**Economics Investigation Notes** – Assessment 3

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**Australia's Oil Industry:**

* Australia produced 334.737 barrels of oil a day in Dec 2021
* The oil and gas industry has continued to grow with 24.9% growth over the past 5 years
* Currently the Australian oil and gas industry are worth $163.8 billion in 2023

**Negative Production Externalities:**

* A negative production externality is when actions of producers cause negative side-effects on others who are not part of these actions, and whose interests are not taken into consideration
  + In the oil and gas market, there are a number of hidden costs with the production of oil and gas, including damage to the environment, climate change and the major reliance on non-renewable resources
* There is an overallocation of resources due to negative externalities in the Australian Oil and Gas industry
  + This leads to inefficiency creating a deadweight loss which represents the reduction in overall social benefits from the overallocation of resources
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* Oil Spills and Pollution
  + 140 oil spills happened in Australian waters during 2008-09
    - Oil spills have devastating effects on the environment
    - There are both big and small oil spills that happen all the time
    - Effects:
      * Kills fauna and flora physically
      * Oil toxicity poisons organisms
    - Oil spills are difficult and expensive to clean up

* Carbon Emissions
  + Woodside produced 66 million tonnes of carbon dioxide in 2022
    - This intensifies the greenhouse gas effect causing climate change
    - Climate change has multiple negative effects including:
      * Increased global temperatures and rising sea levels
      * Severe weather effects (storms, drought) + environmental damage
      * Poverty, loss of food, health risks and displacement

* Damage to the environment from drilling and mining
  + The Great Barrier Reef was damaged through drilling and mining until a protest in 1970 led to a ban of oil drilling in the region
    - If the Reef is damaged, it reduces tourism as well as destroys a world wonder
    - Wildlife is put at risk damaging the ocean's ecosystem
  + Extraction of crude oil from oil reservoirs creates large cavities underground which may cause overlying geological structures to collapse

* Cracking
  + Cracking causes issues related to climate change
  + Materials produced by the chemical industry using components of crude oil as the raw materials are non-biodegradable.
    - Therefore, their disposal poses an environmental concern, particularly in the long-term as the amount of non-biodegradable materials being used accumulate
* Non-renewable resource
  + Oil and gas are non-renewable and thus they are continually depleted as we use them
    - This means future generations will have less oil and gas to use as they are limited resources
    - The industry is not sustainable as once we run out of resources, our current infrastructure is useless
  + Poor public image of oil and gas
    - This means that many people will reduce their oil and gas consumption because there is a negative public view of the good
    - There is also public opposition to growth in the industry due to the environmental damage of the industry and because oil and gas are non-renewable resources
      * Survey found 96% of respondents wanted Australia’s primary energy source to be renewables

**Measures to address the market failure in the oil and gas industry:**

* Market Based Approach
  + Taxation
    - Taxation implemented by the government on oil and gas can incorporate the marginal external cost into the market, reducing production of oil and gas to be at the optimal level of production eliminating the deadweight-loss caused by the overallocation of resources and therefore allocative efficiency is achieved.
    - Thus, the market failure is solved and the market produces oil and gas at a socially optimal point with resources being allocated efficiently

* Government Policies
  + Legislation
    - Use of legislation by the government forcing oil and gas companies to adopt technologies that are better for the environment by creating less pollution can address the negative production externality.
    - These technologies are more expensive than current technology being used and thus the marginal external cost is captured under the marginal private cost shifting the supply curve to the left towards the marginal social cost curve.
    - This reduces production of oil and gas from the original market production to an optimal level of production, thus, the overallocation of resources in the oil and gas market is stopped and the deadweight-loss is resolved with allocative efficiency being obtained solving the market failure.

**Definitions and Important Stuff:**

* Must say ‘This eliminates deadweight loss and allocative efficiency is achieved.’
* MPC is the cost of production of oil and gas. It does not reflect the true cost of production of oil and gas to society.
* MEC is the combined cost of all the external costs associated with the oil and gas industry including environmental damage, pollution and climate change.
* Because the supply curve is set by the MPC, the external costs are not captured in the market leading to the overallocation of resources in the oil and gas market.
* Must say that D = MPB = MSB

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