EE375 Applied Economics for Natural Resources and Environment
Semester 1/2021 (August 9 - November 27, 2021)
Instructor: Dr. Supawan Saelim

Quiz 1

(5 points)

Time: 10 September 2021 at 15:00-15:30 (30 minutes)

There are 2 questions. You need to answer all questions. Please **submit** your answers in a PDF file with a file name "**Quiz1_StudentID_Name**" via BE Moodle class before **15:40**.

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 Qm, 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 Qm, 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?

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?

Q.1.

i.) There are externalities in both cases. In the case A, the externality is costs due to the factory's production that leads to air pollution and ignore the social impact. Therefore, the the quantity produced would surpass the social optimal point, and create market inefficiency. In case B, there is a negative externality caused by transportation sector.

ii.) Through using the coase theorem, the problem in case A could be solved. This is because the village and the factory could negotiate, and follow the court's decision. If the property rights is assigned to the village (as the victim's scale is small), the factory would have to bear the cost of damages it created to the village. However, in case B, the pollutors are large as referred to the whole transport sectors, coase theorem might not be effective. As well as the cost of court is so small that they are willing to accept more than to compensate.

iii.) The government could use methods like liability rules in order to guarantee a compensation to the affected party. Another method for a large pollutor may be putting a cap to restrain the CO_2 emission per sector or per quarter, or putting a price on emission per unit.

Q.2

(This could be done through survey-based analysis)

i.) By using the WTP and WTA question: if the factory have no property rights, they might consider to have a higher willingness to pay. For an investor, cost – benefit analysis should be used to evaluate the cost or benefit of this project to find if the cost to environment, to people (compensation), or to operate are lower than the benefit received in the future or not.

ii) The project policy, impacts, and the NPV.