Official Statistics in Monitoring and Achieving Goal 1 of SDGs; With Illustrations from Egypt

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Abstract
The objective of this paper is to illustrate how official statistics can be used as a monitoring tool to assess indicators for targets of Goal 1 and to provide policy makers of evidence base tools to assess the effectiveness and efficiency of different social programs for poverty reduction. The paper uses Egypt as an example.
Key words: poverty, targeting, poverty maps, proxy means testing

1. Introduction

In 2015, countries adopted the 2013 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs). Governments, businesses and civil society together with the United Nations have started to mobilize efforts to achieve the Sustainable Development Agenda by 2030.

There are several lessons learnt about data production for assessing development goals. There have been significant improvements in data collection under the Millennium Development Goals (MDGs), but indicators have not been used by policy makers for planning purposes, because goal data have often come too late - often three years or more - and data are often incomplete and poor quality. MDG monitoring also gave little attention to what should be measured and lacked some important benchmarks for key development priorities. Investment in strengthening statistical capacity has been minimal, reflecting the efficient monitoring of the Millennium Development Goals in a timely fashion and the achievement of statistical standards and quality requirements.

Given the breadth and complexity of the SDG agenda, many different types of data are required. According to the United Nations Secretariat's report in 2014, data should be available at different levels of detail, especially gender, age, race, origin, geographical or administrative area, so that indicators can be calculated at these detailed levels.

SDGs require annual reports and high-quality data from all countries. This in turn requires much greater investment in building and enhancing national and independent statistical capacity. National statistical offices should actively participate in the development of global and national indicator frameworks, through partnership with agencies and experts concerned with indicators of sustainable development.

UN Sustainable Development Solutions Network (2015) identified 7 core types of development data required for monitoring the 100 SDGs indicators. Data are derived from the following eight sources: *Census data,* Household surveys; Agricultural surveys; Administrative data; Civil registration and vital statistics; Economic statistics, including labor force and establishment

surveys and trade statistics and Geospatial data. At least 5 of these types are produced by official statistical offices.

Table 1.1 presents Goal 1 targets and their primary data sources and points that households' surveys play the major role in evaluating and monitor progress of SDG 1 targets.

Realizing that poverty is not only lack of income and resources to ensure a sustainable livelihood, but it includes many other dimensions such as hunger and malnutrition, limited access to education and other basic services, social discrimination and exclusion as well as the lack of participation in decision-making. Both monetary and non-monetary poverty have been on the top of many development Agendas including MDGs. However, SDG goal was adopted broader poverty concept to insure that no one is left behind. It takes into accounts gender disparities, human rights and social protection.

Thus Goal 1 of SDG is

End poverty in all its forms everywhere

The objective of this paper is to highlight **the power of Household Surveys in providing disaggregated data** and information needed to calculate the indicators of targets for Goal 1; including monitoring progress in poverty measures disaggregated by age and gender (target 1.1 and 1.2) assess the impact of policies in poverty reduction and social protection and hence enable the government to actually determine the effectiveness of policies and interventions (target 1.3). Poverty profiles can be derived to ensure that all men and women, in particular the poor and the vulnerable are benefitting from economic growth and the provided public services such as education (target 1.4) and to evaluate exposure of the poor to shocks (target 1.5). Household surveys are also used to develop targeting mechanisms necessary to reach the most needy and hence increase the efficiency of social protection (target 1.3).

The paper is divided into 3 sections, in addition to introduction and conclusion section. ***The analysis of this paper is based on recent surveys for Egypt and it is used to illustrate how households' surveys are used in assessments of targets of Goal1.***

2. Households' income/expenditure surveys are the main tool to measure poverty

Households' surveys have increasingly gained prominence in the world. In 1990, about 60 countries had collected a household survey (collected in the previous five years) to measure welfare. In 2000, the number was 90, and in 2005 it was 109.

Depending on the purpose of survey, Households surveys cover wide range of topics, including household income and expenditure, health status, food security. Malnutrition, reproductive health topics, supply side of labour market, …etc.

Household expenditure/income surveys collect data on income, consumption and expenditures and other household characteristics over a year, and hence they are the ***main source of information for monetary poverty*** (target 1.1 and 1.2). Other surveys can also provide information on health status, uses of public services provided, nutrition status of household members and reproductive health practices, …etc, Household surveys demonstrate households' distribution of measures across different segments of population (gender, age).

