

Effect of Re-Organization on the Performance of the Egyptian Economical Organizations for Water and Wastewater

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1. Abstract

An investigation was carried out to study the effect of re-organization of the Egyptian economical organizations for water and wastewater on its performance. The study was conducted in two phases. Phase one was to collect the required technical and financial data of the Affiliated Companies (A.C's). Phase two was to analyze the collected data and show how the performance of the AC's is affected. Technical performance indicators considered in this study were; Produced water capacity (PWC), Consumed water capacity (CWC), Non revenue water (NRW), Treated wastewater capacity (TWWC), while financial indicators includes, Comparative financial statement, Liquidity ratio and Leverage ratio. All of these factors were deeply investigated for a selected sample of A.C's showing the difference between their values before and after the re-organization process. The study came to a conclusion that the technical and financial performance indicators showed an obvious improvement after the re-organization. Despite this improvement the AC's didn't reach the required level of improvement which insures the user's satisfaction and the AC's financial and technical sustainability.

2. Introduction

Investments in the water and wastewater infrastructure are urgently needed in order to provide all members of the population with drinking water at the required quality as well as reducing the pressure on the environment through the treatment of wastewater. Municipalities, and therefore water utilities, are the main actors in water supply and wastewater treatment projects, thus their capacities are scrutinized. Currently, the water utility sector is also facing serious challenges related to financial, technical and administration.

Due to the poor performance of the Egyptian water and wastewater sector, the government initiated sector reform that, aimed at improving service quality, gradually attaining a financial equilibrium and improving staff skills. The Ministry of Housing, Utilities and Urban Development charged National Organization for Potable Water and Sanitation Drainage (NOPWASD) with the elaboration of a diagnostic study and recommendations for reforms. This was to be done under the label of decentralization through the creation of commercially oriented companies at the governorate level, just as recommended two decades earlier. However, two new elements were added to the

reforms: private sector participation and autonomous regulation. (<http://hcer.info/ar/?p=388>)

The study was presented to the Cabinet of Ministers in 1998. The Cabinet charged the Ministry of Housing with the elaboration of two documents: a decree on the reorganization of the water and wastewater sector, as well as a law on public utility concessions for water and wastewater. Both were initially approved in principle by Cabinet in 2000. However, the water concession law was never passed. A decree for the creation of a regulatory agency was also circulated. The process of enacting the reforms took many more years. During this time the decree on the reorganization of the sector was modified, creating a Holding Company that would de facto compete with NOPWASD.

Creation of the Holding Company: In April 2004 the decree that created the Holding Company, which was to become a central institution of the sector, was enacted. The existing seven water and wastewater companies (two in Cairo, two in Alexandria, and three in the Nile Delta) as well as the existing seven Public Economic Authorities were all transformed into affiliated companies of the Holding Company. While the Holding Company did not become responsible for investment, it was responsible for the acquisition of equipment to modernize its affiliate companies and for training their staff. Also, it became a key interlocutor for foreign donors. (Mowad A. 2011).

Eight years after the reform, where do the water and wastewater sector stand now? What is the current situation of the affiliated companies on the base of technical and financial performance? Does the reform indeed achieve the required results? Those are the main inquires that will be covered later on through this paper by comparing the status of the affiliated companies before and after the reform process.

3. Objective of Current Study

The main target for the present paper is to perform a comparative analysis for the technical, financial and administrative performance of the affiliated companies. By analyzing the collected technical and financial data and show the improvement or the deterioration of the sector.

This study consists of two phases. Phase one is to collect the required data to perform a comparison in the technical and financial performance of the affiliated companies. The collected data came from different resources. Mainly the financial statements of the A.C's – before and after the reform – and from the holding company for water and wastewater. Phase two is to analyze the collected data and show the improvement or the deterioration of the sector. A number of technical and financial indicators were used to assess the performance of the companies before and after reform.

4. Literature Review

Performance evaluation of construction companies gains its importance from the fact today's world is moving rapidly toward globalization (Elyamany, et al. 2007). Regarding to the economical situation today, any company should continuously evaluate its performance to detect any problems and improve its performance. This evaluation should cover technical and financial criterion.

Inter-utility performance comparison is needed in the water and sanitation sector, because the sector offers limited scope for direct competition. Firms operating in competitive markets are under constant pressure to outperform each other. Water utilities are often sheltered from this pressure, and it frequently shows: some utilities are on a sustained improvement track, but many others keep falling further behind best practice. These matters, because a well-run water utility is essential to people's lives. Only the most efficient, financially viable utilities are able to respond to urban growth, connect the poor, and improve wastewater disposal practices. (The International Benchmarking Network for Water and Sanitation Utilities IBNET).

The World Bank defines performance indicators as tools providing a means of measurement of fulfillment of any project's objectives, success, and prediction of obstacles that may hinder operation. According to the World Health Organization, performance indicators are variables whose purpose is to measure change in a process or function. They can be used either on regular time intervals as a means of assessment of performance over time, or to measure the change resulting from certain conditions. Finally, the International Water Association defined performance indicators as measures of the efficiency and effectiveness of water utilities with regard to specific aspects of the utility's activity and of the system's behavior. (Hassanein, et al. 2008).

The International Benchmarking Network for Water and Sanitation Utilities (IBNET) provides a set of financial, technical and process indicators (mainly capturing the institutional context in which the utilities are operating) for the assessment of utility performance in the provision of water and sewerage services. This set of indicators provides the basis for the cross-utility and cross-country comparisons.

