

Question 1 (3 points)

Case A: The production of a plastic factory 'K Chemical' is located nearby a house village 'Dreamland'. If the production of the plastic factory reaches a certain level at Q_m , it will release air pollutions to the level that destroy clean air around the Dreamland village. However, if the production of the plastic factory does not exceed Q_m , it will create no significant impact for people living in the Dreamland village.

Case B: In Thailand, the CO_2 emissions from oil consumption in transport sector increased from 51 million tons of CO_2 in 2008 to about 63 million tons of CO_2 in 2018.

Please answer the following questions for both Case A and Case B above

- i. Does an externality exist? If so, classify the externality type (e.g., positive vs. negative, costs vs. benefits) and explain how inefficiency problems could arise in this case.
- ii. If an externality exists, could the Coase Theorem be applied to solve market inefficiencies in this case? Please explain your answer (Hint: is it possible to use property right rules and solve the problem?)
- iii. If the Coase Theorem does not apply, what the government could do to solve the problem?

case A

- i) If the production exceed Q_m , there will be negative externalities effect to people living in the Dreamland village and it will be cost to environmental society. The externalities as a source of market failure.
- ii) Yes, it can. The affected parties is small, not much transaction cost and no wealth effect. Using property rights rule, if the rights to K Chemical, the cost will be on the village, they will have to pay in order to make K chemical produce less. If the rights to village, the K chemical will have to compensate for village.
- lii) Putting a cap \rightarrow restrict the production from the factory
Putting a price \rightarrow impose tax on product or pollution

case B

- i) There is negative externalities to the society from the more CO_2 emissions. People in Thailand still using much of oil consumption for transportation and if they don't realize how bad effect of it, this problem will be more. Government failure, they benefit the small group of people in this oil industry, then cost the whole society.
- ii) It cannot use the Coase Theorem since there are a big issue in country.
- iii) Government should impose tax on producer and promote of using public transportation or using renewable energy other than oil.

Question 2 (2 points)

Suppose an investor is considering a wind farm project to produce electricity. The wind farm will create noises that affect people living in a house village Dreamland.

- i. How could you estimate the compensation amount for people living in the Dreamland to approve the wind-farm construction? (Hint: Choose WTP vs. WTA question, methods to estimate WTP and WTA).
- ii. What should be considered in the cost-benefit analysis to decide if the wind farm project should be built or not?

i) The villagers' willingness to accept the less quality from noise pollution. Measured by using state-preference approach (SP) which is a survey based. CVM would be more appropriated since it is capable of measuring both used and non-used.

ii) There are many step of CBA

- define project's purpose
- impact of project, is it benefit or cost? in monetary value
- Time Value of Money
- Use Net Present Value (NPV)
- The project will be accepted if $NPV > 0$
- consider initial cost, maintenance cost, compensation to locals, benefit = electricity production value.