Household Income / Expenditure Surveys are usually carried out by national statistical offices to compile national accounts, generate CPI weights, measure welfare, poverty, and utilities. To

cover seasonal patterns of income and expenditure, surveys are often conducted over a whole year. Some of countries have expanded this type of surveys into multi-purpose household surveys. At least twenty-two of the indicators proposed to monitor sustainable development goals can be calculated using household income/expenditure surveys.

Although most developing countries have one or another household surveys that allow for the assessment of poverty and other indicators of sustainable development, the irregularity of these surveys and the timeliness of their conduct, the different definitions and methods of measurement of consumption, the size of the sample and the degree of representation of the state may limit the possibility of using them in international comparisons or over time within a country. It should be noted that these differences do not question the credibility of the surveys. However, each survey needs to be addressed in order to make sure that the standard of living used is comparable to countries and even to the same country in different years.

2.1 Incidence of poverty can be only provided by Household expenditure/income Surveys

Monetary poverty is defined as lack of access to minimum basic needs. Any person whose income/consumption is below the value of the minimum basic needs is considered poor. Two indicators are required here, value of minimum basic needs and a welfare indicator. The former is called poverty line and in Goal 1 two poverty lines are employed. In target 1.1 extreme US$PPP 1.25 is used and US$ PPP is evaluated through close collaboration of the World Bank and Official statistical Agencies that produce consumer price indices. In target 1.2, national poverty lines are to be employed. Usually the "Basic Needs approach is the appropriate approach for measuring poverty in developing countries. Basic needs include material needs such as food, housing, clothing, clean water and means of education and health. They can also include non-material needs such as the right to participate, human freedom and social justice, but they are hardly used as they cannot be monetarily evaluated.

Using Household survey, population can thus be classified as poor and non-poor according to the relation between their income/consumption and the poverty line and the ***percentage of the poor can be derived (indicators for targets 1.1 and 1.2).***

To illustrate; Table 2.1 shows trends in poverty between 2012/13 and 2015 in Egypt using successive household' income, expenditure and consumption Surveys. It indicates that Urban areas has not seen a significant change in poverty indicators between 2013 and 2015, while poverty in rural areas has been increase significantly. In fact, Rural Upper Egypt region exhibited the biggest rise in the poverty indicators.

2.2 Access of the poor to basic services and amenities.

Household surveys that classify individuals into poor and non-poor can provide poverty profile. Thus, access to basic services and amenities of both the poor and non-poor can be compared and figure out deprivation level among the poor. Figure 2.1 illustrates access of poor children to basic education in Egypt and to social protection, respectively. Figure2.1 shows that the poor have lower access to basic education (by 8 percentage points), and enrolment rate is not universal even for the non-poor.

3. Assessment of existing targeting mechanisms

As targets 1.3 and 1.4 require that the poor and vulnerable should be the main beneficiaries from social programs, households' survey can be used to evaluate the efficiency and effectiveness of different government social programs such as cash transfers and fuel subsidies and hence targeting mechanisms can be assessed and channeled to the poor.

Figure 3.1 and 3.2 illustrate that the lower coverage of social transfers especially for the poor, where only 6.5% of the poor received social transfers and also 38% of benefits leaks to the non-poor. Households' survey assess how much of the government limited resources are channeled to the non-poor and calls for better targeting mechanism.

Figure 3.3 exhibits the distribution of fuel subsidies among quintiles. It shows that richest quintile get 38% of the total energy subsidies. LPG () subsidies is most evenly distributed, while Gasoline and Natural Gas are most disproportionately targeted towards rich. The policy implications here is obvious, Gasoline, and Natural Gas subsidies need to be better targeted to direct fuel subsidies to the poor.

As such, Households' surveys enable policy makers to assess the effectiveness of social programs. It provides evidence based answer to questions like "How much impact do social policies have on poverty?" To illustrate, Household income, expenditure and consumption survey of 2013, was used to assess the impact of social transfers to poverty status of population. Comparisons between poverty status with and without social transfers evaluate the effectiveness of such social program. Without social transfers, extreme poverty rate reached 22.6%, this dropped to only 7.4% when extremely poor persons received social transfers, see figure 3.4.

