CASE 9:
BIG GREEN BIOFUELS

Firm Style	Interview Round
McKinsey	2

Case Question:

Big Green Fuel Systems, a large provider of fuel additives required for the production of gasoline, has recently developed a substantially improved form of ethanol that adds 20% efficiency (measured as miles driven on a single gallon of ethanol). This version of fuel is costly to produce but the market is large and growing more rapidly as increased amounts of ethanol are being used in fuel blends. The company has engaged your team to help determine the viability of this new product, and, if it is viable, how to go about the process of launching it.

Clarifying Questions & Answers

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

Question	Answer
Is the company working in the US only?	Yes, please concentrate on the US market only.
Does the current infrastructure exist to make and support this product?	It's compatible with other infrastructure in the external value chain, but Big Green does not yet have the capacity to mass produce it.
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Clarifying Questions & Answers

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

Question	Answer
What criteria does Big Green want us to use to determine the viability of the project?	Please develop your own criteria.
What is the value chain for this product from Big Green to the consumer?	Ethanol is delivered from manufacturers to fuel blenders, who then sell and deliver in bulk to filling stations, who in turn sell it to consumers.
Does Big Green have a patent on this technology?	Yes, they have a patent.

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Structure / Framework

This is a value chain analysis case. The analysis may include, but is not limited to, the following areas:

- Standard valuation (ROI + intangible benefits). What is the initial and recurring investment?
- What is the incremental profit from this venture? What can be gained beyond the sale of ethanol?
- What barriers exist for this product? How will the value chain respond? Can we make it?
- What is the standalone value of this product, and what is its value to other producers? Can we sell it?
- What will existing competitors do in response?

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Strong Plan

Includes valuation of the product as part of Big Green and at least considers its value for other firms. It is necessary to consider barriers to a successful launch (both internal capability and external pressures). Also a strong plan considers the competitive response and how it is manifested throughout the value chain. Intangible benefits (spin-offs, positive PR, etc.) should be considered as well.

Weak Plan

Valuation is important but not strong enough on its own. Failing to consider costs and investments (both fixed and working capital) is a shortcoming. Failure to consider the possibility of selling the product to another, more capable company shows lack of creativity. Intangible benefits (hard to quantify) are a strong opportunity to showcase creativity as well. Failure to consider competitive response and the full impact on the value chain would also result in a negative hit.

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Calculations

Interviewer: Thank you for sharing your approach. Now I would like you to size the market for me. But I will give you some data. First, there are two ethanol-gasoline blends used in the US, E-85 and E-15. E-85 is 85% ethanol at 10% of the market and E-15 is 15% ethanol at 90% of the market. The number of miles driven in the US last year was 1,800 billion miles. Please give me the market in gallons for ethanol.

This is fairly simple, but it's important to first develop the approach (gallons of ethanol = (1,800 billion total miles / *X* average gas mileage) * 85% ethanol content * 10% of the market + (1,800 billion total miles / *X* average mileage) * 15% ethanol content * 90% of the market.

A key is seeing that the *X* mileage is missing and is needed, so the interviewer should ask for it. This will yield a response from the interviewer of 20 miles per gallon on average. Thus: (1,800 billion / 20) * .85 * .10 + (1,800 billion / 20) * .15 * .90 = **19.8** billion gallons of ethanol.

Expected Insight: One should notice that there's not enough information and know to ask for the average mileage in the US (20 miles/gallon). Also, one should ask about the 20% additional efficiency, but the interviewer will instruct the interviewee to ignore it. Once the interviewee calculates the answer, he or she should remark about the size of the market, and immediately want to know how fragmented it is, and will be told it's highly fragmented.

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Interviewer: Good. Now, the analysis has determined that there is no savings by using this new fuel blend. Basically, the fuel costs exactly as much to develop and deliver as can be gained by selling it. But the CEO has staked his reputation on this product, so he is committed to delivering it. Please explain how you would best appeal to each level in the value chain in order to best promote this improved product.

Expected Insight: The value chain should be looked at from source to consumer:

- Selling to blenders: the fuel blenders will have to blend 20% less (but will pay for it as a price premium). However, they could use it as a competitive advantage by differentiating on its basis. Additionally, it could reduce its distribution costs (delivering less to filling stations). Also, blenders would have a competitive advantage by being positioned for potential future government regulation.
- Filling stations: differentiating factor for eco-sensitive consumers. Point of positive public relations. Appeals to drivers who want to spend less time filling up. Less refills needed from the blender, so less delivery costs. Could also make it possible to distribute gas from smaller tanks, making it possible to put new stations in formerly prohibitive locations.
- Consumers: eco-friendliness. Higher cost of fuel set off by less need to fuel up (efficiency) and there is an additional value add since they'll spend less time at the gas station.

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Recommendation

The recommendation should include the following:

- The answer – Since the interviewer will make it clear that the CEO is intending to roll out the new fuel, this is a given. The main points from the second question, regarding the value chain, should be included as supporting evidence.
- The number(s) – The ethanol market number is optional and may not do anything to add value to the argument.
- Risks or considerations – Rolling out the new fuel could cause a price-perception problem (higher cost to fill up). Attempts to fix this through marketing efforts could also drive marketing costs. There is also the consideration of what it means to release a new fuel, including risk that the fuel is more corrosive than other existing fuels.
- Next steps – Next step would be launching a pilot program, including marketing efforts, to test the fuel for its efficacy. Lessons learned would be applied to a gradual national roll-out.

Strong Recommendation

The CEO has indicated that he wants to roll out the new fuel. The best way to do this is to appeal to blenders and gas stations on the basis of reduced delivery costs and enhanced public relations, and appeal to consumers on the basis of eco-friendliness and fewer required fill-ups. The biggest risk is alienating consumers due to the higher cost perception and alternatively the marketing cost of mitigating this perception.

Weak Recommendation

The market size is 20.9 Billion gallons of ethanol each year. Thus Big Green should roll out the new product because it's more efficient and could cut associated costs and make green consumers happy.