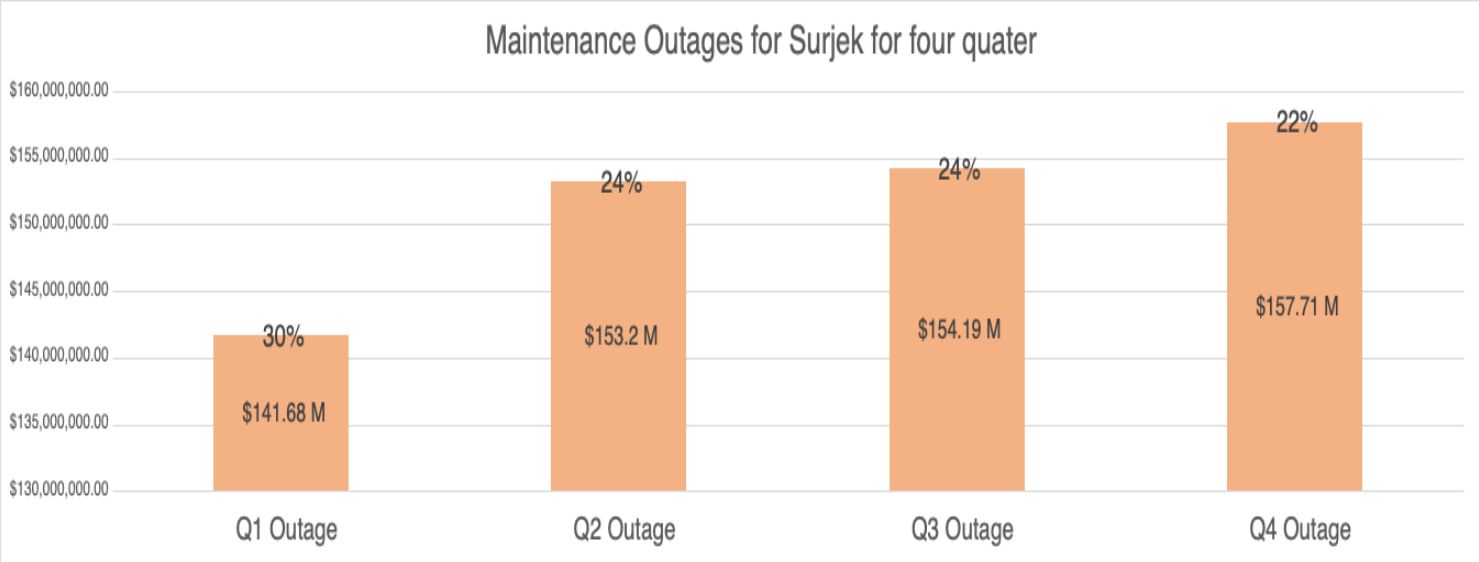
Economic Analysis

Objectives:

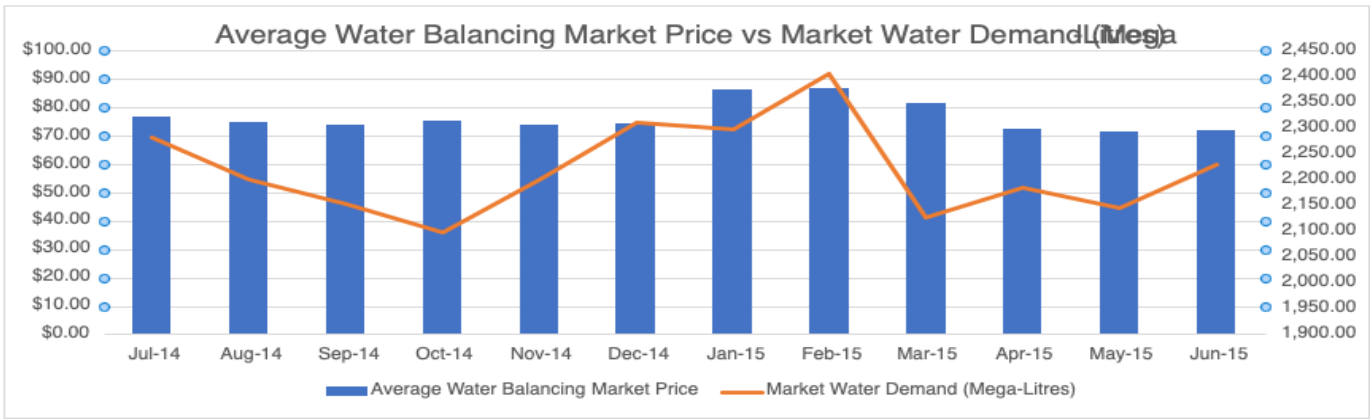
1. Using a column-chart, please show the quarterly revenue (Q1,Q2,Q3,Q4).
2. Using a combo-chart, create a chart which shows the 12-Monthly Water Market Demand and Average Water Balancing Price(s) using the data from the Water Data Repository Table
3. Using a column-chart, please show the Overall Cost to Produce for Kootha, Surjek and Jutik compared against the Overall Desalination Cost to Produce ($/ML). This is the macro view. Using a line-chart, trend the monthly Cost to Produce for:
    I. Kootha
    II. Sujrek
    III. Jutik
    IV. Kootha + Surjek + Jutik
4. Create three chart(s), which show the Cost to Produce vs. the Quantity of Water Produced for each Desalination Plant
5. Create three chart(s), which show the Weighted Balancing Market Price vs. the Volume of Water Demanded (I.e. Soft Water, Hard Water, Soft + Hard Water)

Analysis:

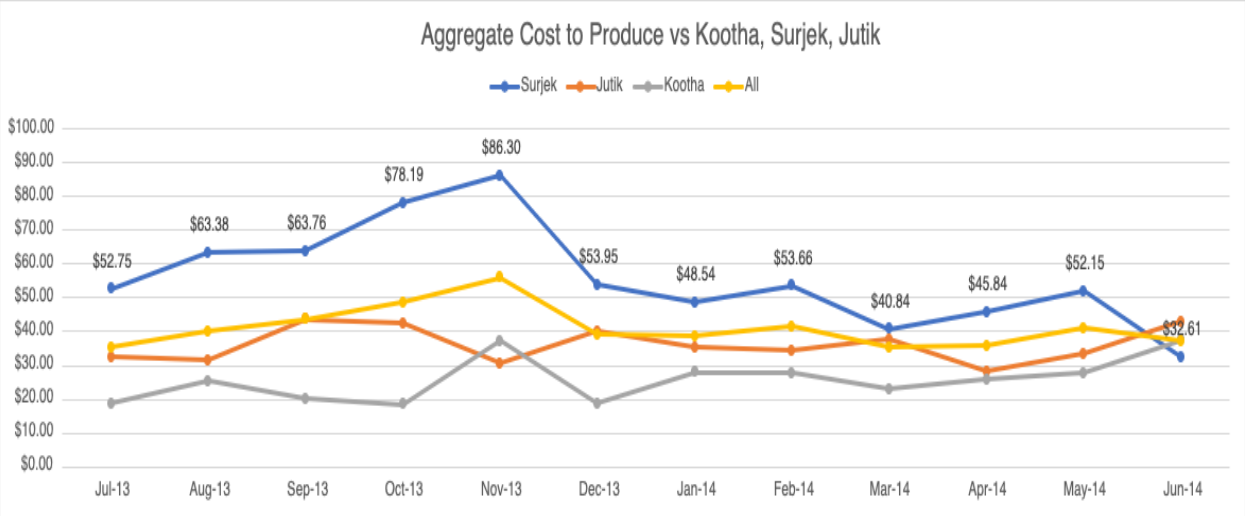
1. With a estimated 22% reduction in Surjek's Revenues ($157.71 M) due to the Maintenance Outage, Quarter 4 presents the best balance of revenue-loss mitigation with respect to market pricing, as opposed to Quarter 1 which represents the highest demand (2406 GL) and Water Balancing Market Prices ($86.83).