4. Targeting mechanisms based on Households' surveys

In this section, two major statistical tools for targeting are presented. These two mechanisms are based on official statistics. As resources in all countries are limited, reaching the poor and helping them to get out of poverty are the best way to reduce poverty. By those statistical targeting tools, official statistics enable policy makers to achieve Goal 1 of SDGs

4.1 Geographical targeting: Poverty Mapping

Poverty Maps are essential poverty monitoring tool that assess poverty level at the smallest administrative level and represent poverty estimates in maps. It is also frequently used as geographical targeting tools. Simply described, a poverty map is a visual representation of where poverty is concentrated. Maps encourage visual comparison and make it easy to look for spatial trends, clusters, or other patterns. It is important for policy makers in achieving goal 1 of SDG's to identify pockets of poverty and hence design and target programs to reduce poverty in those areas.

As illustrated by Elbers et al., 2002, geographic targeting offers significant advantages over other methods of targeting. **First**, it provides a clear criterion for identifying the target population and avoids the informational constraints that impede most other targeted programs. **Second**, it is relatively easy to monitor and administer and its implementation can be greatly assisted by local administrative institutions and nongovernmental organizations (NGOs). **Third**, geographic targeting has relatively little influence on household behavior since it is difficult and costly to change the place of residence. **Fourth**, it is possible to combine the location criterion with other criteria based on individual or household characteristics for determining eligibility and thereby improve targeting. Examples of these combinations include programs for school-age children in rural areas, food rations for pregnant and lactating women in certain regions or states, public

work programs that are restricted to the poorer districts, and so forth. **Fifth**, the instruments of geographically targeted programs can include not only direct income transfers to the target population, but also a variety of other measures aimed at increasing the income of the population. Measures to develop the target areas can be particularly important at the local level of the village or urban neighborhood, where the physical infrastructure is often a critical constraint. Geographic targeting can thus provide guidelines for both the allocation of benefits under a country's welfare program, and the allocation of resources under the country's development program.

Two official statistics are needed to produce poverty

Poverty map methodology involves detailed analysis of two main sources of data: a household survey; and the population census. Individual and household welfare is best measured by their consumption. The main source of information on consumption is the Household Income and Expenditure Surveys. However, these surveys only provide statistically reliable spatial estimates of welfare at an aggregate areas (for instance at urban and rural areas). The census, which can provide more disaggregated data at the smallest administrative areas (villages), but does not contain any information on consumption. Poverty map is based on a statistical procedure developed by Elbers et al. (2002) that combines household survey data with population census data. Elbers et al. (2002) procedure allows for heteroskedasticity in the household component. This technique uses the strength of both the detailed information about living standards available in the household budget survey and the more extensive coverage of a census to derived spatially disaggregated poverty estimates based on a consumption indicator of welfare, see figure 4.1.
Figure 4.2 presents an example of poverty map in one of Egypt's municipalities. Poverty map for Egypt is based on Census data collected in November 2006 and a consistent and nationally representative household income, expenditure and consumption survey of 2013. The Egyptian Central Agency for Public mobilization and Statistics (The official Egyptian statistical agency) conducted both the household survey and the Census. Each data set has its advantage and limitation; household survey provides detailed information on household income and expenditure but information is not available to every district and sub-districts, while Census data provides indicators for every small area but it does not provide any information on income or expenditure. Poverty map was used extensively to target poor population especially in cash transfer program provided by Social Solidarity Ministry and in Emergency Labor Intensive program developed by the Social Development Fund.

4.2 Proxy Means Testing

Proxy means testing is another targeting tool that is used to identify poor persons rather than areas. It derives a composite index of variables that are highly correlated of living standards. As asking every household about their income or consumption to determine eligibility for social assistants is not feasible, the composite index is used to proximate household's or individual's welfare. Good practices identify six groups of variables in household income/expenditure surveys that can proximate welfare. These are community (residence: urban area/region) household head characteristics; characteristics of family members; remittances and financial flows to family members; housing residential properties; and Ownership of durables.
These are different criteria to evaluate model performance, these are: Coefficient of determination (R2): It measures the ability of explanatory variables to explain household welfare level; Under-coverage rate: It measures the ability of a model to identify the poor properly. It is the percentage

of the poor whom the program is meant to cover who are not covered; and Leakage: It represents the percentage of non-poor who received benefits out of total beneficiaries.

