Diagnosis and Challenges of Sustainable Agricultural Development in Egypt

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Chapter 2
Diagnosis and Challenges of Sustainable Agricultural Development in Egypt

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2.1 Introduction

Sustainable agricultural development seeks not only to preserve and maintain natural resources, but also to develop them, as future generations would have much more demand quantity-wise and quality-wise for agricultural and food products. Such goals should ensure a balance with the development of livelihoods enjoyed by the individuals concerned. Livelihood should not be restricted to an indicator of sufficient income levels but should also include public health concerns and education standards. The objective of this study was therefore to diagnose the challenges facing sustainable agricultural development in Egypt.

The analysis examined six dimensions: trade trends with an emphasis on agricultural trade; rural poverty indicators and causes; degradation of agricultural resources (soil and irrigation water); agricultural labor employment in relation to migration and the technological packages adopted; public health criteria; and education indicators. The final section was allocated for a profile of the strategy towards rural development.

The deficit in the trade balance showed an increase due to the deterioration of Egyptian exports in the world market, in particular the EU, due to the impacts of non-tariff barriers. Inequalities and rural poverty showed the extent of the unequal distribution of agricultural resources. They also demonstrated whether or not income generated from agriculture was capable of alleviating poverty in small-scale farming households and whether or not poverty in rural Egypt runs deeper than in urban areas. The appraisal of the degradation in natural resources focused on agricultural land and irrigation water. Whereas the agricultural land resources

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analysis concerned social and economic attitudes as well as the deterioration in soil fertility and quality, the analysis dealt with the types of quantitative and qualitative waste in irrigation water resources.

Worrying demographic issues were examined via migration trends and unemployment indicators as well as through the labor force and employment by sector. Public health indicators showed that the imbalance between access to piped water and the sanitation network in rural regions was the worst of all Egyptian regions. While piped water reached 97 % of rural households, only one-third of them have access to the sanitation network and only 13 % of rural households in Upper Egypt had access to sanitation in 2008. The public health indicators recorded 30 beds and 13 doctors for every 10,000 citizens in major cities, there were fewer than 20 beds and 2 doctors per 10,000 citizens in rural towns. Surprisingly, there is a higher ratio of nurses to doctors in rural regions than in urban regions in Egypt. This implies a lack of doctors in rural regions and the preference of rural women to work as nurses in the vicinity of their home villages for social reasons, in particular the fact that other employment opportunities in rural areas for women are rare. Literacy rate estimates would appear to show that the lowest literacy rate is in rural Upper Egypt at about 57 % and that the highest rate is in urban Lower Egypt at around 79 %. The literacy gap between rural and urban areas in Egypt nevertheless fell from 45 % in 1995 to less than 21 % in 2010.

The study was concluded with the definition of a profile for a strategy aimed at rural development in Egypt including a proposed program to alleviate poverty.

2.2 Trade Balance Degradation

This section presents some of Egypt's major agricultural trade performance criteria, including export flows, with a special focus on EU markets and the impacts of the revolution of January 25, 2011.

2.2.1 Egyptian Exports to the World Market

The old regime in place before the revolution of January 25, 2011 had introduced a development strategy built on a series of 5-year plans implemented since 1982. The last of these was the sixth development plan (2007–2011). Among the main objectives of that plan was the task of increasing export value with a view to overcoming the considerable trade deficit, in particular with regard to food. Table 2.1 shows significant annual growth in the value of total exports of about 16.6 % over the period 2007–2011. It was nevertheless smaller than the 21.3 % annual growth in the value of total imports. The Egyptian agricultural exports to the EU represented less than one-fifth of the agricultural imports from the

Table 2.1 Average annual growth rate of Egyptian foreign trade flow 2007–2011

Trade flow	Average annual growth 2007–2011 (%)
Imports from the rest of the world	21.3
Exports to the rest of the world	16.6
Imports from EU-27	7.8
Exports to EU-27	7.8
Agricultural imports from EU-27	21.4
Agricultural exports to EU-27	4.3

Sources Compiled from: (1) Eurostat (Comext, New Cronos), IMF (DoTS)

EU market to Egypt. Therefore, it can be assumed that the agricultural trade balance between the two markets developed in favor of the EU and not Egypt over the final 5-year development plan (2007–2011).

The profile of Egyptian exports over the period 2007–2011 shown in Table 2.2 provides some important indicators. Although total agricultural exports increased significantly over the period, it decreased from US$2887 million in 2010 to US $2774 million in 2011 while its share in total exports decreased from 11 to 9 %. It seems that the onset of the revolution of January 25, 2011 had a negative impact on agricultural exports. A dramatic fall in all categories of Egyptian exports, both agricultural and non-agricultural, was observed between 2011 and 2012, as shown in Table 2.3. The ratio of export earnings to import expenditure (either the total trade or the agricultural trade) also decreased over the period 2011–2012 (Table 2.3). This trend implied that the outflow of imports is much more than the inflow of exports, which means increases in the drainage of foreign currency associated with a shrinking of tourism activities. The expected result is a further fall

Table 2.2 Share of Egyptian agricultural products in total exports

Year	2007	2008	2009	2010	2011
Total exports in million US$	16,181	26,204	23,102	27,324	30,611
Agricultural products, without cotton	1048	1875	2819	2887	2744
Total (%)	6	7	12	11	9
Food industries	224	536	758	1355	1274
Total (%)	1	2	3	5	4
Leather and its products	84	86	108	182	151
Total (%)	0.52	0.33	0.47	0.67	0.49
Cotton and textiles	768	1858	2210	3094	3211
Total (%)	4.7	7.1	9.6	11.3	10.5
Exports of agricultural origin	1076	2480	3076	4631	4636
Total (%)	6.6	9.5	13.3	16.9	15.1

Source Compiled and calculated from CAPMAS, Central Agency for Public Mobilization and Statistics (2013), Nasr City, Cairo, Egypt

Table 2.3 Influences of January 2011 revolution on Egyptian exports (value in million US$)

Year	Exports to the world market			Exports to the EU-27		
	Jan–Sep 2011	Jan–Sep 2012	Growth Rate (%)	Jan–Sep 2011	Jan–Sep 2012	Growth Rate (%)
Total exports	23,038	21,958	−5	7630	6485	−15
Total imports	43,486	51,690	19	13,072.8	15,441.4	18
Exports/imports (%)	53	42		58	42	
Exports of agricultural products, without cotton	2273	1936	−15	525	449	−15
Imports of agricultural products, without cotton	5473	5910	8	627	612	−2
Exports/imports (%)	42	33		84	73	

Source Compiled from CAPMAS, Central Agency for Public Mobilization and Statistics (2013), Nasr City, Cairo, Egypt

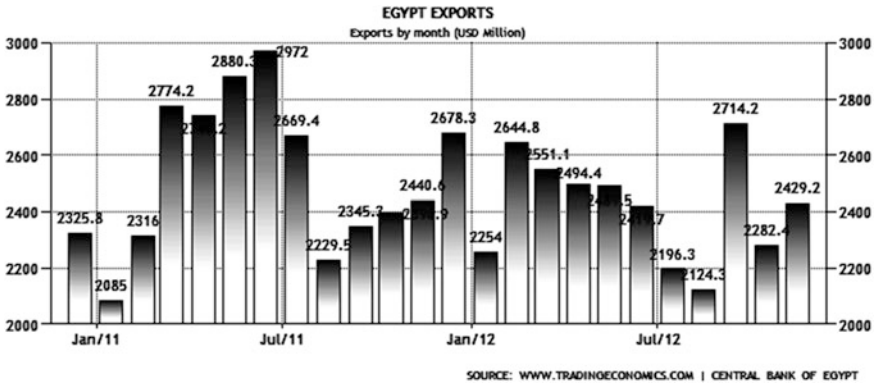

Fig. 2.1 Monthly changes in Egyptian exports (2011–2012)

in foreign currency monetary reserves. Figures 2.1 and 2.2 confirm the monthly increase in the deficit of the aggregate Egyptian balance of trade over the period January 2011–July 2012.

2.2.2 Egyptian Exports to the EU

The EU market is the world's biggest market for Egyptian agricultural product exports. In 2011, Egypt increased exports of agricultural, processed agricultural, fish and fishery products to the EU, with a total value of US$9404 million, i.e. 15 % more than in 2010 (Table 2.4). More than 80 % of these products benefit from duty-free and quota-free access to the EU market. The main agricultural products exported by Egypt to the EU are fresh table grapes, potatoes, sweet oranges, beans,

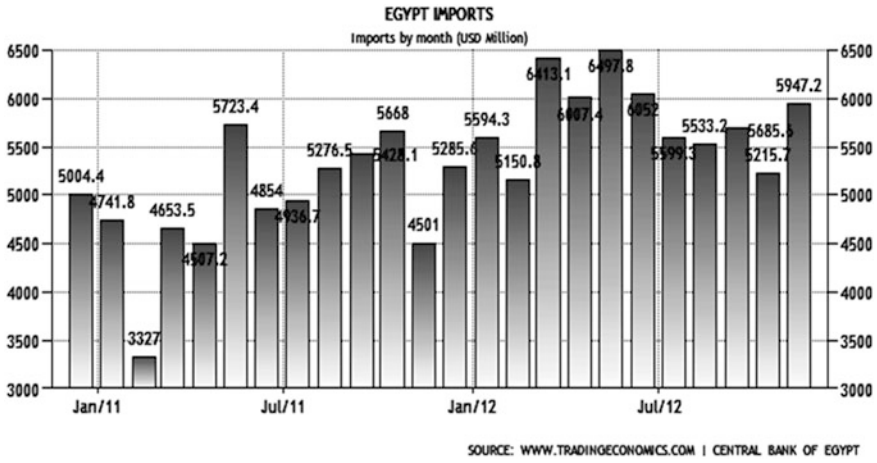

Fig. 2.2 Monthly changes in Egyptian imports (2011–2012)

onions and strawberries (IMF 2013). If other agricultural products exported to EU markets were taken into account, the role of the European market would be vital to Egyptian trade. Surprisingly, Egypt pegged its currency value to that of the US$ rather than the euro. While the annual growth rate of total Egyptian imports and exports from and to Egypt and the EU was 7.8 %, Egyptian agricultural exports to the EU recorded a growth rate of only 4.3 %, i.e. less than one-fifth of the comparable rate of agricultural imports from the EU, which was 21.4 % over the period 2007–2011.

2.2.3 Impacts of Non-tariff Barriers

It would appear that non-tariff barriers (NTBs) have a considerable impact on the competitiveness of Egyptian agricultural products on the EU market (Bassiony 2012). The study applied the gravity equation model as a common approach to assessing the impact of domestic and foreign policies on Egyptian trade patterns using cross-sectional data for the year 2010. The results showed that the impacts of NTBs were significant with a positive sign. This indicated that NTBs have a strong trade impact on Egyptian agricultural exports of vegetables and certain roots, tubers, fruits (including fresh oranges), nuts, peeled citrus fruits, melons and cotton. The positive sign may indicate the revealed competitiveness (RC) of these products on the EU market. Egyptian exporters should therefore satisfy EU requirements with regard to non-tariff barriers to raise their share on the EU market. This paper examined six types of measures: sanitary measures, technical barriers to trade, licenses, quotas, prohibitions and financial measures, applied in EU countries. Moreover, it examined the export-related measures applied by the Egyptian government.

