

## 1.4 Market failure

### 34. Market failure as a failure to allocate resources efficiently

#### Market failure

- ✧ Failure of the market to achieve allocative efficiency.
- ✧ A state which community surplus is not maximized
- ✧ When markets fail, governments are often expected to intervene in order to attempt to eliminate the market failure and move towards the optimal allocation of resources

#### IB Question

- Analyse the concept of market failure as a failure of the market to achieve allocative efficiency, resulting in an overallocation of resources (overprovision of a good) or an under-allocation of resources (under-provision of a good)

#### Key words:

- **Public goods**
  - ➔ Goods that would not be provided at all in a free market
  - ➔ E.g.) National defense and flood barriers
  - ➔ Also known as quasi public goods
- **Merit goods**
  - ➔ Goods that the government thinks provide positive benefits for both the people for use them and the society as a whole
  - ➔ E.g.) Education, health care, sport facilities, opera etc.
- **Demerit goods**
  - ➔ Goods that the government thinks provide negative loss for both the people who consume them and for society as a whole
  - ➔ E.g.) Cigarettes alcohol, hard drugs and child pornography

✧ Lack of **public goods**

→ Public goods are **non-excludable** and **non-rivalrous** which makes it pointless for private individuals to provide the goods themselves

→ Government may try to reduce this market failure by intervening in number of ways

1. They may provide the public goods themselves
2. They may subsidize private firms, covering all costs, to provide the good



✧ Over-supply of **demerit goods**

→ These will be **over-provided** by the market and, because of this, they will be **over-consumed**

→ Depending on the harmness of the demerit good, government may attempt to reduce the supply and/or the demand

✧ Under-supply of **merit goods**

→ These will be **underprovided** by the market and, because of this, they will be **under-consumed**

→ Depending on the importance of the merit good, they will increase or decrease supply

### 35. The meaning of externalities

#### IB Question

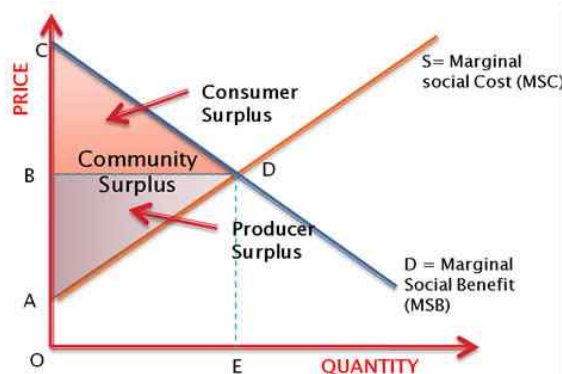
- Describe the concepts of marginal private benefits (MPB), marginal social benefits (MSB), marginal private costs (MPC) and marginal social costs (MSC).
- Describe the meaning of externalities as the failure of the market to achieve a social optimum where  $MSB = MSC$ .

**Marginal Private Benefit (MPB)** = The benefit incurred by the firm or the consumer in producing or consuming each extra unit of a good.

**Marginal Social Benefit (MSB)** =  $MSB +$  any additional external benefits

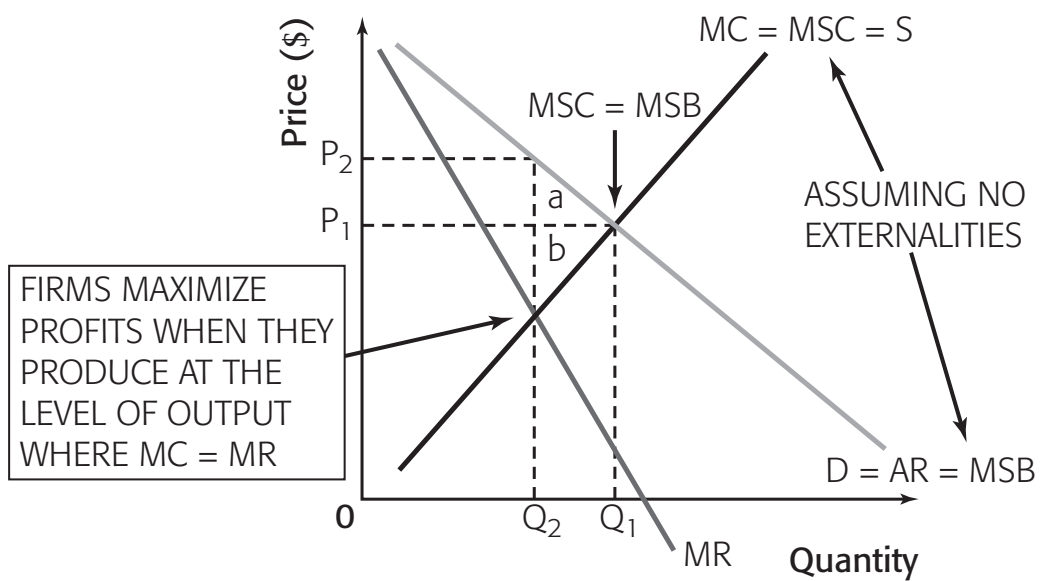
**Marginal Private Cost (MPC)** = The cost incurred by just the firm or the consumer in producing or consuming each extra unit of a good

