions are loosely listed in descending order of relevance as indicated by the discussion participants. Yet, this ordering is subjective and should be interpreted cautiously.

Table 4—Organizations and institutions concerned with public health and nutrition

Governmental organizations	Private or non-governmental associations and organizations	Research institutions
<p>Ministries</p> <p>Ministry of Health and Population (MOHP) Ministry of Social Solidarity (MOSS) Ministry of Supply and Internal Trade (MSIT) Ministry of Education (MOE) Ministry of Agriculture and Land Reclamation (MOALR)</p> <p>National institutes</p> <p>National Nutrition Institute (NNI) National Council for Childhood & Motherhood (NCCM) National Council for Women (NCW) Consumer Protection Agency (CPA) Egyptian National Competitiveness Council (ENCC) National Food Security Community – inactive</p> <p>Educational institutes</p> <p>University Hospitals, especially Kasr El-Einy and Ain-Shams Alexandria University's High Institute for Public Health Faculties of Home Economics, especially Helwan University and Banha University</p>	<p>Domestic NGOs</p> <p>Egyptian Food Bank Egyptian Cure Bank Dar Al-Orman Resala Misr El Kheir Caritas - Egypt Coptic Evangelical Organization for Social Services (CEOSS) Egyptian Lactation Consultant Association (ELCA)</p> <p>International NGOs</p> <p>Save the Children Cooperative for Assistance and Relief Everywhere (CARE) - Egypt International development agencies World Health Organization (WHO) United Nations World Food Programme (WFP) Food and Agriculture Organization of the United Nations (FAO) International Fund for Agricultural Development (IFAD)</p> <p>Private organizations</p> <p>El-Zanaty and Associates</p>	<p>National Research Center (NRC) Agriculture Research Center (ARC) Central Agency for Public Mobilization and Statistics (CAPMAS) Information and Decision Support Center (IDSC) Regional Center for Food & Feed (RCFF), Egyptian Food Safety Information Center (EFSIC) Food Technology Research Institute (FTRI)</p>

Source: Own representation.

Knowledge Gaps and Research Demands

A number of important knowledge gaps exist in the field of public health and nutrition. They can be organized in three broad areas:

- The need for a better description of the current health and nutrition situation;
- A lack of understanding of the etiology of health and nutrition problems; and
- A lack of evidence on the effectiveness of programs and policies to solve the problems.
- A fourth, cross-cutting area relates to the limited availability of information and knowledge with respect to the three areas mentioned above. The areas are discussed in more detail below.

Priority 1: Provide better description of the current health and nutrition situation. Egypt suffers from a nutrition and health information gap. What is currently known about the nutrition and health status of the population appears to be largely based on Demographic and Health Surveys (DHSs). These are limited in scope (e.g., they do not provide information on iron deficiency) and are collected only every five years, so they fail to provide up to date information on the prevalence and incidence of health and nutrition related issues, such as anemia, growth retardation (stunting), overweight, and obesity. The knowledge gap is not limited to health and nutrition status only, however. Much better data are needed on the known determinants of current health and nutrition problems, such as the prevalence of hookworm infection and description of food habits across the country; current laws and regulations; the key players in nutrition and health; current efforts and programs to address nutrition and health problems; and the annual public budget for nutrition and health-focused activities.

Priority 2: Understand the etiology of health and nutrition problems. Such problems appear to be addressed without a clear understanding of their etiology. Anemia in Egypt, for instance, is addressed by large-scale iron supplementation. Even though iron deficiency is considered to be the most common cause of anemia globally, other conditions, such as folate, vitamin B12, and vitamin A deficiencies; chronic inflammation; parasitic infections; and inherited disorders can also cause anemia. Without an in-depth understanding of the causes of the nutrition and health problems, efforts to tackle them run the risk of being ineffective. Other problems for which the causes need to be carefully examined include child undernutrition, overweight, and obesity, and changes in diet, such as the apparent recent drop in green vegetable consumption.

Priority 3: Consolidate evidence on the effectiveness of programs and policies. Current efforts to improve Egypt’s nutrition and health problems appear to be fragmented. In addition, little is known about their effectiveness. As a result, resources might be wasted on programs that make little to no difference. Once the nutrition and health problems and their etiology has been clearly described—the first two research areas above—the effectiveness of interventions to address these problem need to be developed and tested. Once effectiveness has been shown, programs can be continued and scaled-up. In addition to understanding the effectiveness of programs and policies aimed at improving the nutrition and health of the Egyptian population, research is needed on the nutrition and health impact of other policies in other sectors. This includes the effect of agricultural policies on the food system and ultimately on dietary intake. Similarly, rigorous analysis of the effects of formal education and nutrition awareness campaigns on dietary intake and nutrition outcomes is needed.