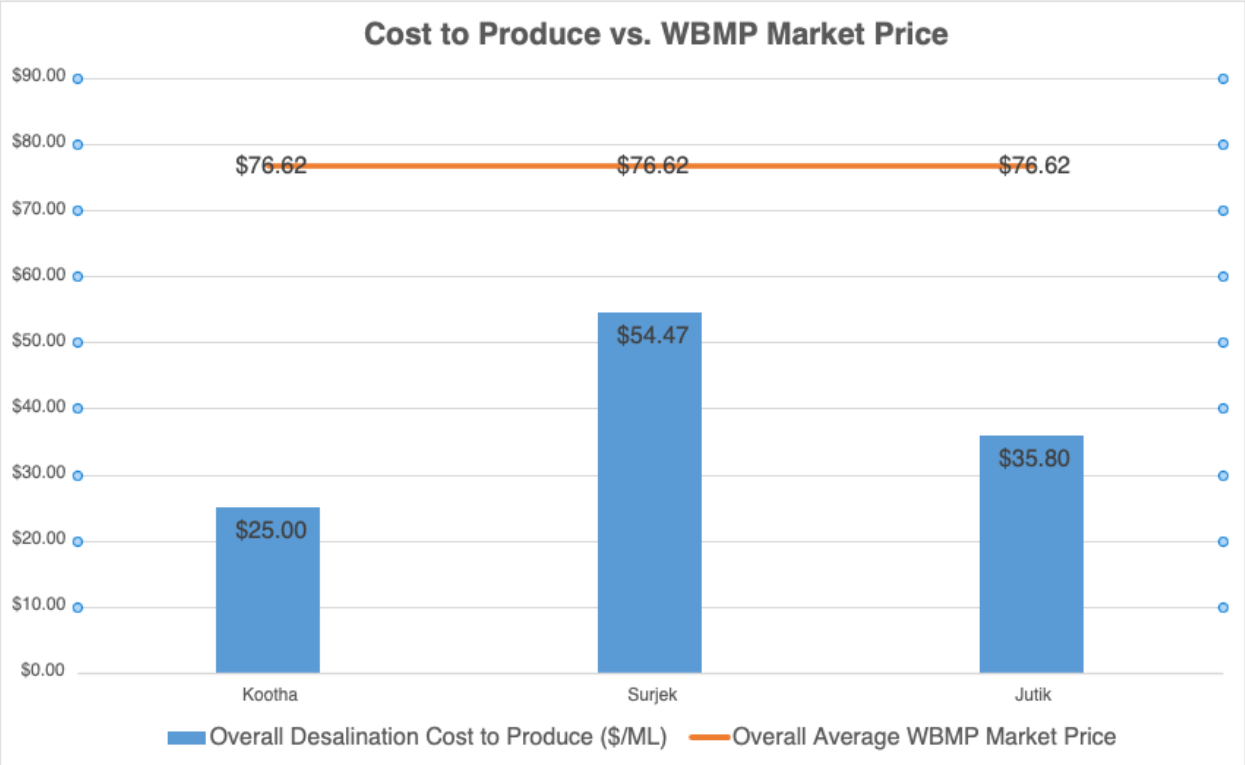


2. Based on this combo graph Market water demand decresed mostly mid of year. However water demand increased from Dec - Feb.

