

Q1: The Fukushima nuclear disaster led to public pressure on the Japanese government to shutdown their nuclear reactors. The void in the nuclear power supply will result in an energy crunch. Fears of radiation have affected the demand for Japanese food exports.

With the use of demand, supply and elasticity concepts, discuss the effects of the above on the consumers and producers in Japan. [25]

Interpret the Question

<u>What is the cue word?</u> (what are the skills required for this question?)	<u>What is the concept word?</u> (what are the concepts required to answer this question?)	<u>What is the context word?</u> (what is the context for this question?)
<i>Discuss</i> – A two sided answer is required with evaluative comments	<ul style="list-style-type: none"> • Demand and supply • Elasticities of Demand and Supply <p>Consumers and producers → expenditure/ rev + consumers' surplus + producers' surplus</p>	<i>Japan</i> -examples required from Japanese context

Schematic Plan

Explain briefly the implication of the Fukushima nuclear leak and state which product markets are likely to be affected

Explain what determines the equilibrium price and quantity of various products. (Price Mechanism)

Examine Product Markets

- 1) Energy (Δss)
 - 2) Agriculture/ fishery ($\Delta dd + \Delta ss$)
 - 3) Spillover effects of rising COP on Japanese industries (Δss)
 - 4) Other industry – Tourism /Construction / Healthcare products (Δdd)
- ⇒ **Link to expenditure, consumers' and producers' surplus**

Conclusion

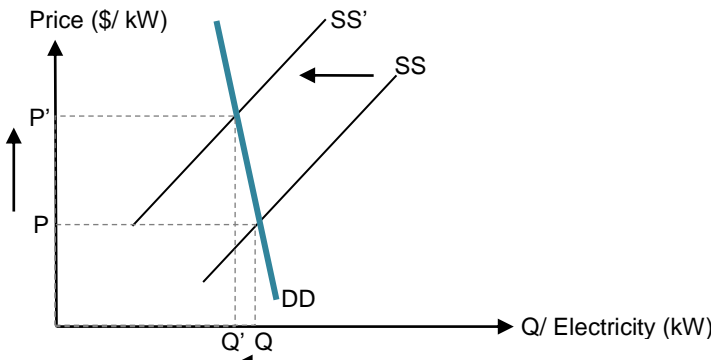
Introduction (GIST)

Introduction	(G) Japan's economy was dealt a devastating blow of nuclear disaster, resulting in power crunch and concerns on radiation contamination in food. Infrastructures were damaged and radioactive radiation has contaminated the area around the region. (I & S) There are numerous product markets in Japan that will be affected by this disaster – markets such as energy, food/ agriculture, and other industries such as tourism and construction. (T) The impact on consumers and producers in the various product markets are affected by shifts of demand and supply of the products/services and elasticities of demand and supply.
---------------------	--

Body (PEEL)

What is the most important point?

State the Point (P)	The nuclear leak will affect Japan's energy market significantly.
----------------------------	---

<p>Explain the point with clear causal links (E)</p> <p>Elaborate the point with examples/diagram</p>	<p>Japan's nuclear industry supplied a third of the country's electricity. Due to the nuclear leak, the capacity to produce electricity was reduced as infrastructure was damaged and affected nuclear reactors were shut down. This disrupted production of electricity in the Japanese economy and supply of electricity will fall, causing the supply curve to shift leftwards. In addition, as electricity is an essential and necessary energy source for many households in Japan, it is not easily substitutable and hence, demand is highly price inelastic. The leftward shift of the supply curve will create a shortage at the original price and there's an upward pressure on price. Thus, price will rise to clear the shortage. With demand being highly price inelastic, the fall in supply of electricity against a price inelastic demand curve will result in prices being escalated significantly.</p>  <p>Figure 1 – Fall in supply of energy sector in Japan</p>
<p>Link back to Qn</p>	<p>With the significant increase in price and less than proportionate fall in quantity of electrical usage, the consumers' expenditure and producers' revenue has increased significantly ($P' \times Q' > P \times Q$). The producers' surplus is increased, with a large reduction in consumers' surplus. Hence, the producers benefit significantly, at the expense of consumers.</p>
<p>What is the second most important point?</p>	
<p>P</p>	<p>Secondly, Japan's nuclear leak will adversely affect its agricultural sector and food exports.</p>
<p>Explain the point with clear causal links (E)</p> <p>Elaborate the point with examples/diagram</p>	<p>Nuclear radiation leaking from the Fukushima nuclear power plant complex contaminated food produced in surrounding farmland and seeped into groundwater beneath the site. The New York Times reported that ten days after the nuclear leak, abnormal levels of radiation are detected in an assortment of foods: milk from Fukushima Prefecture, where the reactors sit; spinach from Ibaraki Prefecture to the south; canola from Gunma Prefecture to the west; and chrysanthemum greens from Chiba to the south. This piece of news affected the consumers' taste and preference dramatically, reducing demand for Japan's agriculture produce and exports by a huge magnitude.</p> <p>As the nuclear leak seeped into the ground and made conditions for crop cultivation unfavorable, supply of agricultural products will fall, resulting in a leftward shift of the supply curve for agricultural products.</p> <p>(Evaluation) However, with the prevalence of social media and attention paid to this disaster which is deemed as serious as the Chernobyl one, demand for Japan's agricultural produce is likely to fall by a much greater extent compared to the fall in supply. Furthermore, with constant news reports and prolonged media coverage of</p>