**Marginal Social Cost (MSC)** =  $MPC +$  any extra external costs



- **$MSC = MPC + / -$  external cost or benefit of consumption**  
If there is no externalities,  $MSC = MPC$
- **$MSB = MPB + / -$  external cost or benefit of consumption**  
If there is no externalities,  $MSB = MPB$
- Thus, if there is no externalities in the market, then  $MSC = MSB$  and we have **social efficiency** and so **maximum community surplus** as in the graph
- If externalities do exist, then  $MSC$  does not equal to  $MSB$  and so we have a **market failure** and **inefficient allocation of society's resources**

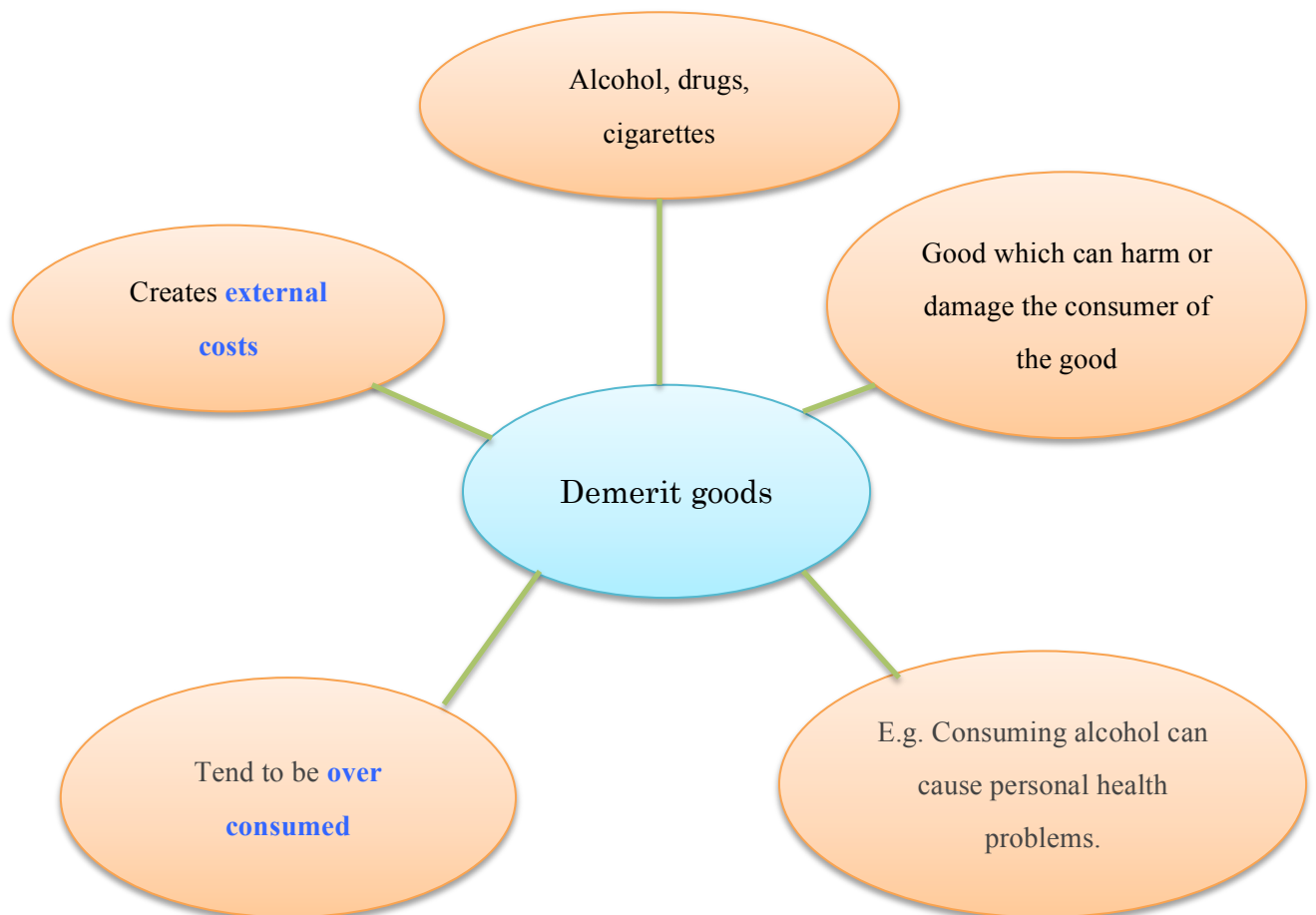
Monopolists, and other imperfect markets, restrict output in order to push up prices and maximize profits. The result is that they do not produce at the social optimum level of output,  $Q_1$ , where  $MSC = MSB$ . Instead, they produce at  $Q_2$ , as shown below. There is a loss of community surplus of  $a + b$ .



