

Title: Designing a role-playing exercise - trade-offs between climate change, land use and sustainable development goals (SDGs) in the process of land management.

Background: With the existing climate structure, countries have to report greenhouse gases (stock and emissions) to UNFCCC (United Nations Framework Convention on Climate Change) (in Sweden this goes through Naturvårdsverket, the Swedish Environmental Protection Agency, first) by using accounting guidelines. However, at the same time countries have goals of other sorts: Sustainable Development Goals (SDGs), national policies and guidelines for energy, forestry, agriculture, food production, land use, livestock, water, land tenure, poverty reduction. This is clearly seen in the Nationally Determined Contributions (NDCs) submitted to Paris in 2015 that is the engine for the present climate agenda.

Link to education: To solve present and future environmental challenges are most likely arenas where students from Chalmers will be working in the future. Addressing complex situations call for the use of nexus-approaches. Here the inclusion of a wide variety of stakeholders with different agendas are needed in the processes. This task is to prepare and develop material that can be used to augment the skills of i) system approaches ii) participatory methods, and iii) facilitation.

Thesis aim: The aim of this thesis is to generate materials for and to design a role-playing exercise that will be implemented in one of the courses in the Industrial Ecology MSc program. The aim of this role-playing exercise is to assess trade-offs (and synergies) often found in land management. The focus is on aspects of climate change (adaption and mitigation), land use and goals related to the Sustainable Development Goals (SDGs). In order to achieve this, the tasks in this thesis work are 1) to identify key criteria that are linked to climate change, land use and other SDGs, 2) to do quantitative assessments of these for a few sub-national cases, for example a production forest, a protected forest and a subsidized pasture land in Sweden 3) to give advise on a role-play structure including different roles, preparation task, calculations, and format, 4) to create a ready to be tested role-play manual for classroom use, and 5) to do an analysis of the material in terms of learning outcomes for engineering students.

The assessments will be done with help from environmental systems analysis tools such as LCA, ecosystem service approaches, and synthesising existing scientific literature.

The results of this thesis will most likely be used in the education at Chalmers. Further, the results of this exercise are used in a research project that aims to propose a new GHG accounting system. management”, and thus there will be a close connection between these two projects.

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