

- 3 In Indonesia, plantation companies must commit to zero deforestation and stop illegal practices such as fire clearing for crop production. Currently, forest protection measures are poorly enforced.

Source: *Greenpeace*, accessed on 20 Aug 2014

- (a) Explain why government intervention is advocated when externalities are present. [10]
- (b) Assess the view that the regulation of plantation companies, as opposed to the imposition of pollution taxes, is the best way of solving the above problem. [15]

Suggested Answer Model:

Part (a)

Explain the private costs of crop production

Cost of workers, equipment for clearing the land (electric saw, axe etc), seeds, fertilisers etc.

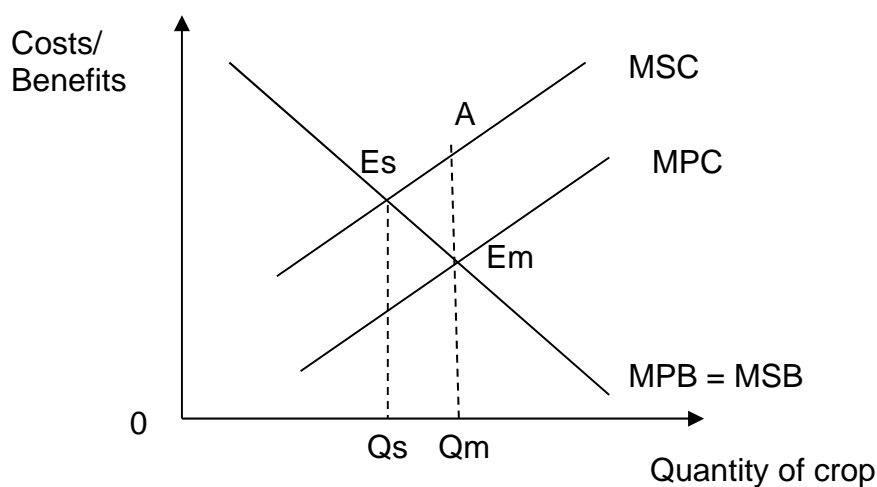
Explain the negative externalities in crop production

Farmers in preparation of land for farming burn forest land (slash & burn method) has created negative externalities in production. The burning of forest land generate pollution in the form of smog, carbon dioxide and sulphur dioxide which causes health problems to third parties such as residents staying near the forest. These third parties incur costs of the form of medical expenses for which they are not compensated by the farmers or plantation owners.

Explain, with the use of a diagram how negative externalities in production lead to market failure

Market failure occurs when the price mechanism fails to allocate resources efficiently and equitably.

Figure 1:



The social cost of crop production is the summation of the private cost and the external cost. Hence, the existence of negative externalities in production causes divergence between the costs curve, where marginal social cost (MSC) > marginal private cost (MPC) as seen in Figure 1. The market equilibrium output, Q_m

determined when $MPC=MPB$ where the sum of producer and consumer surplus (or sum of producer and consumer welfare) is maximised. On the other hand, the socially optimal level of output, Q_s is determined when $MSC=MSB$ where societal welfare is maximised..

Hence, market equilibrium output (Q_m) exceeds socially optimal equilibrium level (Q_s) resulting in an overproduction and overconsumption by Q_sQ_m . The total social cost of producing Q_sQ_m , Q_sBAQ_m outweighs the total social benefit, Q_sBCQ_m resulting to the deadweight loss of ABC. Hence, there is a need to lower the quantity of crop produced.

Conclusion

Thus, inefficiency in resource allocation arises when negative externalities which are not accounted for and usually the government needs to take actions and provide a non-market mechanism to allocate scarce resources.

Level	Knowledge, Application, Understanding and Analysis	Marks
L3	For an answer that analyses how the market fails for negative externalities in production.	7-10
L2	For an answer that describes how the market fails for for negative externalities in production.	4-6
L1	For an answer that demonstrates some understanding for negative externalities in production, private cost, social cost	1-3

(b) Assess the view that the regulation of plantation companies, as opposed to the imposition of pollution taxes, is the best way of solving the above problem. [15]

Development 1: Explain how regulation deals with the market failure due negative externalities in production.

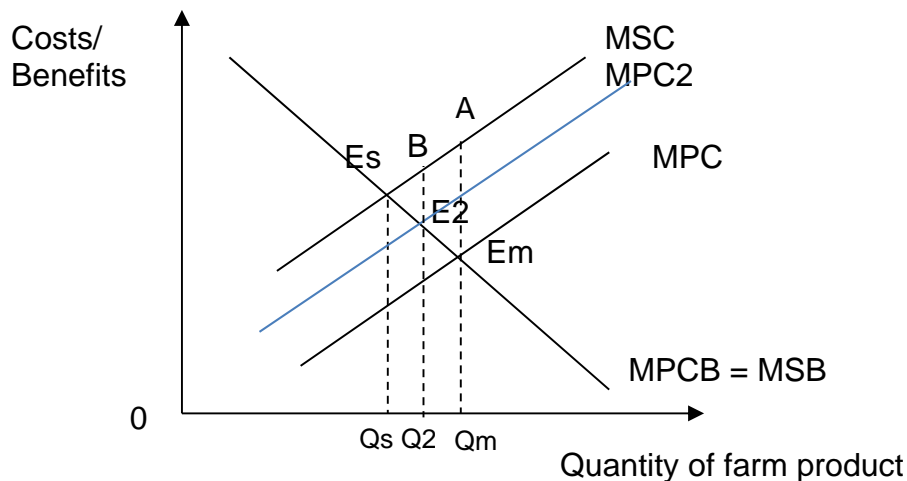
What legislation is.