Priority 4: Create awareness by making information available and accessible. Information related to the three priority areas above needs to be made widely accessible. This will create broader awareness of current issues on nutrition and health and the causes of these problems, thereby improving transparency with respect to current programs and policies addressing the nutrition and health problems.

Cross-cutting Themes and Other Issues

This section summarizes the findings of the two plenary discussions. Some issues—particularly those that span across all themes—were added to the debate. Other issues that had been debated in the breakout group discussions were reemphasized by individual participants in the plenary discussions. These are noted here.

Need for a more integrated policy framework, especially related to agriculture, rural development, and health. For example, there is no rural development plan within Egypt’s agricultural policy which may better link rural areas and lagging regions to the national development process. Furthermore, Egypt is in need of a sustainable food system that not only focuses on increasing agricultural production, but also focuses on improving consumers’ diets. Similar to the unexplored role of agriculture for improving household diets and nutrition outcomes, as discussed in one of the breakout group discussions, there is large knowledge gap around the impact of potentially harmful farming practices and food safety violations on Egyptians’ health. Inside and outside the agricultural sector, there is need for policy to focus on and address poor food safety standards. When focusing on strategic crops for food security, the current wheat-focus is insufficient. It is important to also concentrate on other crops, including vegetables, lentils, fava beans, and sesame (which are important sources of protein for the poor) in order to appropriately tackle food and nutrition insecurity.

Enhance the links between policy research and decision making. There is large body of experiential knowledge in Egypt, but there seems to be a lack of will for seeking research advice as well as a lack of evidence-based research for knowledge generation. The Sustainable Development Goals (SDG) framework can be useful in addressing some of the national development challenges, supported by rigorous research. Using the SDG goals as guiding principles can help align and formulate national strategies, such as the formulation of a national poverty alleviation plan. Evidence-based research needs also to be requested and valued by policymakers. There are four interrelated actions that could facilitate better collaboration between policy and research:

First, an autonomous oversight body to coordinate resources and research and to evaluate development policies and programs should be established. The perception is that government-created and government-accountable support bodies have not been efficient in that regard, so another body—possibly one based on technical expertise—can better fill this gap. A model for such a technical, cross-sectoral platform could be the European Technology Platforms of the European Union, which focus on developing strategic research and innovation agendas. It is believed that such a platform created around research on Egypt’s development objectives and involving all main stakeholders would be more effective than a high-level ministerial platform, which has shown to be rarely effective in the past. Important for the success of such a body is the involvement and participation of all relevant stakeholders—including the private sector.

Second, research needs to be evidence-based, rigorous, timely, and well-disseminated—targeted towards policy makers. There is demand for development policy advice, but oftentimes evidence-based research is not available in a timely manner to advise policymakers. While a significant amount of knowledge exists, most research findings have limited capability in their current format to influence policy decision-making. Think tanks and other research institutions need to better package their research findings so that those findings are more easily accessed by policymakers. Examples of knowledge and data systems or products for policy advice include:

- **Food and nutrition security observatory:** The observatory should not depend on national surveys that are repeatedly conducted only over longer time periods of several years. Data need to be updated more frequently and be made available in a more timely manner after data collection. The observatory should also track the main determinants of food insecurity and malnutrition.

- *Series of briefs for policy makers:* The brief series should summarize recent evidence-based research findings, be targeted to policymakers, and offer them analyses of different policy scenarios in a timely manner. Best-practice dissemination models should be considered. Policy-relevant research is often poorly communicated in Egypt. Best-practice dissemination and communication of research findings should be an integral part of the research work—including utilizing social media, networking, and policy outreach opportunities.

Third, the lack of data needs to be addressed. The availability and accessibility of high-quality data was identified as a major challenge to conducting good policy research across all themes. The lack of data and information was at the heart of this discussion—both in the breakout group and in plenary discussions. In addition to the unavailability of data, oftentimes, what data is available has been found to be invalid, lacking representation at the desired level of analysis. For example, data on issues related to gender, disability, and other forms of discrimination are not available or insufficient at administrative and household levels. The shortcomings of available data partially explains their limited exploitation for policy-relevant research. Moreover, in addition to the insufficient communication of research into policy and program design, there is a general lack of rigorous research on policy and program impact.

