CASE 10:
NEW RUBBER PLANT INVESTMENT

Firm Style	Interview Round
BCG, Bain, A.T. Kearney, Deloitte	1

Case Question:

The federal government of a country in certain part of the world is investigating whether to restart a rubber factory in the western part of the country. The factory was operational in past but has not been used for 7 years. The plant was closed due to terrorism in the area which has now come down significantly though there are still issues and skirmishes reported in the area. If rejuvenated the plant may become a target for the rebels. All the equipment is considered useable but the government still estimates to spend $12M to rejuvenate the plant which would enable the plant to produce up to 10M lbs of rubber per month. The demand of rubber worldwide is strong but rubber must be transported to an export port via trains; up to 2 trains per day can used for this.

Clarifying Questions & Answers

Provide the following answers only if the interviewee asks the corresponding questions.

Question	Answer
What are the raw materials?	Need gum resin. 3lb of resin after processing results in 1lb of rubber
Where are the resins coming from?	They need to be transported from the capital. Up to 4 trains can be used for the same (This is a key question, a candidate not asking the question misses out a key element in the case)

NEW RUBBER PLANT INVESTMENT

Clarifying Questions & Answers

Provide the following answers only if the interviewee asks the corresponding questions.

Question	Answer
What price can rubber be sold at?	Sell the Rubber at $20 per lb, Gum resin costs $5 per lb.
How many suppliers are there?	We have identified one supplier.
Who are our customers?	We would be selling the rubber in the commodity market to the entire world.

NEW RUBBER PLANT INVESTMENT

Structure / Framework

This is an Operations case mixed with Cost Benefit Analysis. The analysis may include, but is not limited to, the following areas:

- Analyze the Financial benefits of the investment:
  - Analyze the ROI for the investment
  - Analyze the production capacity of the plant. Given the equipment capacity is 10M lbs per month production is probably limited by supply and distribution.
  - A great approach would be to lay out the value chain for the rubber plant

  Raw Material Supplier → Manufacturing Plant → Customers

After drawing the value chain, the candidate should clearly identify that there is a transportation element here.

- Identify the other benefits associated with this investment considering this is a government investment:
  - Employment
  - Economic Development
- Identification of Risks
  - Assess risks in the investment (timely delivery, terrorism, labor shortage, etc) and deliver

After the candidate lays out the plan ask the candidate to calculate the **ROI.**

If the candidate asks about the demand of rubber in the market then state that the market demand is strong and for our analysis assume that whatever the plant produces can be sold.

NEW RUBBER PLANT INVESTMENT

Calculations

First step expected to analyze how much the rubber plant can produce. A common mistake is to assume the 10MM pounds per month as the amount of production. Also ask the candidate to perform all calculations on a monthly basis.

For the calculation ask the candidate to make the assumption that there are 25 days in a month.

Outgoing Train Information:

No of Trains	2
Bogies/train	8
Cases/Bogie	25
lbs/Case	500

Expected Calculation:

Daily Capacity: 2*8*25*500 = 200,000 lbs

Monthly Capacity 200,000*25 = 5,000,000 lbs

NEW RUBBER PLANT INVESTMENT

Incoming Train Information (Carrying Resin):

No of Trains	4
Bogies/train	10
Barrels/Bogie	25
pds/barrel*	640

Expected Calculation:

Daily Capacity: 4*10*25*640 = 640,000 lbs

Monthly Capacity: 640,000 * 25 = 16,000,000 lbs of resin => 5.33 M lbs of rubber (using 1:3 conversion)

Expected Key Insight:

The bottleneck is the outgoing train capacity which implies that the monthly production of rubber would be $5MM.

NEW RUBBER PLANT INVESTMENT

Other Financial Information for the Plant:

Labor: $8 MM per month

Other Fixed Overhead costs: $10 MM per month

Cost per train trip: $40,000 (both inbound and outbound)

Expected Calculation:

Transportation Cost per month: $40,000* (4+2) [Number of trains per day]*25 = $6MM per month [Ask the candidate to assume that although 15MM pounds of resin will be transported we will be using all the trains.]

Revenue: 5MM * $20 = $100 MM

Material Cost: 15MM * $15 = $75MM

NEW RUBBER PLANT INVESTMENT

Income Statement:

Revenue = $100MM

Material Cost = ($75MM)

Labor Cost = ($8MM)

Transportation Cost = ($6MM)

Other Fixed Costs = ($10MM)

Profit = $1MM per month

Key Insights expected

The candidate is then expected to state that the ROI is 1 year, however the margins are wafer thin 1%.

If candidate asks whether a NPV analysis is required, let the candidate that this is not required.

Interviewer: Now ask the candidate what other areas the candidate would explore to help make a recommendation to the government.

NEW RUBBER PLANT INVESTMENT

If the interviewer asks any of the following questions provide the responses give below:

- Interviewee: We are limited by our Outgoing capacity. Do we have market demand for 5,000,000 lbs of rubber?
  - Interviewer: Yes we have demand of lot more
- Interviewee: Can we increase the number of trains incoming or outgoing? We have additional production capacity.
  - Interviewer: Not right now but good thing to explore in future.

<u>Expected insights from the candidate</u>

- **Highlight the other benefits:**
  - Employment ($8MM per month figure indicates quite labor intensive process)
  - Economic Development of the area

NEW RUBBER PLANT INVESTMENT

- **Highlight some of the risks and state mitigation:**
  - Low Margin, exposure to price fluctuations of resin and rubber
    - Mitigation: Forward contract purchases of resin
    - Forward contract sale of rubber
  - Labor risks
    - Introduce automation
    - Facilitate migration of labor from other areas
  - Terrorism Risk
    - Involve community leaders in the process
    - Look at getting government or private security for the plant.
  - Supply Chain Risk
    - Sole dependency on trains
      - Mitigation
        - Maintain enough safety stock of resins and rubber
        - Ensure the rail tracks are protected sufficiently in sensitive areas
        - Crucial to diversify into other modes of transportation, invest in building roads and if applicable pursue waterways.
    - Single Supplier
      - Mitigation: Diversify Supplier base

NEW RUBBER PLANT INVESTMENT

Recommendation

The recommendation should include the following:

- The answer – Go ahead with investment in the plan as it seems highly profitable
- The number(s) – With production at 5M lbs of rubber we make a profit of $12M a year. Production is limited by transportation, an area that can be looked at and addressed. This should further increase our profits in future.
- Risks or considerations – We have highlighted a lot of the risks, key is that the government takes steps to mitigate the risks , the government can take some steps based on our analysis of the mitigation. Some of the steps could mean a long term investment.
- Next steps – Assess how plant can be staffed, whether transportation bottleneck can be alleviated, the level of terrorism threat and steps to mitigate.