



Assessment of Egypt's Agricultural Sector Competitiveness

Volume I: Synthesis of Principal Findings and Recommendations

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ACRONYMS AND ABBREVIATIONS

Abt	Abt Associates Inc.
ACC	Arab Communication Consult
ADCA	Agricultural Collection and Analysis
AFTA	Arab Free Trade Agreement
AGERI	Agricultural Genetic Engineering Research Institute
AgLink	Agricultural Linkages for Egypt Project
ALCOTEXA	Alexandria Cotton Exporters Association
ALEB	Agriculture-Led Export Businesses
APRP	Agricultural Policy Reform Project
ARC	Agricultural Research Center
ATUT	Agricultural Technology Utilization and Transfer Project
BASA	Business Association Strengthening Activity
CAC	Cotton Allocation Committee
CAPMAS	Central Agency for Public Mobilization and Statistics
CBI	Centre for the Promotion of Imports from Developing Countries
CBS	Center for Business Support
CIF	Cost, Insurance, and Freight
CLE	CropLife Egypt
COMESA	Common Market for Eastern and Southern Africa
DAI	Development Alternatives Inc.
DCP	Digestible Crude Protein
DRC	Domestic Resource Cost
EAGA	Egyptian Agribusiness Association
EATSAP	Egyptian Association of Traders of Seeds and Agricultural Pesticides
ECCA	Egyptian Cold Chain Association
ECRI	Egyptian Cotton Research Institute
EEA/ExpoLink	Egyptian Exporters Association
EEC	Egyptian Export Center
EEPC	Egyptian Export Promotion Center
ELS	Extra Long Staple Cotton
EMPA	Egyptian Milk Producers Association
ERSAP	Economic Reform and Structural Adjustment Program
ESAS	Egyptian Seed Association
EU	European Union
EUREGAP	The Global Partnership for Sustainable Agriculture of the European Retailers Program
EUROSTAT	European Union Statistical Database
FAO	UN Food and Agricultural Organization
FAOSTAT	Food and Agriculture Organization of the United Nations Statistical Database
FEI	Federation of Egyptian Industries
GAFRD	General Authority for Fish Resources Development
GAP	Good Agricultural Practices

GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GESU	Genetic Engineering Services (AGERI)
GOE	Government of Egypt
GTZ	German Aid Agency
HACCP	Hazard Analysis Critical Control Points
HAD	High Aswan Dam
HEIA	Horticultural Export Improvement Association
IARC	International Agricultural Research Centers
ICAC	International Cotton Advisory Committee
ICLARM	International Center for Living Aquatic Resources Management
IDRC	International Development Research Centre
IESC	International Executive Service Corps
IFPRI	International Food Policy Research Institute
IQF	Individually Quick Frozen
IRRI	International Rice Research Institute
ITC	International Trade Center, UNCTAD
LE	Egyptian Pounds
LS	Long Staple Cotton
M&E	GTG Monitoring and Evaluation Unit
MALR	Ministry of Agriculture and Land Reclamation
MFA	Multi-Fiber Agreement
MFN	Most Favored Nation
MLS	Medium Long Staple Cotton (check with Lamb)
MVE	Monitoring, Verification and Evaluation Unit
MWRI	Ministry of Water Resources and Irrigation
NARIs	National Agricultural Research Institutions
NARP	National Agricultural Research Project
NARS	National Agricultural Research System
NGO	Non-Governmental Organization
NRC	National Research Center
NTAE	Non-Traditional Agricultural Exports
NTR	Non-Tradable
NTRV	Non-Tradable Value
PBDAC	Principal Bank for Development and Agricultural Credit
	Pesticides
REC	Research and Extension Councils
SDT	WTO Special and Differential Treatment
SME	Small and Medium Enterprises
SPS	Sanitary and Phyto-Sanitary
TDN	Total Digestible Nutrients
TPRM	WTO Trade Policy Review Mechanism
TR	Tradable
TRIPS	Trade-Related Aspects of Intellectual Property Rights
TRV	Tradable Value
UHT	Ultra High Temperature

USAID/Egypt
USG
WPRP
WTO
YLCV

U.S. Agency for International Development, Egypt Mission
U.S. Government
Water Policy Reform Program
World Trade Organization
Yellow Leaf Curl Virus

TABLE OF CONTENTS

EXECUTIVE SUMMARY	xiii
CHAPTER ONE	
INTRODUCTION	1
What Did USAID Ask the Assessment Team To Do?.....	1
Organization of this Assessment	1
What Did the Assessment Team Do?.....	2
The Team’s Methodology and Approach.....	2
About Competitiveness	3
About Priorities	4
CHAPTER TWO	
USAID INTERVENTIONS IN THE AGRICULTURAL SECTOR	5
EVOLUTION OF USAID PROGRAMS.....	5
ILLUSTRATIVE PAST INTERVENTIONS	5
The 1980s	6
CURRENT USAID-SUPPORTED AGRICULTURAL PROGRAMS	8
The 1990s To Date	8
LESSONS LEARNED.....	13
Lessons Learned by Large-Scale Projects.....	13
Lessons Learned by Smaller-Scale Projects.....	15
Lessons Learned by Egyptian-led Projects	17
Is There an Ideal Approach?	17
CHAPTER THREE	
ALTERNATIVE GROWTH SCENARIOS	19
THE GENERAL RELATIONSHIP BETWEEN AGRICULTURAL GROWTH AND EMPLOYMENT ...	21
TARGET GROWTH RATES BY COMMODITY GROUP.....	23
SOURCES OF OUTPUT GROWTH	25
Yield.....	25
Area	26
Unit Value	27
PRODUCTION AND MARKETING CONSTRAINTS.....	27
Marketing	28
Comparative Advantage in Agricultural Commodities.....	28
KEY CONSTRAINTS.....	29
Cotton.....	29
Cereals.....	29
Other Field Crops.....	30

Horticulture	30
Livestock	30
Efficiency of Input Use—Fertilizer.....	31
Efficiency of Input Use—Water	31
Achieving the Aggregate Agricultural Growth Rate.....	32
EMPLOYMENT IMPACT OF THE TARGETED GROWTH RATES.....	33
Base Data.....	33
Growth Rates.....	33
Employment Impact of Rapid Agricultural Growth	34
ALTERNATIVES TO AGRICULTURE-LED GROWTH.....	35
De-Emphasizing Agriculture.....	35

CHAPTER FOUR

ANALYSIS OF RECOMMENDED COMMODITIES: CONSTRAINTS, AND OPPORTUNITIES

	39
INTRODUCTION.....	39
OVERVIEW OF EGYPTIAN AGRICULTURE.....	39
HORTICULTURE	40
Non-Traditional Crops	40
Traditional Crops.....	44
Domestic and Export Growth Potential	48
Conclusions and Recommendations.....	50
LIVESTOCK AND POULTRY	52
Livestock	53
Poultry	57
Recommendations	59

CHAPTER FIVE

POLICY AND POLICY IMPLEMENTATION ISSUES CRITICAL TO EGYPTIAN AGRICULTURE

	63
OVERVIEW	63
MACROECONOMIC ISSUES	64
Trade Policy	64
INCREASED MARKET ACCESS.....	65
ANTI-DUMPING LEVIES AND EXPORT SUBSIDIES	65
SANITARY AND PHYTO-SANITARY REGULATIONS.....	65
DOMESTIC AGRICULTURAL SUBSIDIES	66
STATE TRADING.....	66
INTELLECTUAL PROPERTY RIGHTS AND BIOTECHNOLOGY.....	67
TRANSPARENCY AND CONSULTATION.....	67
Exchange Rate Policy.....	67
Privatization and Competitiveness.....	68
Poverty Alleviation	68

NATURAL RESOURCE POLICIES	68
Water Policy	68
SECTORAL POLICIES AND REGULATIONS.....	69
Horticulture	69
Cereals.....	69
Cotton.....	70
Livestock.....	70
INSTITUTIONAL ISSUES.....	70
Customs.....	70
Agriculture Extension Service	71
Agricultural Research.....	72
Biotechnology	73
Statistics	74
LAND TENURE.....	75
INFRASTRUCTURE ISSUES.....	76
POLICY AND REGULATORY ISSUES.....	77
Recommendations	78
Future Policy Analysis	78
CHAPTER SIX	
THE ROLES OF THE PRIVATE AND PUBLIC SECTORS	79
PUBLIC-PRIVATE COOPERATION: KEY TO AGRICULTURAL PROGRESS	79
Egypt's Private Sector.....	79
The Public Sector	86
RECOMMENDATIONS: PRIVATE SECTOR.....	87
RECOMMENDATIONS: PUBLIC SECTOR.....	88
CHAPTER SEVEN	
ALTERNATIVE USAID STRATEGIES	89
DISCUSSION OF ALTERNATIVE STRATEGIES	89

LIST OF TABLES AND FIGURES

Table

3-1	Target Agricultural Growth Rates by Commodity Group, 1999 Base.....	23
3-2	Target Sources of Growth, by Commodity, Hypothetical	24
3-3	Demand Growth under High, Balanced Growth Scenario.....	24
3-4	Egypt Compared with Selected Countries, Yield of Specified Crops, 2001.....	26
3-5	Domestic Resource Cost, Various Commodities	29
3-6	Domestic Resource Cost, Livestock Products.....	30
3-7	Three Hypothetical Situations of Agricultural Growth.....	31
3-8	GDP and Employment Proportion, by Sector, Hypothetical	34
3-9	Employment and GDP Growth Rates, by Sector, Hypothetical	34
3-10	Jobs Generated in the Rural and Urban Sub-Sectors, Fast and Slow Growth in Agriculture, 2002	35
4-1	Export Growth Rate Projections, 2002-2007, 2012	49
4-2	Livestock/Poultry Consumption Data	53
5-1	Policy Matrix by Topic and Commodity.....	78
7-1	Differences among Recommended USAID Intervention Areas	90

Figure

4-1	Egyptian Crops in 2000/01.....	40
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EXECUTIVE SUMMARY

This report assesses the key opportunities and constraints for increasing the contribution of the agricultural sector to economic and employment growth in Egypt. USAID/Egypt is reviewing its agricultural sector strategy in light of anticipated reductions in funding and the completion of two major agricultural projects within the next six months. This report provides the analytical basis and recommendations for developing and implementing new interventions in the sector that are consistent with USAID/Egypt's 2000-2009 Strategy to promote a "Globally Competitive Economy Benefiting Egyptians Equitably."

Key Assumptions

USAID's commitment to both equitable growth and increased competitiveness sets important parameters for this assessment. The principal consequence is the significance that rural farm and non-farm employment has in our analysis and resulting recommendations. Briefly stated, this assessment is based on an economic model (described in detail in the assessment) that shows that the greatest employment gains in the Egyptian economy arise from the high multiplier effects from increased agricultural incomes. To achieve these increases in rural agricultural incomes requires paying special attention to the constraints affecting smallholders. Furthermore, since some commodity sectors offer greater comparative advantage (such as cotton), market potential (such as horticulture), and opportunity for productivity increases (such as livestock) than others, the Assessment Team places greater emphasis on these commodity systems than on others such as sugar or cereals.

The second major factor conditioning our analysis and recommendations is the assumption that USAID/Egypt will have fewer resources, perhaps significantly fewer, to devote to achieving its development goals in over the near to mid term. The major consequence of this assumption is the prioritization and ensuing limitations on our recommendations for future interventions in the agricultural sector. This has been a useful parameter for the assessment because it focused attention on those actions and activities that the Assessment Team believes will have the greatest impact. Although there are innumerable constraints to be addressed and opportunities to seize to improve the productivity, value added, and competitiveness of the Egyptian agricultural sector, the team's findings lead to a few high-priority recommendations for USAID action.

Why Agriculture?

Agriculture represents a significant (17 percent of GDP) but by no means dominant sector of the Egyptian economy. Yet development research across a broad array of countries suggests that rapid agricultural growth results in the quickest employment growth, so it is the best entry point for ensuring that economic growth is broadly participatory and hence equitable. The difference between rapid (4.8 percent per year) and slow (2.8 percent per year) growth in Egyptian agriculture represents 300,000 more jobs per year. About 15 percent of those

additional jobs are in agricultural production, about one-fourth in the agribusiness input and output marketing activities and about 60 percent in the rural non-farm consumer goods and services sector.

The rural non-farm sector is almost entirely a producer of non-tradable goods and services and occupies 44 percent of the labor force. Agriculture is the dominant source of increased demand for the rural non-farm sector. Without rapidly rising farm incomes, the essential increased demand for the goods and services provided by the employment-intensive rural non-farm sector will not exist.

This report documents how agricultural growth can be accelerated to achieve nearly a 5 percent growth rate through increased productivity, efficiency, and competitiveness. Such a growth rate, with its profound impact on employment growth, requires major acceleration in each of five commodity groups delineated in our analysis. We find that improved policy is critical to each of the commodity groups so we first delineate a means of setting priorities for policy change, then discuss the means of implementing priority changes and associated cash transfer payments, and finally suggest a significant set of development interventions designed to further that end. We also project a high rate of return to technical assistance throughout the value chain in the horticulture and livestock sectors (which together account for nearly three-fourths of increments to fast growth in agriculture).

Why Emphasize Agriculture Now?

This is an unusually propitious time for USAID to provide major assistance to accelerating agricultural growth. There is momentum in its past programs in policy reform and export development. The employment problem in Egypt has become increasingly acute, particularly as rationalization in urban employment dumps even more people onto the unemployment roles. Opportunities and threats are expanding rapidly with an increasing globalization of food and fiber markets and the enactment of WTO conditions.

What Is New?

This assessment outlines a program to support Egyptian agriculture that builds on USAID experience but presents new approaches to address the needs and realities of 21st century agriculture in Egypt. The five key elements are:

1. Increasing agricultural incomes to stimulate increased rural non-farm employment.
2. Improving the productivity and competitiveness of smallholders to achieve increased incomes.
3. Broadening the horticultural development strategy to diversify crops and markets, enhance the role of small growers as suppliers to exporters, integrate the fresh and processed segments of the industry, and expand the use of good agricultural practices in domestic horticulture.

4. Improving the smallholder livestock sector as a means to increase agricultural incomes, especially for women who dominate this sector.
5. Targeting policy reform and implementation linked to the achievements of points 1-4.

Policy Reform and Implementation

Findings

Policy reform and implementation in Egypt are gradual processes, but processes that have seen important changes in the structure and operation of the agricultural sector. Egyptian agriculture is now more responsive to domestic and international market forces, less constrained by government involvement in production and marketing decisions, and more open to competition than ever before. Much of this progress stems from USAID's commitment to high quality policy analysis and reforms, constructive interaction with the government and private sector, and detailed monitoring and evaluation. However, policy constraints continue to prevent Egypt from fully realizing the comparative advantage it has in most commodity systems. The challenge of reform is not completed.

The environment in which policy reform and its implementation occur is changing rapidly in Egypt. Four factors account for this evolution. First, as Egypt becomes more integrated into the global economy, its policies must conform to the requirements of WTO and other trade agreements. Second, global competition places a premium on policies that could reduce production and marketing costs through more efficient customs services, efficient use of natural resources such as water, and access to low-cost production inputs. Third, the growing role of the private sector is the most dramatic change affecting how policies are formulated and implemented. Business and trade associations, with significant assistance from USAID, are becoming a major force in the policy process. However, these associations are not yet capable of fulfilling this policy advocacy role entirely on their own. Finally, given this assessment's emphasis on fast growth in agriculture as a prerequisite for large increases in farm and rural non-farm employment, the lack of a policy focus on the productivity and competitiveness of smallholders is a serious shortcoming.

Given this context, the team identified a set of priority policy issues for USAID action. They are:

- **Policies that Seriously Constrain the Productivity and Competitiveness of Agriculture as well as Other Sectors of the Egyptian Economy.** WTO readiness, exchange rate policy, reform of the Customs Service, and reduction of State involvement in trading are the top issues;
- **Policies that Have Impacts on Agriculture as a Whole or Multiple Commodity Systems.** Water policy, including megaprojects such as Toshka, is the most significant; and

- **Policies that Affect the Productivity and Competitiveness of Specific Commodity Systems.** Current cotton policies create major distortions in this system and deserve USAID’s continued engagement. Other significant policies include sanitary standards in livestock that are not science-based and those that impede the importation and registration of cultivars in horticulture.

Recommendations

- USAID should orient policy reform, implementation, and monitoring to focus on policy priorities based on the strategy of stimulating fast-growth agriculture to increase smallholder income and rural non-farm employment.
- USAID should target policy activities on a select number of commodity systems (horticulture, smallholder livestock, and cotton) and a manageable number of macro and cross-cutting issues (exchange rates, water policy, WTO, and trade agreements).
- Policy reforms in macro-economic areas, such as exchange rates, and cross-cutting issues, such as water, should be coordinated with other USAID offices to reinforce USAID influence.
- Building on USAID’s efforts to monitor and verify policy implementation, additional efforts should be made to ensure that implementation occurs at operational levels in commodity systems. Continued support to trade associations in their policy role is one promising way to focus attention on the execution of policy reforms.
- USAID should make a concerted effort to transfer policy analysis capabilities to Egyptian institutions, public and private, over the next five years. The progress of trade associations holds promise as one element of this strategy. However, by their nature these groups are not disinterested, objective sources of policy advice. Neither is the Ministry of Agriculture and Land Reclamation (MALR). Other institutional options should be examined.

Horticulture

Findings

USAID’s programs promoting high value non-traditional agricultural exports (NTAE) have initiated a new era in Egyptian horticulture. Although exports of the major traditional products—potato, orange, and dried onion—have declined, NTAE products introduced by USAID are being successfully commercialized. They are projected to account for more than one-third of the increase in total horticultural export volume in the current decade (more in terms of value) and to increase in importance as production increases, new products are introduced, and additional markets are entered. A USAID-supported program has

established a product/market development system that provides a strong foundation for this growth by delivering an appropriate mix of production, post-harvest, and marketing support to the growers and shippers who have committed risk capital to establish an NTAE sub-sector. The Horticultural Export Improvement Association, an association of growers, exporters, and service organizations, is providing marketing information and support, technical services, and policy analysis and advocacy for continued improvements in the enabling environment. Another USAID-supported program has successfully upgraded plant and food safety systems, raised processing efficiency, improved products and export marketing strategies, and ultimately raised the competitiveness of client enterprises. However, the capabilities established through these programs and the numbers of enterprises assisted have not yet reached the critical mass required to be self-sustaining.

The ongoing establishment of a vibrant NTAE sub-sector has important implications for Egypt's more traditional, domestically oriented horticultural sector. Agricultural innovations, cold chain facilities, and transport improvements basic to NTAE success can have spillover effects in the national-level supply chain. Yet the creation of an integrated, sustainable total horticulture sector that is globally competitive and benefits Egyptians equitably requires that direct attention be given to the special needs of the more traditional sub-sector. The sheer size of the traditional sub-sector provides an opportunity to reach hundreds of thousands of small and medium-sized holders. Large exporters need additional sources of supply from different production areas. Small producers need additional outlets capable of absorbing volume increases and peak supply, thereby buffering price volatility. It follows that the best long-term growth strategy for the horticultural subsector is to work to expand the domestic and export markets for both fresh and processed products (especially through value-added innovation), while upgrading the quality, safety, and consistency of supply of small, medium-sized, and large operators.

Recommendations

The team believes that USAID should continue but broaden its support to Egypt's horticultural sector.

- Interventions should encompass both domestic and export, and traditional, non-traditional, and new product and market opportunities simultaneously. In the NTAE sub-sector, USAID's assistance should focus on solidifying the success of products already in the system, adding value through innovation, introducing and commercializing new products, incorporating small- and medium-sized holder participation where feasible.
- In the traditional sub-sector, USAID's assistance should focus on developing and delivering appropriate technologies for production and post-harvest handling, using innovative private and public-sector delivery mechanisms, and also on improvements in the domestic distribution and marketing systems.
- For processed horticultural products, emphasis should be given to introducing cultivars and good agricultural practices that are tailored to the needs of processors, while

reinforcing supply relationships between contract growers and the processing companies and fostering greater integration between the fresh and processed segments of the industry.

Livestock and Fisheries

Findings

Livestock and fisheries together make up 24 percent of value added in the agricultural sector. Production is predominantly on small farms, although there is a modest sized large-scale sub-sector. Livestock represent about two-thirds of that total and, within livestock, milk and associated meat account for over half of the livestock sub-sector. Women dominate livestock production, and marketing and dairy animals are distributed far more equitably than land. There is a powerful interaction of livestock and crop production, with substantial area devoted to the principal high-quality roughage, berseem. Rapid growth in livestock will increase the demand for maize as feed. Maize is already an important import.

Although a domestic resource cost of one or less indicates a comparative advantage in livestock, particularly on livestock production based on berseem, the levels of efficiency and productivity in the sub-sector are low. There is immense scope to reduce costs of production and increase competitiveness. The private sector marketing and feed distribution channels and facilities are poorly developed, as are the support systems for improving technology development and application.

Livestock and dairy in particular are the number one opportunities in the whole Egyptian economy to have an impact on women's incomes and to develop their entrepreneurial capabilities. There are probably 2 million rural women playing a major role in livestock production. Particularly smallholder dairy production is highly labor intensive.

Recommendations

The team recommends a substantial technical assistance program in smallholder livestock.

- The program should cover the full supply chain, with its first priority to the smallholder milk production sector and its associated meat production. Special emphasis should be placed on private sector growth and development in marketing, including chilling plants, and production services from mixed feeds to veterinary services. Given the already dominant role of women in this sub-sector, special effort must be made to enable them to expand their livestock enterprises through access to credit, advisory services, and other mechanisms.

- The USAID processed food project has found export potential for specialty dairy products, particularly to the Persian Gulf states. There should be an interaction of that project with this recommended program.

CHAPTER ONE INTRODUCTION

What Did USAID Ask the Assessment Team To Do?

USAID separated the assessment into four inter-related tasks:¹

- **Task 1:** Review select past and present USAID interventions and assistance mechanisms that promoted or promote a more competitive agricultural sector.
- **Task 2:** Identify (1) alternative growth scenarios for the sector and select the one that has the best chance to bring about increased agricultural sector competitiveness and strengthened agricultural investments and exports; and (2) key policy, institutional, and technical constraints to achieving that scenario and key opportunities that need to be seized.
- **Task 3:** Identify appropriate roles for the public and private sectors that address these constraints and how these public and private sector roles can be achieved
- **Task 4:** Assuming limited USAID staff and declining budget, identify and prioritize alternative options for USAID interventions in the next five years.

In addition, USAID raised numerous questions and issues for the team to examine and respond to.

Organization of this Assessment

The assessment is presented in three volumes.

Volume I contains a condensed version of the team's analyses, findings, and recommendations. The volume begins with an Executive Summary and Introduction and ends with a Summary of Principal Recommendations for Future USAID Interventions.

Volume II contains the analytical support for Volume I. Each of the four tasks assigned to the team by USAID is explored in considerable detail. Annexes are located in this volume.

Volume III comprises slides prepared for the team's presentations to officials of USAID and the GOE during the assessment.

Each volume is intended to be a free-standing document that may be read independently of the other two.

¹ From USAID Statement of Work for Agricultural Sector Assessment, January 2002.

What Did the Assessment Team Do?

The contractor, Development Alternatives, Inc. (DAI), with Abt Associates Inc. (Abt), assembled a team of agricultural economists, agronomists, agribusiness consultants, and business managers, all with extensive experience working with USAID and with both public and private agriculture in Egypt.

The team:

- Obtained and analyzed an enormous volume of data;
- Read and analyzed dozens of documents from USAID, USAID-funded activities, other donors, and the Government of Egypt;
- Conducted three presentations to stakeholder audiences of USAID and GOE officials; and
- Conducted multiple interviews with private and public sector leaders, contractors, USAID officials, and leading business support organizations.

This assessment relies heavily on the information and insights obtained through this process.

The Team's Methodology and Approach

The team's work was carried out both in Egypt and in the United States from February 1 through May 15, 2002. The team was guided by five overarching objectives:

- Protecting and building on the achievements of the past 25 years of USAID assistance to Egyptian agriculture;
- Increasing the overall competitiveness of the sector;
- Raising productivity for both domestic and export markets;
- Creating employment; and
- Increasing the net income of smaller farmers as a means of helping to alleviate rural poverty.²

Recognizing the importance of private enterprise as the principal engine for growth in a liberalized agricultural sector, the team reasoned that to fully understand and analyze the opportunities and challenges facing Egyptian agriculture it should adopt a commodity-by-

² Throughout the three volumes of the assessment, the team has used the following definitions of small-, medium-sized, and large farms. For livestock, the small farmer owns fewer than 3-5 heads; medium-sized, 5 to 10; and large, more than 10. For crops, the small farmer owns fewer than 1-3 feddans; medium-sized, 4-10; and large, more than 10.

commodity approach, examining the supply chains for each major commodity produced by the sector. The principal objectives of this approach were to:

- Identify the constraints in these supply chains that could limit the optimization of higher production and fuller employment;
- Suggest approaches to overcoming these constraints; and
- Identify opportunities for growth in each commodity chain.

The team then examined USAID interventions, past and present, to identify the major achievements and principal lessons learned from each.

Simultaneously, the team developed alternative growth scenarios; calculated their employment, income, and other implications; and identified the trade-offs likely to arise from each approach. This approach informed the team regarding its presentation of alternative options for USAID interventions.