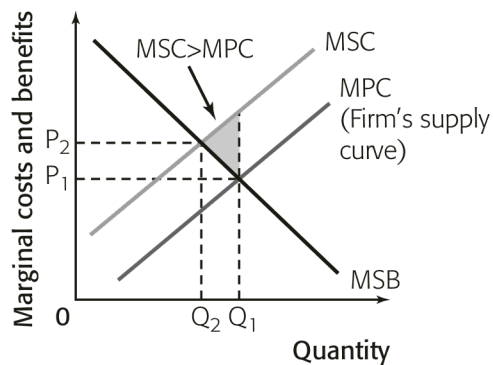
*36. Negative externalities of production and consumption*

**IB Question**

- Explain, using diagrams and examples, the concepts of negative externalities of production and consumption, and the welfare loss associated with the production or consumption of a good or service.
- Explain that demerit goods are goods whose consumption creates external costs.
- Evaluate, using diagrams, the use of policy responses, including market-base policies (taxation and tradable permits), and government regulations, to the problem of negative externalities of production and consumption



## ❖ *Negative externalities of production (external costs)*



→ Occurs when the **production** of a good or service creates external costs that are damaging to **third parties**

→ E.g. when a factory pollutes a river with waste. The costs to society are **the costs of the firm + external costs that the firm creates, but does not pay for**. The good or service is over-produced and so there is a **welfare loss**.

### The government could:

- **Tax the firm to recover the external costs**

#### Problem:

1. Often difficult to measure accurately the pollution created and put value on it, which can be regained by tax
2. Difficult to identify which firms are polluting and to what extent
3. Often argued that taxes do not stop the firms from polluting

- **Legislate to ban the firm or to set environmental standards**

#### Problem:

1. Ban or restriction may lead to job losses
2. Cost of setting and then policing standards may be greater than the cost of pollution

- **Issue tradable emission permits**

#### Problem:

1. Does not always lead to reduction of pollution (firms simply pay the cost of polluting, some polluting heavily and others not)
2. Government faces a difficult decision when setting an acceptable level of pollution and also difficult to measure a firm's pollution output

### Key Fact

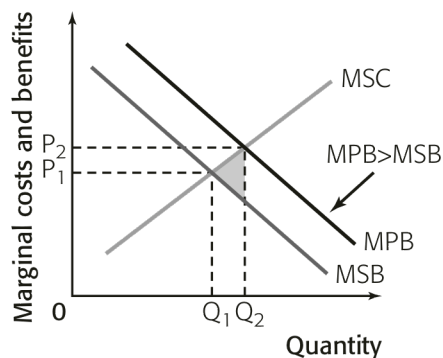
- **The Kyoto Protocol**

→ an agreement to **cut global emissions of greenhouse gases**, negotiated in 1997

→ the treaty covers more than 187 countries globally and over 65 percent of global GHG emissions (Two notable exceptions are the USA and Australia, who have signed the treaty but not ratified it)

→ Developing countries have no obligations to reduce GHG emissions but they can be given tradable carbon credits when they implement domestic GHG projects.

## ✧ *Negative externalities of consumption*



→ Occurs when the **consumption** of a good or service creates external costs that are harmful to **third parties**

→ E.g. Through secondary smoking or cars and air pollution. **There is negative utility** suffered by the third parties. The good or service is over- consumed and so there is a **welfare loss**.

