1. In his TED talk (Pavan Sukhdev: Put a value on nature!), Dr. Sukhdev gives an example of the cash value of a shrimp farm in Vietnam being much higher than its cash value as a mangrove swamp. (Mangroves are trees that live in brackish – fresh-salt – coastal waters.) Explain why shrimp farms are more valuable from a private perspective and mangroves are more valuable from a public perspective (as discussed in the video AND class lecture).

2. Pro-democracy protests in Tiananmen Square reflected popular frustration with corruption and inequality that arrived with economic liberalization in the 1980s. The Chinese government responded by promoting growth "for the masses." What negative externalities have resulted from pro-growth policies? How could popular anger with these problems turn into a challenge to the power of the communist party?

3. The "Environmental Kuznets Curve" (EKC) describes how pollution starts off low (when people are poor and underdeveloped), then rises and then falls (when people are richer and developed). Why does the EKC describe local pollution trends better than global pollution trends? Give examples of local pollution that has followed an EKC and global pollution that has not (using costs and benefits).

4. In his guest lecture, Chris Joseph compared Economic Impact Analysis (EIA) to Cost Benefit Analysis (CBA). EIA (often) focuses on a project's immediate impact while CBA (often) focuses on its total social impact.

   (a) Are jobs a cost or benefit in an EIA? Why?

   (b) In his example of an oil sands project in Alberta, Chris showed that it had positive net benefits under an EIA analysis but negative net benefits under a CBA analysis. Why?

5. In Briefing 2, you suggested policies that would reduce resource consumption. Give an example of a pure economic policy that incentivizes a reduction in resource use. Give a different example of an economic instrument that depends on a regulation (e.g., creation of a property right) to reduce resource consumption.

6. In HW#3, you looked up water prices in California. I mentioned that these prices are often designed to recover the cost of delivering water. I discussed how these prices may be TOO LOW, such that people who "pay for what they use" cause water shortages. Why would prices be too low?

7. In HW#3, you discussed temperature, precipitation, supply and demand. Describe the impact of an **increase** in temperature on demand and/or supply of residential drinking water. Describe the impact of an **increase** in precipitation on demand and/or supply of water.

8. In HW#4, you calculated Pigouvian taxes that would reduce carbon emissions in Canada and China. Those taxes – and the refund of revenue to citizens – make the policy seem like a good idea, but most countries do not use such taxes (some subsidize energy use). Name two groups that benefit from energy subsidies. Why do they benefit?

9. Cap and Trade (CT) pollution policies use trade to reallocate permits efficiently. Give two examples of how mismanaged permits can weaken a CT system.

10. Explain two ways in which resources can "curse" a country by slowing development and social progress.

11. In Chapter 8, Dolan describes how private parks may protect resources and the environment better than public (owned by the state) parks. Explain – using prices – why private parks may succeed while public parks fail.

12. Explain how "normal" taxes on income or property create deadweight losses but Pigouvian taxes on negative externalities do not.

13. In lecture, I said that humanity's environmental footprint was a function of P, T and C.

    (a) What do P, T, and C stand for?

    (b) Does a ↑ or ↓ in P *increase* our footprint (circle one arrow)? Draw arrows next to T ( ) and C ( ) for the direction that an increase of one increases our footprint.

    (c) Which of these factors is easiest to affect with economic policy? Why?

14. In my paper, "Economists owe ecology an apology," I discussed how GDP growth can be BAD for society. Given an example of an activity that increases GDP but harms the environment.

15. Julian Simon and Paul Ehrlich made a bet about sustainability in which Simon would win if the cost of five metals fell over ten years. Why did Ehrlich lose? (Hint: they were betting on different types of goods)

16. The government has to choose between two projects. Project A produces $100 of social surplus and employs 100 people. Project B produces $100 of social surplus and employs 50 people. Which is better? Why?

17. Regulations are "command and control" methods of changing behavior because they specify a particular action, technology or target. Why do price incentives change behavior more efficiently than regulations with respect to resources (e.g., oil, water, land, etc.)