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5. Conclusion

The objective of this paper is to demonstrate **the power of Household Surveys in providing disaggregated data** and information needed to calculate the indicators of targets for Goal 1 can provide evidence on how social programs are spread and who are the beneficiaries of such programs. Households' surveys provide information for targeting purposes when they are combined with other data such as census data, ***The analysis of this paper is based on recent surveys for Egypt and it is used to illustrate how households' surveys are used in assessments of targets of Goal1.***

Therefore, income/ expenditure data should be collected at convergent time points (short time intervals) and as disaggregated as possible, so that indicators can be monitored. Thus, countries can develop strategies for implementation and follow-up to achieve sustainable development goals. A detailed and time-bound work plan should be developed, specifying dates for the delivery of periodic reports, data collection or analysis.

Many indicators, especially those related to poverty and economic development, are already being collected (for example as part of the Millennium Development Goals process), but in some cases new indicators are need to be developed (social protection indicators as an example). Official Statistical agencies should immediately begin to identify gaps and any statistics that are required and not collected. For data already exist, statistical agencies should ensure the consistency of its methodology with international standards as well as the indicators extracted from them.

The United Nations suggests that the follow-up patrol should be annual, but this does not mean that the data are collected annually, which is very difficult. However, it has been suggested that the periodicity of data collection should be every two or three years, but projection methods and estimates of models are used to provide indicators for each year. Moreover, innovative methods of data collection and strategies are recommended to ensure consistency of non-formal data, UN 2015.

References

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Annex tables

Table 1.1: Goal 1 targets and their primary data sources

Goal 1 targets	Primary Data Sources
1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day	Household surveys
1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	Household surveys
1.3 Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	Household surveys, Administrative data,
1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	Household surveys, Administrative data,
1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters	Household surveys, Administrative data,
1.A Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programs and policies to end poverty in all its dimensions	Household surveys, Administrative data, International organizations
1.B Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions	Household surveys, Administrative data, International organizations

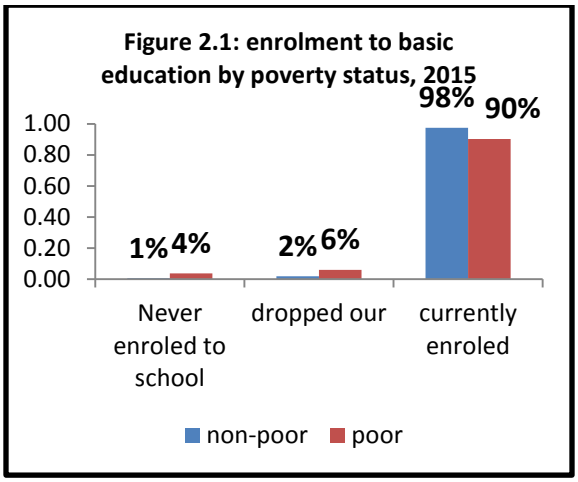
Source: UN (2015)

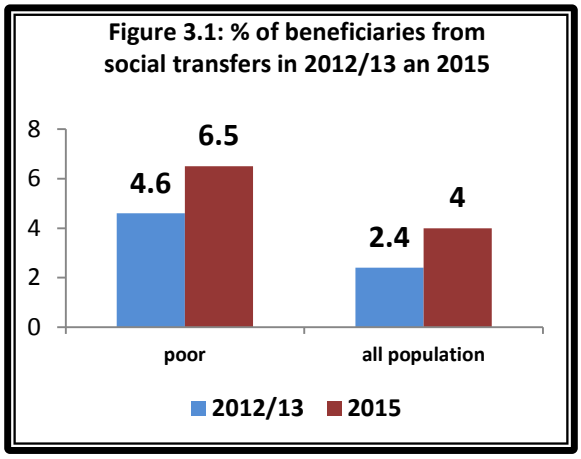
Table 2.1: Evolution in Poverty rate by regions in Egypt (2013-2015)