The government could:

- **Ban consumption of the good or service**

Problem:

1. Large effect upon the industry, in terms of shareholders and employment
2. Governments makes a lot of revenue by taxing goods (e.g. cigarettes)
3. The people who are in favour of the good are not likely to vote for the government that bans it

- **Impose indirect taxes on the good or service**

Problem:

1. Taxes do not manage to reduce quantity demanded to the socially efficient level if the good has an inelastic demand
2. If taxes are raised too much then people will start to look for other sources of supply (→Black markets)

- **Provide education and negative advertising to reduce demand for the good or service**

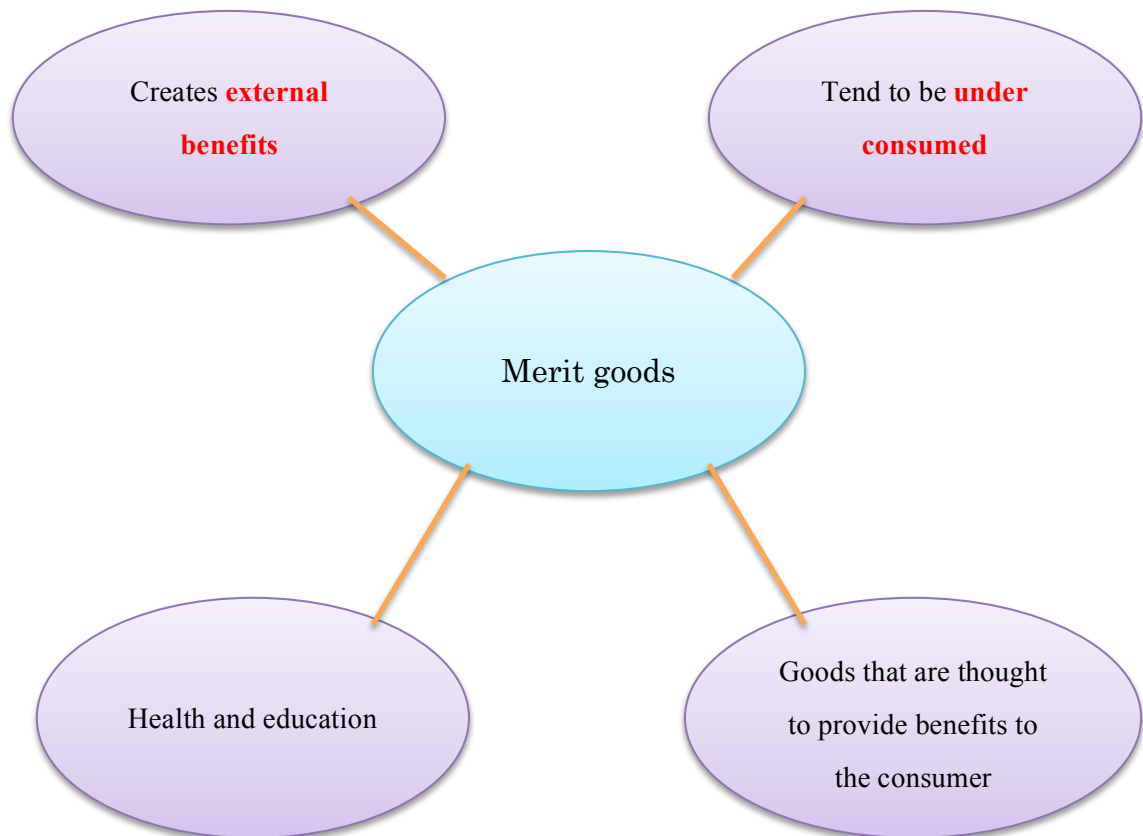
Problem:

1. Cost would be high, although if taxes are in place then the revenue could be used to fund these measures
2. There is doubt as to the effectiveness of education and advertising in terms of reducing consumption (e.g. Many teenagers seemed to be prepared to accept the dangers of smoking and are little affected by measures to put them off)

*37. Positive externalities of production and consumption*

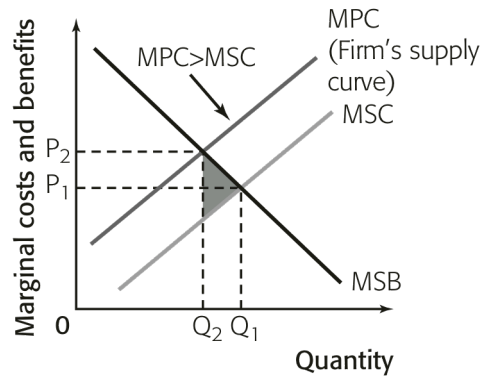
**IB Question**

- Explain, using diagrams and examples, the concepts of positive externalities of production and consumption, and the welfare loss associated with the production or consumption of a good or service.
- Explain that merit goods are goods whose consumption creates external benefits.
- Evaluate, using diagrams, the use of government responses, including subsidies, legislation, advertising to influence behaviour, and direct provision of goods and services.





