

Evaluation of Surface Water Quality Indicators with Socio-Economic Dynamics in the Egyptian Nile

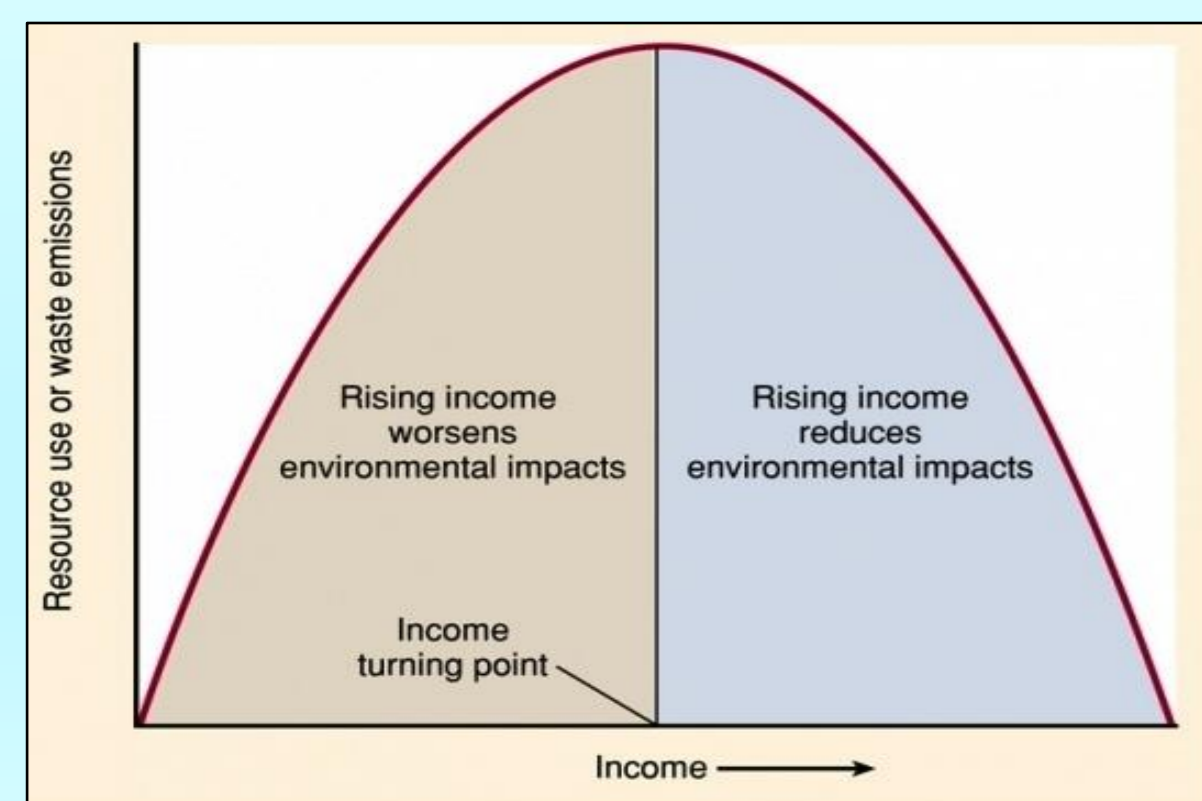
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BACKGROUND

About 95% of the total population of Egypt is accounted to live along the Banks of the Nile (River of Life River Nile, 2007). The sharing of River Nile among 11 countries has created a long lasting conflict in the basin with regards to its division of water. The conflict in itself is not only challenging but unique because of disproportionate level of development in the basin, with Egypt being a stronger country with reference to military and economy and being downstream geographically, while Ethiopia and other African countries are upstream. Also, except for Kenya and Egypt, all of the basin countries are among the world's 50 poorest nations. This accounts for an uneven distribution of physical and economic resources.