Fourth, enhancing institutional memory and fostering critical thinking on past policies. Lack of institutional memory and critical thinking on past development strategies is a knowledge gap that is seen in the repeated shortcomings in adopted practices. New political regimes implement their own policies, without carrying out assessments of older ones to identify causes of failure or success. Further, many current policies have been previously adopted, yet the process is not informed by best practices and lessons learned. Economic assessments of past development strategies and practices are thus needed to guide future policies. Inviting key informants who were involved in previous policy-making processes to document those processes as case studies to strengthen institutional memory would be a valuable resource to inform today's policy makers of past experiences and avoid repetition of unsuccessful strategies.

Finally, raising people's awareness about the opportunities and challenges facing the country's development, and evidence-based ways to address them needs to become the objective of a wide reaching public awareness campaign in order to generate public support and buy-in.

4. SUMMARY AND CONCLUSIONS

This paper presents an innovative approach to prioritizing development policy research in Egypt with the specific objective of informing the research agenda of IFPRI's Egypt Strategy Support Program.⁴ It makes two contributions to the literature. First, much of the literature on priority-setting has focused on the health sector. Consequently, the procedures described in this paper may provide a useful resource for those interested in organizing a research priority setting workshop related to economic and food policy research. Second, the paper provides concrete, policy relevant research priorities for Egypt, including associated development challenges and opportunities, key organizations involved in the topic, and knowledge gaps and research demands. The identified priorities are ranked on their level of importance as identified by the workshop participants. Ranking was an important element in the process, since it prioritizes the key elements of our future work. However, it also presents one of the limitations of the paper, since establishing clear criteria to use in ranking policy research priorities was often difficult for the participants to do, partly because of difficulties in finding consensus and the limited time available for them to reach consensus. Despite these challenges, which are inherent to research priority setting exercises in general, the workshop enabled us to draw a concrete picture of Egypt's current economic development and food policy research demands.

The *Research Priority Matrix* (Table 5) summarizes the proposed research areas for IFPRI's Egypt SSP over the period 2015-2020. Our findings from the priority setting workshop suggest that IFPRI and its partners should focus on the following priorities:

Economic Transformation and Rural Development

- Identify actions on how Egypt's economic transformation can be made more inclusive
- Provide a roadmap for how cluster-based development can be encouraged in rural areas
- Close the data gap and promote institutional collaboration
- Study key drivers of land encroachment and provide possible solutions

Social Inclusion and Institutions

- Identify vulnerable groups and their specific situations and needs
- Establish better policies to incorporate the youth into the labor force, including in agriculture

⁴ The paper and its findings may also be of interest for anybody looking for priority setting methods for use in other countries or regions and anybody looking for policy research topics in Egypt. It is also important to note that the number and selection of topics that IFPRI will be working on will depend on the availability of funding.

- Study activities and objectives of existing social protection program
- Create sustainable strategies to graduate participants out of social protection programs

Food Supply and Natural Resources

- Find win-win solutions that enhance water use efficiency and agricultural productivity
- Identify policies and investments for sustainable “climate smart” agriculture
- Identify options for building resilience to environmental and man-made risks and shocks
- Provide options for improving the performance of Egypt’s agricultural innovation system

Public Health and Nutrition

- Provide better description of the current health and nutrition situation
- Deepen understanding of the etiology of health and nutrition problems in Egypt
- Consolidate evidence on the effectiveness of programs and policies
- Create awareness by making information available and accessible

Tackling these priority research tasks is expected to help in reducing poverty and improving food and nutrition security in Egypt. However, what will be crucial is the strengthening of links between policy research and decision making to ensure that evidence-based solutions are relevant and have a positive impact on people’s lives. Finally, raising people’s awareness about the opportunities and challenges facing the country’s development and evidence-based ways to address them needs to become the objective of public awareness activities in order to generate public support and buy-in.