### ✧ *Positive externalities of production*



→ Occurs when the **production** of a good or service creates external benefits that are good for **third parties**

→ E.g. when a factory provides training for employees. **The costs to the firm = production costs + external costs of training** (which society does not have to pay for). The good or service will be under-produced and so there is a **potential welfare gain**, if output is increased to the point where  $MSC = MSB$ .

#### The government could:

- **Subsidize the firm to reduce the firm's costs**

##### Problem:

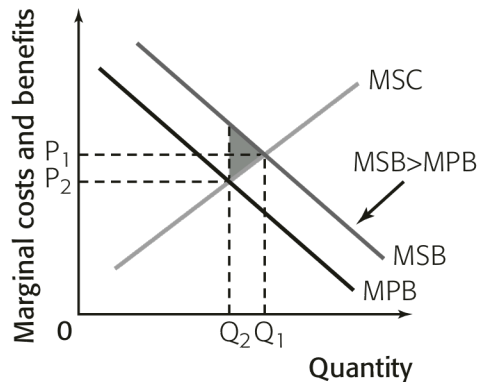
1. Very difficult for the government to estimate the level of subsidy deserved by every individual firm
2. The cost of the subsidies would probably imply an opportunity cost → government would have to cut back on spending in other areas which may be more worthy than this one

- **Provide the training itself**

##### Problem:

1. Cost would be high, the trainers may lack the expertise found in the firms, and it may dissuade firms from offering training of their own

✧ *Positive externalities of consumption*



→ Occurs when the **consumption** of a good or service creates external benefits that are good for **third parties**

→ E.g. having vaccinations or using deodorant. **There is positive utility** gained by the third parties. The good or service will be under- consumed and so there is a **potential welfare gain**, if consumption is increased to the point where  $MSC = MSB$ .

The government could:

- **Subsidize the supply of the good or service**

Problem:

1. High cost

(developing countries are not able to fund such schemes and so do not fully benefit from the positive externalities that are to be gained from the consumption)

- **Use positive advertising to increase demand for the good or service**

Problem:

1. High cost to providing the advertising
2. Takes a long time to have an effect

- **Pass laws making consumption of the good or service obligatory**

Problem:

1. Only successful if the government provides this free of charge

Key Question: Which is the extent to which governments should intervene in the allocation of resources?

### 38. Lack of public goods

#### IB Question

- Using the concepts of rivalry and excludability, and providing examples, distinguish between public goods (non-rivalrous and non excludable) and private goods (rivalrous and excludable).
- Explain, with reference to the free rider problem, how the lack of public goods indicates market failure.
- Discuss the implications of the direct provision of public goods by government.

#### <Comparison between public goods and private goods>

##### Public goods

##### Private goods

Can be consumed without reducing its availability to another individual and from no one is excluded

Must be purchased in order to be consumed and prevents another individual from consuming it

Non-rivalous and non-excludable

Rivaluous and excludable

Likely to have **free rider problem** ('Free riders' are those who enjoy the benefits of a public good without having to pay, because it is impossible to exclude them.)

Less likely to have free rider problem (It is not readily available for free)