Throughout the assessment, the team remained mindful of two other threads:

- Many of the constraints inhibiting the full realization of agriculture’s potential are policy related. Although significant progress has been made in liberalizing the country’s enabling environment, there remain major policy issues not yet undertaken. There also remain many public policy initiatives successfully enacted but not yet implemented.
- USAID cannot by itself transform Egyptian agriculture. This will require the participation of other donors, the Government of Egypt, and the country’s private sector. Moreover, over the next decade, USAID’s resources—both financial and human—will be gradually diminishing. For the team, this has meant recommending those relatively few USAID interventions most likely to optimize the use of these diminishing resources.

About Competitiveness

In the scope of work, the word “competitiveness” is used numerous times, including in the title of this assessment. In this assessment, the word is used sparingly. The reason is that competitiveness is intrinsic to and implicit in an increasingly successful agriculture sector. The team sees competitiveness as the key filter through which all potential interventions must pass. Absent competitiveness, the export sector cannot sell into global markets. Absent competitiveness, those who produce for the domestic market will be unable to face the imports that will appear in increasing varieties and volumes with the implementation of globalization under the WTO. Absent competitiveness, low-income farmers will remain low-income farmers, perhaps even poorer, and their potential to generate rural non-farm income will be lost. Absent competitiveness and tariff protection, Egypt’s agricultural sector faces dramatic contraction, with the concomitant loss of jobs and much-needed foreign exchange. Both the public and the private sectors have equally important roles to play in promoting

competitiveness. But the team sees the private sector as the primary engine of growth for increasing the competitiveness of Egyptian agriculture.

About Priorities

Going forward, USAID faces an embarrassment of needs. The successes achieved through its current interventions must be sustained and built upon. Exports must be increased. Technologies must continue to be introduced and transferred. New public policies will be required. Many public policies and regulatory constraints will need to be removed and their removal actually implemented to create a truly pro-private sector enabling environment. And, far from least important, jobs in rural areas must be created, which inevitably means increasing small holder income.

Achieving the goals recommended by the team will be neither tidy nor easy. Nor will change happen quickly. Egypt's agricultural sector faces formidable challenges as it struggles to move into the era of globalization. Success will require the participation, commitment, resources, steadfastness, and political will of every segment of Egyptian society. The rewards to the country lie in the realization of the considerable opportunities that are possible for the agricultural sector to greatly increase its contributions to the country's economic and social well-being.

CHAPTER TWO

USAID INTERVENTIONS IN THE AGRICULTURAL SECTOR

This section describes past and current USAID projects in the agricultural sector. The purpose is threefold: (1) to document the evolution of USAID's support for Egyptian agriculture, (2) to identify important achievements and effective implementation approaches, and (3) to provide a context and a historical perspective for the priority program areas this assessment recommends.

EVOLUTION OF USAID PROGRAMS

USAID has supported agriculture-related programs in Egypt for more than 25 years. During this period, USAID has provided \$1.3 billion in assistance to Egyptian agriculture. USAID's involvement has facilitated major changes in the industry and in the enabling environment in which it operates.

USAID interventions have included:

- Assisting small farmers;
- Supporting the processed food sector;
- Encouraging technology transfer to the farm community;
- Promoting agricultural exports;
- Encouraging the formation of trade associations; and
- Working with the GOE on reform of agricultural policies.

USAID's assistance has always been focused on providing resources to support the GOE's own agricultural strategies. In the 1980s, and even earlier, the objectives of USAID programs in support of GOE strategy were to increase productivity and institute policy reforms, particularly those related to decreasing government controls on farmers. In 1990s, USAID's assistance to agriculture focused on demand-driven horticultural production, innovative post-harvest and marketing technologies, productivity of staple food crops, agricultural biotechnology, and continuing policy reforms. Today, USAID continues to support policy, institutional, and regulatory reform to improve agricultural competitiveness and to provide technical assistance to increase production, productivity and incomes.

ILLUSTRATIVE PAST INTERVENTIONS

Following are examples of past and current interventions.

The 1980s

The "California Project"

The California Project was formally entitled Agricultural Development Systems (ADS). It was known as the California Project because it was managed by the University of California at Davis. The objective of the project was to introduce new fruit and vegetable cultivars to improve stock and to provide material for varietal development by the Agricultural Research Center (ARC). The program had two components: agricultural economics and horticultural research.

Although the project did not introduce any new crops, it was successful in introducing new varieties of open field tomatoes, grapes, and strawberries. It also made significant scientific advances in rice seed multiplication by small farmers, plant pathology, plant virology, and nematology.

Tomatoes were notably successful. The variety known as U.C. Tomato led to dramatic increases in yields. Egypt is still growing high-yield tomatoes, based on the U.C. varieties as well as others from Israel, introduced under the trilateral research activity, funded by USAID. Unable to work on citrus directly because of U.S. government regulations, the project nevertheless assisted this subsector by working on soil and water management.

At the time of the California Project, the Egyptian fruit and vegetable industry was not at all conscious of quality or cost. By convincing Egyptians they could grow competitive varieties, the project laid the foundation for later generations of projects, including current projects such as Agricultural Technology Utilization and Transfer (ATUT). The California Project also worked closely with the GOE on policies required to increase horticultural competitiveness. It thus paved the way for the consensus-building mechanisms and approaches that have led to the reforms proposed and supported by the Agricultural Policy Reform Program (APRP) and its policy reform predecessors.

Farmer-to-Farmer Program

The objective of the Farmer-to-Farmer Program was to increase private sector agricultural investment, productivity, and income. The program used U.S. volunteer technical assistance, U.S. and local participant training, and outreach activities to provide Egyptian farmers and MALR extension agents with improved farming technologies and farm management techniques.

The Farmer-to-Farmer Program built on the legacy of an earlier program, the Small Farmer Production Project (SFPP). Implemented in the 1980s, SFPP provided technology transfer with credit packages to increase rural incomes and productivity.

The Farmer-to-Farmer Program, carried out by ACDI/VOCA, operated in 16 of Egypt's governorates. It worked with a core group of 600 farmers and reportedly reached more than 12,000 other farmers indirectly. It also was the largest program working with graduates in the new lands. The program's person-to-person approach and multiple interventions helped farmers to increase yields, decrease costs, and improve the quality of their produce.

One main success of the program is that it strengthened the incentive among farmers to share successful experiences and led to the establishment of at least three farmer associations. The current Agricultural Linkages for Egypt (AgLink) Project in the livestock sector (also implemented by ACDI/VOCA) was later to build on the successful methodology of Farmer-to-Farmer.

National Agricultural Research Project (NARP)

NARP, which operated from the mid-1980s until the mid-1990s, represents the largest agricultural research development project ever undertaken by USAID in Egypt and perhaps the largest of any in the developing world. The \$205 million undertaking was directed at improving Egypt's adaptation and use of modern technology to strengthen agricultural production.

In 1986, the project's goal was to improve the capacity for state-of-the-art agricultural research in Egypt. The accomplishments of the project over its eight year life span include capacity building, human resources development, seed policy, agricultural engineering, research system improvement, and research management and administration, as well as improving the capability of the agricultural research and technology transfer system, including ARC, universities, and the National Research Center (NRC).

Among NARP's principal accomplishments was human resource development in agricultural research. More than 6,000 Ph.D., M.Sc. and B.Sc. holders participated in research under NARP. In addition, 90 students obtained their Ph.D. degrees from U.S. universities, 20 obtained their M.Sc. degrees, and 2,150 traveled to U.S. universities for post-doctoral training and exchange visits. This cadre of agricultural scientists is now serving in leadership positions in public and private sector institutions in the agricultural sector.

The NARP project also had an Agricultural Policy Analysis Component. Its principal objective was to provide technical assistance to strengthen the planning, policy analysis, and monitoring capabilities of the Ministry of Agriculture and Land Reclamation (MALR) and the Ministry of Public Works and Water Resources. This was the analytical tool used to help develop benchmarks for the policy reform component under APRP. NARP therefore was one predecessor of later programs such as APRP. It also built the foundation for later programs such as Agricultural Data Collection and Analysis (ADCA).

Although NARP was terminated prematurely—reportedly because of a disagreement between its two client ministries—its legacy provided a basis for future USAID programs in agriculture. The best illustrations of NARP's achievements are:

- Egypt's agricultural research capability was enhanced and resulted in the high yields of most crops and the narrowing the food gap, despite the continuous increases in population; and
- The foundation for ongoing policy reform was constructed, facilitating further policy reform efforts such as those of APRP.

CURRENT USAID-SUPPORTED AGRICULTURAL PROGRAMS

The 1990s To Date

Current USAID-funded projects cover the spectrum from policy analysis to smallholder livestock development to association capacity building. The portfolio includes:

- Agriculture-Led Export Business (ALEB);
- Agricultural Technology Utilization and Transfer (ATUT);
- Agricultural Policy Reform Program (APRP);
- Agricultural Linkages for Egypt (AgLink);
- The AgReform Project (CARE);
- Center for Business Support (CBS)(IESC);
- Egyptian Exporters Association/ ExpoLink (EEA); and
- Horticultural Export Improvement Association (HEIA).

The missions and principal achievements and challenges of these programs are described below.

Agriculture-Led Export Businesses (ALEB)

ALEB builds on the legacy of many prior USAID-funded programs, including the California Project and NARP. ALEB also provides an example of a program that seeks to move agriculture up the value chain through product transformation and thus create what is virtually a new industry in Egypt.

The project provides technical assistance and support to Egyptian food-processing companies, ancillary service firms, and trade associations. Its objective is to enhance global competitiveness and increase exports of processed foods. It does so by collecting, analyzing, and disseminating market information; integrating new food-processing technologies; improving adherence to international food quality and safety standards; enhancing marketing and business skills; strengthening associations; and forming strategic alliances.

In recent years, the demand for processed foods in major markets has steadily increased, in line with consumer demand for convenience foods. Egyptian processed foods have been far

from a major beneficiary of the benefits of this trend; processed foods make up a tiny proportion of Egypt's exports. Yet ALEB is attempting to capitalize on Egypt's unexploited export-marketing potential, particularly in the European Union and the Persian Gulf and Middle East. ALEB addresses many of the competitiveness challenges that will affect Egyptian agriculture over the next decade.

Moreover, as the skills ALEB helps develop in processed food exports move backward along the supply chain, they will more easily be transferred to producers who sell only domestically. High-quality processed foods manufactured locally will help enable Egyptian processors to meet the growing demand from the domestic market and compete more successfully with imports, which are certain to increase with the advent of the WTO.

Agricultural Technology Utilization and Transfer (ATUT)

The ATUT project has two program areas: (1) the identification and transfer of improved horticultural production, post-harvest, and marketing technologies to the private sector; and (2) the development of a carefully focused, improved collaborative research program aimed at resolving the major constraints to increased productivity of selected staple food crops such as rice, corn, wheat, and fava bean.

The objectives of ATUT are to:

1. Increase the volume and value of selected Egyptian fresh fruit and vegetable exports;
2. Increase the adoption of technologies by small, medium-sized, and large Egyptian private sector producers and exporters to improve the production and quality of horticultural crops;
3. Increase the marketability of new horticultural crops and resolve constraints to increasing the value of horticultural exports while lowering the production costs through on-farm water management; and
4. Forge a partnership among MALR, Egyptian university agricultural researchers, and the Egyptian private sector to identify and introduce improved and more profitable technologies.

The project's accomplishments include the following:

- Selected crops in which Egypt has a competitive advantage in export markets were identified and moved to commercial scale;
- A product/market development system that provides a foundation for further growth has been established but is not yet self-sustaining;
- An effective mix of production, post-harvest, transportation, and marketing support has been delivered to selected growers/shippers;
- A reasonably effective association of growers, exporters, and export support organizations (HEIA) has been established. However, HEIA is not yet self-sustaining; and

- The success of ATUT's growers/shippers has given them confidence to compete in export markets.

Agricultural Policy Reform Program (APRP)

APRP builds on the legacy of many of the policy components of previous USAID-funded projects, including the California Project and NARP. APRP has addressed a wide range of policy issues and fostered the participation of public and private stakeholders in the process. It has developed the capacity to analyze broad cross cutting-issues such as trade policy and gender, while addressing sector-specific policy constraints affecting cotton, cereals, and other commodities. And it has done so by building positive consensus between the GOE and the private sector. APRP has laid the groundwork to cover a similar scope of policies in the future. Moreover, this assessment asserts that progress must be made in all of Egypt's commodity sectors to achieve fast growth in agriculture and that the policy and regulatory environment will play a critical role in achieving this progress. Therefore, continuation of policy formulation and implementation is essential.

Cash transfers under APRP have played a significant role in engaging the GOE in policy reform, although the transfers may not have been as significant in policy implementation. Given anticipated reductions in USAID's capacity to employ cash transfers in a similar manner, APRP's success in monitoring and validating policy implementation provides an important set of tools that will likely be in demand in the future.

APRP helped open the door to involvement by the private sector and the academic community in the policy dialogue and formulation process. APRP's work with HEIA is a good example of education, training, and collaboration with an important private sector constituency. The cooperation is also a prime example of the importance of sector-specific policy analysis. However, APRP's autonomy from MALR and the private sector is valuable. Although agribusiness associations need more help to develop their own policy analysis and advocacy capabilities, the independence and objectivity of an APRP-type unit can help push for the policy reforms and implementation required by the fast-growth scenario.

Agribusiness Linkages for Egypt (AgLink)

AgLink's mission is to build stronger commercial ties between the United States and Egypt, with special emphasis on the Egyptian livestock industry. Project activities have focused on three sub-sectors of Egypt's livestock sector: dairy (production and processing), meat (production and processing), and feed and farm supply. The project promotes linkages between farmers and agribusiness firms within Egypt as well as among a broad network of agribusiness contacts in the United States.

A primary goal of AgLink is to bring Egyptian companies to a level where they are prepared to receive foreign private investment and enter export markets. The project has helped

establish two major industry associations, beef and dairy, which are flourishing and expanding.

AgLink is continuing to develop associations, expand trade linkages, and provide technical assistance but is now also expanding the initial program area to include Upper Egypt (Minya), where 44 percent of the country's livestock are located. New target groups, such as small commercial farms and firms and small livestock holders are being included so that improved techniques may be applied to a wider clientele. In addition to the establishment of sustainable livestock associations, the project is training livestock extension agents in MALR to institutionalize project services, helping ensure the sustainability of the project.

AgReform Project–CARE

AgReform is designed to increase incomes among economically marginal farm households in Upper Egypt by improving their access to new markets and appropriate new agricultural production technologies. AgReform, initiated in the Governorates of Fayoum, Sohag, and Qena in March 1996, continues to use the FarmLink Project (1990-95) strategy that directly links community-selected innovative farmers to sources of agricultural information.

AgReform is based on the FarmLink experience and has adopted most of its concepts, terminology, approaches, and data-collection instruments. FarmLink successfully pioneered a participatory linking approach to agricultural extension in the horticultural sector.

As of September 30, 2001, AgReform has worked with 6,320 community-selected innovative farmers to create linkages that improve agricultural practices, 7,928 small farmers through the strengthening of 111 local agricultural and marketing groups, and the enhancement of local livestock services for 4,250 small livestock producers. In addition, the project collaborated with local government agencies in each governorate to enhance and strengthen the extension services' capacity to better meet the small farm household's needs and to manage and replicate AgReform activities beyond the life of the project. Almost 300 government extension workers have been involved in the project.

In 2001, the AgReform grant was amended to add the farmer NGO component. To date, 12 farmer NGOs have been created and training is being provided to strengthen their capacity to coordinate the dissemination of marketing information for exports.

Center for Business Support–(IESC)

In June 2000, IESC was awarded a three-year USAID grant to manage the Center for Business Support (CBS) in Egypt. The CBS program works with companies in three sectors: information technology, tourism, and agribusiness. CBS has been working with companies in the food-processing sector since the program's inception. Client companies receive subgrants to acquire technical consultants, attend trade shows, participate in trade missions, and

develop websites. In the agribusiness sector, CBS has completed one major food-processing trade mission event in cooperation with ALEB.

Egyptian Exporters Association (EEA)

EEA, with its operating arm, ExpoLink, is the successor to a long line of private sector general export promotion organizations³ funded by USAID. In previous incarnations, EEA was known as the U.S. Export Promotion Organization (USEPO) and the Trade Development Center (TDC). Today, EEA provides services to firms in most of Egypt's export-oriented sectors, including information technology, apparel and textile, furniture, fresh and processed foods, footwear and tanned leather, and marble.

ExpoLink prepares firms to exhibit at international trade shows; provides technical assistance consultants; disseminates market information; prepares company literature; and, recently, advocates for policy reforms.

The total number of agriculture-sector clients served since the inception of EEA in October 1997 to June 2001 is 522. The number of fresh- and processed-foods clients served since 1997 is 142 (27.2 percent). The number of clients served in the fourth year is 64. The number of fresh- and processed-foods clients served in year 4 is 14 (21.9 percent).

The type of information disseminated to fresh- and processed-food clients in 2002 has included new regulations for importing meat into Saudi Arabia; markets for herbs and spices in Malaysia and Indonesia; honey and honey wax in Holland; dairy and meat products, beverages, soups, and dry mixes in Poland and Romania; herbs and spices in Japan; and the organic market in Europe.

Although EEA is an association in the legal sense, it did not begin to operate as an association until relatively recently. Now, it is actively working to build membership, although there is no evidence of members voting for the Board of Directors. In a 2000 evaluation, the organization was criticized for its lack of transparency, and for deploying a disproportionate amount of its funds on trade fair participation while not taking advantage of other marketing tools. The quality of its market information and delivery mechanisms was also questioned, as was the lack of either sector-specific or general hands-on export experience among many of its staff. In annual client satisfaction reviews carried out by the USAID-funded GTG Monitoring and Evaluation Unit, the majority of clients found EEA services too expensive and of questionable value. Although policy advocacy was part of its Grant Agreement, EEA did little in this area until recently. The organization has in the past concentrated on larger companies over medium-sized and smaller companies.

However, EEA is gradually correcting some these shortcomings. In the most recent client satisfaction review, a preponderance of EEA clients expressed satisfaction with the services they received. Further, EEA is now becoming more positive—and transparent—in its policy

³ There is also an export promotion unit within the GOE. It is the Egyptian Export Center.

advocacy activities. An example is a recent seminar on Customs Service reforms attended by Customs Service officials and senior USAID representatives. EEA also has begun to set up a network of representatives in major export markets; their task is to feed market-level information to EEA, which, in turn, makes it available to their clients.

Horticultural Export Industry Association (HEIA)

HEIA is a trade association, originally spawned by ATUT. It is now a direct beneficiary of USAID funding. HEIA is described in detail in Section VI, The Roles of the Public and Private Sectors.

LESSONS LEARNED

Critical lessons from USAID's current and past projects may be used to craft interventions to achieve faster growth in the Egyptian agricultural sector. Some of these lessons are discussed below.

Lessons Learned by Large-Scale Projects

Since these projects absorb the bulk of USAID resources, their achievements and limitations have a great deal of significance for the future of USAID agricultural program. They are, to a large extent, the investment on which USAID will build.

National Agricultural Research Project

NARP created a strong agricultural research and production technology capability. Since yield and productivity increases are a fundamental requirement to achieve the fast agricultural growth scenario called for in this assessment, the scientists and technicians trained under NARP must be utilized to attain these goals. The increasing emphasis on private sector-led agriculture means that new institutional arrangements will be needed to link this public sector wealth of knowledge to the evolving needs and demands of the domestic and export markets. Extension services is one area where the disconnect between research and markets is pronounced.

Agricultural Policy Reform Program

Perhaps the most significant lesson learned by APRP is that working with agencies of the host government as well as with the private sector in a spirit of partnership and cooperation is an attainable goal, but one that requires patience, creativity, and diplomacy.

Relative to achieving success in specific policy reforms, APRP sums it up as follows:

- **For a significant policy reform to succeed, it must have a champion within the government**—a senior official who will put resources into it and take certain risks to implement it. These champions provide role models and hard evidence of success that can change the approach of other civil servants, who often strive mostly to not "rock the boat."
- **The most challenging task of any project that depends on fostering change is changing long-held opinions and attitudes.** APRP has promoted changes in attitudes and approaches by requiring public participation in decision making via benchmarks and by using participatory methods to develop consensus during benchmark implementation.
- **There is a major difference between affecting a formal reform (benchmark) and implementing that reform.** Egyptian law is littered with laws and decrees signed by Ministers but never implemented. APRP has recognized this reality by instituting benchmarks that included implementation as mandatory components.
- **Fostering inter-ministry and inter-agency cooperation is difficult but often essential.** APRP has found that cooperation at several levels between the staff of MALR and the Ministry of Water Resources and Irrigation (MWRI) was essential in the issue of irrigation of supply and demand. A pilot program was first implemented to explore the constraints and possibilities of this cooperation at the local level. Through this process, consensus was built.
- **When providing services to individual firms,** they need to be customized in content and delivered in doses, rather than in generic, cookie-cutter fashion.
- **Not all firms within an industry deserve assistance just because they appear to be needy.** A judgment has to be made regarding their absorptive capacity and the chances that they will be able to apply what they hear.
- **When USAID decides to assist a supply chain, it should be defined in broad terms,** i.e. not just the economic actors that form the core but also upstream suppliers of inputs, equipment, services and information who sustain the chain, and the exporters, importers, distributors and so on who benefit from it downstream.
- **In a country as large as Egypt, it is probably not enough to operate on vertical industries at the national level,** because sometimes the national centers are too divorced in distance or understanding or urgency to really be the best vehicles for delivering meaningful assistance.
- **Financial sustainability for nascent associations will never be possible if the main source of revenue is the members themselves,** since their membership and capacity is easy outstripped by the need to offer services before the payback can be expected, and also to service new member.

- **Although it is inevitable and to some degree desirable that directors play a major role in getting associations started**, especially in shaping vision and services, building membership and gaining credibility, the challenge over time is to achieve a staff-managed yet member-driven association that will allow members to participate in and benefit from the association, while not doing harm to their own businesses.
- **USAID and other donors should have realistic expectations regarding how long it takes to establish an effective association**, how quickly it can play a serious advocacy role, how much policy work it can do without external funding and technical resources, and the need for grant-writing capacity as the main source of income for the first ten years or so.

Agricultural Technology Utilization and Transfer Project and Agriculture-Led Export Businesses Project

ATUT and ALEB have focused on establishing the horticulture as an export growth commodity sector. The projects have made significant progress in demonstrating the importance of responding to market demands for quality and price-competitive products. In addition, these projects work closely with the Egyptian private sector at the individual firm level as well as with industry associations. This emphasis on building a commonality of interests among a wide range of business in the sector can be a model for other Egyptian commodity groups.

Capacity building has become a major goal and a principal accomplishment of ATUT and ALEB and, in fact, most of the current USAID-funded programs. The capacity of the GOE has been enhanced by its partnership with APRP. The development of Egyptian-led business associations has been successfully undertaken by ALEB, ATUT, APRP, AgLink, and others. These accomplishments will be an important legacy for USAID.

Neither ATUT nor ALEB is designed to focus on smallholders or to address the domestic horticulture market. However, since approximately 96 percent of all horticultural production is destined for the domestic market, improvements in domestic horticulture are a significant component of growing the agricultural sector and rural incomes. ATUT and ALEB can be important bridges to a more inclusive approach to horticulture sector development. Some of the projects described below may serve as models for improving smallholder participation in export and domestic horticulture markets. ATUT's collaboration with Africare's Wadi el Saayda Project is an excellent example.

Lessons Learned by Smaller-Scale Projects

USAID's support for smallholders in the horticulture and livestock sectors is carried out, for the most part, by not-for-profit organizations such as CARE and ACDI/VOCA. The size of these efforts is modest in comparison to that of projects such as APRP, ALEB, EEA, and

ATUT. Yet the lessons learned through these projects are invaluable and USAID should be encouraged to apply them to similar, new projects.

For example, following are some lessons learned through the Farmer-to-Farmer Program:

1. U.S. farmers can transmit technology better than consultants or MALR extension agents because as farmers they share many of the same experiences and risks as do the Egyptian farmers. Farmer volunteers enjoyed a high credibility and made huge impact in the Farmer-to-Farmer Program.
2. It became a criterion for a core client farmer that received consultations by U.S. farmers to agree to provide training to other farmers in Egypt. Therefore, the improved technology was further disseminated within Egypt by core clients (farmers who were directly assisted by volunteers) who were asked to provide training to non-clients in other governorates as well as in their immediate farm locations, thereby greatly expanding outreach. The core client also was asked to open his farm to other farmers and to MALR extension workers so the new technologies and impacts could be studied by others. This outreach training was all arranged by Farmer-to-Farmer staff, and the methodologies were further improved, upgraded, and expanded when the AgLink project was launched at the end of the Farmer-to-Farmer Program (and other innovations were introduced such as agricultural forums and staff-conducted training.)
3. Volunteers who returned to Egypt were even more effective in their second and third visits.
4. When new technologies are introduced, it is essential for the target clients to have the financial means to adopt the technology. Credit should be available from local banks so clients can finance purchases of inputs and introduce the recommended modifications to farm and industry.
5. Farmer-to-Farmer helped start up at least three producer associations that are still in operation. However, association development was not an objective of the project but an ACIDI/VOCA response to a felt need that was seen to exist in the various sectors served by Farmer-to-Farmer volunteers. No funds were allocated to assist or support the fledgling associations so Farmer-to-Farmer staff could only devote their time to assist interested persons to establish associations. In future projects, as in AgLink, resources should be budgeted from the start of project to ensure that a viable and sustainable association is in place and is serving its members by the end of the project.
6. The two-way program of U.S. volunteers coming to Egypt to provide technical assistance and Egyptian farmers and MALR extension workers study trips to the United States produced the best results. Trips to the United States promoted "learning by seeing" as well as the purchase of U.S. technical products that accelerated adoption of new and recommended technologies.