Table 2.4 Egyptian exports to the EU markets (value in million US$)

Year	2007		2008		2009		2010		2011	
	Exports to the EU-27 markets	Total Egyptian exports (%)	Exports to the EU-27 markets	Total Egyptian exports (%)	Exports to the EU-27 markets	Total Egyptian exports (%)	Exports to the EU-27 markets	Total Egyptian exports (%)	Exports to the EU-27 markets	Total Egyptian exports (%)
Total exports	9146	57	10,704.2	41	7946	34	9404	34	12,363	40
Agricultural exports without cotton	619	59	579	31	679	24	666	23	707	26
Food industries	99	44	108	20	74	10	169	12	151	12
Leather and its products	51	60	74	86	70	65	121	66	127	84
Cotton, textiles, clothes	652	85	1022	55	892	40	1036	33	1195	37
Exports of agricultural origin	1420	67	1794	41	1714.7	29	1991.6	26	2180	30

Source Compiled and calculated from CAPMAS, Central Agency for Public Mobilization and Statistics (2013), Nasr City, Cairo, Egypt

All agricultural products sold in the EU, either imported or locally produced, must comply with EU requirements in terms of food safety. This involves an integrated approach (from farm to fork) covering food and feed safety, animal health and welfare as well as plant health. Consequently, in the case of food products of animal origin, only establishments that comply with these requirements are approved with a view to exporting to the EU (Delegation of the European Union to Egypt 2013). Therefore, the available approach to expand agricultural product exports from Egypt to EU markets are to comply with these requirements, otherwise such constraints would restrict efforts to develop Egyptian exports.

2.3 Inequalities and Rural Poverty

To assess the poverty level and performance indicators, the study used data from successive household budget surveys conducted by Egypt's Central Agency of Statistics and Public Mobilization (CAPMAS) between 1975 and 2009. These surveys allowed some major indicators for the standard of living in rural and urban regions of the country to be estimated (Table 2.5). The table shows that while food price levels rose at an annual rate of 9.4 % in rural regions between 2000 and 2005, it increased at an annual rate of 2.1 % in urban regions. This shows the bias of the Egyptian government in favor of urban areas at the expense of rural areas with respect to food price subsidy policy and market control functions.

Table 2.5 also shows that the parity current income (the ratio of rural annual per capita income to urban income)[1] rose from 55 % in the year 2000 to 84 % in 2005 at the current price level. However, at the constant price level of 2000, this ratio decreased from 55 % in 2000 to only 39 % in 2005. This was due to a rapid decrease in the real annual rural per capita income at 9 % while it decreased by only 2 % in urban areas. Consequently, the standard of living in rural regions was much lower than in urban regions and worsened over time due to price inflation, which reflected less economic growth and more poverty depth in rural than urban regions.

2.3.1 How Large Are the Inequalities in Agricultural Resource Distribution?

In general, the Egyptian farming system has two major features. It is highly intensive in production and too fragmented in farm size pattern. The first Egyptian land reform law was enacted in September 1953. It limited land holdings to 84 ha

[1]Instead of annual income, total annual expenditure was used as the household budget surveys were unable to measure income precisely.

Table 2.5 Indicators of standard of living in Egyptian rural and urban regions

Economic indicators	2000		2005	
	Urban	Rural	Urban	Rural
Average value/kg of food consumed	2.73	1.43	2.97	2.29
Annual food price inflation rate (%)			2.10	9.40
Annual per capita expenditure (L. E.)	2653	1455	2769	2328
Expenditure (rural/urban), where 2000 = 100 (%)	100	55	100	84
Annual growth rate between the two successive periods (%)			0.90	7.71
Real annual per capita expenditure (L. E.)	2653	1455	2391	928
Expenditure (rural/urban), where 2000 = 100 (%)	100	55	100	39
Annual economic growth rate between 2000 and 2005 (%)			−2	−9

Source Estimated from Central Agency for Public Mobilization and Statistics (CAPMAS), "The Household Budget Survey of Egypt", from the surveys of 2000 and 2005, Cairo, Nasr City, Egypt

(200 Feddan[2]) for a family (parents and children under 21 years of age) and to 41 ha (100 Feddan) for a single person. The second law was passed in 1969, adjusting the size of land holdings to half the limit established by the first law, i.e. 40 ha per family and 20 ha per single person. The period between the two laws saw another presidential decree, referred to as the nationalization decree enacted in 1961, which placed all firms under state management, including those in the agricultural sector. Tenant farmers benefitted considerably from the land reform law, which established numerous barriers protecting them from landowners when the latter wanted to repossess their land from the tenant. Furthermore, the law set land rent at 7 times the land property tax. Under that past regime the tenants used to bequeath the rented land by dividing it between their sons and daughters, thereby exacerbating land fragmentation through increasingly small farm sizes. However, the land market was completely liberalized in 1997 when the land reform law was cancelled, a fact which had a dramatic impact on land holding patterns.

Tables 2.6 and 2.7 present the relative frequency distribution of agricultural land holdings in Egypt from the period before the Egyptian Revolution in July 1952 until the year 2000, covering all structural changes in the land holding policy of Egypt. Unfortunately, no recent data on farm structure is available beyond 2000.

Estimates of the GINI coefficient and the Lorenz curve are two parameters used to assess the equality and justice of wealth and resources in an economy. The GINI coefficient is useful in illustrating the principal factors that characterize equality and inequality in nation states and communities within these states. When focusing on social equity, the GINI coefficient serves as a useful guide (Litchfield 1999). Expressed as a percentage, the GINI coefficient ranges between zero, which means full equality of the probability distribution of the variable concerned, and 100 %, i.e. full inequality (Lui 1997). The GINI coefficient was therefore estimated by this

[2]1-Feddan = 4200 m^2.

Table 2.6 Distribution pattern of agricultural land holdings before and after land reform low

Land holding category (Feddan)	Before 1952		After the 1st reform law, in 1953	
	Numbers (%)	Area (%)	Numbers (%)	Area (%)
<2	94.3	35.4	94.4	46.5
2−	97.1	44.2	97.0	55.3
4−	98.8	54.9	98.6	66.0
8−	99.6	65.8	99.6	79.7
21−	99.8	73.0	99.8	86.9
42−	99.9	80.3	99.9	94.1
84+	100	100	100	100
GINI coefficient	61.1		49.4	

Source Compiled and calculated from the Ministry of Agriculture and Land Reclamation (2009)

Table 2.7 Distribution pattern of agricultural land holdings (1969–2000)

Land holding category (in Feddan)	Contemporary to the nationalization Acts in 1961		After the 2nd land reform law in July 1969		In 2000, after the law of land holding liberalization	
	Numbers (%)	Area (%)	Numbers (%)	Area (%)	Numbers (%)	Area (%)
<2	94.1	52.1	95.8	56.3	90.4	47.8
2−	96.7	60.6	98.1	66.0	96.7	63.4
4−	98.8	71.2	99.2	75.8	98.9	75.2
8−	99.6	84.7	99.7	85.0	99.7	85.5
21−	99.8	91.8	99.9	91.5	99.9	89.5
42−	100	100	100	100	100	100
GINI coefficient	43.3		40.3		44.9	

Source Compiled and calculated from the Ministry of Agriculture and Land Reclamation (2009)

study for the frequency distribution of farm holdings of agricultural land in Egypt over the period running from before 1992 until 2000.

The estimated GINI coefficient of land holding distribution shows that the lower the GINI coefficient, the greater the fragmentation in terms of land holding size. Before the first land reform law (during the Egyptian royal era), it was about 61.1 % before falling to 49.4 % after the first land holding law was introduced, indicating a shift towards greater equality. After the nationalization decrees of 1961, the GINI coefficient fell even further to 43.3 % due to the absence of economic incentives to establish large farms with stagnation in the land market. The absence of incentives was the result of several factors. Among these is the fact that the land reform law prevented owners from repossessing land from the tenants, even if they did not pay their rent on a regular basis. The rent was set at a too low rate—only 7 times the land tax, which was in itself very low at US$7–10 per hectare. By the time the second land reform law was introduced in 1969, the GINI coefficient had decreased

Table 2.8 Share of small farms in land holding patterns of Egypt

Category of farm area (Feddan)	No. holdings (%)	Farm area (%)	No. cattle (%)	No. buffalo (%)
<1	34.72	6.17	16.81	21.54
1 to less than 2	26.11	12.49	20.07	26.92
2 to less than 3	18.87	15.47	19.03	23.67
3 to less than 4	8.35	9.84	10.50	9.32
4 to less than 5	3.64		5.36	5.71
Sub-total	5.63		71.77	87.16
5 to less than 6	49.61	8.16	6.32	6.12
6 to less than 7	1.58	4.62	2.84	2.63
7 to less than 10	1.10	4.62	1.97	1.61
10 to less than 15	0.50	2.95	1.00	0.85
15 to less than 20	0.51	4.26	0.85	0.69
20 to less than 30	0.34	4.52	0.77	0.59
30 to less than 50	0.16	3.54	0.40	0.28
50+	0.04	17.73	0.11	0.07
Total	100	100	100	100

Source Compiled and calculated from the Ministry of Agriculture, Egypt (2010)

even further to 40.3 %. In the year 2000, i.e. three years after the liberalization of the land market following the cancellation of the land ownership limits and the decision to allow land rent to be determined by the market mechanism, the GINI coefficient had rebounded slightly around 45 %, i.e. towards less equity. Therefore, land holding patterns changed to reflect a much higher centralization of larger farm sizes. Small farms, therefore, still account for the majority of agricultural land holdings in Egypt. By Egyptian standards, small farms measure less than 5 Feddan (less than 2 ha) (Soliman et al. 2012). Table 2.8 shows that 91.68 % of holdings are smaller than 5 Feddan, accounting for 49.61 % of land, i.e., less than 10 % of the owners hold almost half the agricultural land area. Nevertheless, small farmers hold the majority of livestock in Egypt, i.e. 71.77 % of cattle and 87.16 % of dairy buffaloes. Livestock is seen as a sort of capital intensification on small farms to generate a daily income for the family (Soliman et al. 2012).

2.3.2 *Does Agricultural Income Alleviate Household Poverty on Small Farms?*

Table 2.9 presents the household income structure in both rural and urban regions in Egypt. While agricultural activities are the main source of income in rural areas, i.e. about 62 %, such activities represent only 16 % in urban regions (some urban citizens hold agricultural assets in rural areas). While income from wages and salaries accounts for almost one third of urban household income, this figure is only

Table 2.9 Role of agriculture in rural household income in 1999/2000

Source of income		Urban	Rural	All sample
Agricultural income	Owned agricultural land	9.57	44.53	28.06
	Agricultural machinery	2.38	2.92	2.66
	Agricultural projects	1.74	1.13	1.41
	Farm animals	2.13	13.39	8.09
	Sub-total (1)	15.82	61.97	40.22
Other sources of income	Residential buildings	6.38	1.62	3.86
	Financial activities	19.54	10.71	14.87
	Commercial projects	24.05	7.52	15.31
	Sub-total (2)	49.97	19.85	34.04
	Wages and salaries (3)	34.21	18.18	25.74
Total (L.E./household/year)		100	100	100

Source Calculated from Had-hood, Mashhour (1999)

18 % in rural regions. The remainder of the income is derived from residential building rent, commercial projects and financial activities. Such sources represent about half of an urban household's income but only one-fifth of household income in rural regions. In other words, until the end of the last century, the opportunities for non-agricultural sources of income in rural areas were much more limited than urban. However, it would appear that the size of the agricultural share changed drastically during the first decade of the current century.