These indicators are set according to the following categories:

- Service coverage	- Quality of service
- Water consumption and production	- Billings collections
- Non revenue water	- Financial Performance
- Metering practices	- Assets
- Pipe network performance	- Affordability of services
- Costs and Staffing	- Process indicators

WORLD BANK GROUP (2004) discussed the reform of water sector in Senegal. They conclude that this reform is a successful process and one of the most important successes is the existence of a good working relationship between the players, and this relationship is perceived as a partnership. SONES (Société Nationale Des Eaux du Sénégal (state asset-holding company in Senegal)) concentrates on overall sector development and contract enforcement, and leaves the day-to-day operation of the system to Sénégalaise des Eaux (Senegalese water utility)SDE. SDE has created an efficiently managed system, increasing capacity through employee training, and has introduced state-of-the-art technology such as electronic leak detection and computerized billing.

USAID (2008) discussed the reform of water sector at 37 countries around world and they found that the objectives of reform were:

1. Autonomy and accountability of the water utility.
2. Incentives for reform, penalties for failure.
3. Progressive performance standards.
4. Cost-reflective pricing.

And they summarized some points to achieve these objectives, these points are:

1. Decentralization.
2. Corporatization & corporate governance reform.
3. An effective regulatory agency.
4. Incentive-based operating contracts.
5. Private sector participation.
6. Shift from capital grants to sustainable financing mechanisms.

5. Data Collection and Evaluation Parameters

Data was collected from different authorities such as; a) Holding Company for Water and Wastewater (HCWW), b) Affiliated Companies (ACs), c) Egyptian Water Regulatory Agency (EWRA), d) Ministry of finance.

Six firms were selected as a test sample for this study, three from Upper Egypt and the others from Delta region. These firms are:

1. El-Fayoum Company for water and wastewater.
2. Beni-Swief Company for water and wastewater.
3. Aswan Company for water and wastewater.
4. El-Sharkia Company for water and wastewater.
5. El-Gharbia Company for water and wastewater.
6. El-Daqahlia Company for water and wastewater.

This paper will present the detailed study of two A.C's only which are:

El-Fayoum Company for water and wastewater.

El-Daqahlia Company for water and wastewater.

Moreover corserylook for the performance of the other four firms will be also provided.

The criterion of selecting firms is that firms were transformed from economical organizations to Affiliated Companies (ACs). The collected data mainly include:

First: Financial Data:

1. Balance Sheet for National Organization from 2002 to 2004.
2. Income statement for National Organization from 2002 to 2004.
3. Balance sheet for affiliated companies from 2005 to 2007.
4. Income statement for affiliated companies from 2005 to 2007.

Second: Technical Data:

1. The development of potable water sector.

These data shows the water capacity (m^3/day) for each governorate before and after transformation, source of water.

2. Development of wastewater sector.

These data shows the wastewater capacity (m^3/day) for each governorate before and after transformation and the percentage of treated and untreated water before and after transformation.

According to performance indicators that mentioned under IBNET, the following indicators were finally selected as a tool for this study:

- Technical Performance Indicators
 1. Produced water capacity (PWC).
 2. Consumed water capacity (CWC).
 3. Non revenue water (NRW).
 4. Treated wastewater capacity (TWWC).

- Financial Performance Indicators
 1. Comparative financial statements.

Comparative Financial Statement analysis provides information to assess the direction of change in the business. Financial statements are compared through a particular period. This can help financial managers and top management are also interested in knowing whether the business is moving in a favorable or an unfavorable direction. For this purpose, figures of current year have to be compared with those of the previous years. In analyzing this way, comparative financial statements are prepared (Hassanien, et al. 2008).

2. Liquidity Ratio.

The liquidity ratios measure the ability of the utility to meet its short-term financial obligations in a timely manner. These obligations are usually due within a period of 1 year. The liquid position of any utility refers to the solvency of the utility's overall financial position or the ease with which it can pay its bill. The current ratio is one of the most important liquidity ratios indicative of the utility's liquid position. (Hassanien, et al. 2008).

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Short Term Liabilities}}$$

3. Leverage Ratio.

Leverage ratio is an indicator for the financial stability of the firm through a long period of time.

$$\text{Dept/Assets} = \frac{\text{TotalLiabilities}}{\text{TotalAssets}}$$

6. Analysis

The study period covers 6 years interval, ranged from the fiscal year ended June 2002 to the fiscal year ended June 2007. It has to be noted that three of the six years period precede the reforming process, while the other three years follow the reforming process. In the next section of this paper the change of the different technical and financial evaluation parameters will be deeply investigated.

6.1 Analysis of Technical Performance

6.1.1 Produced Water Capacity (PWC)

The produced water capacity (PWC) was selected as the first parameter for the technical performance evaluation. The development in the quantity of the daily produced water was investigated through the six years period.

6.1.1.1 Dakahliah Governorate

Variation of the daily produced water capacity for Al-Dakahliah Governorate is represented graphically in Figure (1). Consideration for this figure clearly indicates that the quantity of the produced water capacity has a moderate variation through whole studied years. At the year of reforming (2004 – 2005), there is small variation in this quantity (798,660 m³/d) in 2004 to (843,360 m³/d) in 2005. Again, no considerable variation can be observed in this quantity at 2006. Finally, this value is considerably increased in the last year 2007.