7. Change takes time. The project learned that it could not expect the farmer to immediately adopt new technology. It took time and follow-up by Farmer-to-Farmer staff to move farmer through the phases of awareness, interest, evaluation, trial, and adoption. Adoption was most rapid when applied in a local situation.

Smaller projects such as Farmer-to-Farmer may be viewed as incubators of new approaches or pioneers operating in new or underserved areas. In this regard, these projects have the potential to inform the direction and scope of future initiatives. But one critical issue concerns the scale of the projects themselves. To achieve the employment goals envisioned, the impact of USAID efforts will be need to be expanded well beyond the 1,000-2,000 people affected by these projects.

The common characteristic among projects such as AgReform/CARE and AgLink is their direct delivery of technical assistance to smallholders. The fact that these projects work with farmers in the horticulture and livestock sectors, primary growth targets according to this assessment, means that the experience of these project implementers is worthy of close examination. In particular, their work with producer associations, intensive extension services, and training to meet market standards is an essential aspect of increasing productivity, creating value-added opportunities, and enhancing the competitiveness of farms and businesses in the sector. The fact that several of these projects operate in Upper Egypt and work with graduates and other settlers on new lands provides additional elements to examine for determining future activities

Lessons Learned by Egyptian-led Projects

Two Egyptian associations, HEIA and EEA,⁴ receive direct financial assistance (versus funds channeled through projects such as ATUT) from USAID. These projects should be considered experiments in fostering the sustainability of business associations. A good deal of importance is being placed on the capacity of the private sector to represent its own interests in the formulation and implementation of policies and regulations that affect their businesses. These projects can serve as pilot cases to determine how USAID can best accomplish this goal. Likewise, these associations have an opportunity to continuously broaden the range of services they provide to their members and the efficiency of the delivery mechanisms employed to reach clients.

Is There an Ideal Approach?

If development activities in Egypt and throughout the developing world reveal anything, it is that one size does not fit all. Each project needs to construct its mix of services, delivery systems, and personnel according to objectives it is mandated to achieve and the cultural environment in which it will operate.

⁴ Both these projects are also discussed in Section VI, The Roles of the Private and Public Sectors.

For example, transfer of technology to small rural farmers works best when there is a hands-on, in-the-field approach by people who are perceived to understand the problems of the small farmer. That is the approach used by projects such as Farmer-to-Farmer, ATUT, AgLink, and AgReform.

Technical assistance at the firm or farm level seems to work best when it is delivered not only by knowledgeable consultants but also by those who enjoy a high degree of cultural sensitivity. In the Reform, Design and Implementation Unit (RDI) of APRP, cultural sensitivity is extremely important. Because this project works so closely with the GOE, it understands that there is an Egyptian way of doing things, respects that way, and uses it to effect change. The same is true of projects like ALEB, ATUT, AgLink, and CARE, which work with Egyptians, not only in the GOE but also in the private sector.

This is true of policy reform as well. But, in addition, those who are trying to generate sustainable reform need the skills to put themselves in the position of those resisting reform and to understand why. The simple principles first set out in the book *Getting to Yes* should be required reading for USAID consultants. It is perhaps too soon to state with certainty that policy reform has become institutionalized; one test will come when cash transfers are reduced. But it is the view of the Assessment Team that the process of liberalization has gained considerable momentum over the 25 years of USAID support for agriculture, that liberalization may now be un-stoppable, and that compliance with WTO and other international trade agreements will provide added impetus.

Opportunities for improvement are discussed more extensively in Volume II of this assessment.

CHAPTER THREE

ALTERNATIVE GROWTH SCENARIOS

Although agriculture directly accounts for only 17 percent of Egypt's gross domestic products, in a rapid, balanced growth scenario agriculture would account annually for 61 percent of employment growth. That disproportionately large employment impact occurs because agriculture's modest direct effect on employment is greatly enhanced by powerful multipliers to the highly employment-intensive, non-tradable, rural non-farm sector. When growth is rapid, four-fifths of agriculture's employment impact is from its demand stimulus to that rural non-farm sector, one-fifth is directly in agricultural production.

The growth in farm incomes provides the purchasing power to drive rural non-farm employment. Increased farm income is associated in large part with increased farm output. But that increased output must be generated by increased competitiveness associated with lower costs of production and increased efficiency in processing and marketing agricultural commodities. Growth in farm incomes is further accelerated by a switch to higher value crops as they are made more competitive through improved production and marketing practices. To be fully effective in increasing employment, agricultural production must not only meet rising domestic market demand, but must also achieve even higher growth rates through increased exports.

To compete in dynamic international markets, Egypt must increase competitiveness through constant reduction in costs. The requisite changes in Egyptian agriculture will be implemented by the private sector. That is the only efficient means of moving such a huge sector with so many complex interactions. However, there is an important complementary role for public action, ranging from small NGOs to trade associations and government agencies. That role and how it complements the private sector by raising returns to investment are discussed at length in the commodity chain analysis.

This assessment emphasizes the importance of small farmers to employment creation. That is because small farmers are fully integrated into the market town and village complex and spend most of their income locally, stimulating the rural non-farm sector that lacks export capabilities. In that sense, a small farmer is one who is integrated into the village and market town life. Large farmers are thus defined as having consumption patterns based largely on tradable goods and services, largely absentee, living in the major metropolitan centers and reflecting an urban way of life. Medium-sized farmers are more commercialized versions of the small farmer but still village oriented.

This section of the report describes the commodity composition of a high growth rate for agriculture. That lays the groundwork for later sections that discuss the investment, institutional development, and policy requisites of such a growth rate. The exposition proceeds from a delineation of the commodity components of a high agricultural growth rate to the impact of such a growth rate on employment. This analysis builds upon work on agriculture's employment multipliers that is part of the Monitoring, Verification and Evaluation (MVE) unit of APRP.

Rapid agricultural growth is in part dependent on balanced growth. The export-driven urban sector must grow rapidly not only for its important contribution to GDP growth, but also to help provide effective demand for large non-tradable elements of the agricultural sector. The rest of this chapter quantifies the prerequisites for rapid agricultural growth and its impact on employment. In the context of rapid growth of the urban sector, the chapter also measures the impact on employment of an alternate strategy that results in rapid growth of the urban sector but slow growth of agriculture. The chapter then discusses alternate strategies that de-emphasize various commodities groups in agriculture.

Farmers make decisions about resource allocation among specific commodities. Much of investment, institution building, and policy are also commodity specific. There are, of course, complementarities among commodities and hence total farm production is reflected in a system that includes several commodities. Thus, analyzing growth potentials by commodity group represents a simplification. Because data are available by commodity, it is a helpful simplification in quantifying growth rates. In this analysis, groups of similar commodities are grouped and the treatment is of the commodity groups. Nevertheless, attention will also be given to issues that cut across commodity groups. This analysis is not by sets in a rotation because those sets change with changing technology and price relationships.

The importance of each commodity group in the overall growth rate is a function of two factors: (1) the base weight; and (2) the growth rate. Very high growth rates are often possible for commodities that have only lightweight in the base. In those cases, even a high growth rate has little effect on the overall growth rate. The five agricultural commodity groups into which agriculture is divided for this assessment are (1) cotton; (2) cereals; (3) horticulture; (4) livestock; and (5) other crops. Miscellaneous is a mixture of diverse crops ranging from sugar cane to oilseeds to berseem (which is in effect covered by livestock). The commodity chain analysis treats each of the four commodity groups and will demonstrate the need for integrated policies specific to each commodity group. Hence, our recommendation is for USAID emphasis on an integrated approach to two of the commodity groups—horticulture and smallholder livestock. Those two groups represent well over half of value added in agriculture and a much higher proportion of employment. They are in particular need at present for integrated technical assistance that cuts across both the production and the marketing functions.

Increased input use is generally a significant source of growth. Two inputs, water and fertilizer, are particularly important and cut across commodity groups. Egypt has been increasing the irrigated area at a rapid pace. The government plans to continue that rapid expansion. Even when adjusted for loss of cultivated area to non-agricultural uses, that expansion will account for 15 percent of a rapid expansion of agriculture. Fertilizer is already used at very high rates in Egypt. There is no scope for a major increase in production from radically increased rates of fertilization. But there is scope for significant increase in farm incomes through increased efficiency of fertilizer use even as total usage increases modestly. Increasing the efficiency of fertilizer use will favor higher farm incomes as well as being environmentally sound.

This analysis sets forth indicative growth rates for each agricultural commodity group that will be difficult to achieve but are feasible. For each commodity group different judgments are made about the composition of that growth. In this section, the broad rationale for those judgments is presented. Later sections, specific to each commodity group, present the critical details for achieving those rates in a manner that reduces cost of production, increases marketing efficiency, and raises overall competitiveness. Shortfalls in some commodity groups can in theory be made up by increased growth in others. But that will be difficult.

Achieving these growth rates will require optimal investment allocations; substantial institutional development, including technical assistance; and major policy reform. Without such effort, the growth rates will not be achieved. If those growth rates are not achieved, employment will not grow at the rates needed to solve Egypt's complex social and political problems. Of course, the actual growth outcome will be the product of entrepreneurial reactions to market forces. But those market forces will be influenced by forward-looking decisions. The more those decisions, both in the private and the public sectors, conform to the ex-poste market situation, the more effective they will be. The main body of this assessment is an effort to get those decisions right.

THE GENERAL RELATIONSHIP BETWEEN AGRICULTURAL GROWTH AND EMPLOYMENT

Later in this chapter, specific data will be presented relating agricultural growth in Egypt to employment growth. That sets the stage for understanding the need for and the means of achieving competitiveness for Egyptian agriculture. Those data will be clarified as well as become more plausible if the generality of the relationships is better understood. Hence, this section digresses from Egypt to look more broadly at the relationship between agricultural growth and employment. In this discussion, employment increase and poverty reduction are used interchangeably because increased employment is the means by which growth reduces poverty.

A tremendous amount of research has been done on the linkages between changes in agricultural productivity and poverty levels. Thirtle et al. (2001) summarize the literature as follows:

The literature provides overwhelming theoretical and empirical evidence that agricultural growth is essential, especially in the poorer developing countries. It identifies the diverse roles that agriculture plays in the process of growth and development on the one hand, and the link between economy-wide growth and poverty alleviation on the other. Agricultural productivity growth has an impact on GDP growth, both directly and through agriculture's linkages with the broader economy, that generate increases in non-farm income. Both agricultural growth and GDP growth have impacts on inequality poverty, and nutrition.

Two sector models, such as Matsuyama (1992), multi sector models, such as Irz and Roe (2000), input-output models, such as Rangarajan (1982), and dynamic general equilibrium models, such as Wichman (1997), all demonstrate important relationships between

agricultural growth and overall economic growth, and most also show a close connection to poverty reduction.

The World Bank has made frequent use of an average relationship between overall growth and poverty reduction. On average a 2.1 percent decrease in poverty levels is associated with a 1 percent increase in the economic growth rate (Deininger and Squire 1996.)

We now know that it is the structure of growth that explains much of the variance in poverty decline. Within structure, it is agricultural growth that is the prime driver. In a large intertemporal, cross-national statistical analysis, Peter Timmer (1997) shows that 84 percent of poverty decline is explained by agricultural growth. In his studies and those of Martin Ravallion and colleagues (Ravallion 1995, Datt and Ravallion 1998), as well as earlier work by Mellor (1976), it is changes in the agricultural growth rate consistently explain poverty decline.

Hans Lofgren (2001) of the International Food Policy Research Institute (IFPRI), using a computable general equilibrium model for Egypt, finds that, compared with pro-manufacturing policies, pro-agricultural policies have a more positive impact on household welfare in general and the poor in particular. He also finds that improved market access for agricultural exporters and reduced transaction costs in foreign trade reinforced the effect of generally positive policies toward agriculture. Following up, El-Said, Lofgren, and Robinson (2001) examined a set of economic options and found that what they termed “agricultural demand-led-industrialization” produced the highest growth rate in GDP and the fastest growth in rural household income.

At first glance, the finding of the important role of agriculture in poverty reduction is counter-intuitive. After all, agricultural growth occurs largely through technological change that not only raises yields per unit area of land, but also raises labor productivity. Typically a 10 percent increase in agricultural production provides no more than a 3-6 percent increase in employment (Mellor 1976.) Also, farmers are not the poorest people in rural society. Increased agricultural production provides benefits roughly in proportion to the amount of land a farmer controls. Adams (2001) elaborates this point to conclude that emphasis on agriculture increases income inequality and argues emphasis on the rural non-farm sector. The analysis in this chapter shows that the two are causally related.

Consistent with Adams, the poorest people are massed in the rural non-farm sector. However, they largely produce non-tradable goods and services. For the rural non-farm sector, expanding local demand is essential to growth and to increased employment. That is particularly true of the unskilled labor class that Adams states should receive the most emphasis. Prospering farmers spend a high proportion of increased income on locally produced, non-tradable, employment-intensive, goods and services (Delgado et al. 1998, Hazel and Roell 1983, Mellor 1976.) Raising farm incomes—which can be achieved through technological change and globalization—increases the demand for output and hence for labor in the massive rural non-farm sector that is home to the bulk of the poor and underemployed. That is why agricultural growth is not only important to growth in national income, but also absolutely vital to growth in employment and reduction of poverty.

There is another source of rural demand—remittances from employment in Egyptian cities and foreign countries. In Egypt, that income is about one-third as large as farm income. It is generally believed that remittances overall are not growing rapidly. That is particularly true of those from foreign sources, for which the Persian Gulf is the dominant element. In this assessment, we show how agriculture can grow rapidly, providing the essential demand basis for a dynamic rural non-farm sector. Of course, members of the rural non-farm sector also buy from one another—but buying from one another cannot by itself be a stimulus for growth. The carpenter cannot increase his purchases of bakery goods unless farmers increase their incomes from production for outside the community and spend some of that income on the carpenter. That creates not only demand for the carpenter’s output, but his consequent increased expenditure provides further increased demand for other rural non-farm producers. The initiation of those multipliers comes from increased agricultural incomes.

TARGET GROWTH RATES BY COMMODITY GROUP

Table 3-1 states the base weights of each of five commodity groups as a percent of agricultural GDP and target growth rates for each commodity group. The weighted average of the growth rates is 4.8 percent. That is an agricultural growth rate consistent with a 7.1 percent rate of growth of GDP as well as with rapid increase in employment (Table 3-9.) It is far higher than Egypt has achieved in recent decades. That growth rate, as is shown in Table 3-9 and discussed in the next section, will increase employment at a rate more than two percentage points faster than the labor force growth rate. It would be expected to provide rapidly rising real wage rates within 10 years.

Table 3-1: Target Agricultural Growth Rates By Commodity Group, 1999 Base

Commodity Group	Base Weight	Growth Rate	Proportion of Growth
Cotton	6	9.0	11
Cereals	23	3.0	7
Horticulture	31	6.0	45
Livestock/Fisheries	24	5.3	27
Other Field Crops	16	3.0	10
Total/ Weighted Average	100	4.8	100

Source: Value added proportions from MALR; for growth rates see Table 3-3 and text.

Simplistically, with the nuances taken up below, the commodity groups are differentiated according to whether they are tradable commodities (the market is global) or non-tradable (the market is domestic) (Table 3-2.) Cotton, Cereals, and Other Field Crops are designated tradable commodities. In theory, for these crops, demand at current prices is not a constraint because the global market is available, in the form of exports or displacement of imports. In that case, production forces determine growth. Of course, as will be discussed at length in the commodity chapter, even on the international market, there are complex marketing problems that must be solved, including reducing transaction costs and providing the product quality demanded in the international market.

In the case of non-tradable commodities, it is growth in domestic demand that sets a rough ceiling on output growth. Horticulture and Livestock/Fisheries are classified in Table 3-3 as non-tradable. Lower consumer prices are required if consumption growth is to exceed the growth rate of domestic demand. The production target for livestock is consistent with the demand growth rates, and that for horticulture assumes sufficient relative price decline to allow consumption growth one percentage point faster than demand growth.

Classifying horticulture is difficult. Exports now make up an insignificant 4 percent of production. Although exports are targeted to grow rapidly, the bulk of production is unsuitable for export markets. Thus, the determining constraint on output growth is domestic markets. As success is achieved on export markets, horticulture will become increasingly a tradable commodity with demand not constrained by the domestic market.

Table 3-2: Target Sources of Growth, by Commodity, Hypothetical

Commodity Group	Agricultural GDP, percent	Growth Rate (percent)	Yield Growth Rate	Area Growth Rate	Unit Value Growth Rate
International Demand					
Cotton	6	9.0	4.5	2.5	2.0
Cereals	23	3.0	3.0	0	0
Other Field Crops	16	3.0	3.0	0	0
Domestic Demand					
Horticulture	31	6.0	3.0	2.0	1.0
Livestock/Fisheries	24	5.3	4.0	1.3	0
Total/Weighted Average	100	4.8			

Note: Area expansion roughly equal to new land additions. Data from Table 3-2 and as explained in text.

Table 3-3: Demand Growth Under High, Balanced Growth Scenario

Demand Component	Horticulture	Livestock/Fisheries
Population Growth, percent/year	2.2	2.0
Per Capita Income, percent/year	4.0	4.0
Income Elasticity of Demand	0.69	0.77
Shifter from Lower Prices	1.0	
Demand Growth (calculated from above)	6.0	5.3

Sources: Population, CAPMAS; Income, assumed; Elasticities, IFPRI, 2000

Livestock/Fisheries (because of to very rapid growth over the past decade, fisheries now make up about one-third of the total) is clearly non-tradable. Yes there are imports, but they are only a small percent of domestic production and concentrated in specified sub-sectors. The difference between import parity prices and export parity prices largely stems from costs of marketing.

In Table 3-3, domestic demand growth is estimated for Horticulture and Livestock/Fisheries. The domestic demand is calculated as a function of the population growth rate, per capita

income growth, and the income elasticity of demand. The income elasticities of demand are for Egypt as a whole and are derived from an IFPRI household survey. The growth path stated here is weighted toward growth in rural incomes and of low-income people. Hence, using Egypt-wide data tends to understate the elasticities significantly.

The per capita income growth estimate is based on the GDP growth rate of 7.2 percent (as calculated in Table 3-9) and only slightly higher than the 7.0 percent rate taken by the World Bank as a reasonable future target, population growth rate of 2.2 percent, and a 20 percent marginal savings rate on the per capita income. That provides a per capita income growth rate of 4.0 percent. That of course is very high compared with that of the past. However, this exercise is intended to determine with feasible growth rates that will have a substantial effect in raising employment growth rates. This is a conservative estimate, given the assumption of a fast-growing agricultural sector; the strong multipliers to the large, employment-intensive, rural non-farm sector; and a high, export-driven growth rate for the urban sector.

SOURCES OF OUTPUT GROWTH

Table 3-2 shows a plausible breakdown of sources of output growth for achieving the targeted growth rates. Output growth is decomposed into yield, area, and increased unit value, largely because they relate to different sets of interventions. For the tradable commodities, such estimates of what can be achieved on the production front indicate the volume for which marketing problems must be solved. That of course cannot be taken for granted and is treated at length in the commodity chapter.

Yield

MALR has estimated past yield increases (output per unit area of land) at only 0.4 percent per year for the crop sector. Table 3-2 targets much higher growth rates in yields: 4.5 percent for cotton and 3.0 percent for each of the other crop commodity groups, and 4.0 percent for livestock (output per animal.) A technologically mature country such as the United States can expect continuing research and its application to provide on the order of a 1.5 percent rate of growth of yields. However, even though high in general, Egyptian yields lag well behind what can be achieved with current technology. Thus, an additional 1.5 percent rate of growth of yields is posited, in a sense representing catch-up with the current global state of technology. That would close the yield gap with more advanced countries by only 16 percentage points in 10 years. Nevertheless, to achieve this objective requires a substantial effort and focusing of the agricultural research effort. It probably also presumes a significant foreign private sector input.

In the case of cotton research, it has for over 20 years only maintained yields. Yields have not surpassed the levels of the early 1980s. The rest of the world has experienced steady increase in cotton yields. Thus, an additional 1.5 percentage points of catch-up growth is postulated. That comes to a very rapid 4.5 percent rate of growth. At that rate, it would take nearly 9 years to reach the current Israeli level of cotton production, by which time Israel

would have moved onto substantially higher yields. To achieve this high growth rate in yields is not possible with a business-as-usual approach to cotton research. Considerably greater focus and expenditure are needed. The present research system has been effective in maintaining yields in the face of the usual forces tending to reduce them. It must now focus additionally on what is needed for rapid yield increase.

Table 3-4 shows for four commodities Egypt's yield per hectare and that of a selection of countries with dry, sub-tropical climates, similar soils, and irrigation that have substantially higher yields. The yield differentials run from 17 percent higher than Egypt for rice to 45 percent higher for cotton.

Table 3-4: Egypt Compared with Selected Countries, Yield of Specified Crops, 2001

Crop	Country	Yield (Hg/Ha—Index)
Maize	Egypt	76,800—100
	Israel	133,846—174
Seed Cotton	Egypt	27,551—100
	Israel	40,000—145
Wheat	Egypt	63,566—100
	Namibia	79,987—126
Rice, Paddy	Egypt	81,538—100
	Australia	95,308—117

Source: FAOSTAT 2001

Livestock production is shown to grow largely by increased productivity per animal, implying a doubling in animal productivity over an 18-year period. That is important to increasing competitiveness of the sector and is treated in the commodity chapter. Increasing production per animal also would increase feeding efficiency. In addition, there would be an increase of concentrate feeding, possibly from increased imports. Thus, what happens to the berseem area is indeterminate, particularly because berseem yields should also be presumed to increase at a 3 percent rate, as for the other field crops. With that rate of yield increase for berseem, some relative increase in concentrate feed use, and an increasing feeding efficiency, it is unlikely that berseem area would have to expand to match the livestock growth. Again, however, there is a heavy burden placed on productivity-increasing research and its application to small farms. Livestock output is in terms of value added, that is net of the feed consumed.

Area

Area expansion is targeted as important for cotton and for horticulture: 2.5 percent rate of growth of area for cotton and 2.0 percent for horticulture. In effect, it is assumed that those increased areas are comparable to the increased area from new lands that the government targets, net of losses of land to agriculture from urbanization and such forces. Thus, compensating decline in area of these crops is not shown. That in effect means that something on the order of 0.75 percent points, or 15 percent, of the 4.8 percent growth rate is attributable to the new lands. The importance of new lands is even greater, given the

significant loss of land to non-agricultural uses that is netted out of the new lands in these calculations.

Analysis by the GOE projects cotton area increasing by one-third in the near future and rice area declining commensurately. For that to happen will require major policy changes. A low point in cotton area was reached in recent years at less than half the area planted in the early 1980s. Last year saw some recovery from those low points, but recovery of past peaks would represent a nearly two-thirds increase in area from current levels. Reaching the commonly quoted government objective of 1 million feddan planted to cotton would require a one-third increase from present levels. Of course, the decline in area planted is a response by farmers to the relative profitability of cotton, particularly relative to rice. That is despite the very strong comparative advantage of Egypt in cotton production. Thus, much needs to be done with respect to policy if these targets are to be reached. It should be noted that cotton generates a far higher value added per unit area of land than the other field crops, so raising cotton production is important to the overall growth rate and to employment.

Horticulture uses rather little land relative to its value of output, thus increasing area at the rate shown is not a substantial constraint if farmers find the crop profitable.

Unit Value

For two of the commodity groups, shift toward higher value components is a significant share of the growth rate of overall value added. In the case of cotton, it is assumed that Egypt will develop its absolute and comparative advantage in finer grades of cotton and increase the share of output from those higher value components. Egypt has a strong comparative advantage in extra-long staple cotton. Demand in the world is moving strongly toward high quality products and to some extent to natural products as well. That is a favorable environment for market development for extra-long staple cotton. In the case of horticulture, there may be shift to higher value components.

PRODUCTION AND MARKETING CONSTRAINTS

The high-income elasticities assumed for livestock and horticulture are mirrored by high-price elasticities. That means that if the production and marketing constraints are not removed, the consumer price will rise and consumers will shift readily to other, largely non-agricultural commodities. Given the labor intensity of livestock and horticulture and the strong employment multipliers, that lost opportunity will be paid largely in the form of less employment growth and less poverty decline.

Conversely, if production costs can be reduced substantially, that benefit can be shared with consumers, with the lower prices increasing consumption and providing scope for a higher growth rate than shown. International competitiveness requires steady, substantial reduction in production costs. That is factored into Table 3-2 as a 1 percent addition to the growth rate of horticultural consumption.

Marketing

Growth in farm incomes of the magnitude required for rapid growth in employment cannot occur without large increases in farm output. The preceding text and tables show how that might be achieved. However, the marketing of that increased production, even in global markets, will not occur automatically. In both the global and the domestic markets, there are myriad complex marketing problems that must be solved. For that reason, much of the exposition of later chapters of this assessment deals with marketing problems.

Comparative Advantage in Agricultural Commodities

Egypt has highly productive agricultural resources that are reflected in high crop yields. Such conditions are normally highly responsive to the new opportunities offered by technological advance and the forces of globalization.