Table 5—Research priority matrix

Theme: Subject	Economic transformation and rural development	Institutions and social inclusion	Food supply and natural resources	Public health and nutrition	Cross-theme
Development challenges and opportunities	Agriculture’s potential for inclusive economic transformation has not been fully leveraged. Water and land availability constrains agricultural production and agro-processing. Volatile energy availability impedes the expansion of businesses. Inappropriate education programs and slow adoption of new technologies.	Recent slowdown in economic growth has increased unemployment, poverty and food insecurity for a large share of the population. Egypt lacks a comprehensive and cost-effective social protection program. High fragmentation and a lack of coordination in social protection programs. Quality and availability of data regarding economic conditions and social needs of Egyptians is insufficient. Data lacking on costs, benefits, operations, and beneficiaries of social protection programs.	Water-related challenges are intensifying; starting with declining per capita water availability, and quality. Urgent need to improve existing systems for delivering inputs to farmers, including seed, fertilizer, and pesticides. Agricultural marketing systems ought to be more competitive and efficient. Availability of data and use of enhanced modeling techniques for policy analysis.	Dual burden of malnutrition among women and children is the most critical challenge over the short-term. Financial burden for public sector and loss of productivity associated with noncommunicable diseases (NCD) are expected to increase. Quality of antenatal and neonatal care remains low in the country. Inappropriate waste disposal and management represents potential health risks for the population.	Need for enhanced linkages between policy research and decision making.
Key organizations and research institutions	Government Ministry of Agriculture and Land Reclamation (MoALR) Ministry of Planning (MoP) Ministry of Finance (MoF) Ministry of Trade and Industry (MTI) Ministry of Water Resources and Irrigation (MWIR) Information and Decision Support Center (IDSC) Central Agency for Public Mobilization and Statistics (CAPMAS) Institute of National Planning Domestic NGOs Caritas – Egypt Sanabel Intl. NGOs & dev. agencies Cooperative for Assistance and Relief Everywhere (CARE) - Egypt Univ. & research centers American University in Cairo (AUC) Cairo University Ain Shams University Egyptian Center for Economic Studies (ECES) Other organizations Horticultural Export Improvement Association Union of Producers and Exporters of Horticultural Crops (UPEHC) Agriculture Export Council (AEC) Food Export Council (FEC)	Government Ministry of Social Solidarity (MoSS) Ministry of Supply and Internal Trade (MoSIT) Ministry of Health and Population (MoHP) Central Agency for Public Mobilization and Statistics (CAPMAS) Social Fund for Development (SFD) Domestic NGOs Association of Upper Egypt For Education and Development (AUUED) Coptic Evangelical Organization for Social Services (CEOSS) INJAZ Egypt Intl. NGOs & dev. agencies United Nations Development Programme (UNDP) United Nations Industrial Development Organization (UNIDO) Caritas- Egypt Univ. & research centers American University in Cairo (AUC) Baseera- The Egyptian Center for Public Opinion Research Cairo University - Faculty of Economics and Political Science (FEPS)	Government Ministry of Agriculture and Land Reclamation (MoALR) Ministry of Water Resources and Irrigation (MWIR) Ministry of Supply and Internal Trade (MSIT) Domestic NGOs Egyptian Food Bank Misr El Kheir Dar Al-Orman Intl. NGOs & dev. agencies International Fund for Agricultural Development (IFAD) United Nations World Food Programme (WFP) Food and Agriculture Organization of the United Nations (FAO) Univ. & research centers Cairo University - Faculty of Economics and Political Science (FEPS); Faculty of Agriculture Agricultural Research Center (ARC) Other organizations Horticultural Export Improvement Association (HEIA) Federation of Industry: Chamber of Commerce Chamber of Food Industries	Government Ministry of Health and Population (MOHP) National Nutrition Institute (NNI) Domestic NGOs Egyptian Food Bank Misr El Kheir Dar Al-Orman Intl. NGOs & dev. agencies World Health Organization (WHO) United Nations World Food Programme (WFP) Food and Agriculture Organization of the United Nations (FAO) Univ. & research centers Kasr El-Einy and Ain-Shams University Hospitals Alexandria University’s High Institute for Public Health National Research Center (NRC) Private organizations El Zanaty and Associates	New multi-stakeholder policy-research coordination body, like EU’s European Technology Platforms, should be established.
Knowledge gaps and research demands	Identify actions for how Egypt’s economic transformation can be made more inclusive Provide a roadmap for how cluster-based development can be encouraged in rural areas Study key drivers of land encroachment and provide possible solutions Close data gaps and promote institutional collaboration	Identify vulnerable groups and their specific situations and needs Establish better policies to incorporate youth into the labor force, including in agriculture Study activities and objectives of existing social protection program Create sustainable strategies to graduate participants out of social protection programs	Find win-win solutions that enhance water use efficiency and agricultural productivity Identify policies and investments for “climate smart” agriculture Identify options for building resilience to environmental risks and shocks Provide options for improving performance of Egypt’s agricultural innovation system	Provide better description of the current health and nutrition situation in Egypt Develop better understanding of the etiology of health and nutrition problems Consolidate evidence on the effectiveness of programs and policies Create awareness by making information available and accessible	Need for a more integrated policy framework, especially related to agriculture, rural development, and health.