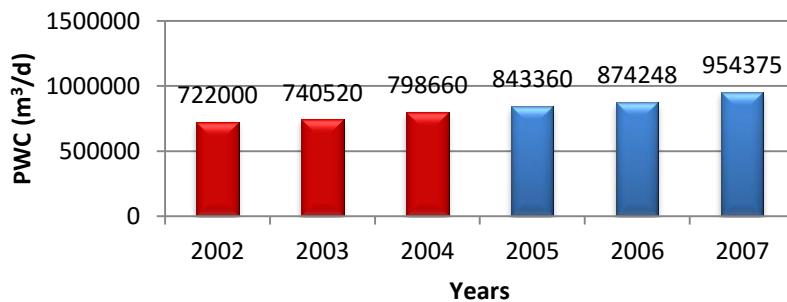


Fig. (1) (PWC) for Dakahliah Governorate

Another presentation for data mentioned before is shown in Figure (2) which shows the change in annual rate of development in the produced daily water quantity. For illustration, the produced water capacity increased by about 2.57% in year 2003 compared by the previous year. Furthermore, this quantity has been increased by about 7.85% in

year 2004. As shown before, there is a small change in the quantity of produced water in the first year after reforming while this quantity increased to a corresponding percentage of 5.6% in year 2005 and 3.66% in year 2006. Moreover, such quantity has considerably increased in year 2007 to a corresponding percentage of 9.17%. Another inspection to Figure (1), clearly shows that the overall change in PWC in Dakahliah Governorate was increased from 722000(m³/d) in 2002 to 954375 (m³/d) in 2007 with a percentage of increasing of about 32.2%. This percentage of increasing reflect the interesting of government to improve water service sector in this Governorate.

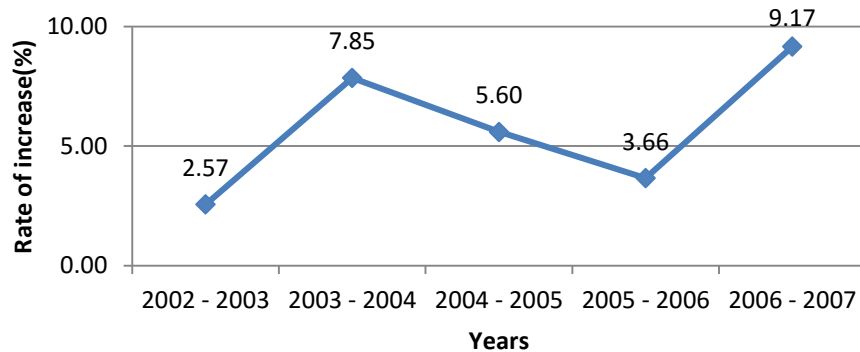


Fig. (2)(Rate of changing in PWC) for Dakahliah Governorate

From previous analysis, it will be found that the per capita potable water production for El-Dakahliah Governorate was (152 l/c/d) in 2002 and it increased until it reaches (187.5 l/c/d) in 2007. This means that there was an improvement in per capita water production in this governorate. Comparing these values by standard values (175 – 220) l/c/d (Egyptian code 102/1, 2010), it will be found that in 2002 there was a shortage in this value but it reaches to the margin of standard value in 2007.

6.1.1.2 Al-Fayoum Governorate

Figure (3) represent the variation of the daily produced water capacity for Al-Fayoum Governorate. A closer inspection for this figure clearly indicates that there is a sharp increase in the quantity of the produced water at year 2003. Another thing shown rather clearly in this figure that there is no considerable change in this quantity through the remaining years (2004 to 2007).

Figure (4) is another presentation for the data mentioned before while the annual rate of development in the produced daily water quantity has a sharp increase by about 39.91% in year 2003 compared by the previous year. Such quantity has slightly increased in years 2004, 2005 and 2006 at a corresponding percentage of 3.24%, 3.19% and 0.46 respectively. Finally, there is no change in this percentage in the last year 2007. On the other hand when comparing the improvement of PWC in Al-Fayoum Governorate through years of study, Figure (3) shows that there is a big increase in this quantity from 320160 (m³/d) in 2002 to 481618 (m³/d) in 2007. This increase, as discussed before, jumped in the first year of study, after that there is no considerable increases for the next years as shown in Figure (4).

Finally it can be summarized that the PWC has a moderate development for the other studied governorates after conversion into holding companies. Moreover there was only

one governorate has a big development for this amount which is El-Gharbia Governorate, where the PWC increased by 40.5% in the year of reforming. Contrarily, the other governorates have moderate increase in the year of conversion. For instance, the rate of increase of PWC in BeniSwief Governorate was 2.09%, while in Aswan Governorate has a rate of increase in PWC of 6.12%. Finally, Al-Sharkia Governorate was found to have no increase in the PWC in the reforming year at all.