A common means of measuring comparative advantage is to compute the domestic resource cost of production. The commodity chapters present domestic resource costs (DRCs) computed specifically for this assessment and summarized in Table 3-5. A country has a comparative advantage if the DRC is less than one. All the crops in Table 3-5 show a DRC of less than one.

The two horticulture crops, potato and tomato, undoubtedly are representative of a wide range of vegetables and fruits, reflecting extremely high comparative advantage. They also show by far the highest returns to water. Hence, the future is bright for major expansion in these commodities. The proportion of area planted to these crops is very small compared for example with that of Southern California, with its comparable climate, soils, and water.

Cotton and wheat show very low DRCs of 0.61 and 0.65. Short season berseem, which is in part a proxy for livestock, shows an exceptionally low DRC of 0.37. Maize also shows a highly competitive DRC of 0.81. Rice, Sugar Cane, and Sugar Beet show competitive DRCs, comparable to that of Maize. However, as shown in the last column of Table 3-5, the returns to water for these very water using crops is very low, at one-third or less that of cotton. At such time as water becomes more scarce than at present, these high water consuming low returns to water crops will become less and less competitive for resources. An area of rice much less than at present, but nevertheless substantial, will remain competitive because it is grown on very heavy soils, ill suited to other crops, and much less demanding in water use.

A separate calculation in a World Bank study, for livestock, shows DRCs of 1.0 or lower for poultry, both home and commercial; buffalo; and exotic cattle (Table 3-6.) It is notable that Baladi (local) cattle show negative returns—but that is most likely a reflection of farmer's willingness to take well below market wages for work on cattle. That suggests that the real profitability of cattle to farmers is much higher than shown in Table 3-6.

KEY CONSTRAINTS

The next chapter discusses opportunities and constraints for each commodity group. The following brief exposition points out critical differences among the commodity groups in constraints to be removed.

Cotton

In the target growth rates presented in Table 3-2, cotton accounts for only 11 percentage points of the increments to agricultural production. That is because of its low weight in the base of production and that in turn is because the area and production of cotton have declined precipitously over the past few decades. That decline does not represent lost comparative advantage (as shown by the DRCs in Table 3-6) but unfavorable policies. Thus, the 9.0 percent growth rate for cotton is very rapid by normal crop growth standards but not unreasonable considering how powerful the negative policy effects have been. Note that Pakistan, also a large producer of cotton under conditions similar to those of Egypt, sustained a 16 percent growth rate in cotton production for well over a decade in the 1970s and 1980s (JMA, 1995.)

Cereals

Cereals account for 7 percent of incremental growth in the scenario set forth. In the recent past, rice has expanded its area substantially at the expense of cotton. That would be reversed by change in policy. Yield growth depicted requires attention to research and extension.

Table 3-5: Domestic Resource Cost, Various Commodities

Crop	Domestic Resource Cost	Value of Water (LE/1000M ³)
Wheat	0.65	0.39
Short Berseem	0.37	0.51
Maize	0.81	0.17
Rice	0.83	0.09
Cotton	0.61	0.34
Potatoes, summer	0.18	1.10
Sugarcane	0.81	0.11
Sugar beet	0.77	0.06
Tomato, winter	0.19	1.13

Source: Calculated by Tyner for this assessment, see Commodity text.

Table 3-6: Domestic Resource Cost, Livestock Products

Animal	Domestic Resource Cost	Domestic Resource Cost, Berseem*
Cattle, Exotic	0.8	0.7
Cattle, Baladi	na	6.5
Buffalo	1.0	0.9
Poultry, Home	1.0	na
Poultry, Commercial	1.0	na

Source: World Bank 1995

*DRC where farmer grows the Berseem, rather than buys it as marketed input.

Note: that the two commodity groups recommended for USAID support represent 72 percent of incremental agricultural growth and are the most labor-intensive commodities. Horticulture has by far the strongest comparative advantage of all the commodities.

Other Field Crops

This catchall sector is depicted as growing at three percent per year, entirely because of increased yields.

Horticulture

A growth rate of 6 percent for horticulture will not be easy to achieve. First, a vigorous research and extension effort is needed to bring down cost of production. Second, massive barriers to competitive marketing must be removed. Thus, although the large-scale farms on the new lands can blaze a path, the large number of smallholders in the Delta must be included. That very much affects the approach to both extension and marketing. Finally, although the bulk of horticulture production will continue to be non-tradable on quality and transaction cost grounds, the export sector must grow quickly and increase the proportion of total production made suitable to the export market. In the long run, a high proportion of the Delta needs to be brought under horticulture production and that means small holders must be brought into the process.

In Egypt, 15 percent of the cropped area is under vegetables and orchards. That compares with more than twice that proportion in the San Joachim Valley counties of California.

Livestock

Livestock are largely produced on small farms, and women play a major role in livestock production and marketing. Smallholder livestock is highly labor intensive. There is some view that the smallholder sector is inefficient. That is partly an image problem because the small farmer uses less capital and much more labor in the production process. It is also a reality because smallholders do not receive significant research, extension, and market development attention. But with 27 percent of incremental value added coming from livestock, and that only matching demand growth, it is essential to income and employment growth that this potential be realized.

Efficiency of Input Use—Fertilizer

Typically in high-income countries value added in agriculture rises more rapidly than gross value of output. In contrast, in low-income countries the reverse is the case. That is because of rapid increase in fertilizer use with little attention to the management-intensive practices that increase the productivity of fertilizer. Table 3-7 illustrates three hypothetical cases, the third of which represents Egypt. Because the efficiency with which fertilizer is used is decreasing with growth in use, value added grows substantially less rapidly than total output. The countries that achieve faster growth in value added than in gross value of production have substantial research and extension programs focused on increasing input efficiency.

Table 3-7: Three Hypothetical Situations of Agricultural Growth

Year	Gross Value Output	Situation 1		Situation 2		Situation 3	
		Cost of Inputs-	Value Added-	Cost of Inputs-	Value Added-	Cost of Inputs-	Value Added-
1	100.00	25.00	75.00	25.00	75.00	25.00	75.00
2	105.00	26.25	78.75	25.75	79.25	26.75	78.25
3	110.25	27.56	82.69	26.52	83.73	28.62	81.63
4	115.76	28.94	86.82	27.32	88.44	30.63	85.14
5	121.55	30.39	91.16	28.14	93.41	32.77	88.78
6	127.63	31.91	95.72	28.98	98.65	35.06	92.56
7	134.01	33.50	100.51	29.85	104.16	37.52	96.49
8	140.71	35.18	105.53	30.75	109.96	40.14	100.57
9	147.75	36.94	110.81	31.67	116.08	42.95	104.79
10	155.13	38.78	116.35	32.62	122.51	45.96	109.17
11	162.89	40.72	122.17	33.60	129.29	49.18	113.71
Growth Rate	5.00%	5.00%	5.00%	3.00%	5.60%	7.00%	4.25%

Source: JMA 1995

Note:

Situation 1: Growth rate of cost of inputs=Growth rate of gross value of output

Situation 2: Growth rate of cost of inputs<Growth rate of gross value of output

Situation 3: Growth rate of cost of inputs>Growth rate of gross value of output

It is value added that matters to farm incomes, which in turn drive rural employment. Thus, Egypt, which uses fertilizer at rates far higher than typical low-income countries (but of course still less than in the high-income countries), has considerable scope to increase the productivity of fertilizer. It should be noted that in effect the employment impacts shown below presume that value added will grow as rapidly as gross value of output, Situation 2 in the table, which in turn presumes an effective effort to improve the management of inputs, especially fertilizer.

Efficiency of Input Use—Water

The targeted growth rates presume that the cultivated area will continue to expand at about the same rate as in the past few decades. In those calculations, the government's targets for new irrigated area have been accepted and then the historical rate of loss of agricultural land

netted out; that leaves a net growth rate of about 0.75 percent. There is an implicit assumption that new lands will be allocated optimally and will be comparable in quality to past additions. It also is assumed that sufficient increase in water use efficiency will occur to meet the rapidly growing urban needs without productive loss in agriculture.

These are all heroic assumptions. For them to become reality will require continuing attention to water use policy and the making of hard decisions about where new water will be allocated. In this context, difficult conflicts between the best allocation for employment and national income growth and broader national objectives will have to be resolved.

Achieving the Aggregate Agricultural Growth Rate

The assumptions stated above provide an agricultural growth rate of 4.8 percent. That is in the mid range of the 4-6 percent growth rates typical of the high-growth-rate countries (Mellor 1992.) That is a reasonable position for Egypt's highly biological technology-responsive agricultural resources. As is shown in the next section, that growth rate makes a major contribution to employment growth and poverty reduction. The contribution of agriculture is a function of the per capita rate of agricultural growth. Thus, with a 2.2 percent population growth rate and a 4.8 percent agricultural growth rate, reducing the agricultural growth rate by one percentage point reduces the total output growth rate by about 20 percent but the growth rate per capita by nearly 40 percent. Thus, there is urgency to finding the means to meet the high growth rate target. The comparative advantage is there. The need is for the investment, the institutions, and the policies delineated in detail in the following sections.

If this high agricultural growth rate is to be achieved, specific investment and institutional development efforts must be made in each commodity group. This assessment recommends that USAID play an important commodity-specific role in the two most important commodity groups for achieving the high growth target—horticulture and smallholder livestock.

Of perhaps even greater importance than the commodity-specific efforts is a large, continuous effort to realize the policy changes that are needed at the macro level, at the general agricultural level, and at the specific commodity level. That effort requires continuous analysis of the changing policy needs, related to the priorities for achieving the overall growth rate, an effective implementation of policy change, and continuous monitoring and evaluation of progress made. The last is of special importance because of the dynamic nature of the changes and the need to understand the shifting policy priority needs in the context of a dynamic technological and commodity growth situation.

EMPLOYMENT IMPACT OF THE TARGETED GROWTH RATES

Timmer (1997) shows that 84 percent of poverty reduction, and by implication employment growth, are associated with the rate of growth of agriculture. That work is consistent with that of Ravallion (1995) and earlier work by Mellor (1976.)

The Timmer and Ravallion work also show substantial lags between growth in agriculture and reduction in poverty. That is consistent with the agricultural impact occurring substantially through the indirect effect of providing a demand stimulus to the rural non-farm sector. Those same analyses show that when the income from farming is extremely unequal the poverty reduction/employment effect is greatly reduced. That is an important finding in its own right and is consistent with the agricultural impact being indirect, through increased demand for rural non-farm products. Very rich landowners will not stimulate the labor-intensive, non-tradable rural non-farm sector as much as peasant farmers. That is of course an argument for realizing the efficient growth potentials in the smallholder farming sector.

The following data are consistent with those international findings. In Egypt, as for most countries, national statistics are not categorized according to the tradable and non-tradable sub-sectors, even though that is the most relevant categorization for analyzing employment growth. Thus, the following data rely on micro studies and considerable extrapolation.

Base Data

National income accounts show 17 percent of GDP in agriculture, and the most recent labor force survey by the Central Agency for Public Mobilization and Statistics (CAPMAS) shows 66 percent of the labor force as rural (Table 3-8.) Based on expenditure data, it is calculated that the rural non-farm non-tradable sector is the same proportion of GDP as agriculture. The CAPMAS labor force survey states 23 percent of the labor force as farm labor force. The same data show that employment in the rural non-farm sector is 43 percentage points of the total employment and total rural employment is 66 percent of total employment.

It is estimated, consistent with survey and GDP data, that the urban informal or non-tradable sector is about 50 percent larger than the urban tradable sector in labor force but less than one-fifth as large in terms of share of GDP. These numbers are consistent with estimates of factor share to labor, capital, and land in the respective sectors.

Growth Rates

The agricultural GDP growth rate is taken from the preceding analysis as 4.8 percent (Table 3-2.). The rural non-tradable growth rate is calculated as 1.5 times the agricultural growth rate per capita plus the population growth rate and therefore comes to 6.1 percent. The Urban formal and non-formal sectors are assumed to grow at a rapid rate of 8 percent.

Employment growth rates are calculated from the GDP growth rates and the employment elasticities. A weighted average growth rate for employment and for GDP is calculated, as is the proportion of employment in each sector (Table 3-9.). That latter number is a function of the employment growth rate and the initial size of the sector.

Table 3-8: GDP and Employment Proportion, By Sector, Hypothetical

Sector	GDP Proportion	Employment Proportion	GDP Employment Ratio
Agriculture	17	23	0.74
Rural Non-tradable	17	43	0.39
Subtotal	(34)	(66)	(0.52)
Urban Tradable	56	14	4.00
Urban Non-tradable	10	20	0.50
Subtotal	(66)	(34)	(1.94)
Grand total	100	(100)	(1.0)

Source: GDP, Agriculture from National Income Accounts, rest extrapolated from data on small and medium scale business; Employment, Agriculture, rural Subtotal, urban Subtotal from CAPMAS 1998 Labor Force Survey; rest extrapolated from breakdowns in that survey and from SME data.

Table 3-9: Employment and GDP Growth Rates, By Sector, Hypothetical

Sector	GDP Growth Rate	Employment Elasticity	Employment Growth Rate	Proportion of Incremental Employment
Agriculture	4.8	0.5	2.4	12
Rural Non-tradable	6.1	0.9	5.5	49
Subtotal	(5.5)	(0.7)	(4.4)	(61)
Urban Tradable	8.0	0.4	3.2	9
Urban Non-tradable	8.0	0.9	7.2	30
Subtotal	(8.0)	(0.48)	(5.6)	(39)
Grand Total	(7.2)	(0.7)	(4.8)	100

Sources: GDP growth; Agriculture from Table 3-2; rural non-farm calculated as Agriculture GDP growth rate per capita times multiplier of 1.5, plus population growth rate; Urban Tradable assumed high rate; Urban Non-tradable, assumed same as Urban Tradable; Employment Elasticity; Agriculture from Rao 1986; Rural Non-tradable, marginally less than one; Urban Tradable, standard for LIC industrial; Urban Non-tradable same as Rural Non-tradable; Employment Growth equals GDP Growth Rate times the Elasticity; Proportion calculated as average of Employment Growth Rate weighted by the employment proportion from Table 3-7.

Employment Impact of Rapid Agricultural Growth

With fast-growth assumptions given, employment grows at 4.8 percent per year, nearly twice the population and labor force growth rate. If there were an underemployed pool of labor equal to 11 percent of the labor force, that pool would be absorbed in a little less than five years, at which point real wage rates would begin to rise. In this fast-growth scenario, agriculture and the sector driven by agriculture provide 61 percent of incremental employment growth and the urban sector provides 39 percent. That is in contrast to 66 percent of GDP in the urban sector and 34 percent in the rural sector.

If employment grows at 4.8 percent and the labor force at 2.8 percent (CAPMAS estimate), it would take five years to absorb 10 percent unemployment of the labor force. Taking the CAPMAS estimate of the total labor force at 21 million, 400,000 jobs would be created beyond the labor force growth.

ALTERNATIVES TO AGRICULTURE-LED GROWTH

Alternatives growth strategies include de-emphasizing agriculture generally, de-emphasizing specified commodity groups within agriculture, and de-emphasizing specific policies within commodity groups. The first two are discussed below, the third in the individual commodity sections. Throughout, we have emphasized that solving employment problems requires balanced growth. In that context, a very high growth rate in the urban sector is assumed. Thus, as alternatives for lower agricultural growth are examined, it is not assumed that urban growth could be increased to compensate. Growth rates are already set far above the present. Those growth rates will be difficult enough to achieve, let alone even higher ones.

De-Emphasizing Agriculture

The preceding discussion states commodity group targets of a 4.8 percent growth rate for agriculture and then calculates the impact that growth rate will have on employment, when combined with a high growth rate in the urban tradable and non-tradable sectors.

Table 3-10 examines the situation if in each category in Table 3-1 the growth rate dropped in half, except for cereals for which the growth rate would be maintained at 3 percent per year increased new lands, but reduced yield rate growth. The overall growth rate would be 2.7 percent—comparable to the growth rate in previous slow agricultural growth periods and a level just keeping up with labor force growth. The difference in impact between the 4.8 percent and the 2.7 percent growth rates is calculated in Table 3-10.

Table 3-10: Jobs Generated in the Rural and Urban Sub-Sectors, Fast and Slow Growth in Agriculture, 2002

Sector	GDP (fast)	Incr. Empl. (fast 000)	Percent Empl. (fast)	GDP (slow)	Incr. Empl. (slow)	Percent Empl. (slow)	Employment Reduction
Agriculture	4.8	121	12	2.7	68	10	53
Rural Non-tradable	6.1	494	51	2.7	218	34	276
Subtotal	(5.5)	(615)	(63)	(2.7)	(286)	(44)	(329)
Urban Tradable	8.0	91	10	8.0	91	15	0
Urban-Non-tradable	8.0	302	27	8.0	302	41	0
Subtotal	8.0	(393)	(37)	8.0	(393)	(56)	0
Grand Total	7.1	1,008	100	6.3	679	100	329

Source: Calculated from Table 3-8; base employment from CAPMAS 1998 Labor Force Survey. Total labor force is 21 million.

The growth rate of GDP would fall little: by only 12 percent from 7.2 to 6.3. That is not surprising because agriculture is a small part of the total economy. However, most important, 329,000 fewer jobs would be created. Job formation would decline by 33 percent, compared to the decline in GDP growth rate of 11 percent. Because it is assumed that the growth rate would not decline in the urban sector, 56 percent of job formation would be in the urban sector, primarily in the metropolitan areas that are dominant in exports and only 47 percent in the rural areas. Rural urban migration would be much greater than under the fast agricultural growth scenario.

The rural economy would be devastated by slow agricultural growth. With agriculture growing at 4.8 percent and high employment growth, the farm population would decline on the order of 0.5 percent. Farm incomes would rise by a full 5 percent per year; they would double in 14 years. With 2.7 percent growth and slow growth in employment, the farm population would probably increase by nearly the amount of population growth and hence farm incomes would not increase at all.

With the low-growth rate, rural areas would experience both stagnant farm incomes and 329,000 fewer jobs created each year. The consequent rural-urban income differentials would certainly result in massive rural-urban migration. Many of those migrants would flood into urban slums and wait for considerable periods for the better-paying urban jobs. That would be one of the most important causes of increased urban poverty and slums.

If agriculture grows at only the labor force growth rate and the urban sectors grow as above, the overall employment growth rate drops to 3.4 percent or by nearly 30 percent—barely above the labor force growth rate. It would then take nearly 17 years to absorb the same pool of underemployed as would be absorbed in 5 years in the fast agricultural growth strategy. It should be noted that with so much of the urban tradable sector in the public sector and believed to have large quantities of redundant labor that in fact the employment elasticity for the urban tradable sector may in the short run be close to zero.

Thus, the solution to Egypt's employment problem can come only through major efforts on several fronts. Accelerated growth of the urban, tradable goods and services sector is essential not only because it is so large and therefore accounts for substantial employment, but also because it is important to growth of the non-tradable sub-sectors of agriculture—particularly livestock, but to a substantial extent horticulture as well. In contrast, agriculture's small share of GDP looms large as a share of employment. In turn, each commodity group within agriculture has a significant role to play in employment growth. Failure to move any one brings a significant effect on employment growth, but none is so dominant that one can concentrate on only that group.

Thus, the place for priorities is emphasizing the large components within each sub-sector and diagnosing the few priorities for moving each sub-sector. The ensuing exposition does just that, so that a manageable number of priority actions are recommended. Of course, priority setting for USAID is somewhat different from priority setting for the GOE. USAID needs to analyze not only what needs to be done in Egypt but also its own comparative advantage

within that range. The following exposition addresses that issue. That there is a lot to do strengthens the argument for making hard decisions about comparative advantage and priorities among sub-sector specific actions.

This analysis of alternatives highlighted the importance of a strategy that does set priorities and a policy environment favorable to succeeding in those priorities. USAID has a powerful comparative advantage in policy analysis complementary to rapid agricultural growth to meet both production and employment objectives.

The following sections take up, by commodity group, the investment, institutional development, and policy requisites of achieving the high agricultural growth rate that can make a significant dent in the employment problem.

CHAPTER FOUR

ANALYSIS OF RECOMMENDED COMMODITIES: CONSTRAINTS, AND OPPORTUNITIES

INTRODUCTION

The Assessment Team used a commodity-based approach to its analysis of Egyptian agriculture. It did so by examining the country's major commodities and agricultural products "from farm to fork." This supply chain analysis covered cotton, sugar, livestock, dairy, horticulture, processed food, and cereals. It viewed these commodities and products through the prism of the criteria that guided the team's work: increased competitiveness, a more-effective enabling environment, and higher incomes for the rural poor.

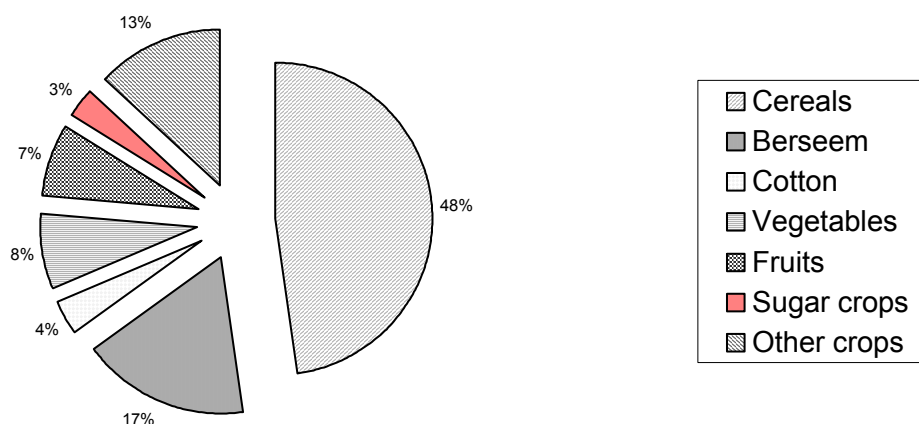
From the analysis, the team recommends two sub-sectors for USAID interventions in the future: horticulture and livestock/dairy. Abridged information about these two commodities are presented below. They are presented in far greater detail in Chapter Four of Volume II, along with detailed descriptions of the supply chains of all the other commodities and agricultural products the Team examined.

Finally, the team recommends that, to achieve improvement in the enabling environment for these commodities—and for agriculture generally—USAID should continue its work in the policy reform area. The needs and issues are explored more fully in Chapter Five, and in even greater detail in Chapter Five of Volume II.

OVERVIEW OF EGYPTIAN AGRICULTURE

Egypt has a long and rich history of agricultural production both for domestic consumption and for export. The agriculture is entirely irrigated and thus is not subject to the large annual fluctuations in yields characteristic of most countries dependent on annual rainfall to nourish the crops. In 2000-2001, Egypt had 13.9 million feddans of crop production. The total agricultural area is 7.8 million feddans, so the cropping intensity was 178 percent. The make-up of the crop production is depicted in Figure 4-1. About half the area is used for cereals with wheat representing about 18 percent, maize 14 percent, and rice 11 percent. Berseem constitutes 17 percent. Together, cereals and berseem represent two-thirds of the cropping area. Wheat and berseem are the major winter crops, whereas cotton, rice, maize, and horticulture are the main summer crops. Cotton (518,319 feddan) only represented 4 percent of total area in 2000-2001, but was back up around 730,000 feddan in 2001-2002. Fruits and vegetables together constitute about 15 percent of the total area. All other crops including sugar, oilseeds, legumes, and others represent another 16 percent of cropped area in Egypt.

Figure 4-1: Egyptian Crops in 2000-2001



HORTICULTURE

The horticulture sector is characterized by four striking characteristics not found in the other crop sectors included in this assessment's analysis. They are:

- A large number of individual crops—with fruit and vegetables alone numbering 40;
- The relatively small amount of land required for their production;
- An absence of direct government subsidies; and
- The presence of traditional and non-traditional crops having very different dynamics.

Non-Traditional Crops

Promotion of fresh non-traditional export horticulture crops has been USAID's principal agricultural production intervention since 1996. The vehicle for this intervention is the on-going ATUT project. ATUT's primary goal is to help the Egyptian private sector develop an efficient and competitive export capability for a selected group of fresh, high value, non-traditional export-oriented horticulture products. This has required ATUT to work with large growers and/or exporters having the financial capacity and entrepreneurial spirit to invest in such a capital-intensive and high-risk venture. There is every indication that ATUT has achieved its principal objective. New products are being successfully grown and marketed. Technical and management training has been provided through technical assistance and field visits to producing counties abroad. Market and marketing knowledge has been disseminated through market analyses and field trips to foreign markets. Expertise has been provided to initiate and support efforts to establish efficient international transportation.

USAID, ATUT and APRP have worked with the horticulture industry to establish HEIA to provide support services to the industry. This has resulted in the institutionalization of selected technology transfer training, quality inspection services and training, and a voice to lobby for the removal of GOE policy and regulatory constraints.

APRP has addressed policy issues that adversely impact the horticulture sector, including work with HEIA to secure GOE approval for a new cool holding facility at Cairo International Airport, improvements in refrigerated sea container availability, and beneficial changes in seed and pesticide policies and regulations. Additionally, APRP has recently become involved in pilot projects with HEIA, governorate-level MALR offices, and selected cooperatives and private companies to test the feasibility of extending the non-traditional export crop production to small and medium-sized holders.

ALEB has worked to increase exports and value-added of horticultural crops by technical and marketing assistance to food processors.

