



**Case study**

## Rich dividends through multiple scenario optimization of a supply chain network footprint design.

A multinational food and beverages company approached IGSA to assist in determining the least cost supply chain network footprint under varying set of market conditions.

### Challenge

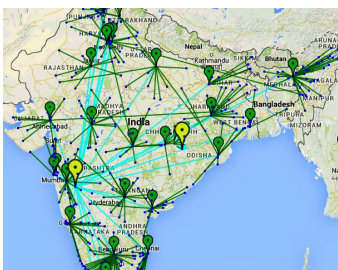
The client wished to optimize the locations and capacities of manufacturing lines and depots for its India business. The management wanted to know both the ideal optimized network footprint (Greenfield analysis) and the feasible footprint towards which they should move by changing the existing footprint in the short to medium term (Brownfield analysis). They also wished to carry out several “what-if scenarios” to evaluate the trade-off between fixed investment cost, variable cost, and service level. Prior to the engagement with IGSA, they were an optimization tool but it did not satisfy all their requirements for a comprehensive network design analysis.

### Solution

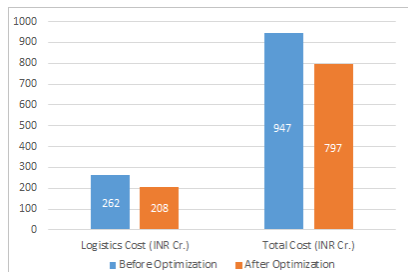
Based on client requirement, IGSA team captured the details of existing and forecasted markets, products/SKUs and demands, locations of existing plants and depots, candidate locations for potentially new plants and depots, existing and new technologies for production lines, capability of production line technologies to manufacture particular products and SKUs, feasible transport routes between plants and depots, feasible links between mother depots and ordinary depots, logistical constraints, all the fixed and variable costs in the supply chain, and service level requirements of sales and marketing. IGSA tailored its network allocation and design solution to the client requirement. The solution uses a large scale OR model developed by IGSA in GAMS/CPLEX. In the initial period of testing the solution, over a hundred scenarios were run to validate the results, reflect changes in the supply chain network under varying demand conditions, and evaluate a range of alternative network footprints. Sensitivity analysis was built on the solution to try out implications of the fluctuations in market demands and costs of labor, fuel, raw material and electricity.

### Results

The client has been using IGSA’s network allocation and design optimization solution every year since the past decade. It carries out “what-if” analysis to assess the impact of the change in market demands, new product introductions and costs of fuel and production on the effectiveness of its supply chain network. It has achieved rich dividends in the process of strategic network planning and reduced its overall costs in the supply chain. Every year the client implements minor and major changes based on this solution, that result in opening new depots, new production lines, expanding the capacity of existing locations, and closing down unattractive depots and production lines. In the post GST tax regime, it has used IGSA’s solution to rationalize its depot network footprint.



**Network Footprint**



**Network allocation & design chart**