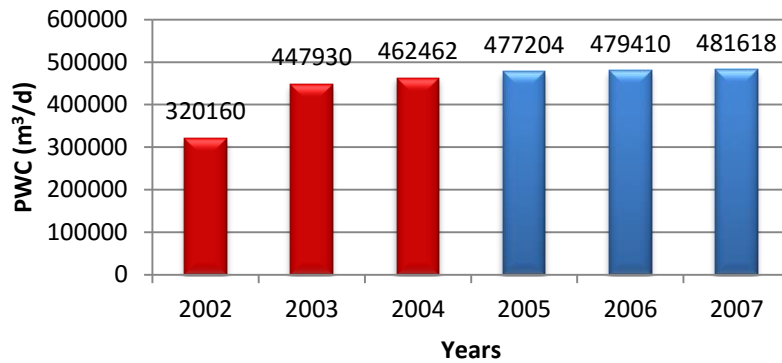


Fig. (3)(PWC) for Al-Fayoum Governorate

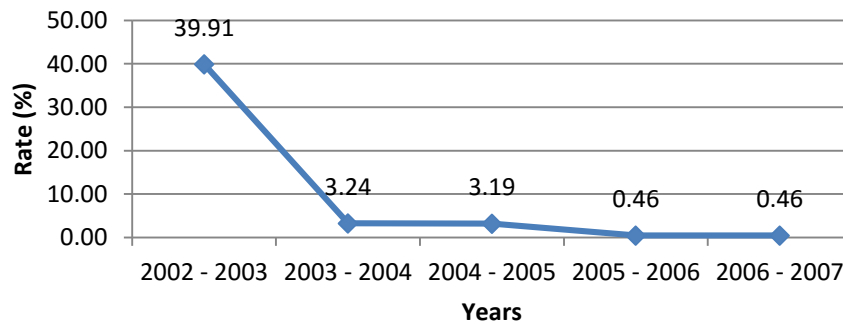


Fig. (4)(Rate of change in PWC) for Al-Fayoum Governorate

From previous analysis, it will be found that the per capita potable water production for El-Fayoum Governorate was (138 l/c/d) in 2002 and it increased until it reaches (187.4 l/c/d) in 2007. This means that there was an improvement in per capita water production in this governorate. Comparing these values by standard values (175 – 220) l/c/d (Egyptian code 102/1, 2010), it will be found that in 2002 there was a shortage in this value but it reaches to the margin of standard value in 2007.

6.1.2 Consumed Water Capacity (CWC)

The consumed water capacity is the amount of water consumed by the customers through the network. This information will help in illustrating how much the production increase affect the customers.

6.1.2.1 Dakahliah Governorate

Variation of the consumed water capacity for Al-Dakahliah Governorate represented graphically in Figure (5). A careful inspection for this figure clearly indicates that no considerable variation in the quantity of the consumed water capacity through years before reform started 2002 and ended 2004. Another thing shown more obviously is that there is a high increase for this quantity in the first year of reforming from (526524 m³/day) in 2004 to (621978 m³/day) in 2005. Again, no considerable variation can be observed in this quantity at 2006. Finally, there is a considerable increase in this quantity in 2007.

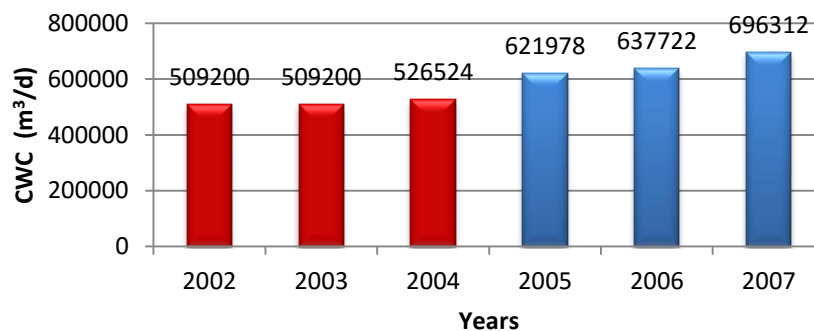


Fig. (5)(CWC) in Al-Dakahliah Governorate

Another presentation for the data mentioned before is shown in Figure (6). Figure (6) shows the annual rate of increase in the consumed water capacity. Some motivating results can be observed through a careful inspection to this figure. For illustration, the consumed water capacity has no change in year 2003 compared by the previous year. Furthermore, this quantity has been increased by about 3.4% in year 2004. As shown before, there is high increase in the quantity of the daily water consumption in the first year after reforming, about 18.13%. Moreover this quantity increased by a corresponding percentage of 2.53% and 9.19% in year 2006 and 2007 respectively.

Comparing these results with those in Figure (2), it shows that the increase in CWC matches with the increase in PWC in the first two years. After one year of reform there is a huge increase in CWC of (18.13%) while the increase in PWC is (5.6%). Finally, in year 2006 the increase in CWC is less than that in PWC while in 2007 the two rates of increasing (PWC & CWC) are nearly the same. Such analysis shows the confusion in water sector in this governorate, this confusion could be due to lack of possibilities, lack of adequate number of water meters, frequent leaks of networks.

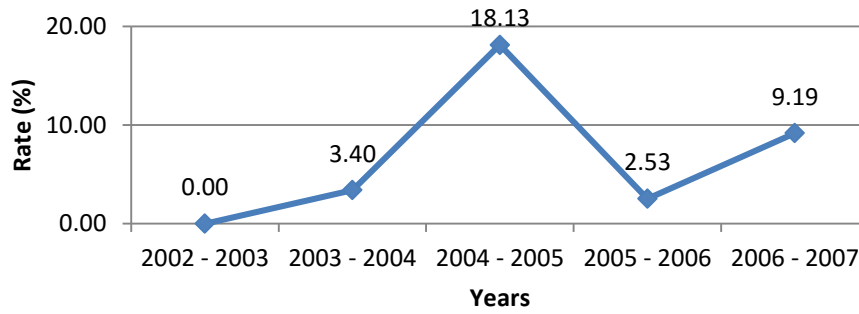


Fig. (6)(Rate of changing in CWC) in Al-Dakahliah Governorate

6.1.2.2 Al-Fayoum Governorate

Fayoum Governorate shows a significant change in the consumed water capacity after reform. This is evident from Figure (7), where the increased amount of water consumed ($307\,824\text{ m}^3 / \text{day}$) in 2004 to ($320\,359\text{ m}^3 / \text{day}$) in 2005, with an increase of about (4.07%). It can be also noted through the same figure that the rate of increase of the consumed water capacity is taking to decline in subsequent years. Figure (8) marked the rates of change in the annual consumed water capacity in Fayoum Governorate. A careful inspection to Figure (8) and Figure (4), it will be found that:

1. While the RPWC increased in (2002 – 2003) by 39.91% but the RCWC is zero %, this may be due to lack of measurements or a lot of leakages in networks.
2. There was improvement in RCWC and the RPWC in years (2003, 2004, 2005). This improvement may be due to more interesting for networks and measurements.