As shown in Table 2.8, the small-scale farmers represent the majority of agricultural landholders in Egypt. Poverty measurements should therefore focus on this category of the agricultural community in Egypt. Accordingly, a recent farm sample survey consisting of 120 small-scale farm holdings from 4 villages in the Sharkia Governorate, where the University of Zagazig is located, was conducted under the supervision of the author. The purpose of this survey was to investigate small-scale farmers' economics for the agricultural year 2010/2011. Table 2.10, presents the

Table 2.10 Sources of small farm income

Source of income	L.E./year	US$/year	%
Sale of crops	4478	740	18
Income from livestock business	8296	1371	33
Income from poultry business	236	39	1
Working for other farmers	876	145	3
Salaries from non-agricultural jobs	10,145	1677	40
Remittances from working abroad	1200	198	5
Total income	25,231	4170	100

Source Estimated from a new sample survey of 120 farms, supervised by the author for the agricultural year 2010/2011 in four villages of the Sharkia Governorate

annual average of the share of agricultural and non-agricultural income in the earnings of small-scale farms. It showed that while 52 % of the total annual income of a farm household was generated by agricultural activities, 48 % was derived from non-agricultural activities. This would imply that the share of agricultural income decreased in 2010/2011 in comparison to the results presented in Table 2.9 for the year 1999/2000, i.e. from 62 to 52 %. It would also appear that small-scale farmers could not generate higher agricultural income due to the limited land endowments available. It is quite clear from Table 2.10 that whereas the sale of arable crops provided only 18 % of annual household income, livestock provided 33 % and poultry provided 1 %. Livestock activities rather than crops have therefore become the major source of agricultural income for the majority of farm households in Egypt. Among non-agricultural income sources, wages from non-agricultural jobs represent the majority, i.e. 40 % of annual small-scale farm household income, followed by the share of remittances from working abroad (5 %) and finally working for other farmers (3 %).

Accordingly, the increase in the non-agricultural population in rural areas will in time prove to be a major burden on the national economy of Egypt. In other words, rural communities will become residential regions for employees rather than mainly being home to farmers and agricultural workers as it was fifty years ago.

According to the small-scale farms survey mentioned above, the average household size was 5.2 people per farm. Considering the poverty threshold of US $2/capita/day determined by the World Bank, the author assessed the extent to which the annual earnings of small-scale farm households were sufficient to surpass the poverty threshold. Summing all income sources from agricultural activities earned by small-scale farming households, including working as a laborer on other farms as shown in Table 2.10, the daily per capita income would not surpass US $1.2, i.e. there would be a poverty gap of 40 % between the minimum income level of US$2/capita/day and actual agricultural earnings. It had not only that but agricultural income sources provided US$1.03/capita/day, which would hardly even exceed the absolute poverty line. However, the average daily per capita income per household (agricultural and non-agricultural) would be US$2.2, a little (10 %) above the poverty threshold (US$2/capita/day).

2.3.3 Is Poverty in Rural Egypt Less Deep Than in Urban Areas?

While the gross national product (GNP) per capita expresses a national average of wealth, it does not provide an insight into the levels of actual wealth distribution to individuals within the state. Accordingly, the GINI coefficient illustrates the principal factors that characterize equality and inequality for communities within states, serving as a useful guide focusing on social equity. GINI coefficients can be put to good use as a means of assessing the impacts of economic and social reform and to

forecast trends towards civil violence and rural to urban migration rates (Litchfield 1999). Consequently, that study estimated GINI coefficients from the household expenditure surveys that were conducted in Egypt between 1974/1975 and 2009/2010 (CAPMAS). The estimates concerned both urban and rural regions.

The poverty rates, as shown in Table 2.11, indicate the concentration of the poor in rural areas, particularly those in Upper Egypt. Even though rural regions are poorer than urban ones, the inequality in income distribution is less marked in rural areas than urban regions in Egypt. Nevertheless, greater income distribution equality associated with a lower income level than in urban areas is a disadvantage as it means that poverty is widespread and deeper in rural areas than in urban areas.

The estimate of the rural/urban parity food price ratio, shown in Table 2.12, shows that the level of food prices had apparently decreased between 1975 and the end of last century. This was due to a very low rate of inflation in food prices in rural regions in comparison to urban regions over the period 1990–2000. Although the last decade of the 20th century was an era of drastic changes in the Egyptian economy, shifting from a centrally-planned economy to a free market system, it seems that rural regions resisted food price inflation due to a high rate of consumption of farm-produced products. The consumption of home-produced items is valued at cost price. The monetary burden of such a cost represents only the inputs purchased (Soliman and Eid 1995).

However, the rural/urban parity food price ratio increased rapidly during the last decade (2000–2010). The food price inflation rate in rural regions exceeded that

Table 2.11 Income distribution and poverty in urban and rural Egypt

Region	Expend/capita (EGP)	Income share of the lowest 40 % of people (%)	GINI coefficient (%)	Poor persons (of total population %)		Wages of poor households (%) of total employees	
				Ultra poor (%)	Total (%)	Income (%)	Total wages (%)
Urban governorates	5832	20.10	35	0.50	6.90	43.50	4.60
Lower Egypt	3556	26.30	23	2.00	14.20	41.00	10.30
Urban	4327	15.10	27	0.80	7.30	38.40	4.90
Rural	3275	32.30	20	2.50	16.70	41.40	12.50
Upper Egypt	2916	23.40	28	12.80	36.90	41.00	27.70
Urban	3879	12.80	33	6.30	21.30	41.60	14.70
Rural	2501	43.7	23	15.60	43.70	40.90	34.60
Egypt	3712	22.30	31	6.10	21.60	41.30	15.20
Urban	4843	20.70	34	2.60	11.00	41.40	7.20
Rural	2924	26.00	22	8.50	28.90	41.20	21.80

Source Estimated from CAPMAS (Center Agency for Public Mobilization and Statistics of Egypt) (2010b), Household Income Expenditure and Consumption Sample Survey (HIECS) of 2008/2009

Table 2.12 Trend of food price level inflation rate in rural versus urban Egypt

Region	Urban			Rural			Rural/urban parity food price (%)
Comparative indicator	Average value/kg of food consumed	Food prices index (%)	Annual food prices inflation rate (%)	Average value/kg of food consumed	Food prices: inflation index (%)	Annual food prices: inflation rate between two successive periods (%)	
1975	0.14	100	–	0.12	100	–	86
1990	1.55	1107	16.0	1.39	1158	16.3	90
1995	1.74	1243	2.3	1.25	1042	−2.1	72
2000	2.73	1950	9.0	1.43	1192	2.7	52
2005	2.97	2121	2.1	2.29	1908	9.4	77
2009	3.40	2431	3.4	3.13	2606	7.8	92

Source Estimated from CAPMAS (2010b)

observed in urban regions by a relatively large margin. This was due to heavy subsidization of food items devoted to urban regions compared to rural areas. It was also due to the urbanization of wide tracts of rural land adjacent to cities, thereby increasing the demand for food commodities in these newly urbanized rural regions. A third reason may stem from the changes in rural consumers' behavior towards simulating the behavior observed in urban regions due to the expansion of communication tools, commercial promotions and the media.

Egyptian statistics lack a continuous estimation of CPI for both urban and rural regions. Therefore, as food consumption expenditure represents more than 50 % of total household expenditure in most Egyptian households, the estimated index presented in Table 2.12 was applied to obtain the real annual per capita income in both urban and rural areas over the period 1975–2010. As shown in Table 2.13, dramatic changes occurred in the Egyptian economy during the period 1975–1990, moving from a centrally planned economy to a free market economy without a proper institutional policy view (Hazell et al. 1995). These changes generated severe disadvantages, which outweighed the few advantages. In reality, both urban and rural communities suffered from reduced purchasing power with negative economic growth in both communities. The great expansion in foreign investments, mainly from the West, was combined with significant positive economic growth between 1990 and 1995. Real income and economic growth then deteriorated until 2010, in both the urban and rural communities, due to a distortion of the applied economic policies. Successive governments over the period 2005–2010, i.e. until the January revolution, focused attention on the rent and paper economy, a fact which was only reflected in certain categories of urban communities, while the rural regions did not derive any benefit from this policy. The urban households in the categories which did benefit therefore enjoyed advantages in terms of economic growth while the rural real economy deteriorated. Accordingly, the new regime should emphasize rural development to bridge the rural/urban development gap as quickly as possible.

Sørli et al. (2004) claimed that the lack of economic and political opportunities among the communities within a certain country provide a fertile soil for frustration and opposition. They added that poor countries or groups within a nation, trapped in poverty, have a greater propensity for violent conflict with a higher probability of conflict breaking out than the global average. Bloomberg and Hess (2002) stated that "reduced levels of domestic economic activity tend to create incentives for increased external and internal conflict, which in turn reinforces low levels of domestic economic activity". Therefore, a conflict-poverty trap emerges where conflict plays a role in reducing capital accumulation and the lack of capital accumulation results in further conflict. Nevertheless, there is a recognized causal relationship between inequity and violence with Collier (1999), concluding that even if economic inequity is significant in causing civil war, the "Collier and Hoeffler model of civil war" lacks the means of measuring its influence.

Table 2.13 Income level and income distribution in rural versus urban Egypt

Region	Urban				Rural			
Year	Annual per capita expenditure (EPD)	Annual growth rate (%)	Real annual per capita expenditure	Economic growth rate (%)	Annual per capita expenditure (EPD)	Annual growth rate (%)	Real annual per capita expenditure (EPD)	Annual economic growth rate (%)
1975	103	–	103		63	–	63	
1990	1058	15.5	96	−0.50	703	16.1	61	−0.25
1995	1793	10.6	144	8.24	1038	7.8	100	9.92
2000	2653	7.8	136	−1.17	1455	6.8	122	4.06
2005	2769	0.9	131	−0.83	2328	9.4	122	−0.02
2009	4843	11.2	199	8.48	2924	4.6	112	−1.69

Source Estimated from Table 2.5 and CAPMAS (2010b)

2.4 Degradation of Natural Resources

Each community has granted a stockpile of natural resources and human resources. Man has generated a new economic factor—capital—using natural resources together with technology to satisfy the growing quantitative and qualitative demands of the population of such a community. The expanded demands therefore exacerbate the scarcity of these limited natural resources. The Egyptian economy has suffered considerably from the impacts of this economic process as a result of the policies adopted over the past five decades, in particular with regard to agricultural land and water resources (Soliman 2006a, b).