- Command and control measure
- Legislations are rules and regulations for compliances.

How legislation works

For example, govt enact anti-burning laws which specifies how land-clearance can be carried out enact anti-burning laws ban the practice of forest burning to clear land and allow zero deforestation. → increase the MPC and reduce output towards the socially optimal level, Q_2 and thus improving efficiency in resource allocation. The overproduction is reduced to Q_sQ_2 and deadweight loss reduced to area EsE_2B .

Figure 2:



Evaluation of legislation

Legislation is a powerful tool in correcting market failure as it is mandatory.

Development 2: Explain how carbon taxes deals with negative externalities in production.

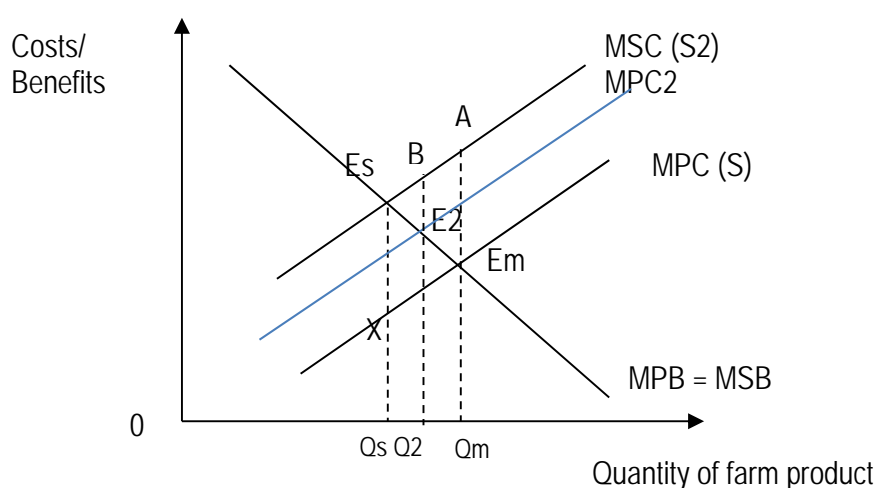
What carbon tax is.

Taxes are compulsory payments to the govt. A tax by the amount of the pollution (EF) can be imposed

How carbon tax works.

The government imposes an indirect tax equivalent to the amount of MEC (EsX). This will increase unit production cost by the amount of the tax and cause MPC to rise to MSC. The external cost is internalised. Output will be reduced to the socially optimal level, Qs.

Figure 2:



Limitations of using taxes:

Difficult to monetarize the MEC - The effectiveness of taxes depends on ability to identify and calculate correctly the amount of external cost created. In general, it is difficult to attach a monetary value to negative externalities generated and hence it is difficult to ensure accuracy in the amount of tax imposed. Over-taxing results in under-allocation of resources and can result in a larger welfare loss. Under-taxing results over-consumption will still exist in the economy although the market equilibrium is now closer to the socially optimal level of output

Development 3 : Compare how well regulation works compare with carbon tax works.
Regulation is a better policy compared to carbon tax as it can achieve pollution target better.

Carbon tax is a better policy compared to regulation as it is a more flexible tool.

Carbon tax may be less costly as compared to legislation

To ensure adherence, legislation requires large amount of manpower to monitor and enforce, requires high opportunity cost unlike taxes which are easily implemented as it is a market-based solution. To ensure compliance of the law, heavy enforcement and monitoring needs to be in place for legislation to be effective. Hence, legislation may be more draining on the governments' resources as manpower is required for conducting regular checks.

Conclusion: Make a reasoned judgement on whether regulation is the best measure.

Knowledge, Application, Understanding and Analysis		
L 3	<i>For an answer using analysis to support the conclusions about the use of regulation as opposed to carbon taxes</i>	9-11
L 2	<i>For an answer that gives a descriptive explanation of regulation, carbon taxes and other policies</i>	6-8
L 1	<i>For an answer that shows some basic but largely unexplained knowledge of regulations, carbon taxes or policies to correct market failure due to negative externalities in production</i>	1-5
Allow up to 4 additional marks for Evaluation		
E 2	<i>For an evaluative discussion supported by relevant economic analysis that either regulation or carbon taxes are justified</i>	3 – 4
E 1	<i>For an unexplained evaluative e.g. a largely unexplained statement that regulation is justified</i>	1 – 2