

Elaboration of different perspectives, attached premeditation to the announced PhD positions

Shaping Post-oil – energy landscapes

Historical:

In the development of the landscape architecture discipline in Norway, we see a significant change in perspectives from gardens, parks and small-scale urban sites to larger territories in the 1960s and 1970s. This 20-year period has parallels with Norway today. Similarly, the introduction of energy infrastructure in partially untouched terrain, increasing land pressure and densification in peri-urban areas has led to conflicts. What can be learned from historical experiences of the first period of debate on these developments? Reviewing some of the early large-scale energy projects of the 1960s and 1970s in light of today's challenges may shed light on some success criteria for sustainable development plans as well as socially and culturally sustainable development processes. Examples of research questions are:

- How did landscape architecture and /or representatives of the profession respond to the challenges associated with energy infrastructure development in the 1960s and 1970s in Norway? To meet future challenges, how was the discipline be repositioned/re-structured itself and what new ways of understanding landscape planning, of approaching large scale developments and/or building alliances were explored and developed? In what way and at what stages did landscape considerations have an impact on the process and the result? The Historical Archive of Norwegian Landscape architecture at NMBU as well as the archive of NVE (The Norwegian Water Resources and Energy Directorate) hold empirical material to research. Possible methods: Literature and archival studies

Social/cultural:

Post-oil energy landscapes have and will entail immense consequences for the social and cultural sustainability of our societies. Areas of researching these consequences should relate to the Council of Europe Landscape Convention (ELC) and could explore the driving forces for landscape changes **or** the role of participatory processes. Examples of questions are:

- How is the ELC made relevant in the context of the “green shift”? What are the foreseeable/imaginable landscape changes resulting from future power production? In what way is the public given the opportunity to understand development plans? In what way are landscapes and landscape changes perceived in connection with the transition to post-oil/renewable energy development plans? In what way may landscape architecture contribute to developments that are truly sustainable? Possible methods: literature studies and archival documents, observation, process participation and evaluation
- What are the most important driving forces connected to energy consumption and production causing landscape changes? What role could participatory approaches

have in such changes? In what way has the public reception of large-scale energy development projects changed since the last big development phase? Methods: literature studies, historical planning sources/archives on landscape evaluation, interviews, image interpretation. In what way does the idea of a post-oil era (which is only partially followed up in practice) affect landscape development and its perception? How sustainable is a 'green-development' such as the renewal or expansion of hydropower projects?

Possible methods: literature studies, interviews, project evaluations, Scenario - thinking

Ecological:

In Norway, alpine cultural landscapes are used for mountain hill farming and grazing as well as for recreational activities. Some of these areas suffer from severe disturbances as large scale energy development projects, regardless of source, create major upheavals in soil, vegetation and possibly entire ecological systems. Studies on restoration and the progression of the spontaneous revegetation under various conditions as well as the survival rate after transplanting vegetation is needed. By focusing on conservation, sustainable management and restoration of ecosystems in several cases, from the planning period through to several years after rehabilitation, a method for restoration of large, degraded landscapes can be developed. Examples of research questions are:

- What is best practice to restore large, degraded landscapes? Is the strategy of spontaneous plant establishment effective for revegetating the areas? Is the spontaneously established vegetation indigenous and similar to the vegetation composition in the surrounding areas. Does transplanted vegetation survive and thrive? Why do some plants establish better than others, is the soil important? Why do trees establish slowly in these areas? Is ecological succession similar in different restoration sites? Methods: Field studies, greenhouse experiments, common garden experiment
- Which methods and plans are best practice for conservation and restoration of large-scale disturbed landscapes? By combining results from restoration areas developed in the 1970s until today, long term restoration effects can be studied. Methods: Archival studies, field studies

Design:

Renewable energy production sites such as wind turbines, solar energy plants and hydropower installations will significantly change large-scale landscapes in the world. However, societies' expectations of pristine landscape experiences and postcard perfectness have not changed. Examples of research questions are:

- How can large-scale energy landscapes be actively shaped and designed by landscape designers (and other spatial designers)? Methods: Literature study, case study, design projects (research by design), virtual reality explorations.
- How can hydroelectric projects be better implemented and adapted in site-specific topography and hydrology? Are wind turbines more likely to be tolerated if

clustered? Methods: Literature study, case studies, design projects (research by design), virtual reality explorations

- How can systems for storage or grids be integrated better in the (urban) landscape? Methods: Literature study, case study, design projects (Research by design).
- How does design-research in landscape architecture demand change the way we think about representation. How can representation be understood as a means to explore the process, rather than limit it to illustrating a final design stage. What are suitable techniques of representation which are explorative and diagrammatic to drive an iterative design research process. Methods: Literature study, case study, design projects (Research by design)