

Course Project

Mitigation of climate change requires the energy system to adapt and transform into a low carbon system at an unprecedented pace. In this assignment, you will focus on a specific country, assess the current state of its energy system and emissions, and analyse the way forward to a carbon neutral energy system.

The essay should include all the following elements:

- **Pick a country** for your analysis (not Finland, or the country you're from)
- **Describe the current state of the energy system in the country**, the key energy demands, resources and vectors, sources and drivers of emissions, key technologies and the national context, including for how and why the system developed to what it is now
- **Identify a sector** that is particularly critical for reducing energy related emissions in the country (e.g. a major source of emissions and/or central for the economy of the country).
- **Analyse and describe** the sector in detail and discuss possible mitigation approaches for it. Consider in your assessment not only the technical alternatives, but also their economic feasibility and possible policy instruments.
- Based on your analysis, **create a scenario** for the low carbon evolution of the sector to 2050, including all the critical steps, decisions and events that lead to the final state.
 - Describe also what happens in the rest of the energy system and how this affects your chosen sector
 - Consider in your discussion also the development of drivers other than technology (e.g. population and economic growth, urbanisation etc).
 - Calculate the expected emission reductions and present your methodology for doing so.
- **Discuss the drivers and barriers** related to your mitigation scenarios
 - How could the barriers be overcome – and drivers enabled?
 - Are there specific future trends or developments that are essential for your scenario?
 - What kind of plausible technological developments could make your scenario less likely to succeed?

This project will be the main synthesis point of all the material you will be learning on the course, so it must reflect the lectures and the reading materials in your work, whenever suitable. The project should be multidisciplinary in approach and illustrate the complexity of perspectives involved in planning and designing for the future.

Outcome:

*Written report: **Max 2500 words*** – use MS Word's word count tool and type the word count at the end of the essay. Word count does not include the abstract, table of contents, bibliography or appendixes, but does include words in footnotes, endnotes, captions,

diagrams and tables. Do note that appendixes should be used sparingly and they will not be considered in the marking. Going above the word limit will be penalised in the marking. 1,5 row spacing, 12 p font recommended.

Please include on the first page your name, student number, course code and date (none of which are included in the word count).

The essay **must** include the following sections (with subsections added as appropriate):

- Abstract
- Introduction
- Main Body [rename as you see best fit]
- Conclusion
- Bibliography

Deadlines:

01/11 Outline of proposed project (country picked, rough outline with country specific subsection titles, bibliography and some bullets reflecting the lectures and readings so far) [max 5 points]

17/12 Final Written Project submission to MyCourses [max 75 points]

Any other questions? Ask them on the *General Discussion* board on mycourse (<https://mycourses.aalto.fi/mod/forum/view.php?id=761848>). Please do not email your questions, using the board ensures that all students get the same information and advice.

Please include your name, student number, course code and date. Please also list the dates of the seminar lectures you attended.