Source: Own representation.

REFERENCES

- Babu, S. C., and A. Tashmatov, ed. 2000. *Food Policy Reforms in Central Asia: Setting the Research Priorities*. Washington, DC: International Food Policy Research Institute.
- Babu, S. C., and S. Khaila. 1996. "Priority Setting in Food and Agricultural Policy Research: A Case Study and Lessons from Malawi." *Quarterly Journal of International Agriculture* 35 (2): 176–191.
- Behrman, J., and J. Hoddinott. 2000. *An Evaluation of the Impact of PROGRESA on Pre-School Child Height*. Washington, DC: International Food Policy Research Institute.
- Bhargava, A., T.J. Lybbert, and D.J. Spielman. 2015. *The Public Benefits of Private Technology Adoption: Localized Spatial Externalities of Water-conserving technology Adoption in Uttar Pradesh, India*. IFPRI Discussion Paper no. 1455. Washington, DC: International Food Policy Research Institute.
- Black, R., C. Victora, and S. Walker. 2013. "Maternal and Child Undernutrition and Overweight in Low-income and Middle-income Countries." *The Lancet* 9890: 427-451.
- Central Agency for Public Mobilization and Statistics. 2015. *Statistical Yearbook*. Cairo. Accessed March 29. http://www.msrintra-net.capmas.gov.eg/pdf/Electronic_year_book%202015//PDF/environment/Untitled.pdf
- Council on Health Research for Development. 2000. *Priority Setting for Health Research: Lessons from Developing Countries*". The Working Group on Priority Setting, 15:2 pp 130-6.
- De Pinto, A., A. Haruna, M. Li, G. Hyman, B. Creamer, H.Y. Kwon, J. B.V. Garcia, A. Coca, J. Tapasco, J.D. Martinez, and J.D. Hoyos. 2016. *Low Emission Development Strategies for Agriculture and Other Land Uses: The Case of Colombia*. Mimeo.
- Ecker, O., P. Al-Riffai, C. Breisinger, and R. El-Batrawy. 2016. *Nutrition and Economic Development: Exploring Egypt's Exceptionalism and the Role of Food Subsidies*. Washington, DC: International Food Policy Research Institute. Forthcoming.
- Fiszbein, A., R. Kanbur, and R. Yemtsov. 2014. "Social Protection and Poverty Reduction: Global Patterns and Some Targets." *World Development* 61: 167-177.
- Ghaffar, A., T. Collins, S. A. Matlin, and S. Olifson. 2009. *The 3D Combined Approach Matrix: An Improved Tool for Setting Priorities in Research for Health*. Geneva: Global Forum for Health Research.
- Ghodake, R. D. 2001. *Research Priorities for the Agriculture, Forestry and Fisheries Sectors in the Pacific Sub-region: A Synthesis*. Sixth Executive Committee Meeting of APAARI and Expert Consultation on ARD Priority Setting. Bangkok.
- Garrett, J., and M.T. Ruel. 2005. "The Coexistence of Child Undernutrition and Maternal Overweight: Prevalence, Hypotheses, and Programme and Policy Implications." *Maternal and Child Nutrition* 1 (3): 185–196.
- Gelli, A., C. Hawkes, J. Donovan, J. Harris, S. L. Allen, A. de Brauw, S. Henson, N. L. Johnson, J. Garrett, and D. Ryckembusch. 2015. *Value Chains and Nutrition: A Framework to Support the Identification, Design, and Evaluation of Interventions*. IFPRI Discussion Paper 1413. Washington, DC: International Food Policy Research Institute (IFPRI).
- Gertler, P. 2004. "Do Conditional Cash Transfers Improve Child Health? Evidence from PROGRESA's Control Randomized Experiment." *American Economic Review* 94(2): 336-341.
- Government of Egypt. 2015a. *Egypt's 5 Five Year Macroeconomic Framework and Strategy 2014/2015-2018/2019*. Sharm El-Sheikh.
- . 2015b. *Sustainable Development Strategy: Egypt's Vision 2030 and Medium Term Investment Framework 2014/2015-2018/2019*. Sharm El-Sheikh.
- . 2015c. *Egypt Economic Development Conference Brochure*. Sharm El-Sheikh.
- Hoddinott, J., D. Gilligan, M. Hidrobo, A. Margolies, S. Roy, S. Sandström, B. Schwab, and J. Upton. 2013. *Enhancing WFP's Capacity and Experience to Design, Implement, Monitor, and Evaluate Vouchers and Cash Transfer Programmes: Study Summary*. Washington, DC: International Food Policy Research Institute.
- International Food Policy Research Institute (IFPRI). 2013. *IFPRI Strategy 2013–2018: Food Policy Research in a Time of Unprecedented Challenges*. Washington, DC.
- Janssen, W. and A. Kissi. 1997. *Planning and Priority Setting for Regional Research: A Practical Approach to Combine Natural Resource Management and Productivity Concerns*. Research Management Guidelines No. 4. International Service for National Agricultural Research, The Hague.
- Leroy, J.L., J. P. Habicht, T. Gonzalez De Cossio, and M. T. Ruel. 2014. "Maternal Education Mitigates the Negative Effects of Higher Income on the Double Burden of Child Stunting and Maternal Overweight in Rural Mexico." *The Journal of Nutrition* 144 (4): 765–70.
- Leroy, J.L., P. Gadsden, T. González de Cossío, and P. Gertler. 2013. "Cash and in-Kind Transfers Lead to Excess Weight Gain in a Population of Women with a High Prevalence of Overweight in Rural Mexico." *The Journal of Nutrition* 143 (3): 378–83.

