

Problem package 3

2012-02-02

Course: Environmental science FFY471

Due time: February 16th at 16.15

Submit by email to bertil.dynefors@chalmers.se or give the answers to Bertil in paper version.

Computer written text is preferred, but hand writing is allowed.

The work is individual. **No text may be copied** or directly taken from any material.

Images, figures and tables may however be copied.

The aim of this problem package 3 is to more in depth study a specific energy - environmental problem of global relevance.

The problem is the carbon dioxide capture and storage.

Capture and storage can be done of the low concentrated carbon dioxide in the atmosphere, but that is not what we study here. In this problem package the focus is on carbon dioxide emission from large single units, like power plants and industrial emission sources in a limited area.

- 3A Describe carbon dioxide capture techniques. Briefly in general and then extensively, and in quite much detail, about a single method.
- 3B Describe transportation of captured carbon dioxide from separation units to storage reservoirs.
- 3C Describe injection and storage of carbon dioxide in geological formations. First in general, then very extensively about a specific method.
- 3D What are the possibilities to reduce or mitigate the CO₂ problem by the capture-storage in a global scale? Discuss this issue. What is the cost?
- 3E Discuss and analyze the results from operation of large-scale projects. What is the experience gained.

Links to start with:

http://e40-hjh-server1.mit.edu/pdf/2009_CO2_Capture_and_Storage_Ch13_book.pdf

http://sequestration.mit.edu/tools/projects/ccs_project_updates.html

The extent of the answers should be at least 7 pages. (Normal style size and row separation)

This problem package 3 will be graded F, 3, 4, 5.

Individual and original structure and treatment of the issues and substantial level on the content will be highly estimated in the grading. Do not write in too general terms, try to be specific and substantial.