

Review of: "Reducing non-revenue water in Egypt using GIS"

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Potential competing interests: No potential competing interests to declare.

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30th of December, 2023

****Title of the Research Paper:****

Reducing non-revenue water in Egypt using GIS

****Author(s) of the Research Paper:****

Zakaria Yehia

****Journal Name:****

Qeios ID: X8Q5CK · <https://doi.org/10.32388/X8Q5CK>

****Year of Publication:****

2023

****1. Summary:****

The paper discusses the challenge of Unaccounted for Water (UFW) in water systems, exceeding 40%, causing significant strain on utility operations and budgets. High UFW leads to revenue losses and impacts utility performance. The primary objective is to reduce UFW through a systematic process involving flow measurement, leak detection, meter installation, illegal connection reduction, billing improvement, and GIS development. The plan includes integrating GIS maps with billing and hydraulic systems. The pilot program involves reviewing similar activities, field visits, meetings, timeline preparation, base map creation, network analysis, and result reporting. A substantial reduction in the UFW percentage is anticipated through leak fixes.

****2. Strengths:****

The research is relevant to the Journal. The technical quality of the paper is good. The research methodology adopted is appropriate. There is clarity in presenting the idea. The paper presents a comprehensive methodology for utilities to reduce Unaccounted-For Water (UFW) rates, which is a strength of the study. The multi-stage systematic process involves measuring water flow, leak detection, installing and fixing meters, reducing illegal connections, and increasing billing and

collections, providing a holistic approach to addressing UFW. Additionally, the study's use of satellite images and GIS technology to divide the pilot area into grids and collect data from the field survey demonstrates a strong use of technology and spatial analysis.

****3. Weaknesses:****

The paper lacks a detailed discussion of the limitations and challenges faced during the implementation of the methodology, which could have provided valuable insights for future studies or practical applications. Additionally, while the study provides a comprehensive methodology, it would benefit from more in-depth discussion and analysis of the results, including a comparison of the effectiveness of different interventions in reducing UFW rates.

****4. Recommendations:****

I would strongly advise the authors to cover the following minor comments:

- Try to merge paragraphs; the author wrote paragraphs consisting of 1 or 2 sentences, which is not acceptable.
- Provide a clear map of the study area showing street names in English and showing the study area within the whole city.
- On page 4, "It should be in the old Luxor city to discover many leaks" – this sentence must be in one line.
- On page 4, the author refers to a GIS map in Figure (2), while Figure (2) is a satellite image.
- The satellite image is not showing the study area.
- Figure 3 is not referred to in the text.
- There is no need to show Fig. (4); you can write its information only.
- What is meant by "coding system" on page 7? The author has to clarify.
- In the section on "Water supply," it is preferable to present your data in graphs since the author has measurements for 48 hrs. Although 48 hrs is a very small period of time, the author can present graphs like water consumption vs. time and pressure vs. time. I think that since this data is collected during the summer, it presents the maximum daily and may also present the maximum per hour. So, I can't say that the water consumption per person is 276 l/c/d; this is not the average consumption. In addition, the study area is not presenting a rural region; it is inside a city, so it is still considered an urban region.
- The paper must be well organized.
- The references are not mentioned in the text.

****5. General Comments:****

The paper is not well-structured, and the presentation of results can be enhanced to improve its readability and accessibility to the academic community. There is no literature review to provide a solid foundation for the research, showcasing a comprehensive understanding of previous works in the field. The research paper will not be accepted unless it is resubmitted in a well-organized form.

Sincerely,

[Hesham Ezz, PhD]