- Leroy, J.L., P. Gadsden, S. Rodriguez-Ramirez, and T. Gonzalez De Cossio. 2010. "Cash and In-Kind Transfers in Poor Rural Communities in Mexico Increase Household Fruit, Vegetable, and Micronutrient Consumption but Also Lead to Excess Energy Consumption." *Journal of Nutrition* 140: 612–617.
- Lybbert, T.J., N. Magnan, D.J. Spielman, A. Bhargava, and K. Gulati. 2013. Targeting Technology to Reduce Poverty and Conserve Resources: Experimental Delivery of Laser Land Leveling to Farmers in Uttar Pradesh, India. Discussion Paper no. 1274. Washington, DC: International Food Policy Research Institute.
- Leroy, J.L., M. T. Ruel, and E. Verhofstadt. 2009. "The Impact of Conditional Cash Transfer Programmes on Child Nutrition: A Review of Evidence Using a Programme Theory Framework." *Journal of Development Effectiveness* 1 (2): 103–129.
- Mekonnen, D., H. Channa and C. Ringler. 2015. "The impact of water users' associations on the productivity of irrigated agriculture in Pakistani Punjab." *Water International* 40(5-6): 733-747.
- Ministry of Health and Population [Egypt], El-Zanaty and Associates [Egypt], and ICF International. 2015. Egypt Demographic and Health Survey 2014. Cairo and Rockville, Maryland, USA: Ministry of Health and Population and ICF International.
- Nuyens, Y. 2007. Setting Priorities for Health Research: Lessons from Low- and Middle-income Countries. *Bulletin of the World Health Organization* 85(4). <http://www.who.int/bulletin/volumes/85/4/06-032375.pdf>
- Okello, D., and P. Chongtrakul. 2000. A Manual for Research Priority Setting Using The ENHR Strategy. Geneva: Council on Health Research for Development.
- Prentice, A.M. 2006. "The Emerging Epidemic of Obesity in Developing Countries." *International Journal of Epidemiology* 35 (1): 93–99.
- Ruel, M.T., and H. Alderman and Maternal and Child Nutrition Study Group. 2013. Nutrition-sensitive Interventions and Programmes: How Can They Help to Accelerate Progress in Improving Maternal and Child Nutrition?" *The Lancet* 382.9891 (2013): 536-551.
- Schultz, T. P. 2000. Final Report: The Impact of PROGRESA on School Enrollments. Washington, DC: International Food Policy Research Institute.
- Shultz, T.P. 2004. "School Subsidies for the Poor: Evaluation the Mexican Progresa Poverty Program." *Journal of Development Economics* 74(1): 199-250.
- Skoufias, E., and B. McClafferty. 2001. Is PROGRESA Working? Summary of the Results of an Evaluation by IFPRI. Washington, DC: International Food Policy Research Institute.
- Sibbald, S.L., A. Singer, R. Upshur and D. K. Martin. 2009. Priority Setting: What Constitutes Success? A Conceptual Framework for Successful Priority Setting. *BMC Health Services Research* 9:43. <http://www.biomedcentral.com/content/pdf/1472-6963-9-43.pdf>
- Spielman, D.J., H. Nazli, X. Ma, P. Zambrano, and F. Zaidi. 2015. "Technological Opportunity, Regulatory Uncertainty, and the Economics of Bt Cotton in Pakistan." *Agbioforum* 18(1): 98–112.
- Stads, G.-J., H. Moussa, and R. Badwan. 2015. Egypt: Agricultural R&D Indicators Factsheet. Washington, DC and Cairo: International Food Policy Research Institute and Agricultural Research Center.
- Stevens, G.A., G.M. Singh, Y. Lu, G. Danaei, J.K. Lin, M.M. Finucane, A.N. Bahalim, R.K. McIntire, H.R. Gutierrez, M. Cowan, C.J. Paciorek, F. Farzadfar, L. Riley, and M. Ezzati. 2012. "National, Regional, and Global Trends in Adult Overweight and Obesity Prevalences." *Population Health Metrics* 10 (1): 1.
- Viergever, R. F., S. Olifson, A. Ghaffar, and R. F. Terry. 2010. "A checklist for health research priority setting: nine common themes of good practice." *Health Research Policy and Systems* 8:36.
- World Bank. 2015. World Development Indicators. Accessed March 29. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators>
- World Bank. 2015. The State of Social Safety Nets 2015. Washington, DC: World Bank.
- World Food Programme. 2011. The Status of Food Security and Vulnerability in Egypt, 2009. Cairo: World Food Programme.
- World Health Organization. 2012. Strategy on Health Policy and Systems Research: Changing Mindsets. Geneva: World Health Organization.
- Yang, Y.C.E, C. Ringler, C. Brown, and A. Mondal. 2016. Modelling the Agricultural Water-energy-food Nexus in the Indus River of Pakistan. Mimeo.