ATUT's Phase One effort initially focused on two crops—table grape and strawberry. ATUT client exports for 2002 are projected at 8,200 metric tons of table grape, and 6,300 metric tons of strawberry, 1,400 metric tons of fine green beans, and 32.3 million stems of cut flowers. ATUT has projected that, with continued technical improvements to raise product quality to E.U. standards, production of .E.U and Persian Gulf export quality table grape and strawberry will increase significantly over the next 10 years—to 67,500 metric tons of strawberry, 45,600 metric tons of table grape, and 960 million stems of cut flower. However, there is a question about whether the target markets for these products will be of sufficient size to purchase these quantities. Egypt may reach its maximum market share of the identified cut flowers by 2006, of strawberries by 2007, and of table grape and fine green by 2012. Of these, only table grape appears to have domestic demand of sufficient size to absorb seconds and excess export-grade production. The magnitude of the implications for Egyptian producers is such that the export market projections for Egypt developed using the unmet-demand model should be thoroughly reviewed as soon as possible.

Market successes indicate Egypt's strong competitive advantage in export markets for these. This competitive advantage will not remain without explicit efforts to maintain it. Market prices are declining both absolutely and in relation to Egyptian prices. Egypt will have to reduce the CIF (delivered) cost of its products to remain competitive. This will have to be accomplished through a combination of investing in technology transfer in all areas (production, post-harvest handling, and transportation), increasing the proportion of exportable yields, developing economies of scale, and reduced taxes, to create the incentive. In addition, Egypt will have to ensure that it meets the market's changing quality needs.

Producer net income from non-traditional horticultural crops is higher than from other crop alternatives. For example, ATUT estimates small and medium-sized holder operating profit for green bean at LE 1,737/feddan, LE 20,772/feddan for strawberry, and LE 21,790/feddan for atriplex cut flowers. Other sections of this assessment estimate returns per feddan at LE 790 for rice, LE 686 for wheat, LE 499 for maize, and LE 1,197 for cotton. APRP has estimated gross operating margins per kilogram for fine green beans a LE 1.46 (higher than

ATUT's later projection because of a higher farm-gate price) compared with LE 1.12 for cotton; LE 0.94 for fava bean; LE 0.66 for New Land potato; LE 0.40–LE 0.490 for Valley potato, bobby bean, rice, and wheat; and LE 0.24 for maize. These estimates do not include depreciation on capital improvements, interest, and rent.

Opportunities for Growth

ATUT's work with the export-oriented horticulture sector has established a product development system, facilities infrastructure, and supporting services to foster further expansion. However, much more needs to be accomplished to establish the critical mass necessary to sustain these accomplishments. This will be achieved only through further development of the industry, including continuing technology transfer, upgrading field and marketing management skills, increasing the variety of the product line, and increasing the number of industry participants. Without continued progress, the accomplishments that have been achieved are put at serious risk, the industry will concentrate into a few major players, and the next important step in export development cannot be taken.

That next step is to extend the income generation opportunities offered by export markets to small and medium-sized holder farmers. This activity, building on the ATUT export development system, is where the major rural impact of USAID's horticultural export development strategy will be felt. Small and medium-sized holders, especially those who own their own land, spend a much greater portion of their increased income from horticultural export products in their villages than do corporate farms and absentee landlords, who purchase inputs in major cities or directly from foreign suppliers and do not leave the profit from their operations in rural villages. The attraction for export companies to use small and medium-sized holders is the opportunity to increase their volume of exports without further investments in land and capital improvements. ATUT is testing production of fine green bean and strawberry with small and medium-sized holders. APRP has a promising pilot program for table grape involving APRP, HEIA, governorate MALR offices, rural cooperatives and producer associations, and ATUT exporter clients. The risk to exporters in using small and medium-sized holders is that emerging quality assurance requirements, such as EUREPGAP, will prove too costly or risky to justify working with smallholders, as is happening to some extent in the Kenyan fine green bean sector.

Sector-specific Constraints

The principal constraints to continued development of Egypt's emerging non-traditional export sector relate to delivered product cost and quality. With total supply from Egypt and other countries increasing and Egypt increasing its market shares, delivered (CIF) costs are becoming a significant issue. Increased supply and importer quality requirements also increase the need to produce and deliver product that meets buyer specifications. Many of the quality and cost issues are affected by GOE policies, regulations, and actions.

Quality constraints include the lack of adequate post-harvest facilities, including cooling and packing sheds, refrigerated transport, and cold storage. Improvements have been made. Large growers and exporters are establishing their own facilities and acquiring refrigerated trucks. The availability of refrigerated containers has increased significantly in recent years, and regulations have been changed to facilitate their use and movement at Alexandria port. A new cold store facility is being constructed at Cairo International Airport. However, increasing production and export volumes will require more investment in support facilities. Particular challenges will be faced in extending these facilities to small and medium-sized holders growing areas.

The transportation issue goes beyond the relatively simple, if unnecessarily costly, acquisition of additional refrigerated trucks. Egyptian law does not permit efficient use of non-Egyptian trucks, thereby increasing the cost and availability of refrigerated transportation. Roads are often rough, slowing down the speed or reducing the quality of shipments. Airports in Upper Egypt do not have cold storage facilities in which to hold perishable cargo awaiting shipment.

Other quality factors include product variety and pesticide issues. GOE time requirements for the registration of imported varieties, although recently improved, still prevent rapid adoption of improved varieties by growers. This is especially crucial with regard to export products where Egyptian producers have to compete with other suppliers having less time-consuming registration requirements—for example, Morocco.

The pesticide issue is of very immediate concern given the E.U.'s expected decisions in 2002 specifying by name the chemicals that are acceptable for use on fresh fruits and vegetables consumed in the European Union. The GOE's recent adoption of a fast-track system, allowing approval of chemicals without proper documentation, has moved it away from earlier protocols that brought its regulation of pesticides more in line with international standards. It is especially worrisome that the fast-track approval system, may result in use of products that do not meet E.U. standards. Should imports from Egypt be found in violation of E.U. regulations, further imports will be endangered until producers come into compliance.

The principal GOE-imposed cost factors, other than income tax, relate to tariffs and sales taxes on imported equipment. For example, the tariff levied on imported refrigerated trucks and components remains at 45 percent despite Parliament's 1998 action reducing it to 5 percent. There also are tariffs on other equipment and materials needed to improve the cold chain.

Commercial financing costs are high—commercial interest rates are 15 percent minimum. Small and medium-sized holders are also constrained by limitations on Principal Bank for Development and Agricultural Credit (PBDAC) financing and high rates of interest charged by other suppliers of credit.

Export product growers and exporters need to improve their technical and management skills. They need to learn more about production, handling, shipping, and marketing quality

products. All levels of management need to learn and implement effective general management techniques.

Technical and marketing expertise provided by ATUT and policy analysis expertise provided by APRP have not been fully institutionalized. HEIA is providing technical expertise and training in packing and shipping and will probably do so for table grape production when ATUT ends. Other technical capabilities, marketing knowledge, and the very important transportation expertise provided by ATUT have not been institutionalized. Nor has the policy analysis expertise provided by APRP.

Traditional Crops

Traditional fresh horticultural crops were not considered for USAID's export development intervention. They were ruled out for several reasons. They are grown primarily for the domestic market, difficult to differentiate as value-added products, normally sold in bulk, and have a low export-pricing structure. Thus, they did not have or could not develop the high margin required to attract the capital investment envisioned by ATUT objectives.

However, as shown in Chapter Three, a strategy to maximize rural income, and hence rural employment generation and poverty alleviation, must focus on products grown by large numbers of farmers, preferably beyond the subsistence farmer level. Desirable products should have high domestic demand and preferably some export demand to secure higher volume and prices, promote increased quality, and provide outlets for increased production. The characteristics that made the crops undesirable for a high-value export strategy actually make them attractive for a strategy designed to maximize impact on rural income, employment generation, and poverty alleviation. They are grown primarily by small and medium-sized holders who know how to grow them; they are sold through existing marketing chains; quality is not a major current issue; the crops respond to low-tech agronomic improvements; and the technology interventions to be learned and transferred by extension agents are relatively simple.

The most important traditional crops are tomato, which has the largest harvested area and greatest tonnage production; and potato and orange (including navel, Mandarin, Clementine, and nectarine), which have large cultivated area and production, and established export markets. Approximately 850,000 feddan of these products was harvested in 2000. Together, they are grown in every governorate. Yields are relatively low and can be improved through known low-technology, low-cost changes in cultural practices. There appears to be unmet domestic demand for horticultural products because real prices for these products are rising. There are export markets for many of the products that Egypt has not seriously cultivated.

As with the non-traditional export products, the export of potato and orange into nearby and European markets without the advantage of specific subsidies and with the imposition of high non-production costs (for example, the tariffs and regulations associated with truck transport) is evidence that Egypt has a competitive advantage in the production and marketing these products. This conclusion is reinforced by the lack of horticultural product

imports for local consumption (except for international hotel trade), even though there are no barriers to import. This does not obviate the need to reduce production and marketing costs. In the short run, these cost reductions will benefit Egyptian farmers, marketers, and consumers. In the long run, they will maintain or increase Egypt's competitive position in the increasingly internationalized trade of fresh and processed foods.

Opportunities for Growth

The farming practices employed for Egypt's principal horticultural crops, grown by hundreds of thousands of small and medium-sized holders principally for domestic demand, can be improved and thereby increase rural income. Costs can be reduced, yields increased, and quality improved through the introduction of even low-technology, low-cost techniques. This has not been accomplished for three principal reasons: (1) MALR does not have a sufficient number of well-trained horticulture extensionists; (2) MALR does not have horticulture technology packages for extensionists to deliver to the farmer; and (3) NGO efforts to provide horticulture extension are relatively small. This is also true of crops that are of smaller volume but offer profitable opportunities, as evidenced by farmer decisions to increase production of numerous other crops. None of the individual smaller volume crops represents an opportunity the size of tomato, potato, or orange to reach such large numbers of small and medium-sized holders. But, taken together and in light of where they can best be grown throughout Egypt, smaller volume crops are grown on 600,000 feddans and represent an opportunity to impact large numbers of farmers. In addition to production information, farmers will also benefit from access to market information. Both can be accomplished through effective use of cooperatives, producer associations, and governorate offices.

An opportunity that goes beyond but affects the individual farmer is the establishment of a refrigerated product handling system that includes assembler packing sheds in rural areas, trucks hauling product to markets, and refrigerated storage at wholesale markets themselves. This is a long-term project, best left to the initiative of the private sector as the horticultural sector continues to develop, but can be facilitated by removing import and sales taxes that are a disincentive to establishing these facilities and by providing tax incentives to locate packing and storing facilities in areas where they are needed.

There also are opportunities related to growth in consumption. The first and most obvious is growth in the domestic fresh markets. Population growth of 2 percent annually, the unmet demand, and rising incomes provide the base for strong growth in domestic demand.

Exports are another area of opportunity. The GOE and individual companies, often assisted by USAID programs, are working to develop new markets in both fresh and processed foods. An example of this in traditional products is orange. Exporters, in conjunction with the Egyptian Export Centre (EEC), are seeking entry into the Hong Kong export and China markets. EEC officials see a near-term opportunity for up to 15,000 tons annually. Selected markets in Africa have been identified for promotion of orange exports. An example of individual corporate activity is Egypt's relatively recent entry and success in exporting frozen

potato. Volume and value increased from under 200 tons/US\$200,000 in the mid-1990s to 11,880 tons/US\$5.2 million in 2000.

There will be increasing opportunities for new processing as production costs are reduced, production volumes are increased, and processing varieties are introduced. The ability to produce significant amounts of competitively priced strawberry should result in processing of frozen products, primarily for the export market. Reduced production cost and varietal improvements in tomatoes should lead to tomato paste production, at least initially for import substitution. The variety of fruits and vegetables grown in Egypt holds other processing opportunities for both export and domestic markets.

Another opportunity for growth in rural income is related to more efficient production and marketing. Reduced production costs will result in higher net income to farmers. Increased efficiencies in domestic marketing will reduce post-harvest loss and make land available for other crops, both of which should lead to increased farmer income. Exporter marketing contracts with retail chains will increase income to exporters, some of which will flow to farmers and farm workers who grow the generally higher quality products required by such contracts.

Sector-specific Constraints

Most smallholders have not adopted advances in agricultural practices that will lower cost of production and increase yields. Part of the reason for this is lack of financing for capital investments, such as drip irrigation and tunnels, and adequate or improved inputs, such as proper chemicals and certified potato seed. These issues are addressed below. However, even low-cost improvements (for example, proper watering, crop rotation, pruning of fruit trees, and reduction in pesticide applications) have not been adopted because the farmer does not know about them because of the deficiencies in horticulture extension.

Credit availability and cost are major constraints faced by smallholders. Farmers who do not have registered title to their farmland cannot obtain the low-cost (7 percent) loans available from PBDAC. Those who do have registered title may be restricted to loan amounts that are insufficient to finance inputs needed for optimal production. For example, the maximum PBDAC loan available for potato production is LE 2,992 per feddan. The cost of inputs to attain better-than-average yields (including imported seed) is closer to LE 4,500. An additional LE 1,000 for full fertigation will increase yields another 65 percent. The potato farmer then has a choice—use less than optimal levels of inputs or find another source of credit. Whatever credit cannot be raised from PBDAC or family resources comes from brokers, wholesaler agents, and input suppliers. These sources charge 1.5 percent or more per month. For some crops, PBDAC provides seeds as part of the loan. If these are lower-yield seeds than the farmer could purchase elsewhere, they effectively reduce income. Brokers and agents will also provide inputs, usually marking them up from their cost. They require part or all of the crop as payment, making no differentiation in price for the quality of the crop. The advantage of this system is that it requires virtually no liquidity on the part of the farmer. The

disadvantage is that it increases the cost of production, resulting in lower revenue than would otherwise be received.

In addition to the low limits on PBDAC crop loans, there is a limit on the total amount of borrowings a farmer can obtain from PBDAC for farm improvements such as irrigation. Again, for those who have registered title to their land, the maximum allowable is 50 percent of the total expenditure and the interest rate is higher—13-14 percent—than for crop loans. These limitations may make it difficult for qualifying smallholders to purchase new technology that greatly increases yields—for example, drip irrigation, trellising, and row tunnels. Those without registered title to their farmland usually have no source of credit to make such improvements.

Smallholders are also constrained by their lack of market information. Reliable price information about historical and current prices and market conditions is not widely available. Lack of information about last year's crop prevents good planting decisions and choice of trader/wholesaler agent for the following year. Lack of information on current prices weakens the bargaining position of smallholders for farm-gate sales.

Water pollution is a problem in the Delta, especially in areas near cities. Areas of particular concern are Kalubia, Beheira, and Alexandria, but large areas of the Delta have problems stemming from the dumping of raw sewage and garbage into the canal system. This raises domestic health issues and may also prevent Delta farmers from selling into European markets when EUREPGAP quality provisions are implemented.

Lack of varietal choice is a constraint. Tomato farmers are limited by the need for resistance to Yellowed Leaf Curl Virus (YLCV) and poor post-harvest handling systems. Potato farmers often use contaminated or advanced generation seed because they do not have the operating capital to purchase imported and/or certified seed.

The domestic horticultural market is constrained by a transportation and storage system that is very damaging to product quality. It is estimated that up to 40 percent of total production of highly perishable products are damaged or lost in transit and handling. Estimates of tomato losses run as high as 60 percent. This results from poor packaging, lack of cold chain facilities, rough transport, and multiple handling. The impact on farmers is lower farm-gate prices because so much product and product value is lost. The impact on consumers is higher retail prices and lower quality than would be the case with proper post-harvest handling. It also reduces the overall production value of Egyptian agriculture, requiring land that might be planted to other products.

Domestic and Export Growth Potential

Domestic Market

Data indicate that real growth in domestic consumption of horticultural products averaged 8.5 percent over 1990-1991. This rate is high and may be partially attributable to inaccuracies in data gathering.

Nevertheless, even if reduced significantly, the annual growth rate is probably at least equal to, if not above, the 6 percent growth rate posited in the model used for rapid agricultural led growth in Chapter Three. Future increases in demand will result from several factors. Population growth will add 2 percent annually. Additional demand will result from rising incomes that, on a worldwide basis, lead to increased consumption of horticultural products. Finally, there is a catch-up factor because of the apparent unmet demand for horticultural products in Egypt

Export Markets

The volume and total and per ton value of Egypt's horticultural exports have declined since the mid-1990s. The volume decline began with the political and economic collapse of the Soviet Union, which had been a major buyer of certain Egyptian products, such as oranges. Russia again made major orange purchases in 1998. Major but temporary upsurges in 1995-1996 potato exports were the result of a potato brown-rot problem in the European Union. The decline in 1997 resulted from recovered E.U. production and, reportedly, a brown rot problem in Egypt. Among other major products, only dried onion experienced increased volume—in 1993 and 1998, of which at least part of the 1993 increase continued to some degree. Average prices for the total market basket of horticultural exports declined sharply.

The structure of Egypt's horticultural exports will change in the near term. The major factor in this change will be the rapid growth of non-traditional export products by growers and exporters working with ATUT. It also appears that exports of traditional products have bottomed out, and will increase somewhat as a result of exporter marketing innovations and joint GOE/exporter market development programs.

Horticulture export projections are shown in Table 4-1. Among traditional crops, tomato is not separated out because its export volume has declined to such a low level as to be unpredictable. Nor have we attempted to project prices and values, given the highly unpredictable nature of supply, demand, and exchange rates.

Table 4-1: Export Growth Rate Projections, 2002-2007, 2012

	Export Volume MT 000			Volume Increase MT 000		Growth Rate	
	2002	2007	2012	2002-7	2007-12	2002-7	2007-12
Traditional Crops							
Potato	150.0	165.6	182.8	15.5	17.3	2.0%	2.0%
Orange	85.0	104.0	114.9	19.0	10.9	4.1%	2.0%
Other	230.0	253.9	280.4	23.9	26.5	2.0%	2.0%
Total	465.0	523.5	578.1	58.4	54.7	2.4%	2.0%
Non-Traditional Crops							
Table Grape	8.2	24.3	45.6	16.1	21.3	24.3%	13.8%
Strawberry	6.3	16.9	21.1	10.6	4.2	22.0%	4.7%
Fine Green Bean	1.4	6.8	13.2	5.4	6.4	37.3%	14.2%
Total	15.9	48.0	79.9	32.1	31.9	24.7%	10.5%
Cut Flowers—mil. Stem	32.3	139.7	153.8	107.4	14.1	34.1%	2.9%
Grand Total—except Flowers							
Volume	480.9	571.5	658.0	90.5	86.6	3.5%	2.9%
NTAE share	3.3%	8.4%	12.1%	35.5%	36.8%	-	-

These projections assume the USAID will implement a follow-on project to ATUT that will provide the technical and marketing assistance required to diversify and strengthen the sector until it is self-sustaining.

Projected growth in export volumes is lower than those in the agricultural-led growth model presented in Chapter Three. Were these projections based on value, the non-traditional agricultural exports (NTAE) sector would show higher relative growth and share because of their higher value than traditional products. Inclusion of cut flowers will increase the growth rate somewhat, and introduction of new products will too. It appears realistic to assume that annual growth in volume will reach of 5 percent or more.

The projections show the need to introduce additional NTAE products into the ATUT developed system. Strawberry and the planned cut flower varieties encounter market share limitations in mid-decade, and all of the products experience lower rates of growth because they are increasing from a constantly increasing base.

Rapid increases in NTAE products are not unprecedented where a concerted effort has been made to achieve them. The development of Chile's export table grape sector was initiated in the 1950s. By 1960, Chile's exports reached 6,600 metric tons; by 1970, they were 15,680 metric tons, and by 1980 over 50,000 metric tons. The Kenyan green bean sector began well before 1990 when FAO began tracking Kenyan trade. By that time, Kenya's exports of green bean had reached 25,500 metric tons annually, most of which were fine green bean. India's table grape export sector began in the late 1970s. By 1989, India exported 6,900 metric tons of table grape and in 2000 over 20,600 metric tons. Morocco initiated development of its strawberry exports in the late 1980s. Its strawberry exports in 2000 were 21,700 metric tons.

Actual exports will prove different from the projections. Some assumptions will prove incorrect, agricultural exports are usually volatile from year to year, and projections often prove optimistic. But the trend is clear. The rapid growth of non-traditional horticultural exports, powered by USAID interventions, is about to change the structure of Egypt's horticultural export sector. This finding emphasizes the importance of USAID's recent interventions to increase horticultural exports. Imagine where horticultural exports would be headed without the growth engendered by ATUT, APRP, ALEB, and other projects. The finding also emphasizes the importance of continuing these programs for the time necessary to attain the critical mass required for continuing growth without further USAID assistance.

Conclusions and Recommendations

The principal conclusions of this analysis are:

- Selected crops in which Egypt has a competitive advantage in export markets have been identified and successfully moved to commercial scale.
- ATUT's work has established a product/market development system that provides a foundation for further growth. This system is not yet self-sustaining.
- An effective mix of production, post-harvest, and marketing supports has been delivered to selected grower and/or shippers.
- The reasonably effective HEIA has been established. Its membership includes growers, exporters, and support service businesses. HEIA is not yet self-sustaining.
- There are grounds for optimism with respect to growth prospects for certain NTAE export crops, but recent projections seem to have been based too much on production possibilities and too little on the size, growth rate, and competitive situation in target markets.
- Further innovation in productivity, transportation, and GOE policies and regulations will be critical to maintaining a competitive advantage as competition increases and market resistance points appear for key export crops.
- Sustaining a high growth rate for NTAE crops will require new markets, additional products, and value-added innovations.
- If USAID continues its current intervention in the export horticultural sector, the support will change the structure of Egypt's horticultural exports in this decade. The changed sector will see higher rates of growth in exports powered by high-value, non-traditional exports that are less subject to the volume and price swings of Egypt's traditional horticultural exports.

- The amount of land and number of farmers required to produce NTAE are relatively small compared with Egypt's more traditional crops that are oriented to the domestic market. There is also a question as to how quality and cost-competitive small and medium-sized holders grown will be in the rapidly changing marketplace for NTAE.
- The potential to increase small and medium-sized holder income, and hence rural job creation and income, is greater in traditional crops that are primarily oriented to the domestic market than in high-value export crops.
- Attaining growth in income among small and medium-sized holder producers of traditional crops will require development of a low-technology, low-cost technology transfer packages and system based on sound market information and using the combined efforts of USAID-financed projects, effective producer associations and cooperatives, governorate MALR offices, NGOs, and private companies engaged in domestic and export marketing.

Recommendations for USAID's involvement in Egypt's horticultural sector are:

- Continue to support horticultural development in Egypt so that the considerable gains made to date will be institutionalized and expanded.
- Pursue both domestic/export and traditional/non-traditional/new product and market opportunities simultaneously.
- Although technology transfer must continue to be a major component of USAID's strategy, increased emphasis should be placed on export marketing—selecting products and markets, establishing links, developing transportation, identifying value-added opportunities, and transferring knowledge to Egyptian exporters. In this vein, the volume potential for exports from Egypt for previously identified products and markets should be re-examined.
- Policy and regulatory interventions in the horticulture sector should be limited to the design and implementation of key changes related actions that will reduce production, cold chain, and transportation costs and will increase quality.
- Effective small and medium-sized holder participation will require technology transfer and marketing systems that involve donor-funded NGOs, private sector marketing companies, selected producer and cooperative associations, and governorate MALR staff to develop and deliver good agricultural practices and market links.
- The time frame for implementing the strategy should be sufficiently long to attain self-sustainability. It is realistic to envision five additional years of NTAE technical and marketing support, and an 8-10 year strategy with small and medium-sized holder producers of domestically oriented crops.

- Expectations of progress should be realistic, taking into account the lagged, cumulative nature of horticultural sector change as well as the degree of emphasis on small farmer participation.
- Implementing organizations should be given substantial operating flexibility. For example, specific crop-market combinations should not be pre-defined.
- Action-oriented diagnostic analyses of the potato, tomato, and orange (or the wider citrus) sub-sectors are needed to identify constraints, opportunities, and realistic interventions, with principal emphasis on increasing productivity for serving the domestic market.

LIVESTOCK AND POULTRY

The livestock and poultry sector is an important source of cash income to family farms, offering relatively higher opportunities for family employment and providing manure and draft power to crop production. It was estimated, in the only available farm budget survey data, that the livestock sector utilized 40 percent of the total agricultural labor supply and 71 percent of female labor in agriculture (Fitch & Soliman, *Livestock Economy in Egypt*, 1982). Women participate in all animal husbandry processes (including feeding, watering, and milking), processing, and marketing.

Ninety percent of the livestock is intensively raised on smaller farms (that is, fewer than 3 feddan), in the irrigated-cropping region. These small farmers produce 80 percent of all milk and dairy products, 80 percent of all beef, and 70 percent of all mutton. The detailed agricultural census (1990) showed that 99 percent of all large ruminant holdings were herds of fewer than 10 head. Of these, 19 percent were owned by landless farmers and 63 percent by owners of fewer than 3 feddan. In fact, 68 percent of all large ruminant holdings were herds of fewer than 3 heads. Of these, 22 percent were owned by landless farmers and 68 percent by owners of fewer than 3 feddan.

Small farmers are much less important in poultry, producing only 27 percent of total broiler production. Commercial, industrialized, high-technology poultry systems produced 73 percent of all broilers and table eggs in 2000.

