

## Course Project – a scenario narrative for a low carbon transition

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, identify a sector key for reducing emissions and create a scenario narrative for it.

The essay should include all the following elements [key items/terms in **bold**]:

**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 (e.g. why and how did the system develop to this specific state?). **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). Justify your choice with data, references and argumentation. Focus on **one** sector.

Based on your analysis, **create an actor based scenario narrative**, a “story”, for the low carbon evolution of the sector to 2050, **integrating** in the narrative all the critical steps, events, and decisions by various **actors** between now and then, eventually leading to the final state. Consider in, and **integrate** to, the scenario narrative the following:

- What mitigation **technologies and activities** are deployed in your narrative? What or who triggers their diffusion – and why?
- What **drivers** (e.g. economic growth, changing behaviours and norms, technological development) enable your scenario, or are even critical to its feasibility?
- What are the key **barriers** that need to be overcome for your scenario to be feasible? How are the barriers overcome in your scenario, through what kind of mechanisms and actions (by whom, why and how)?
- What role do **policies** play, and why, how and driven by whom are these specific policies implemented in your narrative?
- Roughly how much could the expected **emission reductions** of your scenario be? Present the methodology behind your estimate.
- Assessing the scenario as a whole, how **feasible** and **plausible** do you consider it to be, from technical, economic, political and social perspective? What are the key **uncertainties** and **points of fulcrum** for your scenario?

This project will be the main synthesis point of all the material you will be learning on the course, do reflect the lectures and the reading materials in your work, whenever suitable. Read also carefully the “Course Project Q&A” document, which, among other things, includes some general information about what scenarios are (see also the list of papers on the next page).

**Make sure you read the document “Course Policy on the use of AI” under “Materials”!**

## 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):

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

## Deadline:

15<sup>th</sup> of December Final Course Project submission to MyCourses

[graded 0-5, with 0.25 grade increments, weight in final course grade 75% + need to score 1.00 (before rounding) for the course project to pass the course]

Any other questions? First see the “Course Project Q&A” document under “Materials” and if your question is not covered, ask it on the *General Discussion* board on MyCourse ( <https://mycourses.aalto.fi/mod/forum/view.php?id=1061156> ). 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.

## Useful readings for actor-based scenarios (Hughes et al, 2013), scenario methodologies (Börjeson et al., 2006) and scenario narratives (O’Neill et al., 2017):

Hughes N, Strachan N, Gross R (2013) The structure of uncertainty in future low carbon pathways. *Energy Policy* 52: 45-54. <https://doi.org/10.1016/j.enpol.2012.04.028>

Börjeson L, Höjer M, Dreborg K-H, et al. (2006) Scenario types and techniques: Towards a user's guide. *Futures*, 38(7): 723-739. <https://doi.org/10.1016/j.futures.2005.12.002>

O’Neill BC, Kriegler E, Ebi KL, et al. (2017) The roads ahead: Narratives for shared socioeconomic pathways describing world futures in the 21st century. *Global Environmental Change*, 42: 169-180. <https://doi.org/10.1016/j.gloenvcha.2015.01.004>