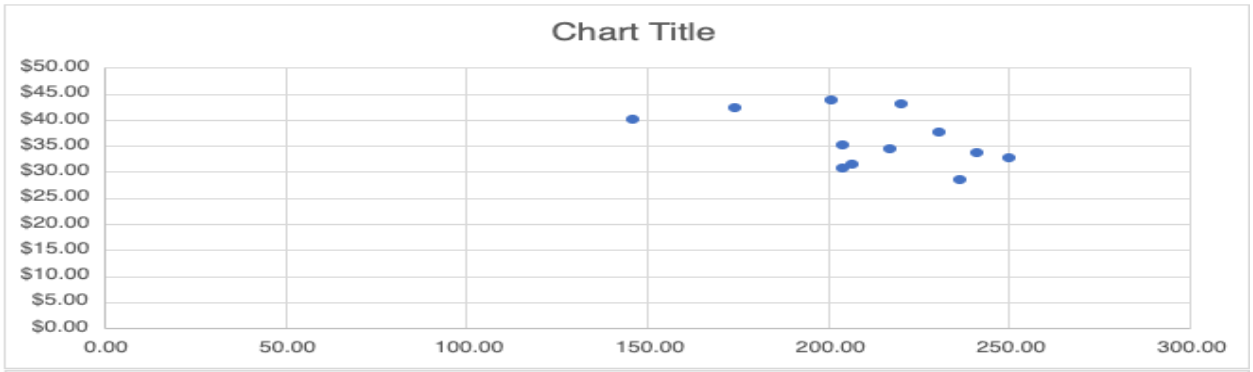


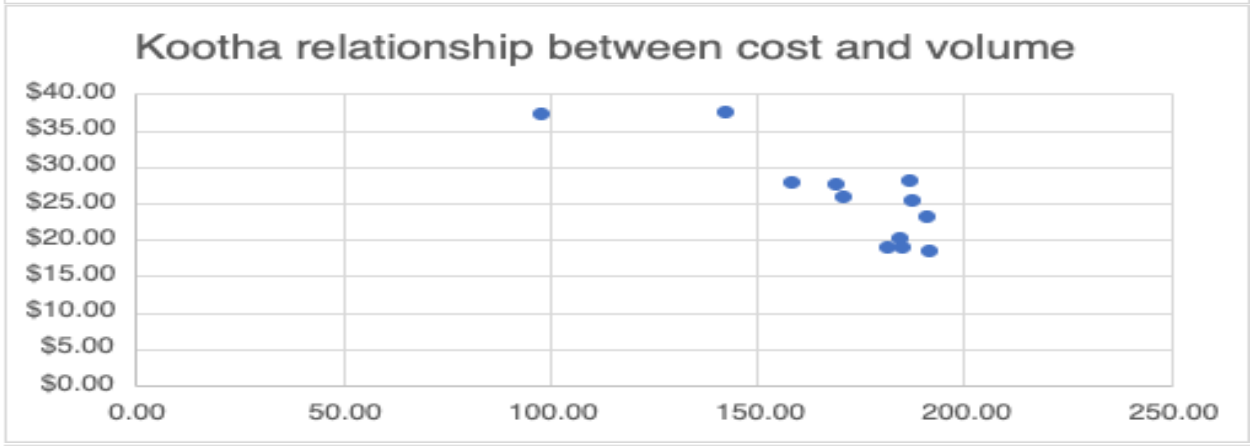
3. Of the three Desalination Plants, all three remain profitable at current market prices by a favourable margin; Clearly Surjek is the most cost-effective ($54.47/ML) followed by Jutik ($35.80/ML) and lastly Kootha ($25.00/ML) which is consistent across the July-2013 to June-2014 period.