this disaster, demand for Japan's agricultural produce will be dampened even more.

With a fall in demand outweighing the fall in supply there will be a surplus created at the original price, creating a downward pressure on price. Prices will therefore fall to clear the surplus with a lower quantity of agriculture produce traded in this market.

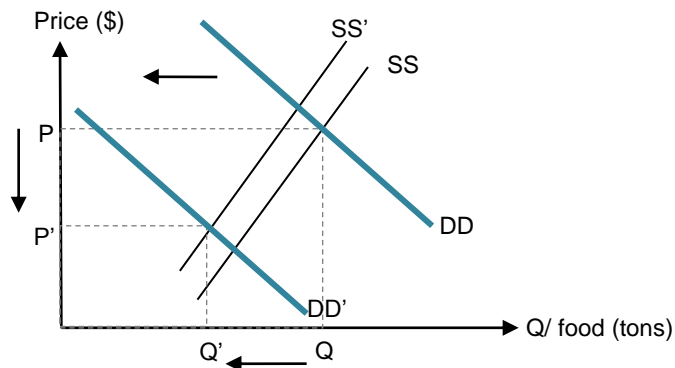
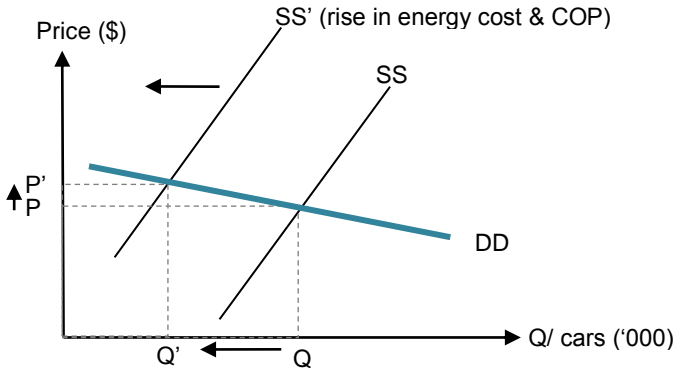


Figure 2 – Fall in demand and supply of food produce and exports in Japan

Link back to Qn

The consumers' expenditure and producers' revenue on Japanese food produce are likely to fall substantially ($P' \times Q' < P \times Q$). Those in agricultural industries are likely to be severely affected.

(Evaluation) On the other hand, the importing distributors have done vastly well, with a sharp surge in demand for imported food items, eg short-grain rice from USA as substitute. Hence, not all in the food industries would be affected in the same way.

What is the third most important point?	
P	The rising energy costs would have a significant effect on Japanese industries, via the increase in cost of production.
<p>Explain the point with clear causal links (E)</p> <p>Elaborate the point with examples/diagram</p>	<p>For instance, car manufacturers such as Toyota and Honda would face large increase in cost of production. Industries that consume more energy are much harder hit, as the magnitude of increase in cost of production is larger. Such industries include chemical production, petroleum refinery, airline/ trains and automobiles industries and appliance and electronics manufacturing, and services that require large office / warehouse spaces such as logistics and banking.</p> <p>The rise in cost of production will shift the supply leftwards for Japanese industries, including car manufacturing (eg Toyota) and consumer electronics (eg Sony). However, given that there is substantial close substitutes available, especially from various car and consumer electronics exports from the other countries and hence, the demand is almost perfectly elastic. The rise in cost of production due to higher energy costs would likely be 'absorbed' by the producers, reducing the</p>  <p>Fig 3 – Rise in energy costs on car manufacturing</p>
Link back to Qn	Hence, the Japanese producers would suffer substantially with fall in total revenue and substantial fall in producers' surplus. Consumers' expenditure and surplus on Japanese goods will also fall.

One of the following points on effects on other industries ($\Delta DD/ \Delta SS$)

4 th most important point (Option A) – Tourism industry (ΔDD & ΔSS)	
P	Tourism activities came to a standstill in Fukushima city as news of the nuclear leak shocked many countries in the world.