At the turn of the twenty-first century, the Egyptian economy is therefore confronted with a major challenge. It has to create a new development system aimed at ensuring an efficient combination of natural resources and human resources while curbing the depletion of agricultural land and water resources both in quantitative and qualitative terms. Sustainable development should ensure that future generations have their share of present-day resources and this share should be developed by taking into account the increasing quantitative and qualitative future demand due to the evolution of civilization and expected economic and social development (Soliman 1995). This section aims to investigate the changes that have occurred in the natural agricultural resources in Egypt over the past four decades, focusing on the quantitative and qualitative deterioration of these resources.

It should be noted that the agricultural and water resource management policies implemented in Egypt have lacked social costs and price implementation which caused the market to fail, thereby exacerbating the deterioration in the quantity and quality of both natural resources.

2.4.1 Agricultural Land Resources

Despite the scarcity of data and accurate information regarding the area of agricultural land appropriated for non-agricultural use, the study tried to extrapolate the validity of the data available to obtain a time trend for the changes in these areas. The study also tried to identify the classification patterns of non-agricultural uses to specify the economic attitudes of rural communities towards land use. The study used a procedural definition for the pattern of appropriations of agricultural land for non-farming purposes. Some of the non-agricultural uses were associated with agricultural development, such as animal and poultry production and agricultural industries. However, the argument is still valid that while these purposes are concerned with agricultural activities, they eliminate fertile agricultural land within the Nile Delta which is difficult to offset in the absence of the Nile flood.

The study used several methods to track the appropriation of agricultural land for non-agricultural purposes between 1970 and 2012. The official time-series statistics show the total agricultural land and the reclaimed land as presented in Table 2.14.

Table 2.14 Time series estimates of Egyptian farmland, and reclaimed area (in 000 Feddan), 1977–2010

Year	Agricultural land	Annual change in farmland	Reclaimed land area
1977	5796	–	–
1978	5838	42	5
1979	5826	−12	7
1980	5820	−6	127
1981	5876	56	81
1982	5822	−54	78
1983	5797	−25	45
1984	5853	56	52
1985	5943	90	100
1986	6019	76	120
1987	6093	74	132.8
1988	6183	90	132.8
1989	6270	87	132.8
1990	6918	648	132.8
1991	7023	105	132.8
1992	7131	111	57.63
1993	7179	45	57.63
1994	7173	−6	57.63
1995	7813	1377	57.63
1996	7563	−250	24.5
1997	7726	163	27.9
1998	7761	35	40.7
1999	7848	87	22
2000	7833	−15	12.7
2001	7946	113	28.7
2002	8148	202	18
2003	8113	−35	23.5
2004	8279	166	14.5
2005	8385	106	7.8
2006	8411	26	2.22
2007	8423	12	2.1
2008	8432	9	0.7
2009	8783	351	0
2010	8741	−42	0
Aggregate change	2945	3682	1734.84

Source (1) Center Agency for Public Mobilization and Statistics of Egypt, and (2) Public authority for agricultural development and reconstruction projects, Egypt (2010)

These data are insufficient to obtain logical estimates of the land appropriated for non-agricultural purposes. The aggregate increase in agricultural land was 3682 million Feddan, according to the official statistics; it surpassed the reclaimed area by 1210 million Feddan.

This inaccuracy in agricultural land estimates forced the study to collect all published studies on the agricultural use of land resources to determine a realistic chronological trend for agricultural land use over time. There are few studies available on agricultural land appropriated for non-agricultural purposes. These studies presented the changes over discrete periods rather than on a continuous annual basis. One of the main conclusions from these studies was that land re-appropriation has two main patterns. The first is a legal appropriation of agricultural land with official approval for either public utilities and/or private enterprises. The second could be for related agricultural activities. Patterns of legal appropriation of land include the establishment of animal and poultry farms, stores for seed and fertilizer, shelters for machines and/or finally the construction of houses within the planned urban belts. The second pattern involves the illegal appropriation of agricultural land. Some people simply leave the land fallow until they have the opportunity to build on it. Other illegal practices include dredging the agricultural land and selling the silt for making bricks for construction before building on this degraded land at a later date. Some individuals build concrete buildings either for activities related to the agricultural sector, such as cattle and poultry pens, or for warehouses and storage/packaging plants. However, an increasing area has been used for residential construction, particularly in villages adjacent to big cities. Such residential areas are the nucleus of "slums" which are called "Ashoaiatt" in Egypt. Such slums have become the focus of social unrest as the inhabitants demand the provision of services and infrastructures through social pressure, despite the fact that they are illegal residents.

Table 2.15 shows the estimates of the total land appropriated for non-agricultural purposes during the period from 1970 to 2010. The cumulative total of agricultural

Table 2.15 Total agricultural land withdrawn for non-agricultural purposes (in 000 Feddan), 1970–2010

Time interval	Total farmland withdrawn in successive time periods	Annual average
1970–1980	(1)500	50
1980–1990	(1)270	27*
1990–2000	(2, 1)140	14**
2000–2010	(2)350	35***
2011	14.3	14.3
Total	1274.3	40

*Act 116 of 1983 to prevent construction on the agricultural land
**Issuing of the military Governor (Prime Minister) Command in 1996
***Issuing of the new urban space map of the villages and rural towns for the period 2008/2012
Source Compiled and calculated by (1) Soliman and Rizk (1991)
(2) Ministry of Agriculture and Land Reclamation, Directorate General of Land Protection, unpublished data

land re-appropriated over the period concerned reached 1274 million Feddan with an average annual rate from 40,000 to 50,000 Feddan/year. This rate fluctuated periodically. While 40 % of the total land was appropriated for non-agricultural use during the 1970s, this rate decreased to only 27,000 Feddan during the 1980s as a result of Law No. 116 issued in 1983 concerning the prevention of construction on agricultural land. During the 1990s, the figure fell even further to about 14,000 Feddan/year due to the military rule witnessed in 1996 which prohibited all non-agricultural construction on agricultural land. Between the beginning of the 21st century and January 2011, the annual rate of agricultural land appropriated for non-agricultural use has once again increased to 35,000 Feddan/year due to implementation of the planned program of urbanization, particularly in the Nile Delta Governorates that do not have desert borders. Lawlessness has been dominant in Egyptian society since the revolution of January 25, 2011, which resulted in a boom in construction on agricultural land. The General Directorate for the Protection of Land reported that more than 14,000 Feddan had been re-appropriated by mid-February 2012.

The total agricultural land illegally appropriated (Table 2.16) represented no more than 9.1 % of the total land appropriated for non-agricultural purposes over the same period. This means that most of the land withdrawn was done so legally. The appropriation of agricultural land for non-agricultural use was therefore influenced by government policies rather than individuals.

2.4.1.1 Social and Economic Attitudes

The intensive demand for withdrawing agricultural land for non-agricultural uses was the result of the estimated price of land for non-agricultural purposes being 10–15 times higher than the price for agricultural use (Soliman and Rizk 1991). Such a price difference was responsible for 71 % of the area re-appropriated for other non-agricultural purposes. The same study showed that the agricultural land market was oriented by the demand for non-agricultural purposes. Soliman and

Table 2.16 Agricultural land withdrawn illegally for urban purposes (1987–2011)

Time interval	Total	Annual average
1983–1987	19,325	3865
1988–1992	17,290	3458
1993–1995	7734	2578
1996–2005	11,743	1174
2011	14,296	14,296*
Total	70,388	2427

*Since the 25th of January 2011 until 15 February 2012

Source Compiled and calculated by (1) Abdul Aziz (2007)

(2) Report of the Directorate General for the protection of land, The Seventh Day (newspaper), 15 February/2012

Rizk (1991) estimated the price elasticity of demand for land for non-agricultural use as 0.9, while it was close to zero for the demand for land for agricultural purposes. However, the same study showed that a 10 % improvement in soil fertility reduced the demand for urban purposes by around 3 %.

The increase in population was another important factor behind the increased demand for land for non-agricultural purposes in the Egyptian countryside. The same study showed that a 10 % population increase would increase the re-appropriation of agricultural land for the purposes of construction by about 4.4 %. This figure doubled in villages near the cities.

2.4.1.2 Deterioration in Soil Fertility and Quality

A study of the economic efficiency of agricultural resources in Arab countries (Soliman 2006a, b) showed how valuable irrigated land is in comparison to rain-fed areas. Agricultural production in Arab countries did not show a significant response to changes in rain-fed areas. However, each additional acre of irrigated land showed an additional value in agricultural production of about US$4000 per year (2004, constant price). The study also showed that the value (price) of one acre of irrigated land in Arab countries was about US$100,000 (at 2004 prices).This value is assumed to be much higher as agricultural land in Egypt is fully surface-irrigated with a high density of cultivation, as the crop density coefficient reached nearly 1.76 in the agricultural season in 2009 (Egyptian Ministry of Agriculture 2010). Furthermore, as the Nile flood no longer occurs following the construction of the High Dam in Aswan, the opportunity cost of Nile valley agricultural land is assumed to be much higher because no more silt is added to this soil. An acre lost could not, therefore, be replaced by a newly reclaimed one as Abdul Aziz (2007) estimated the costs of reclaiming one acre at US$2200. In addition the productivity of an acre of newly reclaimed land would be less than the old one in the Nile valley.

As shown earlier in this section, the higher the soil fertility, the lower the demand for Egyptian agricultural land for urban use. However, Soliman and Rizk (1991) provided evidence that the main reason behind the decline in Egyptian agricultural soil fertility is that the groundwater level has been raised closer to the surface due to the imbalance between the speed of expansion of the drinking water network and the very limited expansion in the sewage network in rural areas. This is responsible for 25 % of the deterioration in soil fertility in Egypt. That study also showed that a 10 % increase in the groundwater level resulted in an 8.6 % deterioration in soil fertility. The latest statistical report (CAPMAS 2010a, b) showed that the proportion of Egyptian village houses connected to drinking water had reached 81.6 % while the houses connected to the sewage network did not exceed 12.8 % in the Egyptian countryside

The extended contamination of agricultural land due to the many sources of pollution is another dimension underlying a qualitative waste of land resources. Numerous villages release household and other waste directly into the soil, making

it a source of environmental pollution. A recent study (AlSaid 2011) showed the deterioration in soil fertility due to the increase in its salt content as a result of poor drainage. The negative externalities of degradation in the chemical and physical characteristics of the soil result from excessive use of chemical fertilizers, especially nitrogen, the irrational use of pesticides and the release of sewage and industrial waste into water canals and at the farmland borders. Moreover, the desertification of farmland results from the moving of the sand dunes which cover the soil and lead to a degradation in soil fertility, especially in Upper Egypt where the strip of fertile land is very narrow.

