Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences

Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
Name	Hugo López Silva
Student number	5114500

Studio		
Name / Theme	Transitional Territories	
Main mentor	Nikos Katsikis	Urban Theory
Second mentor	Taneha Bacchin	Urban Design Theory & Methods / Landscape Urbanism
Argumentation of choice of the studio	My motivation to understand the operationalisation of energy landscapes inside the productive logics in society and its links to economy, space and ecology fits well with the studio's approach and understanding of the territorial project. From there, it is possible to make use of the strategic role of Urban Design and Spatial Planning to propose new realities for the spatial project of energy, land and productivity that could address socio-ecological regeneration of Earth's systems.	

Graduation project	
Title of the graduation project	Memories from worlds yet to be inhabited: terraforming from energy landscapes in the Rhine
Goal	
Location:	Rhine basin, Europe
The posed problem,	Since industrialisation, and especially after the Great Acceleration, non-renewable sources have globally been the backbone of every activity. (Illich, 1983) This condition fueled the modern era to the new possibility of exponential growth and energy-intensive life, leaving its entropies as 'externalities' at its best. (Iturbe, 2019) In a bit more than a century, that logic feedbacks in the forms of climate change and biosphere degradation, (Steffen et. al, 2015) with burning fossil fuels for the generation of energy being one of the biggest contributors. (EEA, 2020) Even with the introduction of renewables, this is, more or less, the same scenario. The scaling-up of new technologies for generation of energy in the current paradigm that meshes nature, capital and power (Moore, 2016) can be able to mitigate, but not to avoid numerous collapses. (Bratton, 2019) All in all, it brings different conditions of possibility to think energy as a spatial project. The anticipation of the scaling-up of the renewable era writes the brief for urbanization strategies to be proposed. "Memories from worlds yet to be inhabited" is to exercise the "already not yet". Flooding and drought, soil degradation, lower biodiversity and dying forests are still the inheritance not only of fossil fuels but also of a renewable era that, even if it shows

	concerns, under large-scale "sustainable development", it will be unfitting to address anything other than a technological transition and decarbonisation of the economy. In a state of climatic instability, exhaustion of old energy supplies and ecological depletion, the need for social and ecological regeneration as a energy spatial project must already be a concern of the urbanism of today.
research questions and	Main research question: How the renewable era of energy landscapes can mediate socio-ecological and regenerative practices in the Rhine basin? Analytical sub-research questions: What is the inheritance left by the non-renewable modes of energy to the territory of the Rhine basin understood from its sub-surface to the atmosphere? What are the geopolitical challenges in the history of the Rhine basin and its exchange of energy? What are the potentials and limitations of the "energy transition" to the current landscape disposition of the Rhine basin? What are the social, political and spatial implications of the next mode of energy of the renewables? Propositive sub-research questions: How to set a common vision and project of regional planning approach responding to the need of social and ecological transitions that faces environmental instability? How to design a trajectory based on actions that are both desirable, low in resources and scalable for the territory of the Rhine basin? How to identify the potential locations of tension between energy and other productive landscapes? And how to find a balance between the fitting action and local possibilities and contestations in this overlap of land-uses? How can design help to mediate among different cross-border interests, governance arrangements, and thus assist transboundary collaboration based on post-growth understanding of productivity? How to translate care and welcome other planetarities within the possibilities and transition of energy landscapes from fossil to renewable and in the future revaluation of the "energy transition"?
design assignment in which these result.	The assignment is to propose an architecture of the territory that can address socio-ecological and just urbanisation from the "energy transition" to the renewable era of energy landscapes. It is then organized in three parts: (I) End of a world: To investigate historical development of energy in a planetary-scale but specially in the context of the Rhine basin in order to understand its ties to the current condition of climate change, biosphere degradation and operational landscapes. (II) Interworld friction:

	To anticipate the territorialisation of the next mode of renewable energy by analysing its potentials and limitations and highlight the tensions in productive landscapes sites by the overlapping of current and new structures. (III) Memories from worlds yet to be inhabited: To speculate on the future revaluation of the "energy transition" and the role and project of urban design and spatial planning amidst social and climatic instability.

[This should be formulated in such a way that the graduation project can answer these questions.
The definition of the problem has to be significant to a clearly defined area of research and design.]

Process

Method description

(1) Literature review
Gather knowledge from within and also outside spatial practice and translate their contribution to the spatial project of energy landscapes.

(2) Visual documentation
The collection and production of photography, cinematography and drawings that represent the local conditions and society.

(3) Adaptive cycle
Conceptual model to understand the structure and processes of complex systems. Main relevant adaptive cycles for the place and topic are identified and the related times of change addressed.

(4) Analytic mapping
The construction of maps and other forms of visualisation to investigate the territorial procedures.

(5) Backcasting
The anticipation of probable realities based on the envisioned change against current trends and the potential tensions in time and in the land.

(6) Typological study
Selection of relevant sites that can be the object of strategic urbanism pathways and interventions.

(7) Speculative process
Speculation as a lens through which to look at the problem to make it more evident. Design a better formulated question or a brief for the further intervention. Find the best format and design a narration that comprehensively describes specificity of a defined problem making clear its connection to energy landscapes in the current world-ecology.