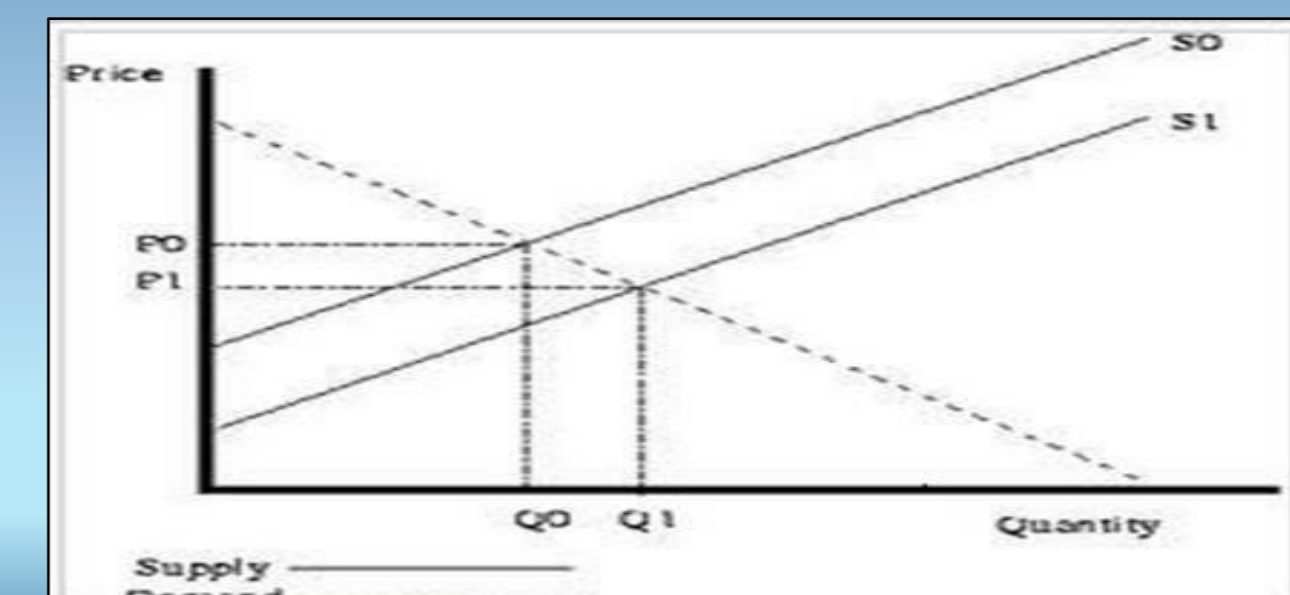
ENVIRONMENTAL KUZNETS CURVE

An Environmental Kuznets Curve (EKC) represents a hypothesized relationship between economic growth and environmental quality, which ideally results in an inverted U - shaped Curve(Kuznets, 1955).