APPENDIX: LIST OF WORKSHOP PARTICIPANTS

Table A1—Participating national experts

Name	Sex	Organization	Position	Other/former posts
1 Abla Abdel Latif	F	Egyptian Center for Economic Studies	Executive Director and Director of Research	Chairwoman of Egypt's Presidential Advisory Council for Economic Development; Professor of Economics, American University in Cairo
2 Mohamed Abdel Wahab	M	Central Agency for Public Mobilization and Statistics	Statistician	
3 Ahmed Abdel Wahab	M	Ain Shams University	Assistant Professor of Agricultural Microbiology	
4 Ali Abdelaziz Ali	M	Ain Shams University	Professor of Food Science	Vice President for Post-Graduate Studies and Research, Ain Shams University
5 Mohamed Abolwafa	M	United States Agency for International Development-Egypt	Agriculture and Agribusiness Program Manager	
6 Riham Abu Ismail	F	World Food Programme	Vulnerability Assessment and Mapping (VAM) Officer	
7 Naglaa Ahmed	F	Heliopolis University for Sustainable Development	Marketing Specialist, Sustainable Development Department	
8 Agharid Amin	F	Egyptian Food Bank	Resource Development and Marketing Director	
9 Mohamed Aw-Dahir	M	Food and Agriculture Organization of the United Nations - Regional Office for Near East and North Africa	Regional Food Systems Economist	
10 Hala Barakat	F	American University in Cairo	Master's Student, Economics in International Development Program	
11 Adel Beshai	M	American University in Cairo	Professor of Economics	Former member of the Higher Council for Reform of Agricultural Policy; member of Egypt's Shura Council (Upper House of Parliament)
12 Maha Rabbat	F	MENA Health Policy Forum	Executive Director	Former Minister of Health; former Head of the Public Health Department at Qasr Al-Aini Medical School, Cairo University
13 Nivine El-Kabbag	F	Ministry of Social Solidarity	Assistant to the Minister for Social Protection	Former Managing Partner, MENA for Research and Consultancy
14 Fatma El-Zanaty	F	El-Zanaty and Associates	President	Professor of Statistics, Cairo University
15 Gihan Fouad	F	National Nutrition Institute	Head of the Infection Control Unit, Nutritional Requirements and Growth Department	Assistant Professor of Pediatrics
16 Ahmed Gamal	M	Central Agency for Public Mobilization and Statistics	Statistician	
17 Hanan Guirguis	F	Egyptian Center for Public Opinion Research (Baseera)	Operations Director	Former Senior Researcher, Evidence-Based Population Policy Project
18 Heba Handoussa	F	Egypt Network for Integrated Development	Managing Director	Former Managing Director of the Economic Research Forum; Professor of Economics, American University in Cairo
19 Heba Hany	F	International Labor Organization	Program Assistant, Decent Work for Women in Egypt and Tunisia Project	
20 Habiba Hassan-Wassef	F	National Research Center	Senior Researcher	
21 Ithar Khalil	F	World Food Program	Head of Climate Change and Livelihood Unit	