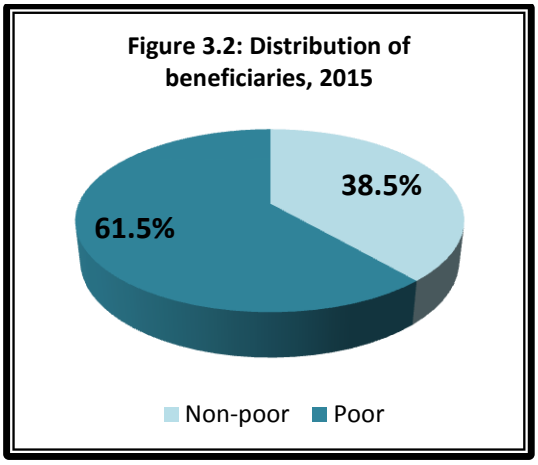
	2015	2012/13	differences
Total Egypt	27.76	26.29	1.47
Urban	16.90	17.59	-0.69
Rural	35.95	32.38	3.57
Urban governorates	15.11	15.68	-0.57
Lower Egypt-Urban	9.67	11.71	-2.04
Lower Egypt Rural	19.71	17.41	2.30
Upper Egypt Urban	27.40	26.7	0.70
Upper Egypt Rural	56.70	49.44	7.26

Source: Authors calculations using Household income, expenditure and consumption survey 2015 , conducted by CAPMAS.

Annex Graphs







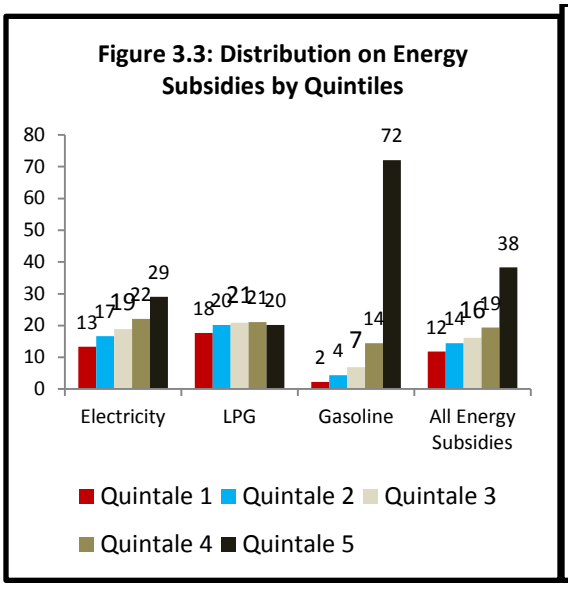


Figure 3.3: Distribution on Energy Subsidies by Quintiles
80
70
60
50
40
30
20
10
0
13
17
19
22
29
18
20
21
21
20
2
4
7
14
72
12
14
16
19
38
Electricity
LPG
Gasoline
All Energy Subsidies
Quintale 1
Quintale 2
Quintale 3
Quintale 4
Quintale 5

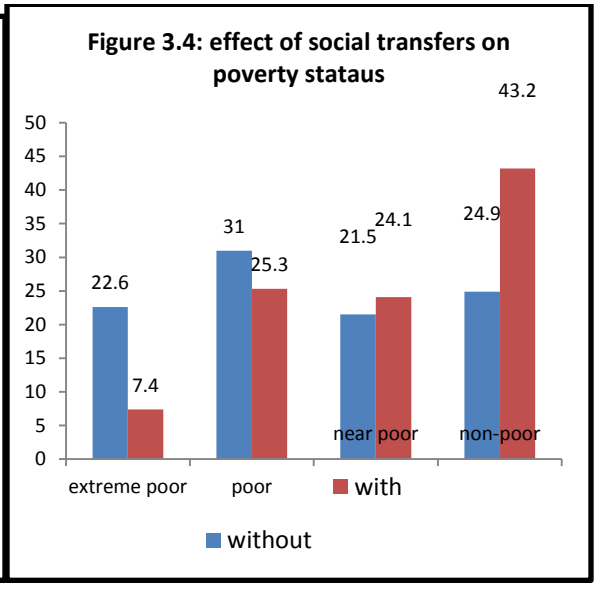


Figure 3.4: effect of social transfers on poverty stataus
50
45
40
35
30
25
20
15
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5
0
22.6
7.4
31
25.3
21.5
24.1
24.9
43.2
extreme poor
poor
near poor
non-poor
with
without