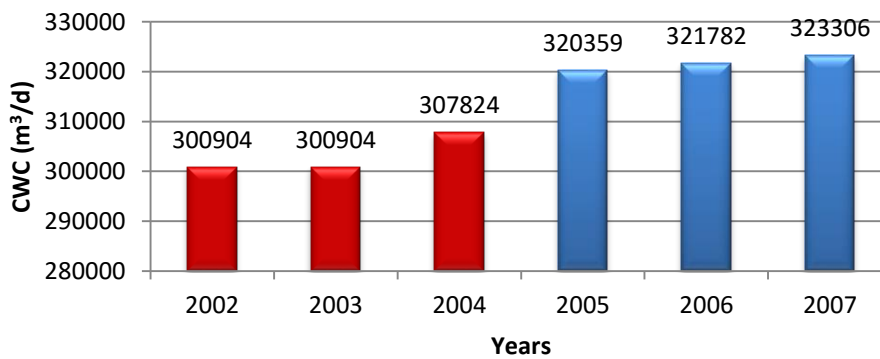


Fig. (7)(CWC) in Al-Fayoum Governorate

Also, when comparing results obtained from Figure (7) with results obtained from Figure (3), it will be found that the difference between PWC and CWC in 2003 was 32.8% and this difference remains as it is in 2007. This means that even the RCWC and RPWC were the same, but not all the produced water were delivered to citizens.

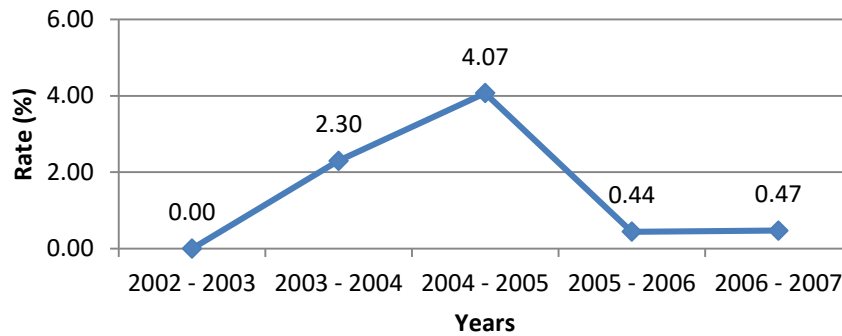


Fig. (8)(Rate of changing in CWC for Al-Fayoum Governorate)

At the end of analysis of this factor, it can be said that there were significant differences between the PWC and the CWC at all governorates, but there were good efforts to resolve this problem. It is clear that these efforts did not succeed as full and so, this problem requires unconventional solutions to overcome it. Regarding this difference between produced and consumed water, it is a very dangerous alarm that there were some difficulties facing potable water system in Egypt. Also it should be make some investigations on existing networks to reduce leakage of the quantities of potable water that leaked from old and dirty pipes. Another thing can be concluded from these analyses, that much attention was given to the Lower Egypt Governorate more than Upper Egypt Governorate.

6.1.3 Non Revenue Water (NRW)

Non revenue water (NRW) is water that has been produced and “lost” before it reaches the customer. Losses can be real losses (through leaks, sometimes also referred to as physical losses) or apparent losses (for example through theft or metering inaccuracies). High levels of (NRW) are detrimental to the financial viability of water utilities, as well to the quality of water itself. NRW is typically measured as the volume of water “lost” as a share of net water produced. However, it is sometimes also expressed as the volume of water “lost” per km of water distribution network per day.

6.1.3.1 Dakahliah Governorate

Variation of the percentage of non revenue water for Al-Dakahliah Governorate is represented graphically in Figure (9). A careful inspection to this figure clearly indicates that a slight increase in (NRW) of the water capacity through years before reform started 2002 and ended 2004. Another thing shown more obviously is that there is an obvious decrease for this quantity in the first year of reforming from (34.07%) in 2004 to (26.25%) in 2005. Again, no considerable variation can be observed in this quantity in the last two years 2006 and 2007.

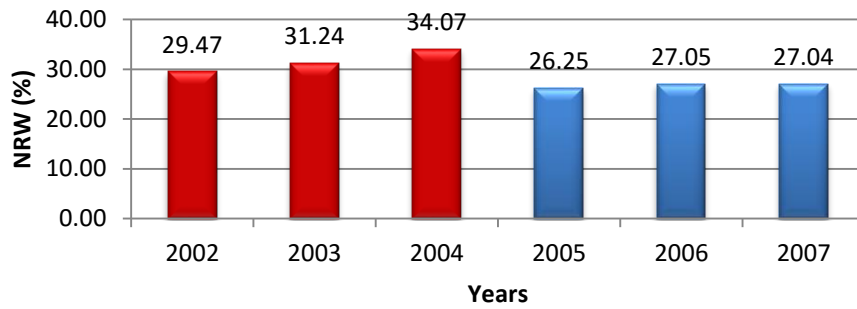


Fig. (9) Percentage of change in (NRW) for Al-Dakahliah

6.1.3.2 Al-Fayoum Governorate

Figure (10) shows the change in the percentage of (NRW) in Al-Fayoum Governorate. By studying this figure it is clear that (NRW) has increased considerably between 2002 and 2003, (6.01% in 2002 and (32.82% in 2003. This percentage is fairly constant until 2007. Comparing Figure (10) with figures number (3), (7) it is clear that there is a surge in the amount of water produced between 2002 and 2003, but the amount of water consumed remain constant, which indicates a lack of benefit of citizens of the increase in the amount of water produced. This may be attributed to the high percentage of the NRW.