The livestock and poultry sector is traditionally highly integrated with the crop sub-sector. It was estimated that 40 percent of the total value of farm livestock production, in the form of animal power and manure, is a direct input to crop production and that 22 percent of crop products (mainly winter berseem clover) are direct inputs to livestock production.

The sector competes with crop production for direct feed use because livestock and poultry consume corn, barley, wheat, and pulses. Livestock also competes directly for land because during the winter a large proportion of land is devoted to production of berseem clover. During the summer, forage is not produced as extensively and there is often a seasonal

shortage of animal roughage. Therefore, the livestock sub-sector is a main consideration in cropping decisions, and vice versa.

Animal sector value, input costs, and value-added value were estimated in 1999 at LE 18.34 billion, LE 12.18 billion, and LE 8.5 billion in 1999, the last representing 17 percent of total agricultural value added at the farm level. Comparable numbers for 1990 were LE 6.81 billion, LE 3.76 billion, LE3.1 billion, and 16 percent. These numbers underestimate total sector value and value added somewhat because they do not include the value of draft power or of manure.

A commercial livestock and poultry supply industry and a national marketing system are emerging for new products such as cheese, ice cream, processed meat, and packaged eggs. However, this industry is characterized by inefficiencies that are reflected in high product losses in milk, meat, and egg assembly and transportation; hatching chicks; and the handling of live birds. Such losses reduce volumes and lead to a reduction in quality and in producer prices.

The last available family budget survey (1995/96) showed that 40 percent of family expenditures was for foods of animal origin. There are major opportunities for farmers if GOE goals for increasing per capita consumption are to be met (see Table 4-2). This is especially important with regard to USAID's presence in the livestock sector, because most meat and milk are produced on small and medium sized farms, whose increased income is most effective in creating rural employment.

Table 4-2: Livestock/Poultry Consumption Data

	1995-96 Consumption (Kg/Capita)	GOE Annual Growth Goal (%)
Red Meat	7.15	2.4
Poultry Meat	8.75	2.8
Milk	14.02	3.6
Dairy Products	7.00	
Eggs (number)	90.30	2.9

Sources: 1995-96 Family Budget Survey, GOE Long Range Agricultural Plan

Livestock

Dairy

Total milk production has increased at a 4.8 percent average annual growth rate, from 2.3 million metric tons in 1990 to 3.8 million metric tons in 2001. Consumption has increased at 3.8 percent annually. As a result, milk product imports (milk equivalents basis) are only 2

percent above 1990 levels, but have declined to 13 percent of total consumption compared with 21 percent in 1990.

Buffalo milk accounts for 46 percent of total milk consumption 2001, but has declined slightly over the past five years. Domestically produced cow milk accounts for 38 percent of total consumption and is slowly increasing in share. It is expected that buffalo milk will continue to lose market share because of the lower cost of cow milk—buffalo milk farm-gate price is almost twice as much as cow milk—and increasing awareness of hygiene among consumers.

The intensive commercial system operates medium and large-scale farms, raising some 200,000 Holstein cattle, beside seasonal commercial herds of lactating buffalo cows. These farms produce 20 percent of all milk, which is used mainly for pasteurized milk, processed dairy products, and fresh milk for urban markets. The seasonal commercial buffalo herd system, which contributes 14 percent of total fresh milk production, keeps lactating buffalo cows for production, selling them for slaughter when they are dry and replacing them with lactating animals. Commercial yields, fertility, and calf mortality rates are significantly better than those of non-commercial farmers.

The dairy sector's total productions value in 1999 was LE 5,383 million (29 percent of total sub-sector value, excluding manure). In 1990 total value of the dairy sub-sector was LE 2.17 billion, 32 percent of total sector value.

About 43 percent of the milk produced in small farms goes to family consumption in rural areas. Thirty-five percent is directed to the fresh market while rural families process the rest, 22 percent, into the lower value-added products of ghee and salted cheese.

Market surplus milk is collected in several ways. Some fresh milk is collected from small farms by wholesalers. Middlemen in some concentrated areas perform assembly functions through village collection points. Public assembly centers assemble less than 100,000 metric tons (mid-1990s data) of market surpluses and give priority to larger farms equipped with cold facilities rather than to small farms that are not only paid less but are further constrained by long delivery queues. Private assembly centers have become more popular with small farmers because of their flexibility, even though they lack accurate means for measuring fat percentage.

Except for one public plant (MISR Dairy), the milk-processing industry is mainly private. There are 600 registered traditional dairy plants. These use primitive modes of production, high-salt percentage for preserving, and pack in unsuitable cans. There are also 119 modern dairy plants. These modern plants use 10 percent of total milk production to manufacture sterilized milk, ultra-high temperature (UHT) milk, white cheese, hard cheese, yogurt, butter, and ice cream. The total capacity of the modern plants is estimated at 931,000 tons. Although there are 17 large-scale dairy processors, small-scale dairy processors capture 85-90 percent of the modern dairy products market. However, large-scale processors dominate the production of some dairy products, such as liquid UHT milk. The large-scale processors have

successfully campaigned through their trade association to raise public awareness of the health hazards posed by unpackaged milk and dairy products.

Red Meat

Total red meat production (excluding small amounts of camel and pig meat) has increased from 386,000 metric tons in 1990 to 694,000 metric tons in 2001. Buffalo meat is increasing its market share, while the share for cattle has remained about the same over the past five years, considering that most imported product is cattle meat. Imports of live cattle for farming and slaughter are highly volatile, and sometimes significant.

The majority of calves and culled animals, which are mainly produced by small farmers, are slaughtered directly, without fattening to produce 80 percent of domestic meat. A small percentage of the dairy/beef calves and culled animals are fattened in commercial feedlots, which produce 20 percent of all beef. Small ruminants raised in the extensive desert system provide 30 percent of all mutton production.

Domestic slaughtered red meat production represented 77 percent of the total supply in 2000. Slightly less than 65 percent of the animals were slaughtered in public slaughterhouses. Imported meat is primarily low-cost frozen product sold to low-income consumers and for manufacturing in processed food products. Importation of cattle steers has declined in recent years because of the regulatory ban imposed on mad cow disease exporting countries.

In 1999, the red meat sector accounted for total value of LE 8.49 billion, or 46 percent of total animal sector value (excluding manure). This compared with LE 2.67 billion (39 percent) in 1990.

Domestic animals are sold live in village or livestock markets, by the head, without weighing. There are 120 livestock markets that are publicly owned and managed and a few private markets. There are no auctions or central system for price discovery. However, these markets remain the focal point of cattle and buffalo exchange because livestock producers sell their animals whenever they need cash, rather than produce for a market economy.

Livestock are moved by truck to public slaughterhouses, located near urban-consuming areas. Meat passes directly from the slaughterhouses to central meat markets, where retailer butchers purchase carcasses from wholesalers. Carcass beef is trucked to retail stores. Only a small proportion of retail stores are equipped with refrigeration facilities. A very few retail grocery chains have started to compete with butcher shops in the higher income locations but it is unlikely that supermarket retailing of beef will gain much prominence in the near future, because most of the lower-income consumers cannot afford more than crude cuts of meat.

Male buffalo calves are slaughtered at 60-80 kilograms live weight as vetello (baby) beef. Only 270,000 head of female buffalo were used in 2000 to replace the culled cows, while 230,000 were illegally slaughtered as vetello. Fifty percent of male calves are fattened to a slaughter weight of 300 kilograms only, rather than their potential live weight of 450

kilograms or more. Some 250,000 head of female calves are used for replacements, while the rest are slaughtered illegally as baby beef.

There are 411 public meat slaughterhouses; only 9 of them are mechanical. Their total capacity is about 12.2 million head per year (17 percent of capacity). The total number of legally slaughtered head in 2000 was only 2.1 million. Some cattle and buffalo, as well as most sheep and goats, are slaughtered informally. Sheep and goats accounted for less than 20 percent of total red meat production.

Comparative/Competitive Advantage. Livestock is protected by border tariffs and quotas. This protection, and producer profitability, are likely to remain and may be necessary to ensure the profitability. Different available studies (Fitch, Soliman, and others) show that Egypt has a comparative advantage ($DRC < 1$) for buffalo milk production, especially under the traditional system. However, these same studies show a comparative disadvantage ($DRC > 1$) in milk production from commercial buffalo herds and from local cows under traditional holdings as well as in red meat production from cattle and buffalo bulls and steers (including vitello buffalo) and in commercial feedlot fattening.

Constraints and Opportunities. Animal husbandry and milk handling practices at the farm level are often inadequate or improper. For example, USAID's AgLink project found such elementary production-inhibiting practices as feeding berseem before it was sufficiently dry and milking to the very last drop of milk. The project also found sanitation could be improved by raising the roof of animal sheds to permit drying of muck and by eliminating a practice of putting wet muck on the cow's teats. In addition, feed rations are less than optimal; however, this is probably as much a question of affordability as it is lack of knowledge. This situation provides opportunities for significant low-technology, low-cost technology transfer, such as the AgLink examples. These improvements will improve the quality of milk and red meat production, increase productivity, and reduce costs.

Animal health, feed, and credit limitations are also constraints and are discussed in the Input section below.

Beyond the farm gate, there are constraints in assembly, transportation, and processing. The most serious are in milk assembly, where inadequate facilities reduce the incentive for farmers to increase production. This is true not only of GOE assembly facilities but also of private sector facilities. There has been some improvement in private sector facilities serving or operated by modern private sector processors that produce quality products. There are also losses in quality because of lack of refrigerated transportation.

The lack of standards in livestock trading is a disincentive to production of better livestock. Standards pertaining to weight classifications and meat quality and health (as gauged by appearance) would create a direct connection in the farmer's mind between animal husbandry practices and income received for the farmer.

The slaughtering industry is in need of major improvements. There is major overcapacity, thus increasing per-unit costs of all in processing operations. Few plants employ modern

techniques. These deficiencies are directly attributable to GOE investment in slaughterhouse facilities in the past. They overbuilt and do not have the money to modernize. The entire industry, and consumers, would benefit from a rationalization of the industry that would increase capacity utilization, thereby decreasing costs that could result in reduced prices to consumers and facilities modernization (which would also lead to reduced costs).

Poultry

Broiler meat production has increased at an annual rate of 9.6 percent since 1990 and increased its share of the poultry market from 72 percent in 1990 to a relatively stable 83 percent (2001). The industry is aided by import restrictions, including the current 70 percent tariff that will have to be reduced no later than 2004 to comply with WTO provisions. Table egg production has not increased as rapidly or as consistently as broiler production.

Commercial, industrialized, high-technology poultry systems produced 73 percent of all broilers and table eggs in 2000. The industry suffers from numerous problems, most of which are related to overcapacity in all areas—production, hatcheries, feed milling, and slaughterhouses. Since production, feed milling, hatching, and veterinary services are largely owned by large commercial operations, we recommend that USAID refrain from involvement in this industry. However, as part of its privatization policy initiative, USAID could push for rationalization of the slaughterhouse industry through closure and privatization of GOE-owned slaughterhouses and feed mills.

More detailed information and analysis of the poultry sector is included in Volume II.

Feed

Green fodder, dry roughage, feed concentrates and mixed feeds, and non-conventional feeds are used in the Egyptian livestock and poultry feeds. Green fodder provides two-thirds of total digestible nutrients (TDN) and three quarters of digestible crude protein (DCP) in ruminant nutrition. Egyptian berseem clover is the fodder and provides nutritious, competitive feed, having estimated DRC 0.4-0.8 and makes good use of water.

There are 128 ruminant feed mills, about 90 percent of which are GOE owned. Industry capacity is 5.2 million tons but operates at only 30 percent of capacity (1999) because of the shift of commercial feedlots and the large dairy operations doing their own on-farm feed mixing. Mills sell feeds to small and medium-sized farmers through middlemen, who decide the feed quality and price. They exercise monopoly power by offering small farmers credit facilities.

The main constraints for feed production are the shortage and high cost of ingredients. This has resulted in a recent trend to produce more non-conventional ruminant feeds.

The GOE used to subsidize feed and feed ingredients and enforce low prices for manufactured feeds. This was accompanied by full governmental control on imports of ingredients and by quotas to feed mills. This promoted an inefficient industry in terms of productivity and profitability. With the removal of subsidies, a more efficient feed industry has emerged. In addition, the feed industry has received technical assistance in producing lower-cost feeds from foreign aid projects. The E.U.-sponsored the Animal Feed Quality Improvement Project developed the technology for treating straw and crop residues with ammonia and supplementation with molasses to increase feeding value. MALR extension staff disseminated these technologies and established eight centers for ammonia feed distribution in the Delta. The GTZ has supported the Non-Traditional Fodder Project in three villages. Its objective is to integrate crop residues and by-products in animal feeds at the farm level. Accordingly, MALR has implemented some extension packages. USAID's AgLink, Africare, and CARE projects have provided direct delivery of technical assistance to livestock farmers.

Livestock Health and Reproduction

Livestock technical and veterinary extension services are provided through MALR's livestock production departments and veterinary departments in the governorates. Critical disease control campaigns are ongoing. However, budgets are insufficient to provide adequate services. The European Union initiated a program in 1994 to support the privatization of veterinary services by strengthening institutions, providing training, pricing of services to farmers, and identifying public roles.

Artificial insemination services are also monopolized by the same MALR departments. These services are very limited. The total number of artificially inseminated cattle cows in 1999 was only 7.9 percent of total elder female cows and just 1.9 percent of total elder female buffaloes with positive results of 65-70 percent. The Canadian Animal Production Technology Project provides technical services in embryo transfer, artificial insemination, and animal health.

The Food Sector Development Program of the European Union has allocated LE 200 million to provide technical services, artificial insemination service, a dairy board, marketing-system development, data collection and market information, dairy quality improvement, and a credit line of LE 150 million for dairy farmers as a revolving fund to develop modernize and expand their operations. Another LE 50 million has been allocated for training purposes on all levels. The program is limited in scope—20 villages in each of five targeted areas have been selected to date to receive these services.

The International Development Research Centre (IDRC) of Canada has initiated a pilot project for developing a milk-recording system. The project has established a data-processing laboratory within the College of Agriculture at Cairo University that can handle data of 100,000 lactating cows. The FAO has provided a technical cooperation project for extending this center's services into a full-scale national dairy herd improvement system, including

executing genetic improvement programs, improving management practices of dairy herds, and developing a friendly-farmer-use information system.

Finance

Credit for small livestock farmers is offered through PBDAC. However, such credit is not available for those who do not own land or buildings to use as collateral. Loans for establishing commercial farms and importing stocks, equipment, and feedstuffs are also available. Producers are asking PBDAC to accept cattle as collateral and suggesting that this change can be accompanied by a special livestock insurance system to guarantee loans repayment. PBDAC interest rates are 11-15 percent, lower than commercial banks (12.5-14 percent) but higher than E.U. program loans (6.5-8.5 percent) and social fund loans (7-9 percent).

The MSSP project of the European Union has provided a revolving credit line facility for financing livestock and poultry farmers with moderate interest rates to modernize their operations and establish infrastructure facilities. USAID has recently established a revolving fund of US\$30 million to finance a credit line to bring back the Veal Production Project. The GOE has allocated an additional LE 200 million for this revolving fund.

Cattle and buffalo insurance is provided through a specialized MALR authority. The total number of insured heads in 1999 was only 1.6 percent of the total inventory. Recently, private insurance companies have been allowed to provide similar services to livestock.

Recommendations

We recommend that USAID develop a strategic intervention to assist smallholder cattle and buffalo farmers and their supporting sub-sectors. Such an intervention will increase the competitiveness of hundreds of thousands of smallholders, thereby maximizing the employment-creation potential of their increased income. Further, the livestock sector suffers from an inefficient and investment-stifling GOE presence and inadequate MALR extension, situations a well-planned intervention could alleviate.

The interrelatedness of milk and red meat production requires a USAID strategy to address issues common to both sub-sectors. There are also issues specific to the dairy sub-sector that need to be addressed.

Common issues that need to be addressed include:

- **Policy.** The meat and dairy-processing industries need to be rationalized, closing inefficient plants and encouraging complete privatization of Misr Dairy and GOE slaughterhouses and feed mills (including poultry feed mills). The GOE policy limiting the use of imported non-fat dried milk for production of inexpensive cheese to MISR Dairy should be lifted.

- **Extension.** Development and delivery of low-tech, low-cost technology transfer packages and training of extension agents in their delivery should significantly increase small farmer income. These technology packages will make use of techniques already discovered by USAID's AgLink project and projects of other donors. This activity should be modeled on the APRP program to take non-traditional horticultural export crops to small and medium-sized holders—that is, the activity should involve dynamic producer associations and cooperatives, MALR governorate extension officers, meat processors, and suppliers of animal health products.
- **Credit.** Smallholders need credit to upgrade herd quality and size and to purchase milk-holding equipment that preserves milk quality. Assembly operations, existing and new, need credit to upgrade/establish their facilities and to acquire refrigerated trucks to transport milk to processing plants. Processors may also wish to use credit to purchase refrigerated trucks. Such a credit program would provide a significant market for sale of U.S. manufactured equipment.
- **Animal Health and Reproduction.** A two-pronged approach is needed—namely, MALR capabilities should be upgraded and a private sector capability should be fostered. Both would be assisted by changing MALR's policy of no- or low-cost provision of animal health products and artificial insemination to one of at least covering the full cost of materials used. Industry suppliers and knowledgeable MALR and private sector veterinarians should be used to train other veterinarians as industry trainers in disease prevention and treatment. Financial support and commodity credits could be used to fund herd upgrading through artificial insemination and importation of pregnant Holstein cattle and dual-purpose breeding bulls.
- **Feed.** The feed industry needs technical assistance to increase operating efficiency and feed quality. Concentrate feed grades and standards should be strengthened and enforced. The feasibility of providing commodity credits for feed ingredient imports from the United States should be explored.
- **Industry Groups.** Producer associations, cooperatives, and industry associations have the potential to provide members collective services, much like USAID is experiencing with its work in the horticulture sector. Many, however, need assistance in the basics of association management and in coming together as associations to procure products and services, lobby the GOE for needed changes in policies and regulations, and develop new services their members will use.
- **Market Information.** Deficiencies in the system of collecting and disseminating market information to farmers should be identified and the existing system strengthened using governorate MALR offices, producer associations, cooperatives, and other means to better disseminate information to farmers.

Addressing cattle and buffalo milk issues requires an integrated approach to improve the entire sector—animal husbandry, on-farm quality, assembly, transportation, and processing. Specific issues include:

- **Extension.** The dairy component of a strategic intervention should include technical assistance to individual farmers who have taken project loans to improve herd quality and storage. Suppliers, local assembly centers, producer associations, and cooperatives might provide this technical assistance.
- **Assembly.** Technical assistance should be provided to support assemblers that have taken project loans to improve or expand their operations, as well as to other processors who are simply looking for ways to improve their operations. Equipment suppliers can provide some of this assistance.
- **Processing.** Technical assistance should be provided to milk processors to improve operations, quality, and product offering.

USAID should address these issues in coordination with ongoing livestock sector projects, funded by both USAID and other donors. Generally, these programs are limited to selected govornates or have a limited scope of assistance. The opportunity for USAID is to use limited resources to integrate strategically needed interventions that broaden and extend the reach of all donor projects working in livestock. This would result in a more far-reaching project and greater leverage in increasing sector efficiency, small and medium-sized holder income, and rural employment generation than would be the case if USAID designs a totally independent strategy.

CHAPTER FIVE

POLICY AND POLICY IMPLEMENTATION ISSUES CRITICAL TO EGYPTIAN AGRICULTURE

OVERVIEW

Egypt and its agricultural sector face a daunting array of policy and regulatory challenges. In a hierarchy of issues, those such as WTO Readiness and Exchange Rate Policy would probably rank highest. The reason is that they have or will have profound impacts on the economic performance of the entire country. But other, narrower issues are almost as important. Cotton policy is a sectoral issue. But because Egypt has made little progress in this crop—the country for which enjoys a clear competitive advantage—it needs to be continuously on USAID’s radar, although not the object of a separate technical assistance-oriented program.

Policy reform and implementation in Egypt are gradual processes, but processes that have seen important changes in the structure and operation of the agricultural sector. Egyptian agriculture is more responsive to domestic and international market forces, less constrained by GOE involvement in production and marketing decisions, and more open to competition than ever before. Much of this progress is the result of USAID’s commitment to high-quality policy analysis and constructive interaction with the GOE and private sector and detailed monitoring and evaluation. However, it is clear that policy constraints continue to inhibit Egypt from maximizing the comparative advantage that it has in most commodity systems. The task is not completed.

The environment in which policy reform and its implementation occur is changing rapidly in Egypt. Several factors account for this evolution. First, as Egypt becomes more integrated into the global economy, its policies must conform to WTO and other trade agreements. Global competition also places a premium on policies that reduce production and marketing costs through efficient customs services, effective use of natural resources such as water, and low-cost production inputs. The growing role of the private sector is the most dramatic change affecting how policies are formulated and implemented. Business and trade associations, with significant assistance from USAID, are becoming a major force in the policy process. However, these associations cannot yet fulfill this policy advocacy role entirely on their own. Finally, given this assessment’s emphasis on fast growth in agriculture as a prerequisite for large increases in farm and rural non-farm employment, the lack of a policy focus on the productivity and competitiveness of smallholders is a serious shortcoming.

The principal policy and regulatory issues in this section are categorized as follows:

- **Trade and exchange rate policy;**

- **Sectoral** policies and regulations, such as practices that impede cotton, horticulture, or other key sectors;
- **Institutional** issues, such as Customs and agricultural extension services;
- **Infrastructure** issues, such as transportation;
- **Natural Resources** issues, such as land and water; and
- **Legal Issues** such as land tenure.

Space considerations prevent a comprehensive catalog of all of these types of issues or even great detail on any of them. However, this section delineates the most important areas needing further attention.

MACROECONOMIC ISSUES

Trade Policy⁵

The Doha Round of WTO trade negotiations has been launched. Agriculture issues are center stage in these discussions, and Egypt is playing a major role as chair of the agriculture committee.

Egypt has had a preferential trade agreement with the European Union since 1977 and has recently signed a new agreement. Four important guiding principles of the new agreement are as follows: (1) it cannot be less “free trade” than the previous agreement; (2) it cannot be less open and free trade than the general WTO agreement; (3) the aggregate monetary value of all quotas must result in equal treatment for all the Mediterranean countries; and (4) it cannot be in conflict with the Egypt-Arab free trade agreement. The European Union has negotiated or is negotiating similar agreements with all the Mediterranean countries.

Generally, the new agreement permits Egyptian manufactured products (except textiles) in duty free. Egyptian duties on European manufactured goods are reduced on a time schedule that varies with the classification of the goods. In agriculture, the new agreement expands windows and quotas in some cases and adds some new agricultural products. In general, there are not major changes in the agreement for agriculture. There is, however, a provision, to re-open discussions three years after signing the agreement. The Egyptians hope at that point to be able to gain greater market access for some important Egyptian agricultural exports.

⁵ This section draws heavily upon two APRP reports: “Trade Agreements and Issues Important for Egypt” by Wallace E. Tyner, December 1999; and “Agricultural Sector Readiness for WTO” by Edgar Arizanino (draft 2002).

The rest of the trade section covers important trade issues that will be faced in future WTO, E.U., and other trade negotiations.

INCREASED MARKET ACCESS

Increased market access was perhaps the greatest demand of the developing countries in the GATT round and today is the greatest disappointment resulting from that round. Clearly, it will be very important for Egypt and other developing countries to gain greater market access in the current round. Egypt gained increased access in its E.U. trade agreement. In fact, Egypt generally does not come close to meeting its quotas for agricultural products into Europe. This is a two sided coin—the issue illustrates the problems Egypt has encountered with delivering quality products into the E.U. market, and it highlights potential for the future.

Textiles are a special case because the Multi-Fiber Agreement (MFA) governing trade in textiles is scheduled to expire in 2005, and all existing quotas will be transformed into tariffs. Since Egypt is not close to reaching its quota level of exports into either the United States or the European Union, this could mean that Egypt will find it increasingly difficult to compete with other textile exporting countries once MFA expires.

ANTI-DUMPING LEVIES AND EXPORT SUBSIDIES

Anti-dumping levies have been an important impediment to trade for developing and developed countries alike. The basic principle in the GATT agreement is that a member may not impose an anti-dumping duty unless it determines there are dumped imports, material injury to a domestic industry, and a causal link between the dumped imports and the injury. Although the principles are clear, the calculation procedures leave lots of room for manipulation of the data. The United States has been particularly aggressive in application of anti-dumping duties. What is needed in this round of negotiations is a significant tightening of the rules for calculation of dumping and injury.

Egypt is in a precarious position regarding anti-dumping issues. Although export subsidies are sometimes seen as tools used by developed countries (especially the United States) against others, Egypt has recently been guilty of export subsidies that could in the future subject it to dumping claims. Egypt has used export subsidies for citrus, textiles, rice, and other commodities.

SANITARY AND PHYTO-SANITARY REGULATIONS

Sanitary and phyto-sanitary (SPS) regulations are another contentious area in trade relations. Egypt believes (probably with just cause) that the European Union has used SPS rules to keep out Egyptian potatoes when European production has been high. Clearly, Egypt needs to press for more scientifically based and more expeditious handling of SPS claims in the next WTO round. However, it is a two-way street because in the past Egypt has used SPS

rules to keep out foreign cotton and meat. Egypt must be prepared to apply SPS rules just as it would have other governments do so.