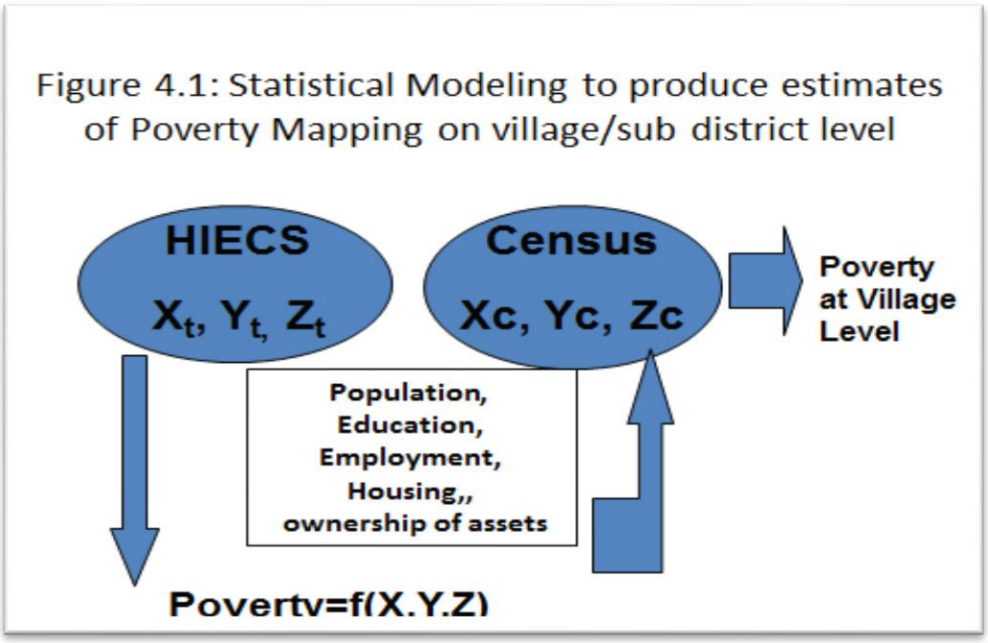
Figure 4.1: Statistical Modeling to produce estimates of Poverty Mapping on village/sub district level
HIECS
Xt, Yt, Zt
Census
Xc, Yc, Zc
Poverty at Village Level
Population, Education, Employment, Housing,, ownership of assets
Povertv=f(X.Y.Z)
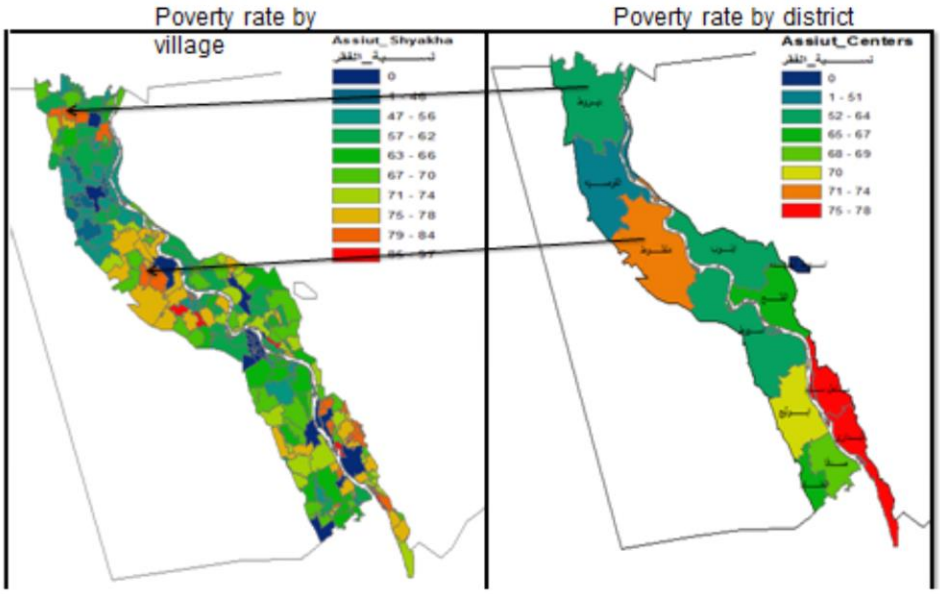
Figure 4.2: Results of updated poverty map 2013
Assuit Governorate