2.4.2 Irrigation Water Resources

Although water resources govern any agricultural development program, the water available in Egypt has reached a level below the critical per capita water poverty line. The per capita share has dropped annually from about 1024 m^3 in 2002 to about 901 m^3 in 2010 (CAPMAS 2012). Egypt is located within the dry belt. However, Egyptian water resources amounted to around 70.9 billion m^3 in 2010. Although 78.27 % comes from the sustainable source of the Nile, it will become an unsecured water source due to ongoing conflicts relating to water distribution between the countries upstream and downstream. Non-renewable sources included about 8.88 % from depleted groundwater in the valley and the delta in 2010 while 1.83 % was derived from unstable natural resources and water harvesting. The recycling of agricultural drainage water accounted for 9.16 % of Egyptian water resources in 2010 while the recycling of wastewater represented 1.84 %. About 10.7 % was therefore derived from unstable natural sources (groundwater and rainfall) and about 11 % from water resources of unstable quality, i.e. exposed to potential contamination (recycling of drainage water and wastewater).

Agriculture accounted for roughly 82.5 % of total water resources used to irrigate nearly 8.7 million acres. The irrigating network covers more than 10 million fields and measures about 40,000 km via a network of canals and channels. The agricultural drainage network stretches about 20,000 km. Households use approximately 12.9 % of the total water supply, followed by industry, which consumes 1.6 %. Water lost to the sea was about 3 % of the total water available in 2010. Such huge surface irrigation networks face technical and economic difficulties with regard to management and suffer from numerous sources of waste. Furthermore, as the old agricultural system was deeply rooted in human culture, a number of inherited social traditions remain which guide the farmers' behavior towards water use. These customs also contribute to either quantitative or qualitative waste. The latter has negative externalities which cause pollution that in turn affects human, animal and fish health as well as the agronomic production in Egypt (USAID, Egypt, 2002).

2.4.2.1 Types of Quantitative Waste in the Water Resources

From the literature, the study identified four types of quantitative waste in water resources. The first type stems from inefficient water delivery. Previous studies (Abdul Aziz 2007; AlSaid 2011) estimated the efficiency of irrigation water from Aswan to the fields as shown in Table 2.17. The most important conclusions drawn from the findings of these studies were that losses from the irrigation network were much higher than suggested by official statistics. The latter estimated the annual loss at 2.2 billion m^3, which is equivalent to only 2.5 % of the amount of water at Aswan, while the studies estimated the loss at between 19.5 % and more than 29.21 %. These studies confirm the frequent complaint of farmers, especially in the summer season, of insufficient water flow reaching their fields. They claim that the fields receive even less than the quantity determined theoretically by the Ministry of Irrigation. In conclusion, it seems that the agricultural sector is not only the major consumer of the limited water resources; it is also the main culprit with regard to water loss. This loss is the result of using the huge network of open channels which carry water to the fields. Huge water loss is therefore expected through evaporation and seepage as well as poor maintenance of pumping stations.

The second type of loss is caused by inefficient irrigation systems. Emad El-din (1990) showed that it would be possible to save about 2 billion m^3 of water if the irrigation water distribution and consumption patterns were rationalized. Al Saied (1997) cited the lack of efficient surface irrigation. He estimated an average irrigation efficiency of 60 % for crops and about 50 % for rice irrigation.

The third source of water loss is inefficient water management at the farm level, which is incompatible with the principle of sustainable development. It also stems from uneven withdrawal from groundwater reservoirs and the lack of rainwater surplus reserves. A case study in "Kafr El-Sheikh governorate" in the Nile Delta region provided evidence of such water loss. It showed that there was a loss in the current charge of irrigation water of around 68 % above the recommended charge. Another study showed that the current flow of mixed water (freshwater and irrigation drainage water) exceeded the recommended flow by about 17.6 % (Moftah and Al Safty 2005).

Table 2.17 Water charge at Aswan and loss percentage from source to destination (1981–2008)

Period	Water charge at Aswan (milliard cubic meter)	Losses (%)			
		From Aswan to canal openings	From canal openings to the fields	Total loss	Water delivery efficiency
1981–1986	51.69	10.2	15.4	25.6	74.4
1987–1992	55.04	9.8	9.6	19.5	80.6
1993–2008	53.99	17.4	11.7	29.1	70.9
Official statistics	53.57	NA	NA	2.2	97.8

Source (1) Suhair (1997)
(2) AlSaid (2011)
(3) Central Agency for Public Mobilization and Statistics (2012)

The fourth source of water loss is indirect. It is derived from existing cropping patterns which make inefficient use of irrigation water (Al Kholi 2009; AlSaid 2011). The studies concerned with rationalizing the use of water according to an economic rationale usage had obtained varied results due to different times and different crop and input prices. Some did not accurately estimate the rental value of an acre of land, in particular after the liberalization of the land market in 1997. There is now a distinct difference in rental prices between agricultural areas as well as between the old and new territories in Egypt. For example, the study of AlSaid (2011) indicated that the proposed cropping pattern based on economic rationale did not differ greatly from the existing one. Another study by Al Kholi (2009) showed that there would be no place for grain crops if the economic costs of a cubic meter of water were taken into account and there would only be a room for the expansion of fruit and vegetable farming at the expense of cereals.

This study concluded that the misuse of water at the farm level derived from the third and fourth types of water loss was mainly the result of the water market failure. Keeping the economic principals, the irrigation water in Egypt is provided free of charge. The farmers bear only the cost of lifting the water from the tertiary canals to their fields, while the energy price used for water pumps is subsidized (Soliman and Owaida 1998). Thereof, the farmers take their decisions on the basis of the profit calculated from a financial budget, ignoring the opportunity cost of water and considering only its operating costs.

2.4.2.2 Waste in the Quality of Water Resources

The growing waste in water quality means deterioration in the validity of water for different uses due to harmful changes in its physical and chemical characteristics and/or its microbial content (Guweili et al. 1988; The Shura Council 1997; AlSaid 2011). The main reason underlying the deterioration of water quality is the disposal of municipal waste, agricultural drainage, the remnants of chemical fertilizers and pesticides and industrial waste in canals. Such materials seep into the water courses and aquifers. Another reason lies in the imbalance between the expansion of drinking water networks to villages and rural towns and the limited commitment to similar sewage network programs. An indirect cause results from saltwater intrusion in the groundwater due to excessive withdrawal of the fresh aquifer water. Successive governments over the past five decades have paid insufficient attention to pollution of the Nile which is combined with an absence of environmental awareness, not only among members of the community but also within the official institutions.

Egyptian literature has provided some estimates of the social costs of the negative externalities resulting from pollution suffered by the individual members of the community (Soliman 1995).These externalities range from chronic disease to potential death. This study evaluated the positive and negative externalities associated with the establishment of the High Dam and showed that the social cost of the death of a person due to pollution amounted to 150 thousand US$ using 1994 prices (Soliman 1995).

2.5 Worrying Demographic Trends and Migrations

This section presents an analytical profile of the indicators of migration, employment and unemployment in rural communities throughout Egypt over time together with some major impacts of the changes occurring in these indicators on the community concerned.

2.5.1 Migration Indicators

The demographic changes in population structure (Table 2.18) highlighted a very important issue that has greatly affected the performance of the Egyptian economy and the rural community in particular. While the total population size grew from about 52 million inhabitants in 1986 to around 78 million in 2008 at an annual growth rate of about 1.9 % and the urban population grew at 1.8 % per year, the rural population showed vital demographic changes over that period. The share of the agricultural population in rural society declined from almost 50 % in 1986 to only 29 % in 2008 at an annual rate of decline of 0.5 %. At the same time, the non-agricultural rural population increased from only 7 % of the total rural population in 1986 to more than 27 % in 2008 at an annual growth rate of 8.2 %. The result was a growth in the total non-agricultural population living in either rural or urban regions from 51 % of the total population to more than 71 % between 1986 and 2008. This phenomenon, i.e. the rapid increase in the non-agricultural rural population at the expense of agricultural inhabitants, has been more drastic during the past few years. Table 2.18 shows that the agricultural population in rural territories decreased from 29 % in 2008 to 27 % in 2012, at a larger annual rate of decline of 0.7 % than the comparable rate between 1986 and 2008. Furthermore, the share of the non-agricultural rural population in the rural community as a whole increased from 27 % in 2008 to 30 % in 2012. It seems that the shrinkage of the agricultural population in rural territories to the benefit of the non-agricultural sector was due to the fall in manual farming employment, to be replaced by mechanization. Moreover, the agricultural sector has become unable to offer a satisfactory wage (income) to rural people to ensure a reasonable standard of living. A previous section in this study presented the poverty profile in rural regions over time while the following section will show the impact of agricultural mechanization on human labor employment.

It seems that the newly urbanized rural population has not only shifted from being food producers to mere consumers, but they have also adopted the urban propensity to consume, in terms of both quantity and quality. In addition to this, such a large non-agricultural population usually faces a lack of employment opportunities offering satisfactory income, either in rural or urban regions. They have therefore placed extra pressure on demand in the agro-food sector without contributing to expanding its supply (Soliman 2000).

Table 2.18 Population structure and growth rate by demographic category in Egypt (1986–2012)

Population structure	1986		2008		1986–2008	2012		1986–2012
	(000) Inhabitants	Total population (%)	(000) Habitant	Total population (%)	Annual growth rate (%)	(000) Inhabitants	Total population (%)	Annual growth rate (%)
Total population	52,063	100	78,323	100	1.86	83,958	100	1.74
Urban	22,884	44	33,840	43	1.78	36,696	44	2.03
Rural	29,179	56	44,483	57	1.92	47,262	56	1.51
Agricultural	25,607	49	22,949	29	−0.50	22,325	27	−0.69
Non-agricultural	3,572	7	21,534	27	8.17	24,937	30	3.67
Total non-agricultural	26,456	51	55,374	71	3.36	59,256	71	1.69

Source Calculated from FAOSTAT; Statistical Data Base, FAOSTAT/© FAO Statistics Division 2013/February 2010 www.FAO.org, and Ministry of Agricultural and Land Reclamation, Egypt (2010) Economic Affairs Sector

Irrespective of whether the non-agricultural population have stayed in rural communities or migrated to new urban communities, they continue to suffer from a lack of satisfactory jobs to cover their ambitious acquired desire to improve their consumption attitudes. Accordingly, they have become a main factor in the expansion of the categories under the poverty line and an increase in the government budget for food and service subsidies (ILO 2008).

The reasons for leaving rural societies outweigh the reasons for staying, particularly with the liberalization of the agricultural market by 1986/1987. This was due to the lack of integrated rural development programs. Since 1994, Egypt's Human Development Reports and the growing number of indicators of well-being have consistently shown the persistent level of deprivation of rural communities. They are deprived in terms of physical infrastructure facilities as well as access to education. Moreover, the quantity and diversity of job opportunities is far more restricted in rural Egypt and can explain the strong tendency towards rural-urban migration and the very fast expansion of the informal slums (Ashwaiyat) which offer intermediate earnings and living conditions between rural and urban regions (UNDP Egypt Human Development Report 2010).

Migration broadens young people's opportunities while offering them a means of earning higher income and gaining skills (World Bank 2004). However, while many Egyptian youths hope to migrate, few actually succeed in doing so. According to SYPE (2010), 15 % of young Egyptians aged 18–29 want to live or work abroad, but only 1.6 % manages to do so. By now, it is well established that migration from Egypt is mostly made up of temporary migration to other Arab countries, whereas the proportion of young returning migrants from European destination countries is almost negligible, perhaps because those who go there do not return (UN Department of Social and Economic Affairs 2009).