<p>Explain the point with clear causal links (E)</p> <p>Elaborate the point with examples/diagram</p>	<p>For instance, South Korea's Asiana Airlines Inc has cancelled charter flights between Seoul and Fukushima city in October due to public concerns over the radioactive water leaks. Consumers' taste and preferences were affected negatively as tourists stayed away from the radioactive contaminated city or switched to alternative destinations. This decreased the demand for tourism services to the city, leading to a leftward shift of the demand curve for tourism services.</p> <p>In addition, Fukushima city, around 60 kms (37 miles) from the nuclear facility and with a population of some 284,000, is a popular destination for golfers and tourists visiting nearby local hot springs and lakes. However, due to possibility of the city being contaminated with radioactive radiation, many of such tourist attractions were temporarily closed down and residents sought refuge in other Japanese cities for fear of contracting radioactive related illnesses such as cancer. Supply of tourism services hence fell, resulting in a leftward shift of the supply curve for tourism services in the city.</p> <p><i>However, as anecdotal evidence has shown that tourism prices plummeted during the period of the disaster, demand for tourism services must have outweighed the fall in supply in order for price of tourism services to fall. (Evaluation)</i></p>
Link back to Qn	<p>The fall in price of tourism services was caused by the combined effect of a fall in demand outweighing the fall in supply which has created a surplus at the original price. Downward pressure will be exerted, resulting in lowered prices and quantity traded in the market, thereby affecting producers tremendously via fall in total revenue.</p>

4 th most important point (Option B) – Construction industry (ΔDD & ΔSS)	
P	The nuclear leak may impact the construction and renovation industry positively
<p>Explain the point with clear causal links (E)</p> <p>Elaborate the point with examples/diagram</p>	<p>With infrastructures and many places possibly contaminated with radioactive radiation, the demand for renovation and restorative services will be raised. This will cause the demand for restorative and renovation services to rise, causing the demand curve for construction and restorative services to shift rightwards.</p> <p>As price of restorative and renovation services increase due to the significant rise in demand, the quantity supplied of restorative services may not be extremely responsive to the higher prices in the short term. With public health concerns, workers and residents have left the city and it will be hard for construction and renovation firms to employ workers in the short term. With construction and renovation services being highly intensive the labor market constraints will make the supply of restorative and renovation services highly price inelastic.</p> <p><i>However, the extent to which Fukushima city could be restored to its usual state and cleared of contamination depends heavily on government intervention. The severity of this natural disaster has made the Japanese government act swiftly in mobilizing many of its agencies and ministries to start working in the affected region instead of leaving the restoration and reconstruction work to the free market. The speed at which the city is rebuilt may be increased with government intervention. (Evaluation)</i></p>

Link back to Qn	Without government intervention in the free market, the rapid increase in demand for construction and renovation services will result in a shortage of construction and renovation services at the original price, exerting an upward pressure on price, leading to higher prices to clear the shortage. With a rise in demand against a highly price inelastic supply curve, prices of construction and renovation is expected to rise significantly. Producers will benefit from rising total revenue and producers' surplus, at the expense of consumers' greater expenditure and lower consumers' surplus.
-----------------	--

4th most important point (Option C) – Pharmaceutical and healthcare industry (ΔDD)

P	The pharmaceutical and healthcare industry might receive a temporary boost due to the nuclear leak.
Explain the point with clear causal links	The nuclear water leak has emitted radioactive radiation which is known to cause cancer in human beings. Hence, the demand for health related products such as berry essences which are known to be able to reduce the risk of contracting cancer may rise. This increase in preference for such health related products and supplements will cause the demand curve for such products and supplements to shift rightwards, resulting in higher prices and quantity traded of such products and supplements in the market.
Elaborate the point with examples/diagram	
Link back to Qn	(Evaluation) However, the rise in demand for such products depends on how fast the Japanese government is able to complete its cleaning up and restorative work in Fukushima city. If the Japanese government could efficiently and effectively execute its efforts to prevent the spread of radioactive radiation and reassure the public of the fact that Fukushima city is cleared of all possible contamination, the impact of the healthcare products industry may only be temporary and insignificant.

Conclusion (SR)

Conclusion	<p>S: The Fukushima nuclear leak will have different impacts on different product markets and the extent of the impact will primarily depend on the extent of the shifts of the demand and supply curves and elasticities of demand and supply.</p> <p>R: In the short run, the impact on many product markets in Japan is largely detrimental for consumers. Whether or not producers are adversely affected, it depends on the magnitude of change in demand and change in supply and the relative elasticities of demand and supply. For producers with relatively more inelastic PED, it is able to pass on as higher prices to consumers and limited eventual change in output and hence increase in total revenue.</p>
------------	--