

Paper Topics II

- 1) **Environmental impacts of coal mining** – strip mines; mountaintop removal mining, mine tailings; coal fires.
- 2) **Acid Rain**; What is the basic chemistry of acid rain? What are the causes? What impact does it have on forests, lakes and other parts of the ecosystem? What efforts have been made to reduce acid rain? How successful have they been? (this topic needs to go beyond our discussion in class)
- 3) **“Clean coal”?** – What are the proposed clean coal technologies? To what extent have they been mandated and/or implemented? What are the prospects for carbon sequestration? What are the criticisms of “clean coal”?
- 4) **Carbon sequestration**; How does it work? What are the different possibilities for storage locations? Are there existing projects? What are its prospects for the future? Is it realistic?
- 5) **Shale oil**; Where is it found and in what quantities? What are the issues involved in extraction and refining? What are the environmental impacts? What levels of production are projected in the future? What is the U.S. government doing to promote development of shale oil infrastructure? What are the arguments for and against using shale oil? (this topic needs to go beyond our discussion in class)
- 6) **Greenhouse gases beyond CO₂ (methane, ozone, CFC’s, ……)**; What are there levels and rates of increase/decrease in the atmosphere? What are the sources/sinks? What is there relative impact on global warming? What efforts are being made to reduce emissions?
- 7) **Massachusetts vs. EPA – Supreme Court decision**; What were the main issues? What were the arguments on both sides? What were the majority and minority opinions? What has EPA’s response been? What has the impact been on other court cases and regulatory decisions?
- 8) **Carbon Cycle** – What are its primary components? Which of them is relevant for removing anthropogenic CO₂ from the atmosphere? How well do these mechanisms handle anthropogenic CO₂? Is there a danger of carbon sinks being saturated or turning into sources?
- 9) **Cap and Trade Schemes for CO₂ reduction** – How do they work? What are the pros and cons as a method for decreasing emissions? How has the cap and trade scheme for SO₂ worked? How is the EU CO₂ cap and trade scheme working? How will the Northeast/Mid-Atlantic CO₂ program (Regional Greenhouse Gas Initiative) work?

- 10) **Carbon Tax**; What is a carbon tax? How is one implemented? What is the political history of carbon tax proposals in the U.S.? Are there currently supporters of a carbon tax? What are its advantages/disadvantages relative to a “cap and trade” system?
- 11) **Kyoto Protocol**; What is it? What nations are participating? What mechanisms does it mandate for reducing CO₂ and other greenhouse gases? Why doesn't the U.S. participate? Why have other industrialized nations chosen to participate? What happens next?
- 12) **Energy/Climate Change and the 2008 elections**; What are the positions of the candidates? Which candidates seem to take the issues most seriously and have the most realistic positions from your point of view? What are their records to date? Why do some candidates choose to talk about climate change while others don't? Has this topic come up in the debates to date? (This topic runs the risk of too many vague statements. Give examples?)