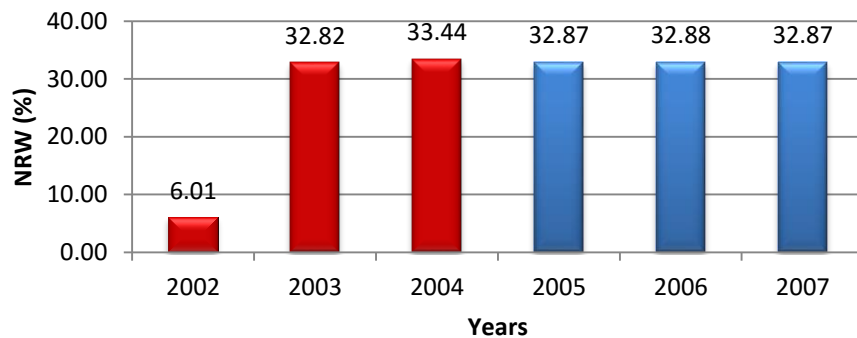


Fig. (10) Percentage of change in (NRW) for Al-Fayoum Governorate

At the end of analysis of this factor, it can be said that the government paid more attention for water producing without sure that these produced quantity reached to beneficiaries and there had small importance with reasons of losses in potable water.

6.1.4 Treated Wastewater Capacity (TWwC)

6.1.4.1 Dakahliah Governorate

Variation of the treated wastewater capacity for Al-Dakahliah Governorate is represented graphically in Figure (11). A closer inspection for this figure clearly indicates that there is a small increase in amount of treated wastewater along the whole studied years.

When calculating the amount of the treated wastewater as a percentage of the consumed water in Al-Dakahliah Governorate, it will be found that this percentage seems good. That it ranged from 80% to 85%. This means that before and after reform

there was a good interest and improvement in wastewater system in parallel with improving potable water. From these results we can conclude that the system of treated wastewater in Al- Dakahliah Governorate is a good system comparing with other governorates that suffers from shortage in treated wastewater services.

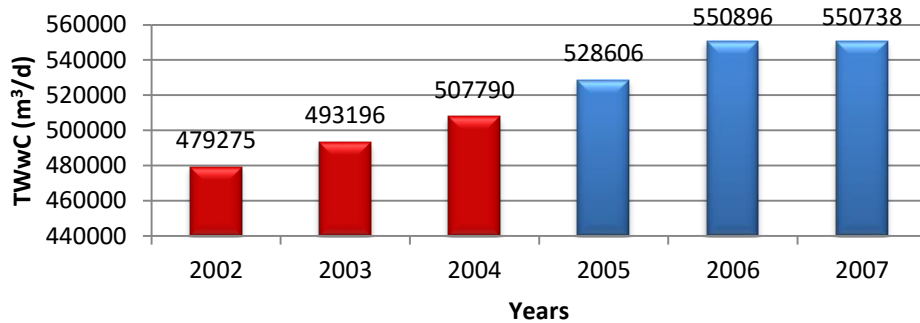


Fig. (11)(TWwC) in Al-Dakahliah Governorate

6.1.4.2 Al-Fayoum Governorate

Figure (12) is graphical presentation for the variation of the treated wastewater capacity for Al-Fayoum Governorate. A closer inspection for this figure clearly indicates that there is no considerable change in (TWwC) through years before reform started 2002 and ended 2004. Another thing shown more clearly is that there is a high increase in the amount of treated wastewater in year of reform,(123178 m³/day) in 2004 to (149682 m³/day) in 2005. Again no considerable change in (TWwC) in the last two years.

By calculating the amount of the treated wastewater as a percentage of consumed water in Al-Fayoum Governorate, it will be found that before reform this percentage ranged about 35% in 2002 to 40% in 2004. After reform, there was a small improvement in this percentage that it reached to about 47% in 2005, but it remains constant till 2007. This means that after reform, the government began to improve wastewater system in parallel with improving of potable water. In spite of this improvement in TWwC, the percentage of untreated wastewater remains high. From these results it can be concluded that the system of treated wastewater in Al- Fayoum Governorate needs a big improvement to reach an acceptable percentage of untreated quantities of wastewater.

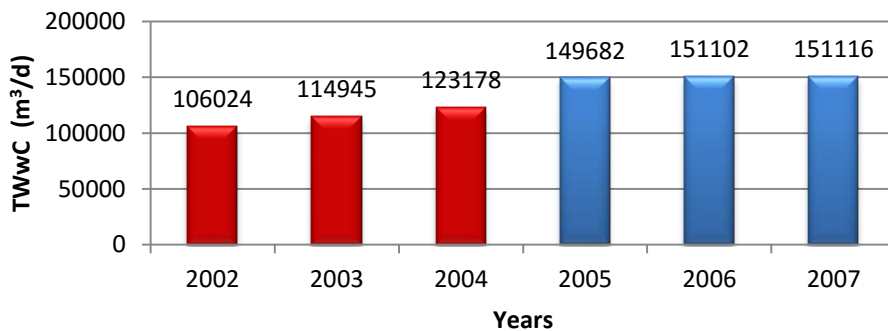


Fig. (12)(TWwC) in Al-Fayoum Governorate

At the end of analysis of this factor, it can be said that there was a very big shortage in wastewater system. That there was a big amount of wastewater untreated, which it had bad effects on habitants, environment and public health. Also it can be concluded that the attention given to produce potable water is larger than the attention given to improve the system of wastewater treatment. Also it is clearly showed from the results obtained that the government gives more attention to the Lower Egypt governorates larger than the Upper Egypt governorates. This finding clearly obvious from the results of Al- Dakahliah Governorate and Beni-Sweif Governorate. That in Al-Dakahliah Governorate the percentage of treated wastewater in 2007 was about 79% which is means that all quantities of collected wastewater were treated. While this percentage in Beni-Sweif at the same year was about 24.8% which is means that small quantities of the collected wastewater were treated. This difference makes citizens unsatisfied and causes kind of immigration from governorates that had no attention to governorates that had more attention. Also this may have a very bad environmental impact.