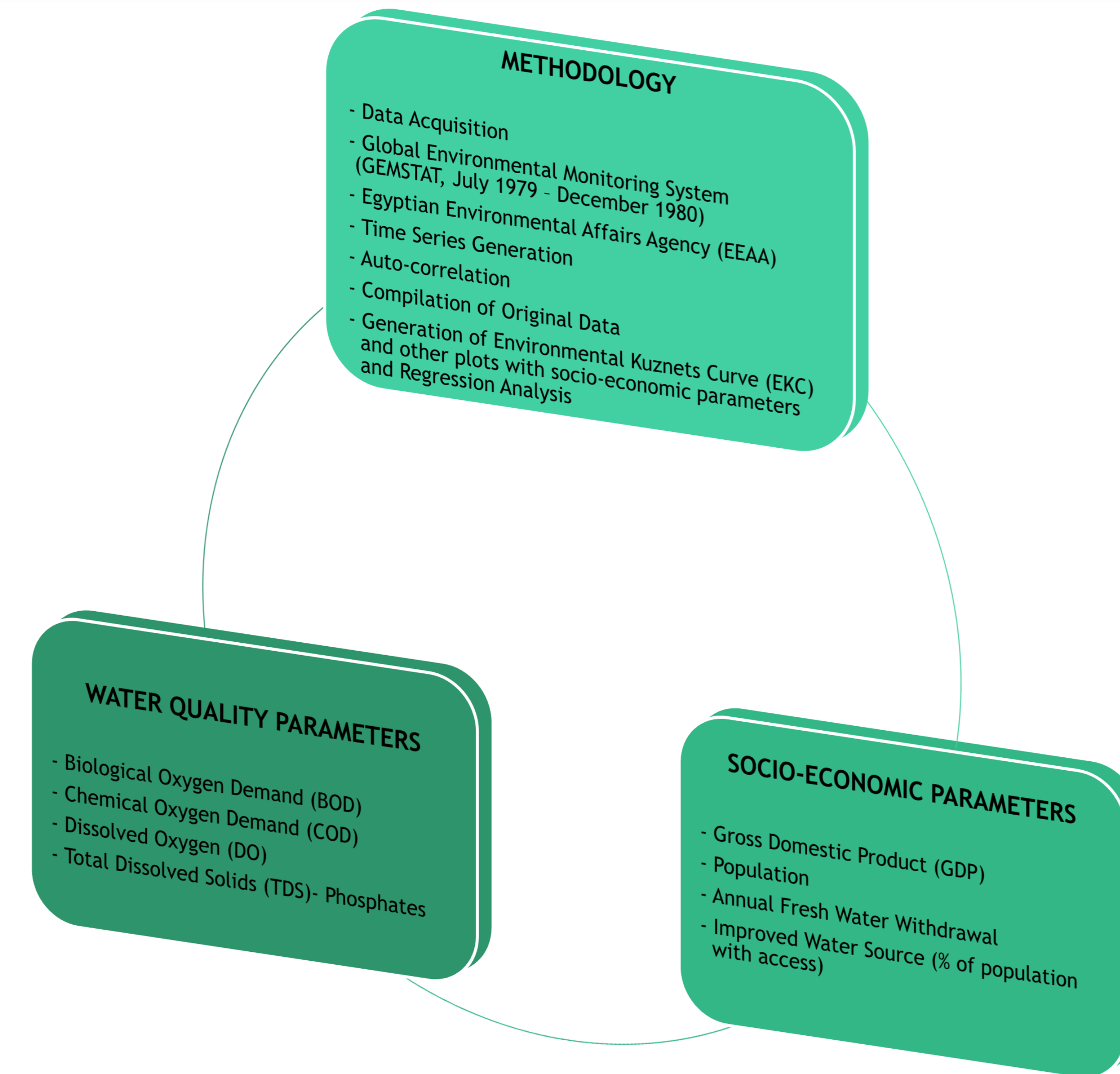
JEVONS PARADOX

Jevons paradox occurs when technological progress increases the efficiency with which a resource is used (reducing the amount necessary for any one use), but the rate of consumption of that resource rises because of increasing demand.



OBJECTIVES OF THE STUDY

- ✓ To evaluate different water quality parameters, their source/s, concentrations and trends of their concentration in the Egyptian River Nile.
- ✓ To assess trends of water quality indicators with the Environmental Kuznets Curve and with different Socio-Economic parameters, to provide estimates for improvement of water quality in the Egyptian Nile water.



CONCLUSIONS

- Besides COD all the water quality parameters are below the permissible limit.
- **Auto-correlation** is not a successful method for generating **water quality data**, however, it can be used to study **seasonality**.
- The recent values of the parameters are either too close to the permissible limits or reaching the limits which indicates **water quality deterioration in the future**.
- Considering **water scarcity** is already a huge issue in the region, **increasing population** along with the **increasing trends in concentration of pollutants** will pose bigger problems for Egypt in the future.

RECOMMENDATIONS

- ❖ Improved information dissemination.
- ❖ Development of centralized performance monitoring program for all Water Quality Projects.
- ❖ Further Development of this study based on the Jevons Paradox.
- ❖ Point and Non-Point Discharge of Waste Water needs to be considerably decreased in the River Nile.
- ❖ Third party Validation of industries for regulation of enforcement of laws regarding Waste Water quality standards.

REFERENCES

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- AQUASTAT Data <http://www.fao.org>
- Ministry of Environment, Egyptian Environmental Affairs Agency, (2004 - 2013). *Egypt State of the Environment Reports*. Cairo, Ministry of Environment, Egyptian Environmental Affairs Agency.
- Ministry of State for Environmental Affairs and Ministry for the Environment, Land and Sea, (2008). *Annual Guide for Environmental Data and Indicators*. EEAA and APAT.
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RESULTS