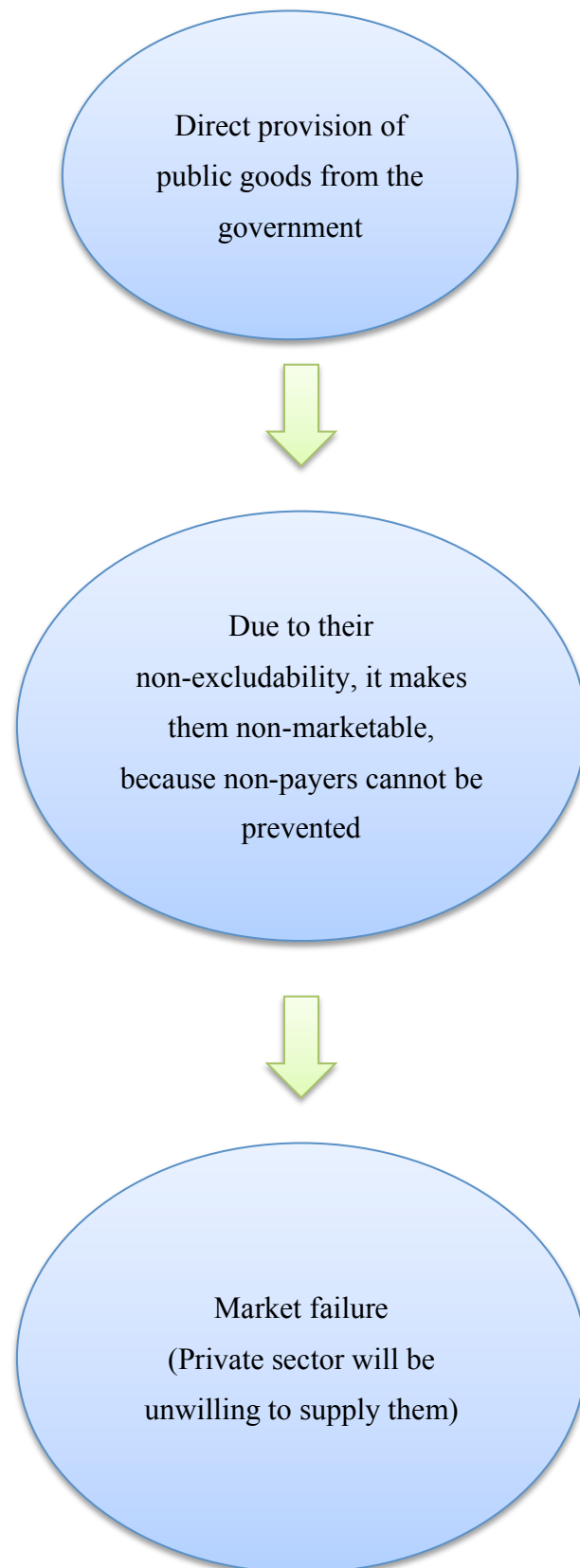
E.g.) National defence, sewer systems, public parks, basic television, the police service

E.g.) Food, airplane rides and cell phones

Lack of public goods → **Market failure**

This is because since public goods are goods that are of benefit to society, the lack of them in a free market is considered to be a market failure

## Implications of the direct provision of public goods by government



*39. Common access resources and the threat to sustainability*

**IB Question**

- Describe, using examples, common access resources.
- Describe sustainability.
- Explain that the lack of a pricing mechanism for common access resources means that these goods may be overused/depleted/ degraded as a result of activities of producers and consumers who do not pay for the resources that they use, and that this poses a threat to sustainability.

**Common access resources**

→ Natural resources which are characterized by the difficulty of excluding people from using them.

→ E.g. forests and pastures, fisheries, oil and gas fields, national parks, grazing lands and irrigation systems

→ It is argued that the lack of a price mechanism for common access resources results in their overuse, depletion and degradation. The consequence of the actions of producers and consumers, who do not pay for the resources they use, creates a **threat to sustainability** and, therefore, the availability of common access resources for future generations.

**Sustainability**

→ *Sustainability encompasses the simple principle of taking from the earth only what it can provide indefinitely, thus leaving future generations no less than we have access to ourselves.*

“Friends of the Earth, Scotland”

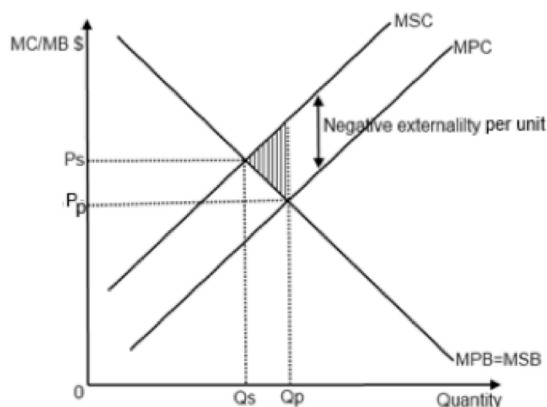
*Sustainability may be described as our responsibility to proceed in a way that will sustain life and allow our children, grandchildren and great-grandchildren to live comfortably in a friendly, clean, and healthy world.*

“Thomas Jefferson Sustainability Council”

## IB Question

- Explain, using negative externalities diagrams, that economic activity requiring the use of fossil fuels to satisfy demand poses a threat to sustainability

### The threat to sustainability from the use of fossil fuels



- There is a misallocation of resources: too much is being produced at a too low price than is socially desirable.
- There is a welfare loss to society of the extra units from  $Q_p$  to  $Q_s$  because MSC is greater than MSB (shaded area)

- Use of fossil fuels result in externalities and welfare loss
- Fossil fuels are non-renewable resources
- Since the producers and consumers of fossil fuels do not have to account to later generations for their overexploitation of resources, fossil fuels are over-produced, and over-consumed despite their increase in price. → Market Failure
- The burning of fossil fuels emits Carbon Dioxide (CO<sub>2</sub>) and other greenhouse gasses (GHGs), contributing to the process of global warming.