In some ways, the private sector is effectively setting the standards in the SPS arena for many products. Particularly in Europe, the supermarket chains are specifying not only the required characteristics for the final product but also the processes (chemicals used, labor rules, packaging and handling, etc.) that must be used in the production and distribution process. Europe good agricultural practices (GAP) have become the standard. Egyptian producers must be able to meet the private sector requirements if they are to be competitive in European markets.

DOMESTIC AGRICULTURAL SUBSIDIES

The developed world spends hundreds of billions annually in agricultural subsidies (mainly in the United States, European Union, and Japan). These high levels exist even given the limits that were placed on subsidies in the GATT round. For example agricultural subsidies in the United States over the period 1998-2000 averaged \$20,803 per agricultural worker or \$120 per hectare. In the European Union for that same period, the subsidy was \$16,028 per agricultural worker or \$762 per hectare. Even with these high subsidy levels, the United States and European Union are not currently in violation of their GATT agreements. Much of the subsidy payments is considered green or blue box and thus exempt, and the remainder that is amber box falls within the stipulated limits. Despite the legality of the payments, there is little doubt that the high subsidy levels have induced additional production, which has resulted in lower world prices for many commodities. As a result, developing countries are entering the Doha round feeling that they did not achieve market access for their commodities and that they are being hammered by low commodity prices induced by these developed country subsidies.

For Egypt, low world prices for rice and cotton have clearly hurt the value of exports of these commodities. In contrast, low wheat and corn prices have reduced Egypt's import bill for these commodities. The lower world prices of these commodities have led to indirect protection of Egyptian farmers through domestic procurement prices higher than world prices.

STATE TRADING

Efforts were made in the GATT round to significantly reduce or eliminate the role of state trading organizations. However, little happened, so reducing state trading is back on the agenda for the Doha round. Egypt makes heavy use of state trading on both the import and the export sides. Wheat imports are handled by the state. Cotton and rice exports are managed by state-owned or -controlled organizations. Thus, if the developed countries are successful, Egypt will need to change significantly the way it handles trade in major agricultural commodities. No doubt, Egypt will resist, but the irony is that removal of these

state trading organizations would probably be the best thing that could happen to improve the efficiency of the Egyptian agricultural commodity trading systems.

INTELLECTUAL PROPERTY RIGHTS AND BIOTECHNOLOGY

Egypt has yet to conform to the intellectual property rights requirements of the GATT agreement, which was due in January 2000. So-called breeder's rights legislation has been stalled in the legislature for two years. Egypt, with its rich supply of human capital in this area, has much to gain from adoption of intellectual property rights protection. As of this writing, the general sense was that the legislation would be adopted in 2002 such that intellectual property rights could become a reality in Egypt. Doing so could open the door to entry of more foreign seed companies and additional seed research and development in Egypt.

TRANSPARENCY AND CONSULTATION

One of the greatest complaints of Egyptian exporters is the lack of transparency in E.U. trade regulations. Transparency was one guiding principle of GATT, but, clearly, we have some distance to travel to achieve the needed transparency. Egypt will need to push for stronger rules enforcing transparency in import rules and duties in the Doha round.

Trade policy is at the heart of an export-oriented growth strategy. This section summarized some of the major issues, but there are many more issues not only with the WTO round but with bilateral negotiations with the United States, Arab Free Trade Agreement (AFTA), Common Market for Eastern and Southern Africa (COMESA), and others. Trade policy analysis and reform must be key components of a future reform program for the Egyptian economy and especially for the agricultural sector.

Exchange Rate Policy

Exchange rates are very important in determining the relative prices of imports and exports. Over the past year, Egypt has devalued its currency by 30 percent, from LE 3.40 per U.S. dollar to LE 4.50-4.60 per dollar. Because of this devaluation, imports are now about 30 percent more expensive in local currency and Egyptian exports are more competitive on world markets.

Even though Egypt has devalued its currency 30 percent, it may need to go further. The parallel market exchange rate ranges between LE 5 and 6, more recently closer to 6. An additional 25-30 percent devaluation would have a very positive impact on the competitive position of Egyptian exports. If Egypt is to succeed with an export-oriented growth strategy, it cannot tax exports through an overvalued exchange rate.

Privatization and Competitiveness

Failure to follow-through with privatization plans has had serious adverse impacts on Egyptian agriculture. In every sector, there are competitiveness policy issues as well. Import taxes on inputs to export crops serve to render the export crops less competitive. For example, high import duties on refrigerated trucks and equipment increase costs of delivering quality horticultural products to market.

Poverty Alleviation

Poverty reduction is a major objective of almost every development agency. Yet in Egypt the data on poverty are poor. The 2001 World Bank Country Assistance Strategy reports that poverty in Egypt is within the range of 22-48 percent of the population, with 7-10 percent of the population deemed to be ultra-poor. About two-thirds of the poor (and three-fourths of the ultra-poor) live in rural areas. The depth of poverty is estimated to be considerably worse in rural Upper Egypt.⁶ To understand who are the poor and how they can best be helped, we need much better data and analysis of that data. There is better information on who are the poor and where they are in most other developing countries than in Egypt. It will be important for much more complete analysis of poverty to be done, perhaps in coordination with other donors and the Poverty Reduction Strategy Paper process.

NATURAL RESOURCE POLICIES

Water Policy

Water is an immensely valuable resource in Egyptian agriculture. Yet the value of water does not figure into farmer's cropping decisions because water is neither priced nor allocated according to value. Many countries have political difficulty pricing water at its opportunity value. So an important policy issue is what other policy instruments might be available to move farmers toward decisions that are consistent with water pricing. This does not mean that water pricing is absolutely necessary; rather, that the country needs to develop policies that can move toward greater economic efficiency, such as could be achieved by water pricing.

Toshka

Toshka is a massive new lands project to which the Government of Egypt is fully committed. It will represent a substantial proportion of the new lands planned for the next decade or so. For that reason, Toshka is built into the production targets presented in this assessment. That occurs because the growth of cotton and horticulture area is roughly comparable to the net

⁶ World Bank, *Country Assistance Strategy for the Arab Republic of Egypt*, June 2001, pp. 4-5.

new lands planned, and therefore the expansion in their area is not matched with decline in other crops. Of course, that does not presume a precise match between the new lands and the specified area growth. The employment modeling does not take into account that the new lands tend to be distributed in much larger holdings and therefore to much higher-income people than the old lands, and that consequently the employment multipliers to the rural non-farm economy will be lower.

Toshka will also take a significant proportion of the total water supply. The effect may be to tighten water supplies to the old lands and make improved water management more urgent than otherwise. Since evapo-transpiration rates will be even higher than the average for Egypt, efforts to conserve water through drip irrigation may be important.

SECTORAL POLICIES AND REGULATIONS

Horticulture

Some of the policy issues important for horticulture have been mentioned above. In addition, following are some other sector-specific issues needing further attention:

- Privatization of the seed business is important, but it needs to be accomplished so as to ensure that a competitive market will result. One way is to make sure the markets are open to international competition. Another is to create several competing firms. These alternatives need to be carefully evaluated.
- Seed registration needs to be streamlined. To the extent that it takes longer and is more expensive to bring seeds to market in Egypt compared with the process in competing countries, the horticultural sector in Egypt is disadvantaged.
- Pesticide rules and regulations need to be examined to ensure that competition exists and that Egyptian regulations ensure upholding the Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreements.
- There is a need to establish a legal framework to promote contracting between small producers and horticultural marketers and exporters.

These issues are illustrative of the horticultural policy issues that have already or will emerge.

Cereals

Many of the issues in the cereals sector relate to government interventions in procurement, marketing, or milling. For wheat, much of the inefficiency is related to administering the subsidized baladi bread system. The decision to have a subsidized bread system is political,

but doing it in such a way as to (1) provide maximum benefit to the targeted populations, (2) achieve the subsidy objectives at least cost, and (3) minimize distortions elsewhere in the supply chain are economic issues that need to be addressed. There are some changes in the system that could be made to enhance achieving each of these three objectives, while maintaining the subsidy program. The focus in future policy analysis in this area should be on examining the alternatives and their consequences.

In the rice sector, public mills competing with private mills also pose a serious problem. In general, the mixed public-private sector markets have not worked well because the public companies are not subject to the same rules and market disciplines as private companies.

Cotton

Egypt has considerable potential to increase cotton production and exports. Policy changes will be required to achieve that potential.⁷ The most urgent reform needed is liberalization of the seed cotton market. Evaluation of the alternatives, sequencing, and consequences of this liberalization needs to be completed. Accompanying measures such as floor prices may be needed. Starting with extra-long staple cotton (ELS) varieties may be prudent. Many other reforms are needed in the processing sector as well. Additional research will be needed to achieve the cotton yield increases that are needed.

Livestock

Some of the policy issues related to livestock revolve around market information systems and quality control of blended feeds and feed ingredients. Public ownership or control of slaughterhouses also is an impediment to progress in this area. Extension services also need to be improved.

This section has provided illustrations of policy issues for each of the topical and sub-sector areas. Many more policy issues exist and/or will arise. USAID work in policy analysis needs to be flexible to permit resources to be allocated to important issues as they emerge or as targets of reform opportunity arise.

INSTITUTIONAL ISSUES

Customs

The private sector is virtually unanimous in identifying Customs as one of the most serious constraints to trade and investment.

⁷ World Bank, *Arab Republic of Egypt: Toward Agricultural Competitiveness in the 21st Century—An Agricultural Export-Oriented Strategy*, December 2001.

Customs officials tell the private sector they are working on solutions to the issues. Following a recent seminar involving Customs officials, private sector representatives, and USAID, a senior USAID official said Customs should:

- Move away from extended post-arrival clearance procedures to a more streamlined system and post-import audit system;
- Introduce a pre-arrival clearance system;
- Remove conflicts of interest that exist in the inspection and arbitration processes;
- Change and improve incentives to create a service-oriented system;
- Introduce practical solutions that are straightforward and transparent. There now are no consistent and fixed procedures that are followed in all ports;
- Stop controls and procedures for exports; and
- Credit system needs to be reinvigorated with more funds made available for potential exporters.

Although Customs remains a significant constraint to trade, there are some indications that its institutional mind-set is beginning to change. A prominent member of the Food Committee of the Federation of Egyptian Industries⁸ (FEI)⁹ senses a refreshing new receptivity on the part of the Commissioner of Customs and his senior staff to the need to change attitudes and management and implementation procedures to improve Egypt's enabling environment. FEI and many other private sector business support organizations report they will continue to advocate for additional changes.

Agricultural Extension Service

Egypt's official agricultural extension system—based in several agencies of MALR, the cooperative movement, and in certain other public sector agencies—has proven itself effective in getting technical innovations into the hands of Egypt's farmers and other rural producers. This work in both crop and livestock sectors has achieved notable results.

However, recent policy reforms in Egypt have begun to alter the face of the Egyptian countryside. Farmers now have the freedom to choose what to grow, how to grow it, and to whom to sell their crops. Market forces are taking hold, and new agribusinesses are emerging every day.

⁸ Tarek Tawfik, Chief Executive of Farm Frites, a major food exporting firm.

⁹ The FEI is a government-sponsored multi-sector business association.

As the agricultural economy grows, specializes, and becomes more export-oriented in this era of full market liberalization, stakeholders realize they need information that MALR extension and research institutions and staff should provide. Many of these needs—market information, economic analysis of the returns to investment in specific cropping patterns or equipment, and information about processing and storage—have not been available in the past from the state services.

APRP has been working closely with MALR to improve the provision of agricultural extension services and to define the role of the public sector research and extension in a liberal, private-sector-led, free market agricultural economy.

Redefining the role of the public sector research and extension institutions is a major organizational change effort, and the success of this effort requires the active participation and support of all groups, from field extensionists and governmental officials to exporters, growers, and cooperative leaders. To ensure this active participation and support, representatives of all key groups have been involved in each phase of the reform project. This has entailed participation in meetings and workshops in Upper, Middle, and Lower Egypt, as well as in Cairo. APRP has also worked with MALR research and extension agencies, as well as with rural organizations, cooperatives, and the private sector, to implement the policies developed at these seminars in the pilot governorates.

Agricultural Research

Slow agricultural growth, with food production rising more slowly than population growth, is a root cause of the economic and food-deficit problems. To meet development objectives, Egypt must increase its food supply and exports and develop its human and institutional capacities, technology packages, delivery systems, and physical infrastructure.

One solution for improving agricultural performance in Egypt lies in the transformation of its agriculture through an effective national agricultural research system (NARS) capable of producing productivity-enhancing technologies.

Rational use of suitable technologies could increase labor and land output, reduce production costs, and improve agricultural productivity. Besides technologies, proper transformation requires production and marketing policy reforms, institutional and infrastructure restructuring, adequate inputs, and sound crop and livestock management.

The potential for increasing agricultural output in Egypt is great. Crop and livestock yields under farmers are markedly lower than results obtained from research trials. Agriculture is central to economic development, and agricultural research is needed to increase the productivity of the sector. The importance of agricultural research for sustainable agricultural development has been increasingly realized, together with the need for coherent policies to support and guide national agricultural research institutions (NARIs) as one element of NARS in Egypt.

Enhancing the research capacities of NARS requires combined, integrated, and sustained interaction of all the elements involved in agricultural research planning, technology generation, adaptation and validation, transfer, and utilization, including the active collaboration of policy-makers, educators, trainers, extension workers, and the clients. Strong and effective NARS require sustained political will, support, and commitment, linked with appropriate policies and research management, together with defined priorities, coherent objectives, qualified and motivated research scientists, trained technical support staff, adequate research facilities, sustained adequate funding, effective coordination, and intensified on-farm involvement. Almost all NARS in Egypt compete to satisfy these essential requirements. They all require research capacity building and capacity improvement, particularly in human resources development and in the assessment of performance and impact as an ongoing requirement for institutional development. For sustainable agricultural growth and environmental protection, NARS must include research on natural resource management in the research agenda.

Biotechnology

Genetic engineering can be used constructively for many different purposes, but for Egypt arguably the most relevant applications are crop protection and improved tolerance to heat stress, drought, and salinity. Crop protection applications are particularly important because repeated use on the same land and crops of high levels of herbicides, fungicides, and pesticides has not only led to resistance within pests and diseases of economic importance but also to high costs of production and high pre-harvest and post-harvest losses. Crop tolerance applications are also important because high cropping intensity has led to salinity and salt water intrusion in some production areas and because Egypt's agricultural frontier can be expanded only by moving farther into the desert and/or by reclaiming degraded lands.

Complementing the know-how of a core staff of 25 senior scientists, some of whom hold joint appointments with universities, the Agricultural Genetic Engineering Research Institute (AGERI) has developed constructive collaborative relationships with other international centers of excellence. For example, the work on potyvirus resistance in cucurbits is being carried out with Modern Sciences and Arts (MSA) and Cornell universities. Research on managing resistance to potato tiller moth is conducted with Michigan State University. Work on development of geminivirus resistance in tomato is done with Scripps Research Institute. Research on whitefly biotypes and biotype-specific transmission of geminivirus is carried out along with the University of Arizona.

AGERI's facilities appear to be appropriate to its mission and objectives. They include:

- A central facility;
- 12 well-equipped laboratories;
- A BioComputing and Networks Unit;
- A preparation/washing facility;
- A supply and chemicals repository;

- Controlled environment chambers (140 square meters) and a conventional multispan fiberglass greenhouse (307 square meters) used to host the transgenic plant material for acclimatization;
- A new state-of-the-art containment facility (412 square meters) based upon a University of Arizona design and complying with the biosafety and U.S. Environmental Protection Agency regulations, which will allow the safe handling of materials in experiments dealing with the degree of gene expression in transgenic plants; and
- An open field experimental station (1.5 acres of land) for field testing of genetically engineered plant material

Thanks to the human and physical infrastructure described above, AGERI plays a leadership role within Middle Eastern and North African agriculture, serving as promoter, facilitator, or host for regional and international training events and workshops.

Recognizing the need to closely link biotech research and related support activities with its public and private stakeholders, while operating in a business-like manner appropriate to the biotech industry, in 1994 AGERI set up the Genetic Engineering Services Unit (GESU) as a commercial arm of the institute. GESU provides and sells reagents, kits, and diagnostics produced by genetic engineering and molecular biology for agricultural production. For the public sector, GESU officially conducts seed quality control for the MALR Seed Registration and Certification Committee using molecular markers. GESU services offered to the private sector include (1) production of elite germplasm via tissue culture; (2) production of diagnostic ELISA and PCR kits for detection of major phytopathogenic viruses; (3) protein fingerprinting using SDS-PAGE and Isozymes; (4) DNA fingerprinting using molecular markers; (5) custom analytical services; (6) custom oligonucleotide synthesis; (7) molecular imaging; and (8) densitometric analysis. The first two services listed above are the most likely to be used frequently and routinely by commercial agriculturalists.

In sum, biotechnology in general and genetic engineering in particular are advancing rapidly in Egypt. Although it is too soon to judge impact, AGERI's vision, strategy, research agenda, and collaborative arrangements all seem to be relevant and appropriate. Although some of AGERI's research to date has already been funded by the U.S. government through U.S.-Egypt Joint Science and Technology Board, and other efforts directly by USAID, the Assessment Team encourages USAID to continue to provide such support, possibly in greater amounts and possibly through an endowment that will provide more stability and long-term sustainability. If the latter cannot be established directly through MALR or GOE, an alternate mechanism such as the Egyptian Seed Association (ESAS) should be considered as the vehicle. Such an endowment should probably be kept separate from a competitive research fund for horticulture and other key industries, which would co-fund lower cost, non-biotech research activities that are not so strategic in nature as those described above.

Statistics

APRP has made substantial progress in improving agricultural statistics in Egypt, but much more could be done. It is useful to have accurate area forecasts early in the season to better

manage the available water. Improved market information systems also would be useful in the horticultural crops area.

LAND TENURE¹⁰

The two major political changes Egypt has experienced since the early 1950s have also had major economic and social impacts, particularly on the agricultural sector.

Prior to that time, Egyptian agriculture was characterized by a free market and private enterprise. In 1952, the GOE enacted the Agrarian Reform Law as part of its transition to a planned economy. Among other impacts, this measure imposed a significant constraint on the private sector by limiting individual land ownership to a maximum of 200 feddans (later reduced even further). Its purpose was not to attack the principle of private ownership; the excess feddans were distributed to landless farmers. Rather, the law was intended to curtail the political power of large landowners by weakening their economic base.

Prior to the land reform, about 0.1 percent of total owners (about 2.8 million) held about 20 percent of the land; at the other end of the spectrum, about 94 percent of the total owners held about 36 percent of the land. In 1965, at the highest end of the scale about 0.13 percent of total owners (3.2 million) held 7 percent of the land, while at the lowest end about 95 percent of the total held 57 percent of the land.

This stage in land reform lasted until the late 1980s, with the beginnings of economic adjustment. The agricultural sector took the lead in these changes, and GOE intervention was eliminated by the mid-1980s.

According to the last agricultural census in 1990, total holdings reached 2.9 million, covering about 7.9 million feddans. Approximately 2 million owners (68 percent of total holdings) held 5.1 million feddans (65 percent of total lands), while 0.9 million (31 percent of total holdings) held about 1.8 million feddans (22 percent of total lands). According to these statistics, more than two-thirds of the total land area in 1990 was owned and cultivated by landlords and only about 10 percent of the total area was rented (either for cash or through sharecropping).

Land reform increased the average size of small properties from 0.8 to 1.2 feddans in 1965 and to 2.7 feddans in 1990. The very large estates (which had covered about 20 percent of the area in 1952) disappeared, and the medium-sized landowners retained their share of the cultivated area. However, the reform's aim was not to satisfy the land hunger of all tenants and landless workers. Rather, land reform sought limited improvements in the distribution of wealth and benefited the upper section of the low-income group.

Until recently, cooperatives and their associated credit banks displaced the private sector actors as suppliers of inputs and credit and became the major marketing channels for the

¹⁰ Based on a Vision Paper prepared by APRP, 2002.

most important crops. In the mid-1980s, when the agricultural sector started the liberalization process, the private sector again became the dominant force, displacing the GOE with regard to agricultural inputs. PBDAC, however, is still the farmer's main source of credit.

Since 1952, the GOE has sought to address the problems of small landholdings and poverty through a series of land reforms, cooperative management-pooled farms, public-sector investment in land reclamation, a program to maintain farmers' incomes through price intervention, and a special program for graduates. The objective of the graduate program is to give young poor people (that is, the graduates) the opportunity to obtain their own land to cultivate. Subsidies and stipends are given to the graduates to support them in the first years of settlement, fulfilling one of the GOE's economic goals. But the land titling policy is not conducive to achieving the GOE's social goal because the only benefits accruing to the graduates are those derived from cultivation. They are unable to achieve real economic gain because they do not have direct ownership of their resources. They are only slightly better off than farm laborers. And few of these measures have done much to resolve the problem of landless laborers.

Despite significant reforms under the liberalization and privatization of Egypt's economy, the body of legislation regarding land distribution and titling is huge, with six formal laws; hundreds of decrees and regulations; and a regulatory framework governing reclamation, land allocation, and ownership of new lands. In addition, a large number of public agencies and authorities have law-enforcement authority, and ownership rules and procedures for distributing land vary from one law or decree to another. Thus, despite the substantial gains achieved by the GOE in land issues since the mid-1960s, land tenure and its associated issues remain a serious source of concern and confusion to the agricultural community, especially to small farmers.

Land distribution and titling for the graduates' ownership is particularly prolonged and complicated. Ownership is granted to graduates only after payment of a nominal sum of money over 30 years, with no provision for early settlement. Without the land title, many graduates are not free to sell or lease the land and are unable to obtain loans for investing in additional infrastructure or land improvements. The billions of pounds of assets frozen because of lack of title indeed has a depressive effect on the economy as a whole, representing a large loss of investment funds.

INFRASTRUCTURE ISSUES

The transportation system for all agricultural products is expensive. In addition, it results in significant loss of product and quality for horticultural products. Numerous improvements have been made in recent years in transporting produce to export markets, including increased availability of airfreight space, reduction of airfreight costs, development of sea-shipment capability for table grapes and strawberries, reduced transit time to northern E.U. markets with sea-truck transport using Italian Slovenian ports, increased refrigerated container availability, and more efficient port procedures. In addition, a new cold holding facility is being constructed at Cairo International Airport.

However, much remains to be accomplished if the transport system is to play its role in reducing costs and maintaining product for export and for domestic, horticultural, and other agricultural products. This will require changes in GOE policy as well as industry changes to improve existing product handling and movement.

Constraints exist for all three modes of transport—land, sea, and air. These constraints result in reduced container availability (especially critical for fresh produce) and higher costs than would otherwise be incurred. These constraints restrict opportunities for timely shipments to market, increase their cost, and create risks to product quality.

POLICY AND REGULATORY ISSUES

This section has provided illustrations of policy issues for each of the topical and sub-sector areas. Many more policy issues exist and/or will arise. USAID work in policy analysis needs to be flexible to permit resources to be allocated to important issues as they emerge or as targets of reform opportunity arise.

The very important changes that have been achieved in APRP have been carefully documented elsewhere and do not need to be reiterated here.¹¹ The major point is that even some who are quite negative on Egyptian progress in general see very positive results from this project. Also, given the extremely difficult circumstances for the Egyptian economy following the events of 9-11, the comfort zone no longer exists, and Egypt may well be ready to move more aggressively on policy reform.

USAID and the Government of Egypt have a long and successful history of working together in agricultural policy. The current APRP project has achieved many successes, and Egypt has made significant progress in policy reforms related to agriculture. Despite the successes, there remains much to be done. There have also been problems in implementing some of the reforms that have been accepted.

Recommendations

- USAID should orient policy reform, implementation, and monitoring to focus on the policy priorities based on the strategy of stimulating fast-growth agriculture as the means to increase smallholder income and rural non-farm employment.
- USAID should target policy activities on a select number of commodity systems (horticulture, smallholder livestock, and cotton) and a manageable number of macro and

¹¹ ARD-Raise, "A Midterm Assessment of the Agricultural Policy Reform Program in Egypt," April 2000; Rollo Ehrich, "Assessment of the Impact of APRP on the Egyptian Agricultural Information System (draft)," November 2001; and Gary Ender, "Accomplishments in Agricultural Policy Reform in Egypt, 1997-2001 (draft)," March 2002.

cross-cutting issues (exchange rates, water policy, and WTO and trade agreements). Policy reforms in macroeconomic areas, such as exchange rates and cross-cutting issues, such as water, should be coordinated with other USAID offices to reinforce USAID influence.

- Building on USAID’s efforts to monitor and verify policy implementation, additional efforts should be made to ensure that implementation occurs at operational levels in commodity systems. Continued support to trade associations in their policy role is one promising way to focus attention on the execution of policy reforms.
- USAID should make a concerted effort to transfer policy analysis capabilities to Egyptian institutions, public and private, over the next five years. The progress of trade associations holds promise as one element of this strategy. However, by their nature these groups are not disinterested, objective sources of policy advice. Neither is MALR. Other institutional options should be examined.

Future Policy Analysis

In the future, policy analysis will be needed in several areas to help the move to a more market-oriented economy and to support productivity enhancing technical assistance in other areas such as horticulture. The needed analyses can be classified along either topical or commodity lines. We propose a matrix of topical and commodity issues, which is illustrated in Table 5-1.