Surprisingly, education appears to be a powerful motivator for the migration of both young men and young women. Both the intended and actual migration rates increase steadily with education. It ranges from 4.5 % for those with no school certificates to 20.9 % for those with a university education (ILO and Ministry of Manpower and Migration 2009). University-educated young men are nearly 3.5 times as likely to migrate as men with no school certificates and university-educated women are more than 8 times more likely to migrate than their counterparts with no school certificates. This would suggest that the higher the education level in Egypt, the fewer employment opportunities there are (Migration (DRC) 2007). However, El-Kogali and Al-Bassusi (2001) add that the increase in both intended migration levels and actual migration as the education level increases reflects the role of education in facilitating migration. Men from urban slums and rural areas are much more likely to migrate than men from urban non-slum areas (El-Kogali and Soliman 2001). The lack of job opportunities (51 %), poor living conditions (33.9 %), the relatively low income in Egypt compared to other countries (33.0 %), the need to assist their families financially (14.7 %) and the need to earn money (12.7 %) are the main motivations underlying migration.

Table 2.19 shows that a high proportion of the Cairo and Giza populations are the result of internal migration. The majority of migrants are from rural areas in

Table 2.19 Internal migration as percentage of total population in 2008

Region	Internal migration	Region	Internal migration
Cairo	11.9	Bani Suif	2.2
Alexandria	6.7	Fayoum	0.6
Port Said	34	Menia	0.7
Suez	37.9	Asyut	1.2
Ismailia	31.3	Suhag	0.6
Damietta	5.4	Qena	1.4
Dakahlia	1.9	Luxor	1.3
Sharkia	4.6	Region	3.6
Kalyoubia	14.4	Red sea	28.7
Kafr El Sheikh	2.6	New valley	16.7
Gharbia	1.7	Matrouh	13.5
Menoufia	2.1	North Sinai	14.1
Behera	4.1	South Sinai	27.4
Giza	20.4	EGYPT	6.6

Source Collected from data of several issues of "The Official Labor Force Survey", carried out on a quarterly basis

Upper Egypt, which are communities with the lowest relative incomes. This may explain the increase in the numbers of slum-dwellers in Cairo and Giza, which amounted to more than 6 million people, representing about 50 % of slum-dwellers in Egypt in January 2008 (ILO 2008). According to data from the Central Agency for Public Mobilization and Statistics, some studies point to the negative impact on the educational process of this massive immigration to the "Cairo and Giza" peril-urban metropolitan region (El-Kogali and Soliman 2001). Furthermore, the three cities along the western bank of the Suez Canal—Port Said, Ismailia and Suez—have showed the highest rate of migration among their populations. However, this was mainly due to dual migration (from and to) during the conflicts around the Suez Canal over the period 1967–1973 (UN 2009). Most rural immigrants to Arab countries and their job opportunities are observed in the farming and construction sectors, as unskilled labor came from rural areas in Egypt. These opportunities were the main source of savings in the form of remittances of young rural household members working abroad. Such income sources are invested by those young entrepreneurs in projects (Zohry and Harrell-Bond 2003).

2.5.2 Labor Force and Employment by Sector

A small proportion of young people in Egypt (about 11 % in 2006) have never been enrolled at school. These young people have never been unemployed. If they enter the labor force, they usually work at an early age, generally in either agriculture or the informal economy (ILO 2008). The economic slow-down resulting from the

onset of the world financial crisis in 2008 led to an increase in male joblessness for all educational categories except university graduates, which enlarged the proportion of unemployment.

The total residential population of Egypt approached 84 million inhabitants in 2012, of which about 27.5 million were economically active, i.e. approximately one-third, and agricultural labor approached 24 % of the labor force. There has been a declining trend in the share of agricultural labor in the total labor force over the last two decades. This share was more than one-third in 1997 but decreased to almost 23.5 % in 2012 (Table 2.20). It seems that the major reason behind the shrinkage in the share of agricultural labor in the total active labor force was a decrease in agricultural male labor of 0.3 % a year over the last two decades. Surprisingly, the female share in agricultural labor increased, at the expense of the male share, from 35 % in 1997 to 41 % in 2012. Non-agricultural male labor increased over the same period by 3.2 %. The share of agricultural female labor increased at a positive annual rate of 0.3 %. Nevertheless, non-agricultural female labor expanded quickly at an annual growth rate of 4.6 %. One main reason behind the decrease in agricultural labor, particularly for men, was an increase in mechanization in agricultural production over the last three decades, as shown in Table 2.21, where less area per tractor over time means a greater density of mechanization.

Table 2.20 Agricultural population and labor force (in 000) in Egypt

Year	1997	2007	2008	2011	2012
Total population	64,200	76,942	78,323	82,537	83,958
Rural population	36,763	43,750	44,483	46,599	47,262
Rural/total population (%)	57.3	56.9	56.8	56.5	56.3
Agricultural population	23,642	23,070	22,949	22,501	22,325
Agricultural population/rural population (%)	36.8	35.3	34.5	33.3	32.4
Total economically active	18,540	24,550	25,167	26,977	27,560
Total labor force/total population (%)	28.9	31.9	32.1	32.7	32.8
Male economically active	14,443	18,350	18,763	19,998	20,403
Male labor force/total labor force (%)	77.9	74.7	74.6	74.1	74.0
Total economically active in agriculture	6210	6630	6635	6599	6569
Labor force in agriculture/agricultural population (%)	26.3	28.7	28.9	29.3	29.4
Labor force in agriculture/total labor force (%)	33.5	27.0	26.4	24.5	23.8
Male economically active in agriculture	4033	3998	3984	3925	3899
Male labor force in agriculture/total agricultural labor (%)	64.9	60.3	60.0	59.5	59.4

Source Compiled and calculated from FAO Statistics Division (12 March 2013)

Table 2.21 Time trend of machinery and human labor density per hectare in Egypt (1986–2008)

Year	Agricultural area (000) hectares	(000) Tractors	Hectare/tractor	Agricultural labor (h/year/ha)
1986	2567	52,000	49	3335
1987	2547	52,290	49	3400
1988	2581	53,000	49	3395
1989	2571	55,000	47	3445
1990	2648	57,000	46	3377
1991	2643	59,000	45	3415
1992	2900	61,000	48	3139
1993	3246	78,099	42	2821
1994	3246	78,846	41	2800
1995	3283	89,080	37	2837
1996	3286	88,000	37	2856
1997	3300	86,000	38	2877
1998	3300	86,000	38	2910
1999	3483	86,000	41	2789
2000	3291	86,255	38	2987
2001	3338	92,203	36	2979
2002	3424	93,340	37	2931
2003	3409	94,482	36	2983
2004	3478	96,265	36	2965
2005	3523	98,051	36	2965
2006	3533	100,317	35	2979
2007	3538	102,584	34	2994
2008	3542	105,121	34	3018

Source (1) Calculated from FAO Statistics Division, December 2010, http://faostat.fao.org/site/570/default.aspx#ancor
(2) Ministry of Economic Development, Economic Indicators http://www.mop.gov.eg/English/english.html, December 2010

The author of this paper conducted a series of studies on the agricultural mechanization system in Egypt for major summer and winter crops and with different mechanization systems. Those studies concerned the estimated substitution relationships between human labor and machinery. Some major findings were drawn from those studies. The marginal return per one dollar spent on machinery was much higher than the marginal return of one dollar spent on human labor. They also showed that the least cost combination of labor forces (human and machinery) was for increased expansion in machinery at the expense of human labor. Use of machinery would increase the yield of major crops much more than human labor would. Mechanization would also reduce the production costs due to fewer seeds, saving irrigation water due to leveling the soil and consequently saving on chemical fertilizers. Therefore, higher farm income can be achieved by decreasing human

labor on farms, which means that rural inhabitants cannot acquire satisfactory opportunity income from agricultural labor (Soliman 1992; Soliman et al. 1994a, b, c, d; Soliman and Owaida 1998).

Egypt, like much of the Middle East, faces a major unemployment problem exacerbated by its relatively young population. Agriculture continues to dominate the Egyptian employment market with more than 30 % of the population working in the agricultural sector. The end of the 20th century saw a huge population shift towards the cities, particularly Cairo, because rural agricultural workers have moved in search of better wages.

Employment grew at a slower rate than the population and the labor force, resulting in a worsening unemployment situation. Official figures kept the rate of unemployment around 12 %. This figure probably understated the problem, because other informed sources put the rates at 20–25 % (Gualdoni 2013). Analysts cited a multitude of reasons for the rapid increase in unemployment including high population and low economic growth rates, the inability of industry to absorb a larger numbers of workers, high capital intensity in new industrial enterprises and the focus of successive Five-Year Plans on the infrastructure over the last four decades.

Although Egypt had a high percentage of high school and college graduates, the country continued to face shortages in skilled labor. An estimated 35 % of civil servants and 60 % of people working in public-sector enterprises were unskilled or illiterate. The lack of skilled labor was blamed, among other things, on the cultural bias against manual work, the theoretical nature of courses provided by the higher educational institutions and the emigration of skilled personnel abroad where they received higher wages. There were complaints that the implementation of development plans was hampered by the insufficient supply of skilled labor.

2.5.3 Unemployment Indicators

The number of unemployed people in Egypt increased to 3,519,000 in the fourth quarter of 2012 from 3,357,000 in the third quarter of 2012 (Fig. 2.3). As reported by CAPMAS (2012), the number of unemployed in Egypt from 2003 to 2012 averaged 2,500,000, reaching a record high of 3,519,000 in November 2012 compared to 2,022,000 in February 2003. In Egypt, the unemployed are deemed to be individuals who are without a job and actively seeking work.

The unemployment rate in Egypt, reported by CAPMAS (2012) increased to 13 % in the fourth quarter of 2012 from 12.50 % in the third quarter of 2012. Historically, from 1993 until 2012, unemployment in Egypt averaged 10.26 %, reaching a record high of 13 % in December 2012 and a record low of 8.10 % in June 1999. In Egypt, the unemployment rate measures the number of people actively looking for a job as a percentage of the labor force. In addition to unemployment, economists point to underemployment, or disguised unemployment. There was a consensus that underemployment was rampant in government bureaucracy, because of overstaffing and low remuneration.