Limitations:
In these conditions of possibility, the aim of this project is not to pretend to be holistic. The topic of energy is chosen because it is acting like a hinge, articulating other projects inside climate agreements. The limitations of this project are:
(1) Location. It is limited to the European context, in a Northern West Europe that does not suffer from energy scarcity and has high economic potential.
(2) Focused on the interplay of potentials for extraction and conversion landscapes of energy. As explained in the first pages of this document, energy creates different kinds of landscapes, however those are the ones with higher potential for tensions in the Rhine basin territory.

(3) Energy is raw potential that can take the form of usable electricity, heat and raw fuels to power various aspects of life. This project limits its focus to electricity and its sources, within the "energy transition" paradigm.
(4) As elaborated throughout the whole thesis, the "energy transition" is understood in the national policies and continental European Green Deal, having multidimensional impacts. Here, the project limits its focus to studying the territorial conditions of energy transition in areas of tension between the transitioning modes of energy and its socio-ecological implications.
(5) The current productivity and growth-based world-ecology will not be dismantled by any project alone; but this project aims to build in the basis of a broad counter-hegemony for socio-ecologically just futures. (Srnicek & Williams, 2016)

Literature and general practical preference

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Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?

The relation between this graduation and the Transitional Territories studio is the same interest in dealing with the changing nature of the territorial project. The project is set within the Rhine basin and the conditions its watershed makes possible, from the Alps to the Delta region. Then, the instrument of of Urban Design and Spatial Planning is used in a strategic approach to investigate, explore and propose, from the state of energy crises and transitions, in the ever-changing interrelations between natural processes, societal practices, and (geo)political frameworks that are influenced and influence landscapes of energy. In regard to the master track of urbanism, which is used to focus in the issues of the urban built space, the project looks at the other side of this process, the landscapes of "extended urbanisation" and its "operational landscapes". (Katsikis, 2020) This is also part of urbanisation, so it should be object of research of the urbanism studies. In relation to the overall MSc AUBS program provided by the Faculty of Architecture and the Built Environment, this master thesis is a kind of "architecture of the territory" (Topalovic, 2016) that is fitting engagement of the urban design at territorial scales, broadening the understanding of territory from the purely technical or administrative domain and also seeing it as design.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework.

Scientific relevance:

This project hopes to add to the already growing body of knowledge regarding non-renewables and its spatial configuration and the envisioned spatial planning and urban design of the renewable era of

energy, which has been the focus of many thesis, dissertations and applied research, inside and outside the academia. The effort of this project is peculiar in the aim to envision a transboundary approach to a territorial condition (in this case, the Rhine basin) through the lens of urban design and so bridge a gap between technical energy studies, policies and climate reports. Technological advancements in the field of renewable energy, the European Green Deal or the Paris Agreement and climate reports, for example the ones by IPCC, focus on technologies, or countries or the whole globe. These perspectives need further operationalisation happening in a regional scale and related to the functioning of whole ecosystems and their range of influence, like the Rhine basin watershed and the conditions it makes possible.

Another contribution is the synthetic thinking through a qualitative and contextual approach of the energy crisis and its transition as a spatial project, bringing social, political and ecological fields together in space and inside a territorial condition. In that sense, an "architecture of the territory" proves to be a fitting engagement of the urban design at territorial scales, broadening the understanding of territory from the purely technical or administrative domain. (Topalovic, 2016)

A paralell effort is to build upon the recent concept of planetary urbanisation theorised by Neil Brenner and Christian Schmid, helpful in reframing the urban problematic of the last decades which have proven very elusive and unstable categories. This is not a coincidence, social and climatic conditions only promise to become more unstable. "Memories from worlds yet to be inhabit" aims to grapple with the spatial project of energy needed for highly unstable futures - not because they are in the future but because we need more than apocalyptical views or socio-technological scenarios. (Mair, Druckman and Jackson, 2020)

Societal relevance:

Labour productivity growth has historically had a symbiotic relationship with capitalist markets and fossil-energy. (Mair, Druckman and Jackson, 2020) History can locate the transition to fossil fuels and its dense energy capacities as a key dynamic in the transition from a low to a high productivity economy, leading to new possibilities of growth and development in industry, housing and mobility.

Arguably, we can only think of society in terms of growth and development, even inside "energy transition", "sustainable development" backs up many unfitting interventions if seen from the perspective of socio-ecological local contestations. Speaking of energy, we may be entering an era in which we appear to be on the edge of a steep decline in EROIX values (Rye and Jackson, 2018; Brockway et al., 2019) and it is possible that in the near future, it could reach such low levels that the energy sector effectively "cannibalises" other sectors (Sers and Victor, 2018). All in all, a reduction in overall productivity levels is likely to be forced upon us (Elkomy et al., 2019). Following these predictions, post-growth imaginaries are being drawn in philosophy, economy and sociological studies; this project aims to take it to the spatial project of energy. Whether we run up against bio-physical limits or we successfully transform our societies in such a way that they are more just and in pedagogy to abandon the chasing of output growth. However, how would it look like in space?

In this scenario, energy as a spatial project could begin to compose alternative "already not yet" contingencies when encountering tensions in the territory. How should we act today to reach the desired futures? Proposing more platforms for this discussions than answers to these questions is crucial for decision-making today yet it is very challenging to evaluate the effect of interventions. In that sense, the project also aims to propose the "terraforming" frame as balancing post-growth, regeneration and planetarity as elements needed to compose the radically different counter-hegemonies in the scaling-up of the deployment of renewable era of energy.