

Personal reflection

The relation between my graduation project topic, the studio topic, my master track (A/U/BT, LA, MBE), and my master programme (MSc AUBS)

The Urbanism track, which I am enrolled in, is one of five specialisation tracks within the Architecture, Urbanism and Building Sciences master programme. The TU Delft advertises the Urbanism track as an interdisciplinary degree programme, combining urban design, landscape architecture, spatial planning and engineering. Encouraging students to expand their knowledge of social, cultural, economic and political perspectives with the natural and man-made conditions of the site in order to shape and plan for more sustainable development. (information retrieved from <https://www.tudelft.nl/en/education/programmes/masters/architecture-urbanism-and-building-sciences/msc-architecture-urbanism-and-building-sciences/master-tracks/urbanism/>)

Within the Urbanism track, I am part of the graduation research group Complex Cities. Complex cities

is an association of researchers who assist MSc graduation at the Department of Urbanism, Faculty of Architecture and the Built Environment, Delft University of Technology. Researchers share an interest in the changing role of Urbanism that results from increasingly complex spatial and societal circumstances and internationalization. Their mission is to support specific aspects of MSc Urbanism graduations: trans-disciplinary approaches, internationalisation, institutional practices, planning methods, systems and cultures, and decision-making. (information retrieved from <https://complexcitiesstudio.org/about-us/>)

In my graduation thesis Redefining resource management in a fast growing urban setting: A laboratory for regional innovation I aim to analyse how resource efficiency can be achieved on a regional scale through important changes in current spatial development strategies. In this context, due to the ongoing challenges in the national territory, the focus of my thesis is on energy and land use consumption, collectively referred to as resource consumption. Both are closely interlinked with the growth and

commuting trends in the Grand-Duchy. Therefore, my thesis proposes innovative solutions to improve the infrastructure network, thus reducing the current resource consumption. Due to the high complexity of the problem field, also in relation to the cross-border aspect, I see a broad consensus with the interests of the Complex Cities research group. Furthermore, Luxembourg is known as a very international country, bringing together different cultures and also playing an important role in the global network as one of the most powerful financial centres in the world. Current national trends are driven by economic, social and environmental changes, calling for a trans-disciplinary approach. The government and decision-making actors, however, do not seem being up to the challenge resulting in insufficient planning tools and a lack of assertiveness. With this knowledge, I believe that my graduation topic is a really interesting field of research for the Imagining (European) cities group, which is a section of the Complex Cities research group.

The relationship between research and design in my project

Even though both aspects have been essential to carry out this thesis, this research and design graduation project has a stronger focus on research. Besides the in-depth context and problem field analysis, developing a corresponding theoretical framework and finding a fitting concept were key elements to this thesis. Furthermore, in the framework of a case study, an analysis and evaluation of the spatial conditions in Luxembourg's south agglomeration has been implemented.

This extensive research was necessary to form a solid basis for the design part, steer the focus of thesis in the right direction and thus achieve the most positive result possible.

The relevance of my graduation work in the larger professional and scientific framework

Addressing the question 'How can transit-oriented development practices be integrated in regional planning to enhance resource efficiency and spatial justice in the context of Luxembourg?', this thesis explores the potential of transit-oriented development to

enhance resource efficiency and spatial justice. Diving into the research field of resource-efficient planning, a highly relevant topic that is primarily associated with the theory of circular economy. And even though day-to-day you will inevitably be confronted with the concept of circular economy, there is still a lack of relevant planning approaches, translating the principles of circular economy into space. In turn, my research and design graduation project contributes to fill this gap in the existing scientific knowledge. The developed methodology is innovative in the sense that it includes a transit zone categorisation based on specific analysis and evaluation criteria, reacting to the locational spatial conditions.

Within my thesis, with the aim of redefining resource management, the transit-oriented development model is used as a tool. Besides progressing towards resource efficiency, the concept of TOD also addresses the issues of spatial injustice. At the moment still characterised by a high degree of sprawl on one hand, and a strong economic concentration in Luxembourg City on the other hand, the Grand Duchy is given

the possibility to increase spatial justice through the concept of TOD. By implementing TOD principles, the qualities and potentials of the secondary cities are revealed, and thus a more fair and equitable spatial distribution of socially valued resources and the opportunities to use them is set out.

Furthermore, in the context of resource depletion and constant population growth, the theme of resource-efficiency is of great global relevance. The research on sustainable urban structures and regions, and efficient energy management is a continuous process and outcomes have to be evaluated constantly in order to guarantee high-quality solutions that convince even the last critic.