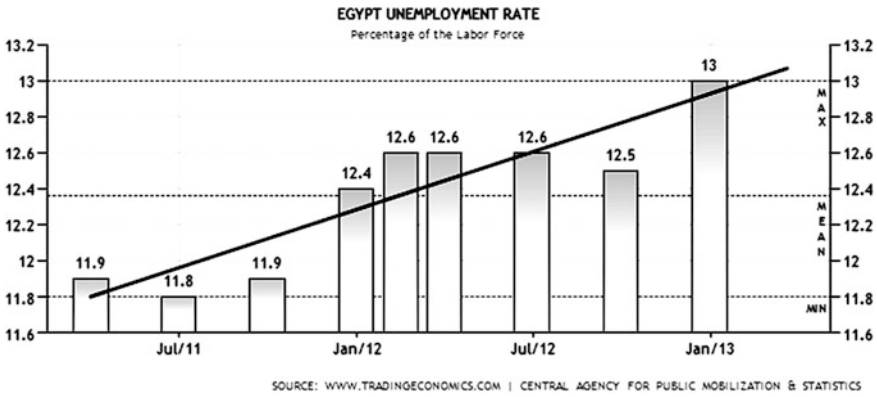

Fig. 2.3 Monthly trend of unemployment rate in Egypt (2011–2013)

Although the private sector has been the leading investor for development plans over the last two decades in Egypt, the formal private sector has not expanded its employment sufficiently to absorb the large number of educated individuals streaming into the job market every year. On the other hand, government hiring of secondary school and university graduates has been severely curtailed in recent years. Faced with poor prospects of getting formal jobs in either the public or private sectors, young people are forced to accept any jobs they can get in the informal economy. Youth unemployment is the dominant form of unemployment in Egypt. In 2006, over 80 % of the unemployed were under the age of 29 and 82 % of the unemployed had never worked before (ILO 2008).

The unemployment rate is a very partial measure of the health of the labor market that depends as much on the level of expectations about getting formal employment. Thus, to ascertain what a decline in unemployment rates means, it is necessary to examine a number of other labor market indicators including alternative definitions of unemployment. The unemployment rate is based on two alternative definitions, namely the "standard unemployment rate" and "the broad unemployment rate". The International Conference of Labor Statisticians that takes place under the auspices of the International Labor Organization (ILO 2009) bases both definitions on recommendations.

The standard definition of unemployment requires a person not to have worked a single hour during a reference week, to want to work, to be ready and available to start work within two weeks and to have actively searched for work during some past reference period, typically the past month. The standard unemployment rate decreased from about 27 % of the labor force (15–59 year-olds) in 1996 to 18 % in 2008. In cases where labor markets are less structured or where searching for work appears futile, international recommendations allow for a broader definition that drops the active search criterion. Thus, the broad definition of unemployment includes, within the ranks of the unemployed, individuals who are not working, ready and available for work, but have not engaged in any search activity. That

Table 2.22 Standard and broad youth unemployment rates (% of 15–59 year olds)

Region	Standard rate (%)		Broad rate (%)	
	2006	2008	2006	2008
Urban	21.5	17.9	24.2	23.0
Rural	13.9	15.8	15.5	22.2
Egypt	16.9	16.7	19.1	22.6

Source (1) The Egypt Labor Market Panel Survey Carried out by the Economic Research Forum (ERF) in cooperation with CAPMAS (Central Agency for Public Mobilization and Statistics), Cairo, Egypt, 1998 and 2006
(2) The Survey of Young People in Egypt (2009), carried out by the Population Council in cooperation with the Information and Decision Support Center of the Council of Ministers

group is often referred to as the "discouraged unemployed". The definition includes individuals who have worked an hour or more during the reference week, but who wish to work more hours. The latter are considered employed but are considered visibly underemployed (Assad et al. 2009).

As shown in Table 2.22, both standard and broad unemployment rates decreased in urban regions while they increased on aggregate between 2006 and 2008. A different face of unemployment can be seen in the unemployment rate in both urban and rural regions of Egypt. Rural unemployment was only 7 % of the total labor force while this figure rose to more than 11 % in urban regions. However, unemployment in rural regions requires further specialized research study. There are specific rural labor market behaviors. Such behaviors are related to farm family labor, seasonal demand for hired labor and the impact of an expansion in agricultural mechanization over the last three decades (Soliman 2006a, b).

2.6 Public Health Concerns

The interdependence of factors influencing health outcomes in a vision of sustainable human development was exemplified in the Millennium Development Goals (MDGs) that place health at the heart of development with health-related aspects in each of the eight goals. Accomplishing each goal can therefore have a positive impact on health outcomes. Health is ultimately dependent on the vitality of nature's life-supporting processes and the fact that investment in stronger multi-sector public health and primary preventive capacities within national policies can provide quick and positive health returns (League of Arab States and United Nations 2007).

Although household access to piped water has reached almost 100 % in both urban and rural Egypt, the rate of households with access to sanitation networks reached on average 62.5 % of Egyptian households in 2008. Whereas the sanitation network reached about 97 % of households in urban governorates, and 93 % of Lower Egypt urban households, it was accessible to only 76 % of urban households in Upper Egypt.

In rural regions, the imbalance between access to piped water and sanitation network was the worst of all Egyptian regions. While piped water reached 97 % of rural households, only one-third of them have access to the sanitation network. Only 13 % of rural households in Upper Egypt had access to sanitation in 2008.

On the other hand, estimates of the density of hospital beds per 10,000 people were only available for urban regions, obviously because hospitals are centralized in cities and towns. Whereas there are 30 beds for 10,000 people in major cities, fewer than 20 beds are available for the same number of people in the rest of Egypt, with 13 doctors serving 10,000 urban citizens but only 2 doctors treating the same density of rural citizens (Table 2.23). There is a higher ratio of nurses to doctors in rural regions than urban regions in Egypt. This phenomenon probably implies not only the lack of doctors in rural regions but also the fact that rural females prefer to work as nurses within the vicinity of their home villages for social reasons and because other employment opportunities in rural areas, particularly for women, are rare.

2.7 Education System Performance Indicators

The Egypt Human Development Report of 2010 (UNDP 2010) measures the performance of the education system as a basic human development criterion by using a weighted average of the literacy rate (over 15 s) and combined basic, secondary and tertiary (higher) education as a gross enrolment ratio for all educational levels. This is because data on enrolment by age are not available, especially for primary education ratios. Similarly, data on enrolment in university and higher education per governorate are not available. The combined gross enrolment ratios for various governorates are derived after distributing total tertiary enrolment at the national level according to the relative shares of the governorates in pre-university (basic and secondary) enrolment. The literacy rate represents the percentage of young people who can both read and write—and understand—a simple, short statement related to their everyday life. These data are published through population censuses while CAPMAS provides data on the illiterate population.

Literacy rates are almost the only educational indicator available, at present, for both rural and urban areas (Ministry of Education and CAPMAS 2007). As rural regions are the ultimate target for the estimates in this study, several indicators were omitted because certain values were absent for rural areas in the approved public references. Therefore, only the estimated literacy rate was presented in Table 2.24. It is concluded from these estimates that the lowest literacy rate is to be found in rural Upper Egypt, i.e. about 57 %. Even though the highest rate of about 79 % can be found in urban Lower Egypt, more than one-fifth of the population is nevertheless illiterate.

One of the major measurements of the human development indicators (HDI) is the literacy gap between rural and urban areas (Table 2.25). It is obtained by

Table 2.23 Some major health service performance indicators in Egypt

Region	Sub region	Households with access to		Ministry of health capabilities			Beds/10,000 persons		Health units/10,000 persons
		Piped water (%)	Sanitation (%)	Doctors/10,000 persons	Nurses/10,000 persons	Nurses/doctors (%)	Total	Ministry health	
Urban governorates		99.90	96.80	12.9	15.5	120	29.8	9.9	3.6
Lower Egypt	Urban	99.80	93.10	24.6	47.7	194	14	7.3	1
	Rural	98.10	52.60	2.3	10.3	448			
Upper Egypt	Urban	100.00	76.50	16.8	30.6	182	19.2	11.9	2.8
	Rural	95.00	13.50	1.9	6.7	353			
Total Egypt	Urban	99.80	89.80	13.1	21.6	165			
	Rural	96.70	37.50	2.1	8.9	424			
	Total	98.20	62.50	6.9	14.3	207	18.2	8.4	2.6

Source Ministry of Health Cairo, Egypt, with El Zanaty and Associates, and Macro International (2009) "Egypt Demographic and Health Survey 2008"

Table 2.24 Literacy rate (15+ year olds) (%)

Region	Urban governorates	Lower Egypt			Upper Egypt			Egypt		
		Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
Literacy rate (15+) (%)	77.6	77.2	78.8	65.8	64.4	76.9	57.1	70.4	78.1	62

Source Extracted from UNDP (2010)

Table 2.25 Relative gap between rural and urban

Rural/ urban	1995	1997/1998	2000/2001	2003	2004	2005	2008	2010
Literacy rate (%)	55.0	62.5	63.7	67.6	67.7	67.7	78.4	79.4

Source UNDP Egypt Human Development Report in 1990, 1996–1997, 2001, 2002–2003, 2004, 2008, and 2010

calculating the rural literacy rate as a percentage of the urban literacy rate with a clear reduction in the gap over the past two decades. Between 1995 and 2010, the gap in the literacy rate decreased from 45 to 21 % in 2010.

2.8 Strategy Towards Rural Development

Income is only a means of reducing poverty and not the ultimate goal (UNDP 1990). A successful strategy for rural development must therefore recognize three challenges. First, the rate of transfer of people out of low-productivity agricultural work and related activities into more rewarding spheres will be slow; given the relative size of the modern sector, it will remain slow. Second, the majority of people in rural areas face varying degrees of poverty and their position is likely to get worse if the population expands at unprecedented rates while limitations continue to be imposed by the resources and technology available as well as the institutions and organizations. Third, rural areas have labor, land and at least some capital which, if mobilized, could reduce poverty and improve the quality of life (El Hydari 1998). This implies more extensive development of existing resources including the construction of infrastructure such as roads and irrigation systems, the introduction of new production technology and the creation of new types of institutions and organizations.

Rural development is concerned with the modernization and monetization of rural society and the transition from traditional isolation to integration with the national economy. Since rural development is intended to reduce poverty, it must be clearly designed to increase production and raise productivity. However, improved food supplies and nutrition, together with basic services such as health and education, would not only improve the physical well-being and quality of life of the

rural poor, but could also, indirectly, enhance their productivity and their ability to contribute to the national economy (Bush 2007).

Rural development is a strategy designed to improve the economic and social life of the rural poor. It involves extending the benefits of development to the poorest among those who seek a livelihood in rural areas. This group includes small-scale farmers, tenants and the landless. The objectives of rural development therefore extend beyond any particular sector. They encompass improved productivity, increased employment and thus higher incomes for target groups as well as minimum acceptable levels of food, shelter, education and health. To achieve such goals, a national program of rural development should include a combination of activities including projects to increase agricultural output or to create new output. Such a program might be made up of single-sector or multi-sectorial projects with components implemented concurrently or in sequence. The components and phasing must be formulated both to remove constraints and to support those forces prevailing in the target area, which are favorable to development (World Bank 1975).

Rural development programs influence rural people's livelihood patterns. These patterns are environmental including soil erosion, water supply and forest cover; economical including work opportunities, income and the cost of living; social including culture, access to healthcare and education; and institutional including farmers' organizations, women's groups and political leadership. The focus should therefore be on understanding these patterns within a particular community and how they interact with the intermediate and macro-level patterns (Wilde 2001).