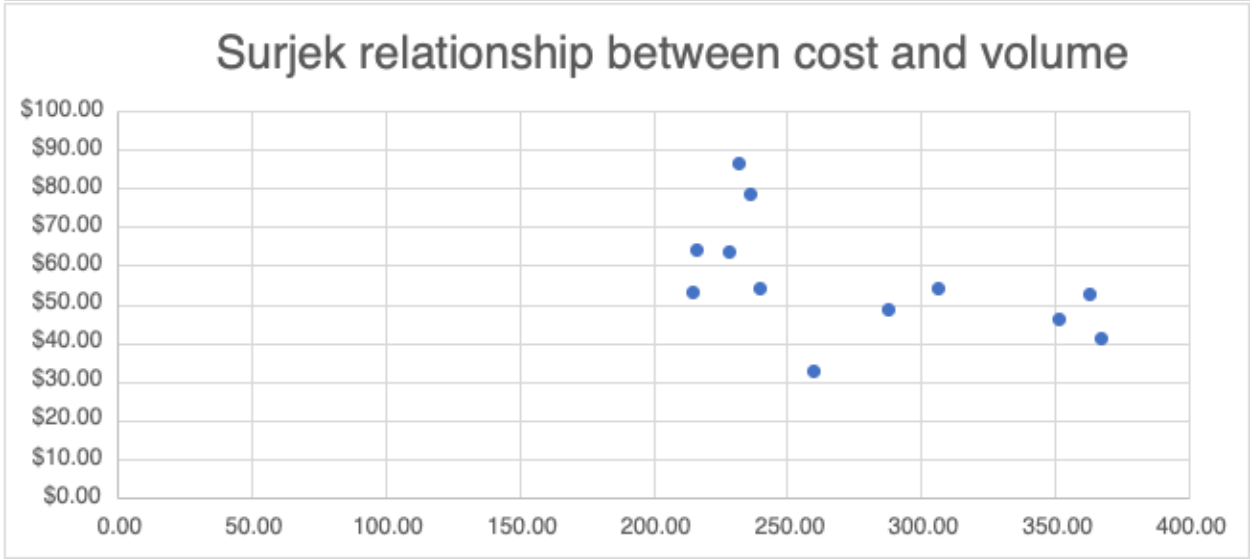




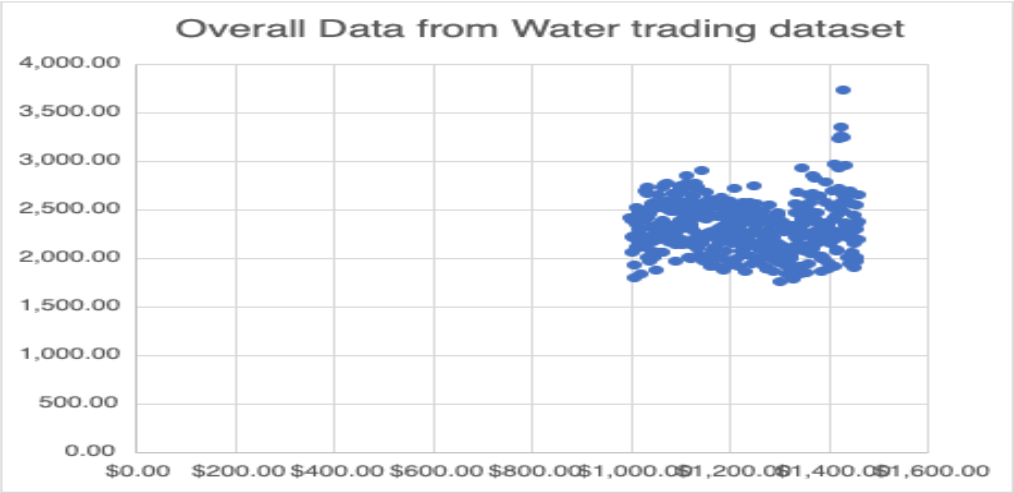
4. Contrasting the Cost to Produce against the Volume of Water Produced highlights clear that there is a relationship between Kootha and Surjek with costs rapidly dwindling across all plants as volume surges, with this being particularly noticeable across the Kootha and Surjek Plants with costs dropping as much as 50%.