6.2 Analysis of Financial Performance

6.2.1 Comparative Financial Statement

6.2.1.1 Al-Dakahliah Governorate

Figure (13) is graphical presentation for the comparative financial statement for Al-Dakahliah Governorate. A closer inspection to this figure clearly indicates that there was shortage in current assets and owner equity and increasing in liabilities at the first years period started 2002 and ended 2004 while a great jump in fixed assets and short term liabilities occurred in year 2004. Another thing shown rather clearly is the great jump in owner equity in 2005. Then, a sharp decrease in short term liabilities in year 2005 and current assets slightly increase in years (2005 – 2007). This indicates that the financial year (2004 – 2005) was reforming point in the financial statement of this company. Also, this figure clearly shows that owner equity was increased in 2007. Results mentioned before reflect that there was an improvement in financial statement in Al-Dakhliah A.C. after reform. For example, fixed assets increased after reform and they got ability to reduce their liabilities. Also owner equity increased again before reform and still increased after reform. This means that there was a good chance for improvement of financial performance.

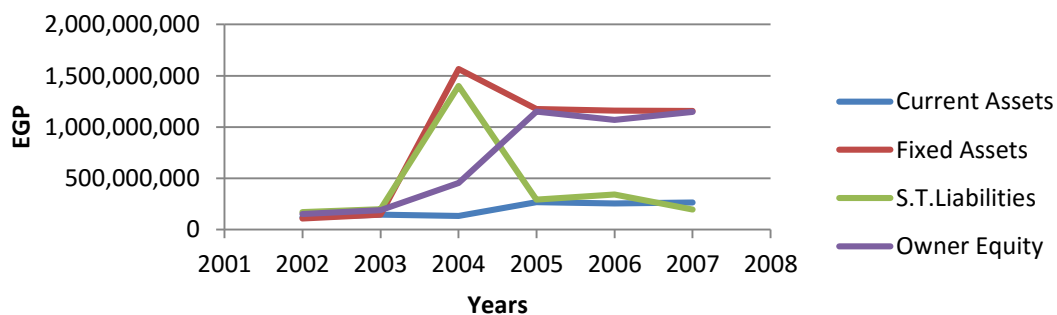


Figure (13) Comparative Financial Statement for Al-Dakahliah Governorate

6.2.1.2 Al-Fayoum Governorate

Figure (14) is graphical presentation for the comparative financial statement for Al-Fayoum Governorate. A closer inspection for this figure clearly indicates that there was a large shortage in current assets compared with the short term liabilities at the first years period started 2002 and ended 2004. This may be considered a bad indicator regarding the available liquidity. A sharp decrease in owner equity occurs in year 2004. Another thing shown rather clearly is the great jump in owner equity in 2006. Then, a large decrease in short term liabilities in years started 2005 and ended 2007 and some increase in current and fixed assets in years (2005 – 2007). This indicates that the available liquidity of this company was improved along the studied years. Also by studying these results it can be concluded that there was instability in financial situation in this A.C.

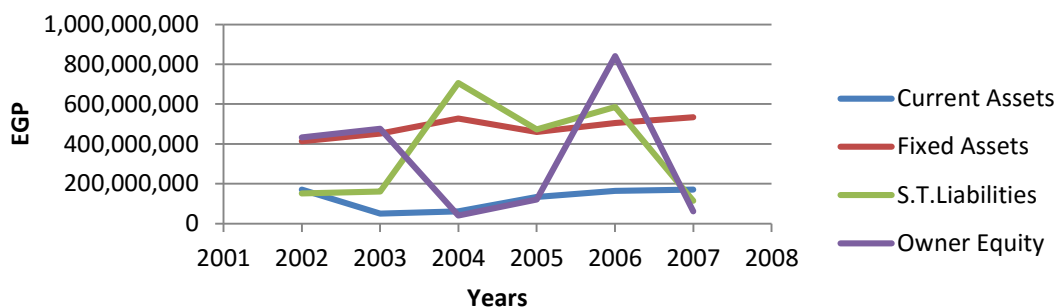


Figure (14) Comparative Financial Statement for Al-Fayoum Governorate

6.2.2 Ratio Analysis

6.2.2.1 Al-Dakahliah Governorate

Figure (15) is graphical presentation for the ratio analysis for Al-Dakahliah Governorate. A closer inspection for this figure clearly indicates that the liquidity ratio was about 0.72 in 2002 and it was changed ups and downs until it reached to 1.35 in 2007 which is far below the study average (2.00). This means that in 2002 there was an amount of 0.72 L.E. of liquid assets for each 1.00 L.E. of liability and in 2007 there was an amount of 1.35 L.E. of liquid assets for each 1.00 L.E. Also it can be clearly showed that in 2004 this ratio had the lowest value comparing by the other years of study. Also these results indicate that a clear improvement occurred in the available liquidity after reform.

Also by studying Figure (15), it will be found that the leverage ratio in 2002 was 0.76 and also changed ups and downs until it reached to 0.14 in 2007, which is much smaller than the maximum value of the safety limit (0.5 – 0.6). Also it will be found that in 2004 it was the highest value of this ratio which is 0.83. The gradual decreasing in leverage ratio after reform provides a good indicator regarding the improvement in the financial stability of this firm after reform.

After analyzing results of liquidity and leverage ratios showed from figure mentioned before, there were some findings. The first one is, that before reform there was a very big shortage in the financial stability in Al-Dakahliah A.C. and it was clear

through values of liquidity and leverage ratios from years of study (2002 to 2004). The second one is, there was an obvious improvement in liquidity and financial stability after reform. This is also clear by the obvious increasing liquidity ratio and decreasing leverage ratio. But while there was an improvement, Al-Dakahliah A.C. still needs more improvement to reach the average standard of the liquidity ratio.