The societal relevance of my thesis and how it addresses future generations

As stated in the foreword 'Luxembourg's continuous and rapid population growth, caused almost exclusively by immigration, has implied excessive energy and land consumption, and a general rise in resource consumption. These trends have caused major problems in the national territory: traffic jams, air pollution,

environmental fragmentation, and a general threat to the livability.

The negative impacts of these trends harm the environment, and simultaneously affect the quality of life and health of the population. Even though the housing preferences and the general Luxembourgish lifestyle have largely contributed to today's situation, Luxembourg's residents are also mourners in this case. Addressing the issues of resource consumption, and thereby solving problems that Luxembourg's society is currently facing, this thesis is of great societal relevance. Given the ongoing challenges that the Grand Duchy is facing and its apparent inability to deal with them, it is an absolute necessity for quick and adequate actions before more threatening conditions occur.

In the past, the government and the population have showed that they are open for new development strategies and economic models, and have the ability to quickly adapt to them (e.g. steel industry, financial industry). Precisely these virtues provide a solid basis for facilitating the implementation of new strategies, which will also have a considerable impact on the

Luxembourgish lifestyle.

Not only the conditions are favourable for a change in strategy, the population is the direct beneficiary in many ways of a shift towards resource-efficient planning. A transit-oriented development model will decrease automobile dependency and thereby reduce the energy consumption, enhance the productivity of secondary cities and provide new job opportunities, lower the impact on the environment and thereby improve and maintain the quality of life. On this basis, my research and design project will benefit today's generation, and if pursued and adapted to changes, also the future generations. As especially with increasing scarcity of resources, developed approaches and concepts need to focus on future generations and their welfare.

Assessment of the ethical dimension of my research and design project

Within this thesis all aspects of the current resource management practices in Luxembourg are set out, as well as the inability to deal with the ongoing challenges. In response, this thesis appeals for

a more respectful dealing with resources, and thus protect the environment. Protecting the environment and its resources, and showing responsibility towards future generations is of high moral value. Another value that is emphasised within this thesis is the social value. By revealing the potential of secondary cities and increasing their productivity, residents are given the possibility to work and live in the same location. The saved commuting time can be spent with family and friends, or for hobby. Furthermore, living in a highly diverse urban environment and the opportunity to spend a lifetime in the same neighbourhood, if desired, promotes integrity and liveability. As already mentioned, the proposed TOD model also responds to the current situation of spatial injustice. The lack of everyday activities of urban functioning is a primary source of inequality and injustice. By enhancing the qualities of different locations, and developing a diverse urban environment, a more equitable distribution of socially valued resources and the opportunities to use them can be achieved, and thus the level of spatial justice can be increased. Knowing that perfectly just

development is never achievable.

I believe in the ethical principles of my thesis, advocating circular economy and spatial justice in order to reduce the environmental footprint caused by resource consumption.

My role

Within my thesis, I assume the role of the strategic planner and advocate for the environment and the society equally. Pursuing the aim of turning Luxembourg south into a laboratory for regional innovation, my thesis shows new ways to deal with the issues of resource consumption. The developed strategy and guiding principles intend to address first of all the governmental decision makers and the municipal authorities. The proposed strategy presupposes that both authority levels closely cooperate along the process, only then successes can be achieved. But besides the public actors, my thesis also addresses private investors and informs about development opportunities within a circular framework.

With my thesis 'Redefining resource management in a fast growing urban setting. A

laboratory for regional innovation.' I intended to make a clear statement and raise awareness that natural resources are in short supply and that we have a responsibility towards future generations.

How I have learned from my own work

Along the process, I have learned that extensive and detailed research is key to innovative solutions. In order to propose an adequate and innovative solution, the respective problem needs to be tackled at its source. And for this, the problem needs to be understood in its entirety. Therefore, it is necessary to analyse the given spatial conditions, the existing planning approaches and tools and seek the necessary dialogue with experts from the field to gain a better understanding of the current situation and the necessity for change.

Besides the research, the design plays a determinant role, translating the research findings into spatial conditions. Through research by design, I became aware of the importance of the locational factor. Even though the findings are generally valid,

they always need to be adapted in order to respond to the specific location of implementation.

Last but not least, I had to admit to myself that no research project stands on its own. Every research and design project is based on existing theories and concepts, adds to this existing knowledge and paves the way for new researches.