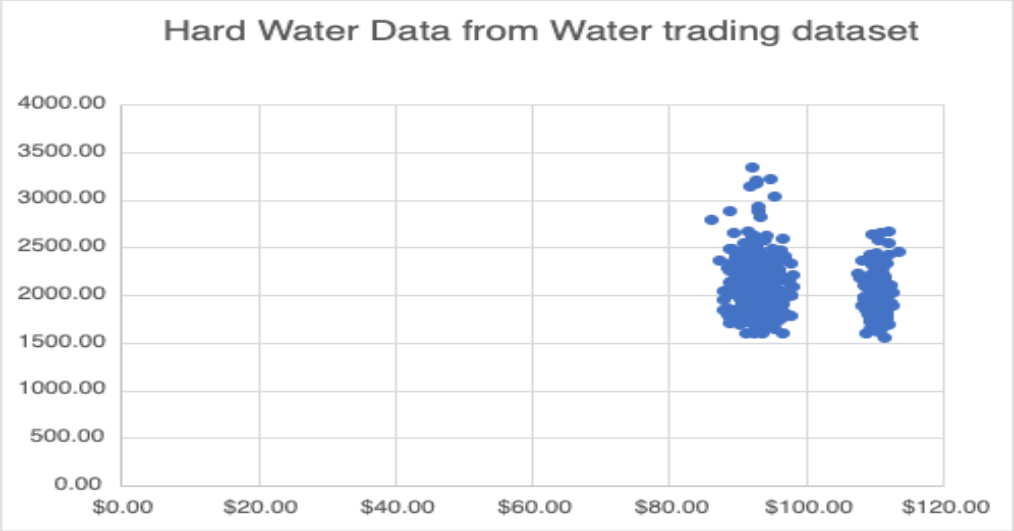


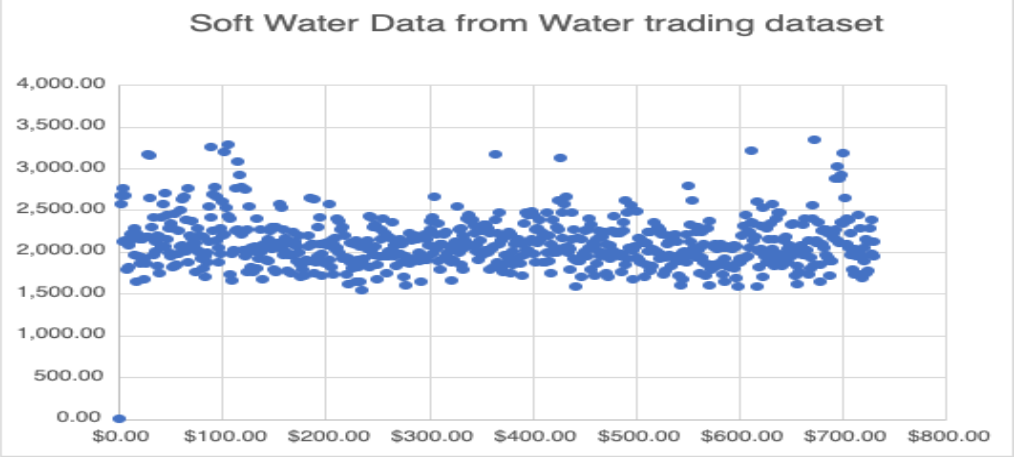




5. Lastly, when viewing the economic pricing data from an micro-perspective, it is indicative that Hard Water is seen as more of a 'less core' product than that of Soft Water whose price remains largely flexible.







Conclusion:

Analyzing the relationship between the cost to produce and the volume of water produced reveals a clear connection between Kootha and Surjek. As the volume of water surges, costs rapidly decrease across both plants, with reductions of up to 50%. Further analysis on a product level shows that overall and hard water tend to exhibit price elasticity regardless of the quantity purchased, while soft water demonstrates an inelastic price-to-volume relationship. In Quarter 4, Surjek experienced an estimated 22% reduction in revenues due to a maintenance outage. This highlights the importance of balancing revenue loss mitigation with market pricing, with Quarter 1 representing the highest demand and water balancing market prices. Lastly, from a micro-perspective, it is evident that hard water is considered a less core product compared to soft water, which demonstrates greater price flexibility. Overall, all three desalination plants remain profitable at current market prices, with Surjek being the most cost-effective, followed by Jutik and Kootha consistently throughout the analyzed period.

Recommendations:

- Increasing water production volume can lead to cost savings and improve production efficiency.
- Kootha and Surjek plants showed significant cost reductions as the volume of water surged.
- Differentiate the price elasticity of soft water, overall water, and hard water to optimize pricing strategies.
- Prioritize Quarter 4 over Quarter 1 to mitigate revenue loss caused by maintenance outages.
- Analyze economic pricing data from a micro-perspective to understand the value proposition of different water types.
- Surjek is the most cost-effective desalination plant, followed by Jutik and Kootha.
- Monitor production costs and pricing dynamics to ensure continued profitability.