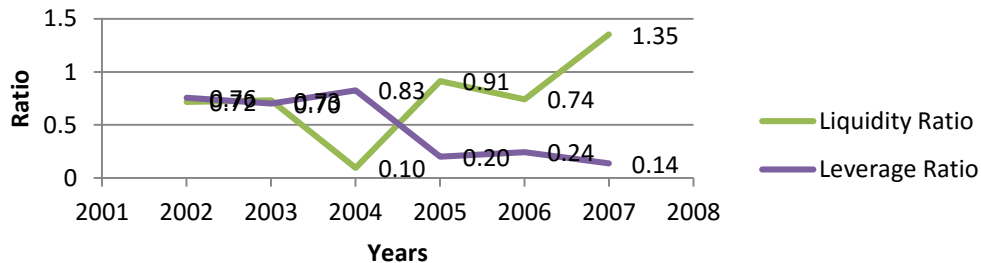


Figure (15)Ratio Analysis for El-Dakahlia governorate

6.2.2.2Fayoum Governorate

Figure (16) is graphical presentation for ratio analysis for Al-Fayoum Governorate. A closer inspection for this figure clearly indicates that the liquidity ratio was about 1.13 in 2002 and it started to decrease until it reached 0.09 in 2004. After that it started to increase until it reached 1.49 in 2007 which is below the average standard (2.00). This means that in 2002 there was an amount of 1.13 L.E. of liquid assets for each 1.00 L.E. of liability and in 2007 there was an amount of 1.49 L.E. of liquid assets for each 1.00 L.E. Also these results indicate that there was an obvious improvement in liquidity after reform.

Again a careful inspection to Figure (16), it will be found that the leverage ratio in 2002 was 0.26 and also changed ups and downs until it reached to 0.16 in 2007, which is lower than the allowable maximum limit(0.5 – 0.6). Also it will be found that in 2004 it was the highest value of this ratio which is 1.20. The gradual decreasing in leverage ratio after reform provides a good indicator regarding the improvement in the financial stability of this firm after reform.

After analyzing the results of liquidity and leverage ratios showed from figure mentioned before, there were some important findings. The first one is, that before reform there was a big shortage in financial resources in Al-Fayoum A.C. and it was clear through values of liquidity and leverage ratios from years of study (2002 to 2004). The second one is that, there was an obvious improvement in liquidity and financial stability after reform. This is also clear by obvious increasing liquidity ratio and decreasing leverage ratio. But while there was an improvement, Al-Fayoum A.C. still needs more improvement to reach the acceptable limit of the liquidity ratio.

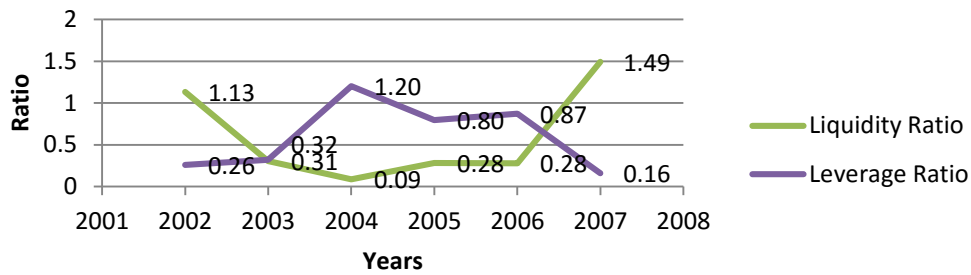


Figure (16)Ratio Analysis for El-Fayoum governorate

At the end of the analysis of the financial indicator, it can be said that, there was a very big shortage in financial resources in all governorates. This is clearly showed in the first years of study started from 2002 and ended in 2004. That there was a significant decrease in liquidity ratio and also significant increase in leverage ratio. This means that current assets were very low and total liabilities were very high at the first years of study. The other thing can be showed from studying results, that there was an obvious improvement occurred in all governorates after reform. This improvement clearly showed that current assets started to increase from 2005 and short term liabilities started to decrease from 2006. This means that there was an improvement in liquidity and financial stability of the firms.

7. Conclusion and Recommendation

Financial and technical data have been collected to have an in-depth view on the performance of the AC's before and after the reform. Based on the results of the analysis, the following conclusions can be made:

- A slight increase in water production after reform. This is due to the increase in the concern for the sector. This concern is supported by increasing the fund.
- The increase in the water production was accompanied with an increase in the water consumption. The increase in water consumption was due to the continuous increase in population. Having those two factors increased at the same time result in the stabilization of the production/consumption curve.
- One of the most important factors in the ACs performance is the non-revenue water NRW. This indicator was not improved after reform. This could be due to the inaccurate figures before the reform which might gave a false indicator.
- On the wastewater treatment side an increase is also witnessed due to the increase in the water production.
- It can be said that government attention was concentrated at the Lower Egypt Governorates rather than the Upper Egypt Governorates. This means that the authorities put public impression as an important factor in investment direction. For this reason, governorates that have high population density took investments larger than those that have low population density.

- The ACs financial situation was deteriorated before the reform. This situation was slightly improved after the reform but more time is needed in order to witness a significant improvement.
- The technical and financial performance indicators showed an obvious improvement after the re-organization. Despite this improvement the AC's didn't reach the required level of improvement which insures the user's satisfaction and the AC's financial and technical stability.

Based on the results obtained from analysis, the following recommendations have to be raised:

- Decreasing NRW is a very important factor that will improve the performance rapidly. Therefore, a NRW plan should be adopted by A.C.s.
- Increase public awareness toward water saving.
- Further studies should be made to study the sector complexity.

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