Table A1—Continued.

Name	Sex	Organization	Position	Other/former posts
22 Hussein Mansour	M	Ministry of Trade and Industry	Head of the National Egyptian Food Safety Authority	
23 Atef Nassar	M	Water Research Center	Deputy Director for Research Projects	
24 Ali Raafat	M	Ain Shams University	Professor of Agriculture	
25 Racha Ramadan	F	Cairo University	Assistant Professor of Economics	
26 Rania Rouchdy	F	Population Council	Senior Research Manager in the Poverty, Gender, and Youth Program	
27 Mona Said	F	American University in Cairo	Associate Professor of Economics	
28 Ahmed Soliman	M	Ministry of Planning	Senior Researcher	
29 Annie Steed	F	United States Agency for International Development-Egypt	Agriculture Team Leader	
30 Tarek Tawfik	M	Cairo Poultry Company	Managing Director	Head of Food Security and Safety Sub-Council, Egyptian National Competitiveness Council (ENCC)
31 Isin Tellioglu	F	Food and Agriculture Organization of the United Nations - Regional Office for Near East and North Africa	Trade Economist and Junior Professional Officer	
32 Nadia Zakhary	F	National Council for Women	Member	Former Minister of Scientific Research
33 Aya Zoheir	F	Ministry of Planning	Economic Researcher	

Source: Own representation.

Table A2—Participating IFPRI staff and collaborators

Name	Sex	Organization	Position	Role in workshop
1 Fatma Abdelaziz	F	IFPRI	Senior Research Assistant (Egypt)	Note taker
2 Perrihan Al-Riffai	F	IFPRI	Senior Research Analyst	Note taker
3 Clemens Breisinger	M	IFPRI	Country Program Leader (Egypt)	Organizer
4 Daniel Burnett	M	IFPRI	Media Relations Specialist	Organizer
5 Paul Dorosh	M	IFPRI	Division Director	Discussion Facilitator
6 Olivier Ecker	M	IFPRI	Research Fellow	Organizer
7 Hagar El-Didi	F	IFPRI	Senior Research Assistant (Egypt)	Note taker
8 Hoda El-Enbaby	F	IFPRI	Senior Research Assistant (Egypt)	Note taker & Organizer
9 Jose Luis Figueroa	M	IFPRI	Associate Research Fellow (Egypt)	Discussion Facilitator & Speaker
10 Laila Kenawy	F	UNIDO	Project Officer	Note taker
11 Jef L Leroy	M	IFPRI	Senior Research Fellow	Discussion Facilitator & Speaker
12 Yifei Liu	F	IFPRI	Communications Specialist	Organizer
13 Nicholas Minot	M	IFPRI	Senior Research Fellow	Discussion Facilitator
14 Mogeda Ramadan	F	IFPRI	Office Manager (Egypt)	Organizer
15 David Spielman	M	IFPRI	Senior Research Fellow	Discussion Facilitator & Speaker
16 Jean-Francois Trinh Tan	M	IFPRI	Research Analyst	Note taker
17 Xiaobo Zhang	M	IFPRI	Senior Research Fellow	Discussion Facilitator & Speaker

Source: Own representation.

ABOUT THE AUTHORS

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