The human development concept is focusing on the human resource development and enlarging rural people's choices as the ultimate benefits of its fruits (UNDP 1990). Accordingly, there are three issues to be considered for rural development planning. First, explicit attention is given to the linkages between economic, environmental, social and institutional patterns that together constitute the development context. Second, understanding gender, wealth, caste and other social differences in communities should be considered as fundamental to understanding livelihood strategies and development priorities. Third, planning for the future should be founded on the analysis of the current situation and should stem from incorporating ideas and methods from rural people.

At the onset of this century all development concepts were brought under the umbrella of sustainability, which is based on the fact that the development objective should seek to generate sustainable economic growth while ensuring future generations' ability to do the same by not exceeding the regenerative capacity of nature. In other words, sustainable development is a pattern of resource use that aims to satisfy human needs while preserving the environment so that these needs can be met not only in the present, but also for future generations. The term was used as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations 1987).

2.8.1 The Road Map

It seems that being poor is very much a characteristic of residing in rural Egypt and thus having less access to public goods and services. Lack of access to schooling in turn becomes a major determinant of low-quality work opportunities throughout life and thus the poverty cycle reproduces itself (Smith and Rees 2003). The poverty assessment indicates the concentration of the poor in rural areas and particularly those in Upper Egypt. Even though rural regions are poorer than urban centers, inequality in income distribution is less prevalent in rural areas than urban centers in Egypt. However, more income distribution equality in rural areas combined with much lower income levels than in urban areas is a disadvantage, as it means that poverty is broad and more pervasive in rural areas than in urban centers.

Several lessons were learned from the application of previous strategies in the eighties, nineties and at the onset of this century. The price liberalization element of the structural reform program has, to a great extent, reached its ultimate goal, while the associated institutional reform suffered from a major response lag and needs further reform. The limited water resources have not been handled with proper policies targeting the rationalization of water use. Although small farm holdings account for more than 91 % of the Egyptian agricultural system, such a majority of holders have not been supported with policies that protect them from the negative impacts of market liberalization and globalization and enable them to adapt to the dramatic changes that have occurred since the nineties of the 20th century in the Egyptian agricultural sector.

The newly reclaimed land, which totals about one million hectares, has generated communities that lack the foundations of settlement and an efficient institutional framework as well as an efficient marketing system. The system of distributing the newly reclaimed land was biased against the real stakeholders in the agricultural system, i.e. small-scale farmers and agricultural graduates either from universities or agricultural high schools (Soliman and Jabber 2011).

Previous strategies lacked proper vision of how to achieve sustainable agricultural development through an integrated rural development program. Unemployment, risky migration to urban areas or abroad and the poverty gap have therefore all expanded in rural communities (Soliman 2011). Little attention has been paid to the environmental impacts of production, marketing and foreign trade on the agricultural system in Egypt, in particular the impacts on output specifications, yield losses and barriers to exportation.

2.8.2 The Proposed Program to Alleviate Rural Poverty

The approach is based on the definition of a national program to improve the livelihoods of the poorest rural households in Egypt, which means:

(A) Determining the poorest 25 % of Egyptian villages
(B) Identifying the needs of households which are eligible for care and support

(C) Determining the households most in need with regard to social welfare
(D) Monitoring the appropriateness of services provided by the State to meet these needs
(E) Developing social welfare policies and programs in a way that suits the needs of households
(F) Consideration precautions: the program should be based on geographic targeting, i.e. on villages, with a view to ensuring the strong relationship between public services and poverty, as the approach is to break the vicious circle of poverty by removing the poor infrastructure conditions that perpetuate it.

2.8.2.1 Determining the Poorest Egyptian Villages

A new "poverty assessment survey" was conducted to draw a "poverty map" in Egypt relying on a model that determines the criteria underlying the low standard of living and high rate of poverty in Egypt.

The implementation of this model requires a detailed and comprehensive map to be prepared for each household's condition (through social field research) together with a file for each household which determines the human and financial capacity of the households in addition to their livelihood needs. The measures should call on economic and social indicators of the household that are strongly related to the level of household expenditure. Each one reflects one or more of the economic and social dimensions related to poverty and the standard of living. These indicators can be divided into six categories:

The first relates to the head of the household (education, work, the existence of insurance or a pension and land ownership).

The second comprises housing data (type of dwelling, number of rooms, the value of the electricity bill and telephone, the ownership of a washing machine, color TV and vacuum cleaner).

The third relates to data concerning family members (family size, dependency ratio, the number of working individuals, the presence of an individual in special education and the presence of a sick or disabled person).

The fourth concerns utilities (the percentage of houses connected to a safe water network, connection to a sanitation network and connection to an electricity network).

The fifth relates to the education of the household members (literacy and enrolment rates).

The sixth focuses on employment (unemployment rates, the percentage of permanent workers, casual workers and temporary workers).

According to the resulting poverty map, the poorest 25 % of the villages are determined within all governorates. Accordingly, the total population of the poorest villages in Egypt is geographically determined. This map should identify the unequal distribution of public goods, including physical infrastructure (water, sanitation and roads), and public services, namely education and health facilities.

2.8.2.2 Identifying the Needs of Households Which Are Eligible for Care and Support

Households are divided into four groups according to the degree of poverty, namely the extremely poor, the poor, the near-poor and non-poor. Each group has specific characteristics determining the extent and quality of the benefits they will receive. These characteristics are:

1. Family size
2. Percentage of working individuals among the household members
3. Household members per room
4. Existence of any social security for the household head
5. Availability of a private bathroom
6. The value of electricity consumption
7. Availability of communication facilities
8. Living in an independent apartment built of red brick or better

2.8.2.3 Monitoring the Appropriateness of Services Provided by the State

A ministerial group for social development should be formed to include the Ministers of Housing, Utilities and Urban Development, Environmental Affairs, Social Solidarity, Education, Higher Education, Health, Transport and Local Development, the Secretary of the Social Fund for Development, the Minister of Family and Population, the National Youth Council, the National Sports Council and the General Authority for Literacy and Adult Education. The group will be responsible for coordinating the design and implementation of the projects between the different ministries whose mission is to upgrade service delivery in the villages covered by the project.

Some restrictions and problems still prevail, reducing the positive impact of the newly enacted laws relating to agricultural investments. To eliminate such obstacles, a single entity responsible for allocating areas suitable for agricultural investments must be established with representatives from all the ministries concerned.

Globally speaking, the success or failure in applying programs for the 1000+ poorest villages in Egypt will rest on the ability of all parties to sustain the financial requirements necessary for this huge and ambitious project in all its phases. It will also require a high degree of coordination amongst all ministries and government bodies involved. In addition to the allocations provided for in the state investment budget, the program will be financed through the collaboration of the civil society organizations, businessmen and the private sector.

Activating the participation of civil society organizations in every local unit to assist in the implementation of housing and waste recycling projects is a vital element contributing to the success of integrated rural development.

For geographic targeting, financial availability, accessibility and adequacy, this largely expanded national project must be implemented in successive phases.

2.8.2.4 Developing Appropriate Policies and Programs

The integrated rural development program for the poorest villages must be carried out through numerous developmental interventions:

1. Prioritizing the beneficiary households in providing housing units for each village from within the "National Project for Housing".
2. Improving the drinking water and sanitation services through the establishment or expansion and renovation of water networks and stations.
3. Establishment of stations for sanitation with home network connections.
4. Developing an integrated system to deal with the problems of collection and recycling of solid waste and the clearance of canals and drainage canals.
5. Establishing a fire-fighting and civil defense department and providing a fire truck in every local unit.
6. Training selected citizens in the work of fire-fighting and civil defense.
7. Upgrading the health units, providing equipped ambulances, organizing the medical convoys and providing qualified medical crews.
8. Improving the quality of basic education by developing or establishing new schools and training teachers.
9. Expanding the coverage of social security and social services and providing a social worker for every 50–70 households.
10. Eliminating illiteracy among 15–35 year-olds by making the education faculties in regional universities assume the task while also preparing trainers and training courses, by providing classrooms, textbooks and training assistance with the support of the Adult Literacy Authority and conducting the exams.
11. Providing employment opportunities for young people.
12. Paving and lighting the entrances to villages.
13. Improving environmental conditions and dealing with solid waste.
14. Improving the health, paramedic and emergency services.
15. Enhancing the quality of basic education.
16. Establishing a pilot project in one village of each governorate and providing training for youth in construction and building skills, carpentry, plumbing, etc., via training centers.
17. Preparation by the government of Egypt of a clear map for investing in agriculture, which defines areas assigned to the different types of investments and is periodically updated. The government authorities concerned have to design and implement an integrated program for upgrading human resource needs and skills to manage the information system. A special law should be enacted to regulate agricultural financial assistance procedures, with special incentives offered to small-scale farmers, particularly those who farm strategic crops and comply with the task of achieving the national objectives of agricultural

development. The Principal Bank for Development and Agricultural Credit (PBDAC) should relinquish its role in the procurement and distribution of agricultural inputs to concentrate on its principal role of financing agricultural and banking activities.

18. Providing appropriate support to encourage cooperative organizations is at the top of the list of agricultural institutional reforms:
    (a) Such support implies amending the current Cooperative Law (122/1982) in light of market economy requirements and international agreements. Reorientation of the role of the administrative mechanism to serve the interests of the members in a democratic manner is needed, associated with merging the small cooperatives into one economically viable entity and establishment of a training program for the staff based on a professionally functional structure and a defined business plan.
    (b) A special program for funds to provide cooperatives with satisfactory credit facilities is required.
    (c) The involvement of cooperatives in the agricultural development plan as centers for disseminating modern technology is also needed and a new regulation should be enacted to allow the cooperatives to establish and/or participate in agricultural banks and agricultural companies.
19. The civil society and other organizations should be involved in defining research plans, their execution and follow-up, as well as in applying the results. A unified law to regulate the establishment of special associations should be enacted instead of enacting a special law for each category of the special associations. Finally, the Ministry of Agriculture should provide technical support to all institutions and organizations and consider them as principal partners of the agricultural extension service in implementing extension plans and programs.
20. Rationalizing the existing subsistence food-price subsidy policies without fazing them out should be a main objective of food security, in accordance with a practical system to identify beneficiaries on the basis of incontestable criteria. A monitoring system should also be designed to assess its relevance and impact on low-income groups.
21. The experience acquired over a number of decades has shown that attempts to impose limits on the demand for housing in villages due to population increase were not respected because of the pressure of high price demand for agricultural land for urban use in adjacent towns. This urban demand pressure outweighed the influence of legislations issued to stop such depletion of agricultural land. Therefore, urban planning to face future population expansion in Egyptian villages (4702 villages) and adjacent cities must be a main parameter of rural development. It implies a final identification of distinct boundaries between residential and service areas within agricultural areas. In addition, the establishment of new villages in recently reclaimed land at the adjoining desert frontiers of the old agricultural land of the Nile Valley is absolutely necessary to absorb the increasing rural population of old village lands.

22. The planning policy for the sustainable development of rural Egyptian areas must be decentralized by applying the decentralized planning and monitoring of rural areas and strengthening the participation of local communities. Such a readjustment of village administration would accelerate the impacts of the programs in improving livelihoods in poor villages (The World Bank 2004).

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