Table 5-1: Policy Matrix by Topic and Commodity

Topic	Commodities			
	Horticultural Products	Cereals	Cotton	Livestock
Trade and Exchange Rate Policy				
Agricultural Marketing and Support Systems				
Natural Resources Policies				
Privatization and Competitiveness				
Poverty Alleviation				
Institutional Issues				
Legal Issues				
Infrastructure Policy				

A policy project designed to enhance capability to increase productivity, economic growth, and employment would need to cover at least these areas. In the sections above, we described analysis that will be needed for each of the cells in this matrix.

Also, whatever policy project is developed should be designed to permit substantial training of Egyptian policy analysts. It would be ideal to have a policy analysis unit attached to the Minister’s office as the principal counterpart for any USAID policy project.

CHAPTER SIX THE ROLES OF THE PRIVATE AND PUBLIC SECTORS

PUBLIC-PRIVATE COOPERATION: KEY TO AGRICULTURAL PROGRESS

Egypt's ability to maintain and grow agriculture's contribution to the economy will depend increasingly on improved public-private cooperation. The reason is that the public sector is the principal, although not the only, determinant of the enabling environment for private sector trade and investment.

The experiences of USAID-funded activities such as APRP, ALEB, HEIA, and ATUT demonstrate that public-private cooperation is an often difficult but achievable goal.

Egypt's Private Sector

Historical Background

In the early 1990s, the GOE began positioning the private sector as a vehicle for change. The GOE realized that the private sector could be a tool to increase the global competitiveness of Egyptian firms. The subsequent public-private dialogue contributed to the private sector's conviction that there was an urgent need collectively to participate with government in policy reform measures and the removal of constraints to economic growth. This was largely as a result of the economic restructuring and structural adjustment program instituted with the support of the International Monetary Fund.

Critical Role of Business Associations

Since that time, there has been a dramatic proliferation of private sector business support organizations. These include both general business organizations and sector-specific trade associations. These groups have grown both in numbers and in sophistication over a relatively short time. This trend is ongoing. Today, business support organizations are working with increasing efficiency with government entities and with donor-supported projects designed to strengthen organizations of this type. These business associations are beginning to make a significant contribution to the development of Egyptian agriculture and the enabling environment in which it operates.

Associations in the Agriculture-Agribusiness Sector

Although Egyptian private sector trade associations in the agricultural sector are still in their infancy, over the past few years they have shown rapid growth,¹² not only in numbers but also in the sophistication of the techniques they utilize. For example, some of these embryonic institutions have been among the first in Egypt to adopt a backward and forward linkages approach to membership and advocacy. These associations have recognized the potential value of including in their activities firms that supply raw materials, inputs, equipment or ancillary services, as well as those that purchase the resulting products. This technique of expanding association membership to a broader set of economic actors appears to be increasing the power of collective action.

Other associations have begun to prepare policy agendas and policy analyses that form the basis of their representations to government. In many instances, these initiatives have been undertaken in collaboration with projects funded by USAID and other donors. In some instances, this triangular collaboration among associations, donor projects, and the GOE has resulted in significant improvements in the enabling environment for agriculture.

Some of these associations are described below.

Egyptian Seed Association (ESAS). ESAS has 140 members, including 50 that are seed-producing companies, with the balance divided among seed distributors or representatives of multinational seed companies, traders, plant breeders, and suppliers or support service companies. The experience of ESAS provides an example of successful collaboration between a private sector association, a USAID-funded project (APRP) and the GOE.

When APRP started five years ago, it recognized that reliable seed of appropriate crop varieties was critical to agricultural development. APRP undertook an assessment of the situation in the seed sector and compared it with what a dynamic and efficient seed sector should look like. The assessment revealed a seed sector that was still dominated by public sector production. The government produced 90 percent of all seeds of self-pollinating crops, wheat, rice, and fava bean. Mandatory registration of new varieties was expensive and time consuming and considered a barrier to introducing new varieties. It typically took over three years to get a registration approved. There was no clear procedure for licensing to the private sector varieties developed by ARC. The government viewed private seed companies with suspicion and dialogue was limited.

ESAS, then a small one-year-old group of private seed companies, shared APRP's vision of a competitive private seed industry. APRP assisted ESAS in numerous ways to achieve this objective. This collaboration resulted in new variety release policy, quicker registration of new varieties of vegetables, legalization of variety screening, and draft plant variety protection legislation.

¹² Growth in the number and diversity of associations in the agricultural sector can be judged from the list included in Annex A of Volume II. These represent associations that attended a roundtable discussion convened by the Team Leader of the Assessment Team.

Today, more than 20 private companies produce seeds of wheat, rice and fava, supplying 30 percent of the market. Fifteen private companies produce maize seed, covering 80 percent of the market. Six private companies now own their own seed-processing plants, and many have created their own distribution networks. Screening of new vegetable varieties has been legalized, and the cost and time it takes to register a new vegetable variety have been cut in half. At least one company is exporting high-value hybrid vegetable seed to Europe.

Horticultural Export Improvement Association (HEIA). HEIA was established in conjunction with the ATUT project, which has provided direct technical and financial exports. HEIA members handle the vast majority of fresh fruit and vegetable exports. HEIA is composed of more than 150 exporters of fresh horticultural products, and is currently expanding into processed food

HEIA's overarching mission is to improve the capacity of Egyptian exporters to export high-quality horticultural products. It has a quality control staff that offers direct technical assistance to member growers and shippers, but also assists non-member producers that wish to sell to HEIA members. It has an active policy advocacy committee. Its newsletter highlights policy constraints, and as several HEIA members also belong to the Arab Communication Consult (ACC), policy issues are brought to the attention of the Minister of Foreign Trade during regularly scheduled monthly meetings. HEIA is currently providing training for 600 agronomists of the MALR's Extension Service in eight Governorates.

One noteworthy example of advocacy involved HEIA's effort to establish a perishables terminal at Cairo. In early 2000, shortly after HEIA signed a contract with the GOE allowing HEIA to design, build, and operate the terminal, GOE abruptly cancelled the contract. HEIA and ACC quickly arranged a meeting to publicize the cancellation and invited print and television reporters, and members of the People's Assembly. The perishables terminal is now under construction.

HEIA's members are primarily growers. Yet suppliers of such inputs as insecticides, fertilizers, seeds, and packaging materials now represent 12 percent of the membership, and providers of services such as transportation, freight forwarding, and cold storage facilities constitute an additional four percent of members.

The association has organized itself by commodity groupings—that is, there are Councils for table grapes, strawberries, melons, nurseries, green beans, and cut flowers. The participation of suppliers and service providers serves to strengthen each of these groups. The councils frequently invite service providers and suppliers—whether or not they are HEIA members—to their meetings. The association has worked successfully to negotiate lower prices and improved quality for services and inputs.

CropLife Egypt. CropLife Egypt (CLE) is made up of importers and distributors of pesticides and agro-chemicals. CLE's objective is to achieve a transparent and fair system of pesticide registration and import licensing. The association is active in advocating for policy change. The thorough product testing that a proper registration system requires is critical for maintaining a supply of safe and effective pesticides for Egyptian farmers. Multinationals

with large research and development budgets for new product development have a financial interest in registration that prevents imports of low-cost, unsafe, and ineffective pesticides. Import licenses of registered products are granted annually by MALR. CLE members are concerned about the lack of transparency in a process that often results in arbitrary volume allocations to CLE members, GOE entities (El Bourse and the military-operated formulators), and the five largest Egyptian formulators.

Egyptian Association of Traders of Seeds and Agricultural Pesticides (EATSAP). EATSAP is a small association that offers representation for the 4,000 pesticide dealers in Egypt. The association's objective is to improve the business environment for pesticide dealers. Although EATSAP is earnest in its desire to advocate for policy change, it lacks the organizational structure and has a small base of members relative to the size of the industry to make it an effective tool for policy change. Nonetheless, EATSAP has energetically participated with ARPR and the Cotton Sector Promotion Program (CSPP) in an ongoing certification program for dealers.

Egyptian Agribusiness Association (EAGA). EAGA is using a similar approach to enhance the competitiveness of the food industry and to build membership. The core founders of EAGA are involved in the food-processing business, but the founders also include several service companies involved in packaging as well as shipping and growing—that is, owners of large farms that are supplying food-processing companies or are exporting fresh produce themselves right now. EAGA has 140 members.

Egyptian Milk Producers Association (EMPA). EMPA was founded in 1998 to improve and promote milk production in Egypt by improving performance and productivity. EMPA'S dairy farmer members have a linkage with the milk processors (forward linkage), and EMPA and Egyptian Milk Producers Company (EMPC), its sister organization, have relationships (backward linkages) with many suppliers to facilitate commercial trading between dairy farmers and suppliers.

Egyptian Cold Chain Association (ECCA). ECCA, founded in December 2001, is dedicated to raising awareness of the need to bring perishable foods from grower to consumer in one continuous cold chain. The fledgling organization has signed a cooperation agreement with the International Association of Refrigerated Warehouses and is preparing a strategic plan for presentation this month. ECCA received initial help from ALEB and will work with APRP on policy issues.

Egyptian Exporters Association. EEA/ExpoLink is a private-sector export promotion organization that receives substantial funding from USAID. EEA serves industrial and service sectors designated as part of USAID'S Growth Through Globalization Project. These include agriculture and agribusiness. Services have focused heavily on taking Egyptian companies to international trade fairs and providing technical assistance to prepare these companies to become exhibitors. EEA has done little in policy advocacy, although its new strategic plan calls for an ambitious program in this area.

Exclusivity: A Clear and Present Danger

Some associations, after having been started by the larger firms in their respective sub-sectors, appear to have limited their membership to firms of this size. Others can be faulted for failing to aggressively pursue new members. Yet the unique advantage of an association is the size and variety of the constituency it can mobilize. Moreover, if agriculture is to grow and become more competitive, associations will need to develop services menus that benefit smaller players as well as larger ones. Associations have an enormous potential to help smallholders—through policy advocacy, transfer of technologies, dissemination of best agricultural practices, and provision of market and price information. Reaching smaller producers is difficult because of their numbers, their locations, and their more limited ability to pay. And it is made more difficult by the limited resources of most Egyptian associations. Yet relatively modest amounts of donor funding could be of enormous help in expanding association membership to those who arguably need the most help, the small farmer. Associations should not fall into the trap of appearing to be merely group versions of the individual crony capitalism that has constrained Egypt's growth in the past.

USAID Strategy

To sustain and accelerate private sector organizations, USAID has developed a strategy to encourage and strengthen associations as well as continuing to provide assistance to individual firms—786 this year alone. All of this assistance is, in various ways, designed to enhance the global competitiveness of Egyptian industry and agriculture. Helping companies collectively is complementary to helping them individually. USAID is well aware of the potential power of collective leveraging of an industry's resources, as opposed to the tradition of individual companies making individual representations to individual government officials—often on a personal basis.

USAID has made direct grants to HEIA, EEA/ExpoLink, and CARE's pilot project with small farmers in Upper Egypt. USAID has also created an association component—Business Association Strengthening Activity (BASA)—within its NGO Support Center. BASA provides small grants and training to associations.

Interventions by USAID-funded Projects

USAID-funded projects have played key roles in the formation and development of associations in the agriculture sector. For example, the ATUT project was instrumental in founding and mentoring the HEIA, now a recipient of USAID funding in its own right. The ALEB project has actively worked with a number of associations, and has played a seminal role in the creation of EAGA. AgLink has worked closely with associations representing milk and meat producers, and USAID is also funding the BASA program within its NGO Support Center.

Association Sustainability

In an emerging-country setting, the issue of the long-term sustainability of trade and business associations remains problematic. The success of associations depend largely on their ability to accurately identify and communicate with their larger constituencies regarding perceived needs and on their capacity to develop and deliver a menu of services that member companies will see as valuable and will pay for. Yet it is unlikely that Egypt's associations will achieve full sustainability—100 percent self-financing—in the near term.

Other Forms of Collective Action

Associations are only the mechanism open to the private sector to exert influence. As the private sector itself matures, we would expect individual businesses with kindred goals or interests to combine in an ad hoc manner to achieve a specific objective. This is, in fact, happening already with firms that are receiving help from USAID-funded projects. Transferring this mode of combination to the policy advocacy arena can be a relatively small step. Moreover, there are many opportunities for the private sector to work with other stakeholders. For example, either associations or groups of individual companies could make far more effective use of the Egyptian academic community. Members of that community bring both analytical expertise and increased credibility. Many would be interested in consulting arrangements to prepare policy analyses, options for solutions, strategic plans, and research into how other countries have solved or approached a particular problem or issue.

NGOs, although legally not associations in Egypt, share some characteristics with associations. For example, both types of organization are not for profit, and both depend largely on voluntary contributions and participation. NGOs are already making significant contributions to agricultural development (see below and Chapter Two).

Since NGOs can often serve as cost-effective mechanisms for delivering resources to local groups with which they have an ongoing relationship, in the future USAID should be encouraged to make even greater use of these gifted organizations.

USAID's Administrative Problems

Associations, NGOs, and other small organizations often require relatively small amounts of money. From USAID's point of view, processing a \$20 million contract requires as much paperwork as processing a \$20,000 grant. USAID does not have the resources to take on this administrative burden. One solution to the problem would be a larger-scale program with authority to make relatively modest grants to smaller associations and NGOs. Criteria, benchmarks, and checks and balances will need to be developed.

Cooperatives, Farmer Associations, and NGOs

Cooperatives in Egypt are generally moribund. Though no longer controlled by the GOE, the government's stamp nevertheless remains on most of the older cooperatives. Yet this form of voluntary organization has been of significant value in other countries. Cooperatives can become the vehicles through which technology and best practices can be effectively transferred, especially to smaller farmers. They can reduce production costs through group purchasing, as some associations are already doing. They can engage in economic activities such as packing, cooling, and processing that raise member incomes. And they can learn the skills of group marketing to reach the critical quantity necessary to meet larger-scale competition.

Because of the GOE's long history of control of cooperatives, some producers at the village or regional level have formed farmers' associations. These groups are attempting to perform many of the services of cooperatives. But they also have the effect of imposing yet another layer of institutional hierarchy on an already confusing patchwork.

In the case of cooperatives, if the GOE would simply get out of the way, this would allow farmers at the village level to organize their own cooperatives and would encourage associations and larger-scale USAID-funded projects to provide ongoing assistance. The effective cooperative could be a meaningful tool for agriculture in Egypt.

The CARE pilot project in Upper Egypt has adopted yet another strategy. It has organized mini-NGOs at the village and regional levels. These fledgling organizations are intended to replicate CARE itself and by so doing reach greater numbers of small producers. USAID should be encouraged to monitor this creative approach in the future.

The experience of another NGO, Africare, is described below.

Small Farmer Export Production and Marketing in Wadi el Saayda-Africare. Africare has been working with small farmers in the Wadi el Saayda area near Edfu in Upper Egypt since 1997. The first phase of the Wadi el Saayda Project (Assistance to the New Settlers in Wadi el Saayda) was funded by USAID at \$3.2 million over 1998-2000. The current project (Small Farmer Export Production and Marketing in Wadi el Saayda), has been funded by the GOE through the APRP cash transfer for \$1.2 million over 2000-2003. The project's goal is to develop the capacity of the small farmers in Wadi el Saayda to produce and successfully market high-quality horticultural crops for export and domestic markets.

With the assistance of Africare, small farmers in Wadi el Saayda have become successful producers of high-value horticultural crops for the export and domestic wholesale markets. The project has introduced two horticultural crops, Gallia Ideal melons and Paulesta variety green beans. Melons have been exported to the United Kingdom, while beans were exported to Italy. Domestic markets are also important. The major portion of each season's production is sold in wholesale markets throughout Egypt, predominantly in the El Obour outside Cairo, Aswan, Alexandria, Luxor, Kom Ombo, and Edfu. Joint research trials in green bean and melons were undertaken with ATUT.

The Public Sector

Ministries in the Government of Egypt have earned the unenviable reputation of being overstaffed, poorly managed, suspicious of the private sector, and hesitant to rise to the challenges of globalization. Much of this is a legacy of the politics of the past, and much of it is doubtless true.

Examples, during the recent past alone, are plentiful. The GOE has been slow to prepare itself for the WTO. The GOE has enacted decrees that have remained unimplemented for years. It has unnecessarily placed roadblocks in the path of the private sector. Its Customs Service is notorious for failure to expedite exports and for applying import policies that add significantly to domestic production costs.

Nevertheless, there are things only government can do and actions only government can take. Moreover, there have been encouraging signs that change is occurring, albeit slowly. Over the past five years, GOE ministries have worked successfully with the private sector through APRP, other donor projects, and private sector associations. The GOE's working relationship with APRP has been based on benchmarks for accomplishment agreed to by both parties and by cash transfers that are made when a benchmark is achieved

If cash transfers are still to be included in a new policy program, the team recommends that these are triggered less by issuance of decrees and more by measuring execution of policies and regulations.

Following are some of the key areas affecting agriculture most and in which the GOE should strive to achieve significant improvements:

- **Customs.** The Customs service has been discussed in a previous section. The reform of Customs is one key to agricultural and other economic growth in Egypt.
- **Extension Service.** The MALR has 6,000 extension agents and subject-matter specialists. The overwhelming consensus among those interviewed by the Assessment Team is that the staff of this service is poorly informed; inefficiently organized; underpaid; and, on occasion, corrupt. Numerous credible individuals contacted by the Assessment Team have reported that extensionists often have private clients and make their most valuable new information available only to these private clients, rather than to their entire constituencies.

In contrast, USAID-funded projects, business support organizations, and NGOs have been working with extensionists, primarily in on-the-job upgrading of their skills and delivery methods. Some extensionists are provided with modest stipends to cover their transportation costs. In many instances, extension agents have been found to be enthusiastic to learn, to improve, and to provide better services to their clients.

RECOMMENDATIONS: PRIVATE SECTOR

- USAID should reaffirm and expand its support for a diverse mix of legitimate, relevant private sector organizations and NGOs, whether simply informal networks at the start or formal associations later on.
- USAID should consider making financial and technical resources available to private associations, probably on a matching and competitive grant basis, so they can contract out policy analysis, applied research, and industry promotional services.
- Most associations in Egypt continue to require intensive and ongoing training in virtually every aspect of association management, fundraising, and service menu development.
- Associations should be required to make cash-or-kind contributions to their own development. Members of the Board should play a leadership role in fundraising in this area.
- Associations need to learn how to define policy areas critical to their industry, to analyze policy and technical issues, to arrive at a member consensus regarding a policy agenda, and to make professional and credible presentations to appropriate constituencies and policymakers.
- Associations need to develop mechanisms to continuously monitor progress toward adoption and implementation of the reforms they advocate.
- Some associations need help in becoming more transparent, more democratic, and more inclusive.
- Boards of Directors of associations need additional training to better understand the requirements of corporate governance and oversight and the distinctions between governance and executive management.
- There is a need for an association-coordinating group of some kind—either formal or informal—to help ensure that collective action can be optimized and that ministries and other constituencies are not inundated in more advocacy efforts than they can reasonably consider.
- Associations should continue to represent the views of the backward and forward linkages in their supply chain, rather than only their particular link in the chain.
- Associations—and their individual members—should explore new forms of collaboration and, in particular, should make greater use of the academic community.

RECOMMENDATIONS: PUBLIC SECTOR

- The Assessment Team recommends a four-pronged approach to upgrading the Extension Service. First, MALR must be prepared to devise more effective management systems to ensure that the Extension Service is empowered to share MALR's expertise and information on a continuous and timely basis. Second, MALR should be receptive to developing and delivering ongoing world-class training to extensionists and subject matter specialists. Third, associations, USAID projects, and NGOs should expand their work with staff members of the Extension Service. Fourth, a benchmarking system should be developed by the private sector entities working with extensionists, and this should continue to include modest incentive payments to individual extensionists who meet pre-agreed goals.
- The GOE must demonstrate the determination and political will to clean up the Customs Service. This is perhaps the single most important initiative needed to reduce real costs and thus help to increase competitiveness.
- The GOE has already demonstrated its capacity and willingness to work closely with USAID-funded projects in the policy area. This has helped change its perception of the private sector as its natural enemy. This work needs to be expanded, including to the policy area.
- The GOE needs to continue to work on a wide range of priority policy issues, notably its readiness for the WTO and exchange rate policy (see Chapter Five).
- The absence of an intellectual property law has been a major constraint to growth in agricultural investment. The measure currently in Parliament should go far toward solving this problem, but the ingrained behavior of individuals toward intellectual property also requires the government's attention. This is partly an enforcement issue, partly an education issue.
- Low-tech, low-cost technology packages should be developed for small and medium sized holders in horticulture, dairy and red meat production.

CHAPTER SEVEN ALTERNATIVE USAID STRATEGIES

DISCUSSION OF ALTERNATIVE STRATEGIES

Finding just the right mix of investment options is always difficult, whether it is an individual designing her investment portfolio or a donor choosing where to allocate scarce development resources. Parallel to the individual's decision, the donor decision must be made taking into consideration what are the development objectives, what degree of risk can be tolerated, and what opportunities exist. In this analysis, we have identified three priority areas for USAID investment:

- **Improved Policy Analysis and Implementation.** There are many areas in the Egyptian agricultural and food system where improved policy would have a tremendous impact on the efficiency of the system and therefore on the rate of growth and job creation in the sector and in linked sectors.
- **Horticultural Production for Domestic and Export Markets.** There is considerable potential for increasing small farmer income and rural job creation through increased productivity and diversification of domestic crops produced primarily for domestic consumption. Also, Egypt has a comparative and competitive advantage in horticultural production. With values of water use exceeding 1 LE per cubic meter (10 times the value of water use in sugar production), horticultural production makes good use of scarce water resources. To achieve the potential of the sector, there must be improvements in technology, increased efficiencies in the supply chain, and changes in policies related to the sector.
- **Smallholder Livestock Production and Distribution.** There is considerable potential for increased productivity in livestock production in Egypt. To realize the gains will require better extension of knowledge on existing production systems plus adaptive research on improving livestock productivity under Egyptian conditions. Also, policy reforms in the supply chain for livestock products will be needed.

These areas differ in many respects—specifically, the target population; risk factors; and impact on economic growth, poverty reduction, and job creation. Table 7-1 summarizes the differences among the areas.

Table 7-1: Differences Among Recommended USAID Intervention Areas

Intervention Area	Target Population	Risk Factors	Impact on Growth, Poverty Reduction, and Job Creation
Policy	<ul style="list-style-type: none"> ▪ Depends upon the scope of the policy project ▪ Likely to have broad impacts touching horticulture, cereals, livestock, cotton, and other areas 	<ul style="list-style-type: none"> ▪ Project can be successful only if the GOE is willing to seriously consider and implement policy reforms 	<ul style="list-style-type: none"> ▪ In many cases, it will be difficult to measure precisely direct impact, but evaluations can be done both ex post and ex ante on the impact of policy changes
Horticulture: Traditional crops primarily for the domestic market	<ul style="list-style-type: none"> ▪ Hundreds of thousands of small farmers who grow traditional crops 	<ul style="list-style-type: none"> ▪ Income growth is necessary for continued growth in domestic market ▪ Must develop effective technology transfer methods for small farmers 	<ul style="list-style-type: none"> ▪ Growth achieved through increased and more diversified horticultural production
Horticulture: non-traditional crops primarily for export	<ul style="list-style-type: none"> ▪ Narrow target population consisting initially of larger growers and traders ▪ Potential to expand activity to smaller producers through associations and cooperatives 	<ul style="list-style-type: none"> ▪ Access to the European market will be critical ▪ Egyptian producers and marketers must be willing and able to meet European market quality standards 	<ul style="list-style-type: none"> ▪ The greatest economic growth potential exists in this area, as value added is high ▪ Job creation in field and packing-house labor ▪ Depending on the scale and location of production, poverty reduction could be lower than other areas
Small-holder Livestock	<ul style="list-style-type: none"> ▪ Target population is the large number (and widely distributed) of farmers, including many women, who produce livestock products as part of their farm output ▪ Also the rest of the supply chain (and ultimately consumers) would be impacted by project activities 	<ul style="list-style-type: none"> ▪ Success depends upon being able to render the extension system more effective and to produce adaptive research that meets the needs of Egyptian producers 	<ul style="list-style-type: none"> ▪ Enhanced farm income (and poverty reduction) through productivity gains in livestock production, but potential gains are not as high as for horticulture ▪ Increased incomes are more widely dispersed ▪ Potential gains for women who engage in livestock production

In creating this set of recommendations for USAID, the Assessment Team has tried to develop a balanced portfolio that achieves significant and widespread economic growth and job creation. The components of the package are designed to achieve a balance among poverty reduction and pure economic growth objectives as well as sufficient diversification so that the total portfolio would achieve gains even if parts of it are not successful. For example, if Europe does not open its horticultural markets or if the Egyptian producers cannot meet the quality standards, the traditional domestic project components could still succeed. Thus, the recommendations from

this analysis provide great opportunities to achieve USAID’s objectives while providing diversification and balance to the package.

Of course, USAID could decide it wants to create a different package. For example, if it deems the risks of success in smallholder livestock to be too great, it could choose to put all its resources in policy and horticulture. Or if USAID decides that the growth impacts from horticulture are likely to be too concentrated, it could limit this component to activities essential to preserve the gains already made and ensure sustainability of the sector. Or USAID could determine that the Egyptian government is not interested in reforming policy or developing policy analysis capability and allocate its resources to the other two areas. The point is that any number of scenarios could be developed as combinations of different weights on the three areas identified in this analysis as priority areas.

It is up to USAID and the GOE to determine what mix of these activities best meet their overall objectives. The team’s assessment is that the priorities should be policy, horticulture, and livestock, in that order.