#### External costs:

- Crop yields are expected to drop significantly in Africa, the Middle East and India as temperature increases and rainfall patterns change.
- Water availability for irrigation and drinking will be less predictable, because rain will be more variable and droughts more frequent, creating pressure on agricultural production and diversity.
- Up to three billion people could suffer increased water shortages by 2080.
- Air and water pollution resulting from the extraction and use of fossil fuels can lead to significant health and environmental problems.

## IB Question

- Explain that the existence of poverty in economically less developed countries creates negative externalities through over-exploitation of land for agriculture, and that this poses a threat to sustainability

## The threat to sustainability from poverty

- Increasing poverty and low standards of living especially in Africa and Asia is caused by population increase
- The demand on common access resources resulting in extensive negative externalities which threaten sustainability.
- Since the 70% of the world's poor who live in rural areas depend on agriculture as their main source of income and employment, the depletion and degradation of natural resources poses serious challenges to producing enough food and other agricultural products to sustain local livelihoods and also to meet the needs of urban populations which rely on this supply.
- Where low-income rural populations rely on subsistence agriculture, the likelihood is that common access resources will become depleted, unless there is some form of community collaboration along the lines suggested by Elinor Ostrom. Sustainability of resources may be lost if poor communities are forced to sell land and resources, such as forests, to external private corporations who do not have the interests of the local community as a priority, but need to satisfy their shareholders.
- As a consequence, there will be overexploitation of timber and deforestation creating negative externalities such soil erosion, landslides, flooding and loss of bio-diversity.

## IB Question

- Evaluate, using diagrams, possible government responses to threats to sustainability, including legislation, carbon taxes, cap and trade schemes, and funding for clean technologies.
- Explain, using examples, that government responses to threats to sustainability are limited by the global nature of the problems and the lack of ownership of common access resources, and that effective responses require international cooperation.

### Carbon taxes

Environmental taxation, such as carbon taxes, to recover the external costs of pollution

### Cap and trade schemes


A market-based approach to reduce carbon emissions via financial incentives that allows corporations or national governments to trade emissions allowances under an overall cap, or limit, on those emissions. Since emissions are not confined to borders, however, and internationally coordinated approach is necessary to reduce the activities which generate emissions effectively.

### Legislation

Setting environmental standards and banning firms which fail to meet these standards

### Funding for clean technologies

Clean technologies are designed to minimize pollution and the emissions of greenhouse gasses, by creating electricity and fuels with a smaller environmental and carbon footprint. These technologies include recycling, renewable energies, green transportation, waste water recycling and energy efficient lighting, homes, buildings, electric motors and commercial and domestic appliances.



Government  
response



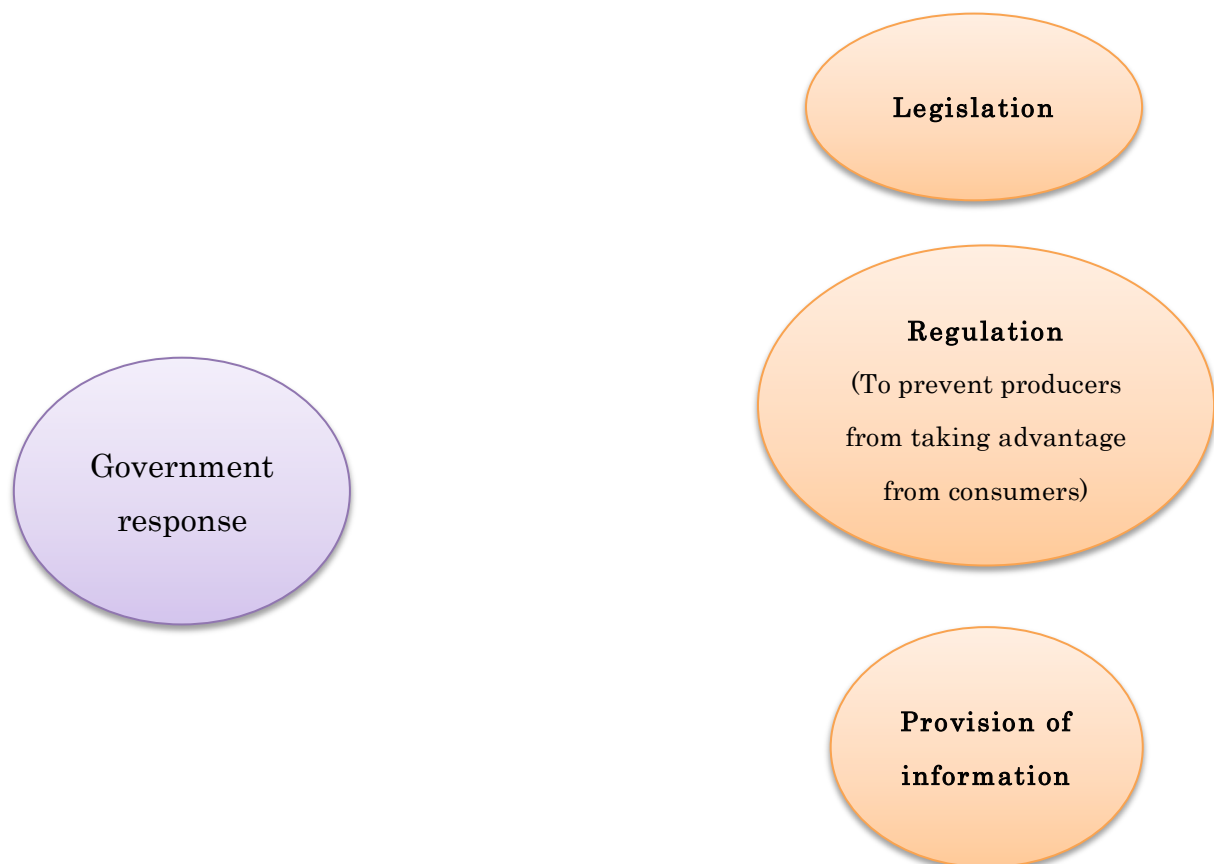
*40. Asymmetric information*

**IB Question**

- Explain, using examples, that market failure may occur when one party in an economic transaction (either the buyer or the seller) possesses more information than the other party.
- Evaluate possible government responses, including legislation, regulation and provision of information

**Asymmetric information**

- A situation in which one party in a transaction (seller + buyer) has more or superior information compared to another
  - Opposite to Perfect information / Perfect knowledge
- → **Market failure** (The market will fail to reach the allocatively efficient level of output)

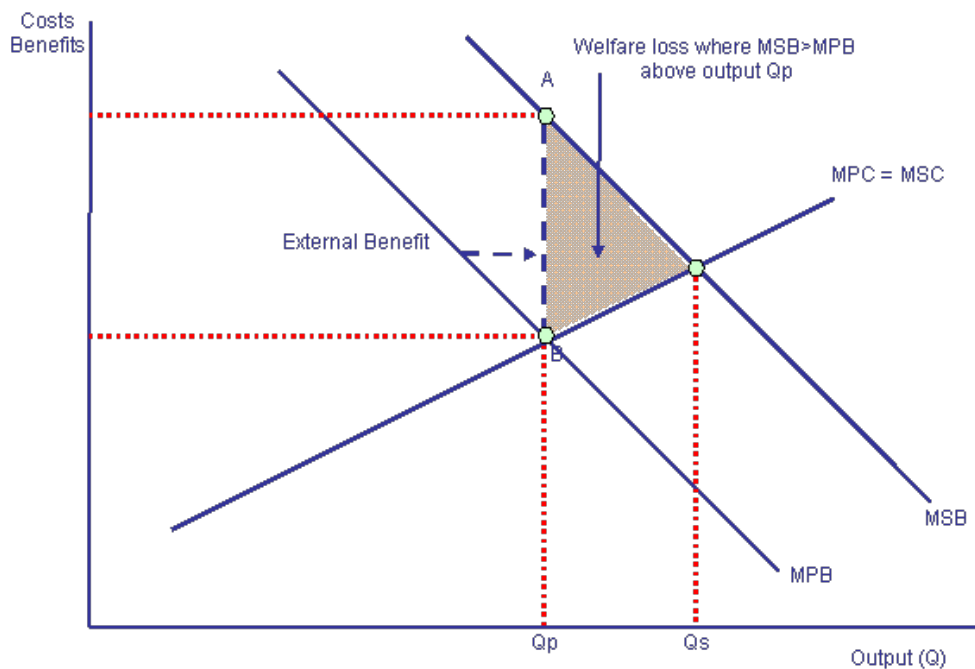


41. Abuse of monopoly power

IB Question

- Explain how monopoly power can create a welfare loss and is therefore a type of market failure.
- Discuss possible government responses, including legislation, regulation, nationalization and trade liberalization.

- In a situation of monopoly or oligopoly, (market dominated by a few producers), producers may attempt to make the market price higher than it would to maximize profit, meaning that they are not producing at the social efficient level of output.



- $Q_s$  is not reached
- Loss of community surplus which is represented by the shaded orange area → Market failure → Welfare loss

Government response

